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ADDENDUM TO

PRELIMINARY SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING REPORT LAKE STREET SOUTH PROPERTY 112 AND 130 LAKE STREET SOUTH KIRKLAND, WASHINGTON

Submitted to:

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1.0 INTRODUCTION

Golder Associates Inc. (Golder) is pleased to provide this geotechnical addendum to our geotechnical report titled Preliminary Subsurface Exploration and Geotechnical Engineering Report – Lake Street South Property – 112 and 130 Lake Street South – Kirkland, Washington dated August 23, 2007. The purpose of the addendum is to provide additional geotechnical recommendations for the proposed project. The original project redevelopment plans included the construction of a five-story building with up to two stories below grade. The up-dated project plans indicate the construction of a four-story building with up to five stories below grade.

This addendum is to be used in conjunction with the previously referenced report. The reports used together present all of our geotechnical recommendations. The recommendations included in this addendum should override any previous recommendation.

1.1 PROJECT DESCRIPTION

The proposed project plans indicate demolishing the existing structures and development of one mixed-use, four-story building with five stories of below-grade parking. The depth of the below-grade parking structure has increased since the preparation of the original preliminary geotechnical report. Stock & Associates, Inc., provided us up-dated site development drawings on November 29, 2007. Based on these drawings, it is our understanding the building will cover the majority of the site. The below-grade structure will require the use of temporary shoring due to site constraints.

The project site covers two King County Assessor Parcels located at 112 and 130 Lake Street South in Kirkland, Washington, as shown on the Vicinity Map, Figure 1. The project site is located along the west side of Lake Street South, just north of the intersection with 2nd Avenue. The site is relatively level. A steep slope is located at the southeast corner of the planned building.

1.2 GOLDER'S PREVIOUS REPORT

Our previous field investigation consisted of advancing three soil borings (MW-1 through MW-3), as shown on the Site Plan, Figure 2. The previous investigations encountered 0.5 to 5.3 feet of fill overlying native, stiff to hard, Pre-Fraser fine-grained deposits to the depths explored, 31.5 feet below the existing ground surface (bgs).

A monitoring well was installed in each of the three previous explorations to monitor groundwater conditions. Free groundwater was encountered 20 to 25 feet bgs during drilling on June 22, 2007. On June 26, 2007 the groundwater levels were measured between 3.5 to 5.2 feet bgs.

2.0 FIELD INVESTIGATION

The Golder field investigation was completed on December 12 and 13, 2007 and consisted of drilling four borings (MW-4 and GB-1 through GB-3) with the installation of one monitoring well in MW-4. The approximate exploration locations are shown on the Site Plan, Figure 2. Locations are based on hand measurements from existing site features. Exploration locations were selected based on existing site conditions and accessibility. Detailed boring logs are shown in Appendix A.

The four borings were advanced using a CME 75, truck-mounted drill rig operated by Cascade Drilling, Inc. under the full-time observation of a Golder Staff Geologist, Alison Dennison. The borings were advanced to 51.5 to 71 feet below the existing ground surface. Drilling and sampling of soils were performed in accordance with Golder Technical Procedure TP-1.2-5, "Drilling, Sampling, and Logging of Soils". Standard Penetration Tests (SPT) were performed at 5-foot intervals using a standard, 2-inch diameter split-spoon sampler advanced with a 140-pound auto hammer falling a distance of 30 inches for each strike, in accordance with ASTM D-1586. The number of hammer blows for each six inches of penetration was recorded. The standard penetration resistance (N) of the soil is calculated as the sum of the number of blows required for the final 12 inches of sampler penetration. The N-value is an indication of the relative density of cohesionless soils and the consistency of cohesive soils. If a total of 50 blows are recorded for a single 6-inch interval, the test is terminated and the blow count is recorded as 50 blows for the total inches of penetration. Field judgment is required when assigning density descriptions to soils with a high percentage of gravel or cobbles since the driving resistance is often increased by the presence of such materials. All samples were collected and placed in plastic jars to reduce moisture loss and returned to our Redmond. Washington laboratory for further classification.

At the completion of our investigation, a monitoring well was installed in boring MW-4 in accordance with the appropriate Washington State regulations. The bottom of the well was set at 70 feet below the existing ground surface with 20 feet of screen surrounded by a sand pack. The remaining three borings, GB-1 through GB-3, were backfilled with bentonite chips in accordance with the appropriate Washington State regulations.

The soil conditions were examined and logged by a Staff Geologist from Golder. The soil samples were classified in accordance with Golder Technical Procedure TP-1.2-6, "Field Identification of Soil." Pertinent information was recorded, including soil sample depths, stratigraphy, groundwater occurrence (if any), and soil engineering characteristics.

The stratigraphic contacts shown on the boring logs represent the approximate boundaries between soil types; actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific dates and locations reported and, therefore, are not necessarily representative of other locations and times.

3.0 SUBSURFACE CONDITIONS

3.1 Soil

The soils described here represent the conditions observed in all four of our explorations. The borings encountered a relatively thin layer of fill soils overlying Pre-Fraser fine-grained deposits. Please refer to Golder's previous report for the general geologic setting.

- FILL: The fill unit refers to soils placed by human activity. This unit was encountered in all four borings from the existing ground surface to depths ranging between 0.4 to 1.5 feet bgs. The artificial fill soils consisted of asphalt and compact, light brown, fine to coarse sand and fine to coarse gravel with trace silt.
- PRE-FRASER FINE-GRAINED DEPOSITS: The Pre-Fraser fine-grained deposit is material deposited in a lake environment however it has been over-ridden by a glacier causing it to be over-consolidated. The material consists of fine-grained sand, silt, and clay. We encountered this material in all four borings underlying the fill to the depths explored, 51.5 to 71 feet. In general, the deposits consisted of stiff to hard, light gray, silt with trace fine sand, trace white fine sand partings, and trace fine to medium sand seams.

3.2 Groundwater Conditions

Free groundwater was not encountered in any of our explorations during drilling. Groundwater was measured in the monitoring well MW-4 on December 14, 2007 approximately 9 feet bgs. The monitoring well was developed by pumping the water using a submersible pump inserted into the well approximately 60 feet bgs. After purging approximately 100 gallons, we measured the water level approximately 50 feet bgs. Within approximately two hours, the water level had recovered to 12 feet bgs.

4.0 ENGINEERING RECOMMENDATIONS

This section of this addendum presents our engineering recommendations based on the proposed new building geometry (up to five stories below grade) and subsurface conditions encountered in the explorations completed for this study. The recommendations provided in Golder's previous report should be used in conjunction with this addendum.

Based on our subsurface exploration and investigation, the site is feasible for development from a geotechnical standpoint.

4.1 Building Slabs

In Golder's previous report section 4.5 recommends a 4-inch capillary break. However, based on the conditions encountered, we recommend that if there are more than two levels below grade that the capillary break be a minimum of 8 inches of clean, free draining material that meets the previously described specifications. The slab-on-grade should also be underlain by an under drain system as described in section 4.10 of Golder's previous report.

4.2 Shoring

In section 4.9 of Golder's previous report, we discuss the shoring design criteria. A shored excavation on the order of 50 feet in depth will be required to accommodate construction of the proposed below-grade parking structure. Due to the depth of the below-grade parking structure below the groundwater table, we no longer recommend soil nailing as an option for excavation support. A shoring system consisting of soldier piles with tiebacks or internal bracing appears feasible to support the excavation sidewalls. The design criteria in Golder's previous report remains valid for a soldier pile shoring system.

4.3 Permanent Drainage Provisions

In section 4.10 of Golder's previous report, we discuss permanent drainage provisions. The discharge section discusses a design steady state flow, we recommend increasing this flow rate for design to 40 gallons per minute (gpm). The design flow should be verified once the excavation is completed.

5.0 CONSTRUCTION RECOMMENDATIONS

5.1 Dewatering

In Golder's previous report section 5.8 discusses construction dewatering consisting of ditching and sumping methods. Groundwater was measured 9 feet below the existing ground surface in MW-4. Due to the increased probability of encountering sand seams containing flowing water, we recommend that the contractor be prepared for active dewatering.

Due to the depth excavation below the groundwater table (40 feet), we recommend that the contractor be prepared to install an active dewatering system should ditching and sumping methods prove not to be effective. The active dewatering system should consist of vacuum wellpoints as described below.

A vacuum well point system consists of small diameter wells generally installed on a 6- to 8-foot horizontal spacing, connected to a header system, and then connected to a vacuum pump. Vacuum well points are typically only feasible to lower the groundwater on the order of twenty feet, therefore, we recommend the well points, if needed, be installed from inside the excavation through the shoring at an inclination of 60 to 80 degrees from horizontal. Therefore, the dewatering system would need to be installed and staged with the shoring system.

Decommissioning of the wellpoint system will be a critical step, especially as the wellpoints themselves will provide preferential pathways for rising groundwater to pass through the soldier pile and tieback support system and potentially cause leaks into the final underground structure. If disposable wellpoints are used, these could be grouted up as they are decommissioned. However, groundwater flow up the wellpoint will need to be stemmed prior to grouting. This could be achieved with a simple packer or wad of stemming material to block the flow while a quick-gelling grout is pumped in place.

The contractor should be made responsible for the control of all ground and surface water within the project site. The contractor should be required to provide and maintain pumping equipment, wells, wellpoints, sumps, suction and discharge lines, and other dewatering system components as necessary to keep the excavation free of water. In addition, the contractor should be required to obtain discharge permits for the pumped water, and perform any water-quality testing that may be required.

Where wellpoints are not installed, the contractor should use conventional ditch and sump methods to dewater the site. Even with a properly installed well point system ditching and sumping may be required. Seepage not collected by the wellpoints should be directed to ditches and sumps for pumping out of the excavation.

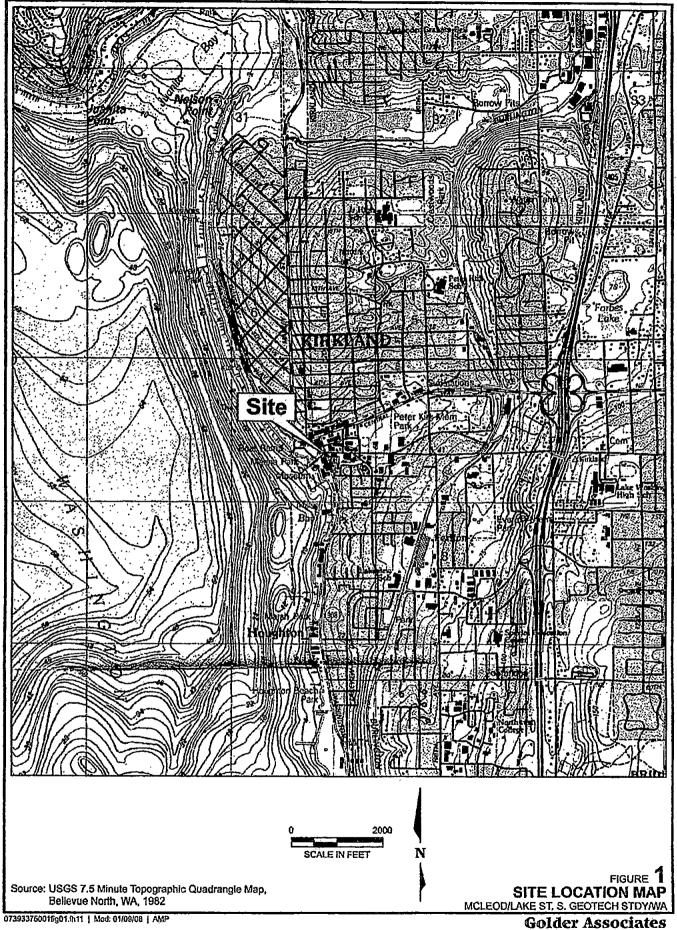
6.0 USE OF REPORT

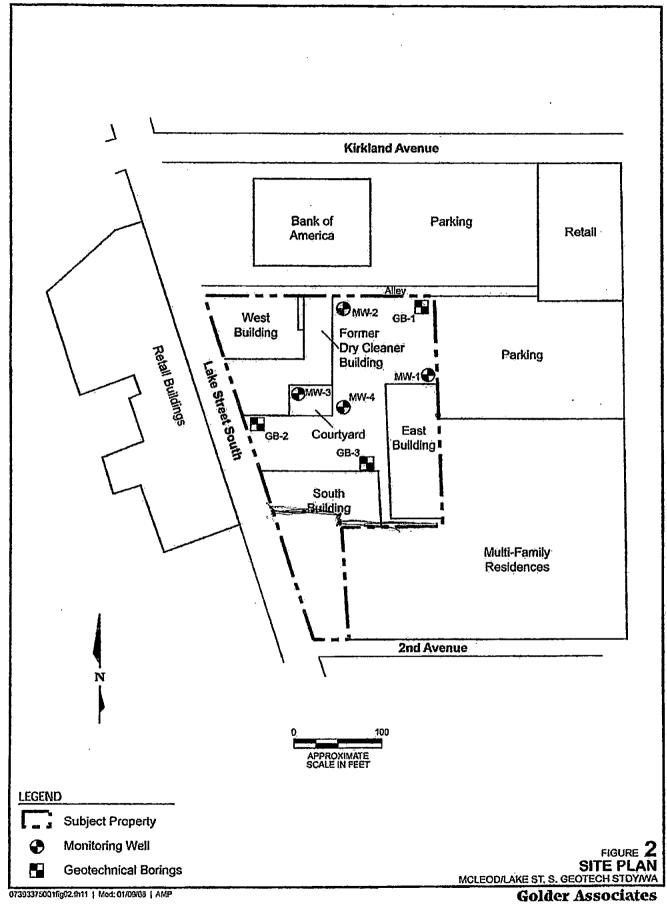
This report addendum should be used with Golder's previous report titled Preliminary Subsurface Exploration and Geotechnical Engineering Report – Lake Street South Property – 112 and 130 Lake Street South – Kirkland, Washington dated August 23, 2007. This report addendum has been prepared exclusively for the use of Stuart McLeod and his consultants for specific application to the Lake Street South Property at 112 and 120 Lake Street South in Kirkland, Washington. We encourage review of this report addendum by bidders and/or contractors as it relates to factual data only (soil descriptions, conclusions, etc.). The conclusions and recommendations presented in this report addendum are based on the explorations and observations completed for this study and conversations regarding the proposed site develop and are not intended, nor should they be construed to represent, a warranty regarding the proposed development, but are forwarded to assist in the planning and design process.

Judgment has been applied in interpreting and presenting the results. Variations in subsurface conditions outside the boring locations are common in glacial environments such as those encountered in Kirkland and the site area. Actual conditions encountered during construction may be different from those observed during drilling. When the site project plans are finalized, we recommend that we be given the opportunity to review the plans and specifications to verify that they are in accordance with the conditions described in this report.

The explorations were performed in general accordance with locally accepted geotechnical engineering practice, subject to the time limits and financial and physical constraints applicable to the services for this project, to provide information for the areas explored. There are possible variations in the subsurface conditions between the test locations and variations over time. We recommend that a contingency for unanticipated conditions be included in the construction schedule and budget.

FIGURES





APPENDIX A

SOIL CLASSIFICATION/LEGEND BORING LOGS

Unified Soil Classification System

Criteria 1or	Assigning Group Symb	ols and Names	Soil Clossification Generalized Group Descriptions			
COARSE-CRAINED SOILS	GRAVELS More than 50% of	CLEAN CRAVELS Less than 5% fines	CW	Well-graded Gravels		
retained on No. 200 sieve	coarse fraction	CERS Man ON MIGS	GP	Poorly-graded gravels		
	No. 4 Sieve	GRAVELS WITH FINES	Cri	Gravel and Sist Matures		
		wore than 12% tines	GC	Gravel and Clay Mixtures		
	SANDS 50% or more of	CLEAN SANDS Less than 52 lines	SW	Well-groded Sonds		
	coarse fraction passes No. 4 Sieve	LESS (IIO) DA INES	ŞP	Poorly-graded Sands		
	•	SANDS WITH FINES	ŞIJ	Sand and Silt Mintures		
		MOTO DIGIT FEATURES	sc	Sand and Clay Mixtures		
FINE-GRAINED SOILS	SILTS AND CLAYS Liquid Smit	INORGANIC	CL	Low-plasticity Clays		
the No. 200 sieve	less than 50		ML	Non-plastic and Low- Plasticity Sits		
		ORGANIC	OL	Non-plastic and Low- Plasticity Organic Clays Non-plastic and Low- Plasticity Organic Sits		
	SILIS AND CLAYS:	INORGANIC	СН	High-plosticity Clays		
	greater than 50		ИН	High-plosticity Silts		
		ORCANIC	òн	High-plasticity Organic Clays High-plasticity Organic Sits		
HIGHLY ORGANIC SOILS	Primerily organic met organic ador	ier, dark in calor, and	PT	Peat		

Component Definitions by Gradation

									
Component	Size Range								
Boulders	Above 12 in.								
Cobbles	3 în. to 12 îñ.								
Grovel	3 in. to No. 4 (4.76mm)								
Coorse gravel	3 in. to 3/4 in.								
fine gravet	3/4 in, to No. 4 (4.76mm)								
Sand	No. 4 (4,76mm) to No. 200 (0,074mm)								
Coarse sand	No. 4 (4.75mm) to No. 10 (2.0mm)								
Medium sand	No. 10 (2.0mm) to No. 40 (0.42mm)								
Fine sond	No. 40 (0.42mm) to No. 200 (0.074mm)								
Silt and Clay	Smoller than No. 200 (0.074mm)								

Samples

SP1 Sampler (2.0° 00)
Heavy Duty Split Spoon
Shelby Tubia
Pitcher Sampler
Ðulk
Cored

Unless otherwise noted, drive samples advanced with 140 lb. hommer with 30 in. drop.

Relative Density or Consistency Utilizing Standard Penetration Test Values

Co	hesionless Soils (c)		Cohesive Soils (b)							
Density (c)	N, blows/ft.(c)	Relative Density (%)	Consistency	N, blows/ft.(c)	Undrained (d) Shear Strength (psf)						
Very foose	0 to 4	0 - 15	Very soft	D to 2	₹250						
Loose -	4 to 10	15 - 35	Seft	2 to 4	250-500						
Compact	10 to 30	35 - 65	Firm	4 to B	500±1000						
Dense	30 to 50	65 - 85	Stiff	B to 15	1000-2000						
Very Dense	over 50	>85	Very Stiff Hord	15 to 30 over 30	2000-4000 >4000						

- (o) Soils consisting of gravel, sond, and sill, either separately or in combination, possessing no characteristics of plasticity, and exhibiting drained behavior.
- (b) Soils passessing the characteristics of plasticity, and exhibiting undrained behavior.
- (c) Refer to test of ASTM D 1586-84 for a definition of N; in normally consolidated cohesionless soils Relative Density terms are based on N values corrected for overburden pressures.
- (d) Undrained shear strength = 1/2 unconfined compression strength.

Descriptive Terminology Denoting Component Proportions

Descriptive Terms	Range of Proportion
Troce	0-57
title	5-122
Some or Adjective (o)	12-302
And	30-502

(a) Use Gravelly, Sandy or Sitty as appropriate.

Laboratory Tests

Test	Designation
Moisture	(1)
ioisture Density Siroin Size Hydrometer Uniterberg Umits Consolidation Unconfined UU Triox CU Triox CO Triox	D
Groin Size	G
Hydrometer	Н
Atterbeig Limits	(0)
Consolidation	c
Unconfined	U
UU Triox	UU
CU Trian	CO
CD Triox	co
Permeability	P

(1) Moisture and Alterberg Umits plotted on log.

Silt and Clay Descriptions

Description	Typical Unified Designation
Sit	ML (non-plastic)
Clayey Silt	CL-ML (low plosticity)
Silty Clay	CL
Clay	CH
Plostic Silt	MH
Organic Soils	OL OH, PL

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Figure SOIL CLASSIFICATION/LEGEND

PROJ	JECT !	MicLeod/Lake St. S. Gootech DRILLIN NUMBER: 073-93375.001 DRILLIN I: NE Comer of Site DRILL R	GMÉTI GDATE	HOD: E: De	RD OF Hollow St cember 13 Truck-Mou	em Au J. 2007		DATUM: N AZIMUTH: COORDIN	MSL N/A		surveyed		SHEET ELEVAT INCLIN	1 of 3 NON: 38 NTION: -9 0
о рерти (#)	BORING METHOD	SOIL PROFILE DESCRIPTION	SDSN	GRAPHIC	ELEV. OEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in 140 to hammer 30 inch drop	Й	REC/ATT	PENETRA BI 10 WATER CX W, I	OWS /	0 40 PERCENT	NOTES WATER LEVELS GRAPHIC
	4-inch linner dämpeler hollow siem auger with auto-hammer	Log continued on next page Log continued on next page	ML		37.6	3	SS	7-8-12 4-16-12	22	1.5 1.5 1.5				Cement backfil.
1 in to DRILI DRILI	LING		inc	· I · · · · ·	<u></u>	CH	IECK	D: A. Denn ED: R. Lua 1/11/2007					· · · · · · · · · · · · · · · · · · ·	Golder

PRO	DJECT	: McLeod/Lake St. S. Geotech NUMBER: 073-93375.001 I: NE Comer of Site	DRILLING DRILLING DRILL RIC	METH	IOD:	Hollow St ember 13	em Au , 2007	ger	DATUM: I AZIMUTH: COORDIN	VISIL NVA		survey	ed		ELE		of 3 On: 38 TON: -90				
ОЕРТН (ñ)	BORING METHOD	SOIL PE	ROFILE	nscs	GRAPHIC LOG	ELEV. DEPTH	NUMBER	TYPE	SAMPLES BLOWS per 6 in 140th barener 30 inch drap	N	REC/ATT	PENI	ETRATI BLC 0 3 ER CON	WS/	(PERC	a ENT)	notes Water Leve Graphic				
-20 -		0.4-51.5 Very stiff to hard, Eght gray, massive trace fine sand, vace white fine san partings, trace fine to medium sand damp to wet (ML) (PRE-FRASER FINE-GRAINED DEPOSITS) (Conti	d i				4	\$3	6-11-12	23	1.5 1.5						Bentonilo <u>.</u> chips bankril				
25 	hammer	·					5	SS.	6-10-15	25	15 15			M			Bentonile chips backtil.				
 30	4-inch inner dameter hollow stem auger with auto-hammer	-Incréase in line sànd content.	ML	1			ML.			6	SS	8-10- 2 2	32	15							
	4-inch inner diar							3													
-35 - - 1 in DRII							7	ŞS	7-13-17	30	1.5										
-40 1 in DRII DRII		Log continued on next page CONTRACTOR: Cascade Dave Grose		nc		<u> </u>	CH	ECK	D: A. Denni ED: R. Luar 1/11/2007							(Golde				

¥8 40	BORING METHOD	SOIL PROFI	E			nted		COORDIN	ATES	note	surveyed	ELEVATI	
	BOR	DESCRIPTION	SOSN	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in 140 to hammer 30 inch drep	N	REC/ATT	PENETRATION I BLOWS 10 20 WATER CONTEN W, 1 6	30 ¢0 IT (PERCENT)	notes Water Levels Graphic
	with auto-hammer	0.4-51.5 Very sliff to hard, fight gray, massive, Sil, trace fine sand, trace white fine sand partings, trace fine to medium sand sean damp to wet (ML) PRE-FRASER FINE-GRAINED DEPOSITS) (Continued)	T, 18,			8	SS	9-12-16	28	15			
45	4-inch inner diamoter hollow stem auger with auto-hammer		ML			9 \$8	12-18-27	45	1.5 1.5				
50		-Sample Increases in moisture content. Boring completed at 51.5 ft.			-13.5 51.5	10	SS	6-14-20	34	1 <u>5</u>			·
55	٠.												·
60 1 in to DRILLI	0.3.0					10	GGF	D: A. Denni	ison				

PRO) IECT	McLcod/Lake St. S. Geotech DRILLII			RD OF Hollow St			EHOLE DATUM: N		-2			SHEET 1	
PRO	DJECT	NUMBER: 073-93375.001 DRILLI	IG DATE	∄ Dec	ember 14 ruck-Mou	. 2007	Bei	AZIMUTH COORDIN	NA	nol 4	eunavad		INCLINA	TION: -90
		SOIL PROFILE	no. On	<u> </u>	IGCK-INIOO	, neu		SAMPLES	<u> </u>	1105 6		TION R	ESISTANCE n =	
рертн (ñ)	BORING METHOD	DESCRIPTION	USCS	GRAPHIC	ELEV. DEPTH (8)	NUMBER	TYPE	BLOWS per 6 in 140 to haramer 30 kept drop	N	REC/ATT	WATER CO	20 INTEN	30. 40 F (PERCENT)	O COLUMN
BOREHOLE RECORD 0739337500185.GPJ GLDR.WA.GDT 1/11/08 D C L N N C C L N N C C L N N C C L N C L N C L N C C L N C C L N C	A-Inch taner djameller hallow stom sugar with autochammer.	0.0 - 0.4 Asphall 0.4 - 51.5 Very still to hard, light gray, massive, Sit.T, lrace line sand, trace white line sand parlings, trace fine to medium sand seams, damp to well (ML) (PRE-PRASER FINE-GRAINED DEPOSITS) Log continued on next page	ML		32.8	2	SS	2-7-14 3-7-9	21	1.5 1.5 1.5				Cement backing.
ol t	to 3 ft		ı lne					D: A. Denn						
E DRI		CONTRACTOR: Cascade Drilling Dave Grose	y inc					ED: R. Lua 1/11/2007	ıK				(Golder Associates



PR	CATIO	: McLeod/Lake St. S. Geolech NUMBER: 073-93375,001 N: SW Comer of Site	DRILLING	METH DATE	100: E De		em At		EHOLE DATUM: I AZIMUTH COORDIN	VISL N/A		surveyed	SHEET 2 ELEVATI INCLINA	
В DEРТН (#)	BORING METHOD	DESCRIPTION	PROFILE	SOSA	GRAPHIC	ELEV. DEPTH	NUMBER	TYPE	BLOWS per 6 in 1401b hammer 30 lach drop	Ŋ	RECYATT	WATER CONTEN	30 40 T (PERCENT)	NOTES WATER LEVELS GRAPHIC
		0.4-51.5 Very stiff to hard, light gray, massh trace the sand, trace white time sand trace white time sand partitings, trace fine to medium sand damp to wel (M.I.) (PRE-FRASER FINE-GRAINED DEPOSITS) (Con	ve. SILT, nd 1 seams, 1 tinued)				4	SS	4-8-8	16	15 1.5			Bentanile chips backili.
-25	.	-increase in line sand content.					5	SS	5-11-12	23	<u>15</u> 15			Bentonile
30	finch inner dameter hollow stem auger with auto-hammer			ML										
	4-inch inner diameter holle						6	SS	9-12-13	25	# 14. * 14.			2688
35							7	ss	S-10-15	25	15 <u>1</u> 5			
											3			
	o 3 ft	Log continued on next page CONTRACTOR: Cascade		nc	11				D: A. Denni ED: R. Luar					Golder



I PRO	DJECT	McLeod/Lake St. S. Geotech NUMBER: 073-93375.001 I: SW Comer of Site	DRILLING DRILLING DRILL RIC	METH	IOD: I	follow Ste	m Au 2007	aer	DATUM: N AZIMUTH: COORDIN	ASL N/A		sulvevi	ed		ELE	ET 3 c VATIO INATI	of 3 N: 33 ON: -90
			ROFILE						SAMPLES				TRATI	ON RE	SISTAN	VCE	· · · · · · · · · · · · · · · · · · ·
DEPTH (A)	BORING METHOD	DESCRIPTION		SOSA	GRAPHIC LOG	ELEV. DEPTH (R)	NUMBER	TYPE	BLOWS per 6 in 140 lb hammar 30 inch drop	N	REC/ATT		R CON	nent Ov	0 49 (PERCI	ENT)	NOTES WATER LEVELS GRAPHIC
45	4-inch inner diameter hollow stem auger with auto-hummer	0.4-51.5 Very stiff to hard, light gray, massiver fine sand, trace white fine san partings, trace fine to medium earn damp to wel (ML) (PRE-FRASER FINE-GRAINED DEPOSITS) (Con	ve. SILT. and d seams, elinuod)	ML			8	SS	6-8-10	18	1.5 1.5						-
50	4-nch uner dameter ho						10	SS	5-9-14	23	1.5						-
BOREHOLE RECORD 07393375001BS.GPJ GLDR, WAGDT 1/1/1/08 CO CO L S 2 2 3 5		Boring completed at \$1.5	Ř.			-18. <u>5</u>											
1 in DRI DRI		CONTRACTOR: Cascade Dave Grose	e Drilling i	Inc			CH	ECK	D: A. Denni ED: R. Luai 1/11/2007							(Golder Associates

PROJEC LOCATIO	NUMBER: 073-93375,001 DRILLI N: SE Comer of Sile DRILLI	NG METI NG DATE RIG: CM	HOD: I	iolow Str	em Áu . 2007	œr	DATUM: 1 AZIMUTH: COORDIN	VIŞL N/A		survey	ed		SHEET 1 ELEVAT INCLINA	
SORING METHOD	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. DEPTH	NUMBER	TYPE	BLOWS per 6 in 140 to hazuner 30 inch darp	N	REC / ATT	<u> </u>	R CON	TENT	(PERCENT)	NOTES WATER LEVELS GRAPHIC
ਨੇ ਨੇ A-Inch loner dameter holfow stem Buger with auto-hammer	0.0-0.4 Asphalt 0.4-1.5 Compact, light brown, fine to coarse SAND and fine to coarse GRAVEL, trace sill, damp (SW/GW) (FilL) 1.5-51.6 Very stiff to hard, light gray, massive, SiLT, trace fine sand, trace white fine sand partings, trace fine to medium sand seams, damp to wet (ML) (PRE-FRASER FINE-GRAINED DEPOSITS)	SW/GW		31.6 0.4 30.6 1.5	2	\$\$ \$\$	9-12-16 5-9-14 5-18-23	28						Cement backin.
20 1 in to 3 t	tog continued on next page t CONTRACTOR: Cascade Drilling	Inc	111				D: A. Denni ED: R. Luar					•		Golder

	TION					ember 14	. 2007		AZIMUTH:	N/A						EVATIC	ION: -90	
		NUMBER: 073-93375.001 : SE Comer of Site SOIL PF	DRILL RIG	: CM	₹75 T	ruck-Mou	nted		COORDINA SAMPLES	ATES:	nots			MND				
	BORING METHOD	DESCRIPTION	NOTICE.	SOSA	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	TYPE	BLOWS per 6 in	N	REC/ATT	PENE 19 WATE W, I	BLC RCO	WS/ 0 3 VIENT	(PER	enn enn	NOTES WATER LEVELS GRAPHIC	
-25	4-inch Inner diameter hollow stem ouger with auto-hammer	1.5 - 51.5 Very stiff to hard, fight gray, massive trace fine saind, trace white fine sain parlings, trace fine to medium saind daimy to wel (ML) (PRE-FRASER FINE-GRAINED DEPOSITS) (Continued on the sain of the sain sain of the sain sain of the sain sain of the sain sain sain sain sain sain sain sain	seams, inued)	SDSN	DIHGRARD CONTROL CONTR	DEPTH	BERNAN 4	SS TYPE		N 24 29 35	15.15. 1.15.	WATE	R COM	NEM O 3	(PER	CEAT)	Bentonits backfil.	
1 in to		Log continued on next page CONTRACTOR: Cascade							D: A. Denni ED: R. Luar								Golder	-

BOREHOLE RECORD 073933750018S.GPJ GLDR WA.GDT 1111MB



1.5-51.5 Very stiff to hard, light gray, massives, SLIT, trace fine hand, from while fine sand portions, trace their features and search portions, trace their features and search portions, trace their features and search printing. Sample decreases in moisture content. MIL. 9 SS 7-11-14 25 15. 10 SS 10-13-22 35 15. Bioring completed at 61.5 ft. Bioring completed at 61.5 ft.	PRO	CATION	McLeod/Lake St. S. Geotech NUMBER: 073-93376.001 DRILL SE Comer of Site SOIL PROFILE	ING MET ING DATI RIG: CM	HOD: I Dece E 75 Ti	tollow Stember 14 ruck-Mou	om Au 2007 nled	ger	DATUM: I AZIMUTH: COORDIN SAMPLES	MSL N/A ATES	not	-			INCL	ATION: NATION	32 -90
1,5-91.5 Very exit in the first gray, measure, 61.1.7 Very exit gray in the first gray, measure, 61.1.7 Very exit gray in the first gray, measure, 61.1.7 Very exit gray in the first gray, measure, 61.1.7 B SS 99-12 21 1.5 1.5 In the first gray fi	(S)	BORING METHOD		1	GRAPHIC LOG	DEPTH	NUMBER	TYPE	BLOWS per 6 in	N	REC/ATT	WATER	CONTE	30 30 30 30 30 30	₩ ¢0 PERCE	NT)	
Boring completed at 51.5 ft. 51.5		٠,,	Very stiff to haid, light gray, massive, SILT, trace fine sand, trace white fine sand partings, trace fine to medium sand seams, damp to wet (ML) (PRE-FRASER FINE-GRAINED DEPOSITS) (Continued)				8	SS	9-9-12	21	1.5 1.5						
Boring completed at 51.5 ft. 51.5	5	ameter hollow stem auger with auto-har	·	MŁ			9	SS	7-11-14	25	15 1,5					AND THE RESIDENCE OF THE PROPERTY OF THE PROPE	
Boring completed at 51.5 ft. 51.5	iO	4-inch inner di													*		
			Boring completed at 51.5 ft.				10	SS	10-13-22	35	1.5 1.5						
	is																
																	·



.	THOD	SOILE	ROFILE				nted		COORDIN SAMPLES			PENETRAT BL	DWS/		NOTES
(8)	BORING METHOD	DESCRIPTION		nscs	DO1 DIHAWED	DEPTH	NUMBER	TYPE	BLOWS per 6 in 140 th hammer 30 inchidrop	2	REC/ATT	WATER CO	NIENI	(PERCENT)	WATER LEVELS GRAPHIC
		0.0 - 0.4 Asphalt 0.4 - 1.0 Compact, Eight brown, fine to coan and fine to coanse GRAVEL, trace demp (SW/GW) (FILL) 1.0 - 71.0 Stiff to hard, light gray, massive, S fine sand, trace white fine sand patrace fine to medium sand seams, wet (ALL) (PRE-FRASER FINE-GF DEPOSITS)	ILT, trace	W/GW		34.6 0.4 34.0 1.0									Flush-mount monument installed in cement.
5	. 53			,			1	SS	7-10-15	25	1.5 1.5				
10	4-inch inner dameier hollow siem auger with auto-hammer			ML			2.	SS	6-18-7	25	1.5 1.5				installed in cement.
15	4-10						3	SS	6-10-12	22	1.5				
20 1 io	to 3 ft	Log continued on next pa	ge				4	ss	7-12-13 D: A. Denni	25	1.5 1.5				



PROJE LOCAT	TION	NUMBER: 073-93375.001 DRILLIN	G MET	HOD: E: D ec	Hollow Str ember 13 ruck-Mou	em Au . 2007	ger	HOLE DATUM: N AZIMUTH: COORDIN	ASL N/A		surveyed		SHEET : ELEVATI INCLINA	*
	BORING METHOD	SOIL PROFILE DESCRIPTION	SOSO	GRAPHIC LOG	ELEV. DEPTH	NUMBER	TYPE	BLOWS per 6 in 140 lb hammer 30 inch drop	ΝĬ	REC/ATT	10 2 WATER CO	NEWC	O 40 F (PERCENT)	NOTES WATER LEVELS GRAPHIC
-25	4-inch inner diameter hollow stem augar with auto-hammer	Stiff to hard, light gray, massive, SILT, trace fire sand, trace while fine sand partings, there are to medium sand seams, damp to wet (ML) (PRE-FRASER FINE-GRAINED DEPOSITS) (Continued) Increase in fine sand seams, moist.	ML			5	SS	30 Inch drop 7-12-13 6-12-18 6-12-14	30.	1.5 1.5 1.5 1.5 1.5	20. 4			Solid 2-linch diameter PVC pipe embedded in bentonite chips.
-40	3 ਜੋ	Log continued on next page			<u>l</u>	8	SS	8-12-18 D: A. Denni	30 Son	1.5				
DRILLI	ING	CONTRACTOR: Cascade Drilling Dave Grose	Inc			CH	IECK	ED: R. Luai 1/11/2007						Golder Associates



Comparison Com	PR	OJECT	McLeod/Lake St. S. Geotech DRILLIN NUMBER: 073-93375.001 DRILLIN	G METI G DATE	OD:	Hollow Str ember 13	em Au 2007	ger:	HOLE DATUM: N AZIMUTH	ASL N/A				E		of 4. ON: 35 NON: -90	
10.7-10 Silf to hard, light gray, mass/we, Silf, funce fine earnd, funce within fine eard persings, with fine earnd persings, with fine earnd persings, with fine earnd persings, and (bill.) PRE-POSITIS) (Continued) 9 SS 8-12-16 28 15 1.5 -45 9 SS 8-12-16 28 15 1.5 -50 8 8 8 8 8 8 8 8 8	LO		: Center of Site ORILL R						COORDIN		not:		RATION	RESIS			
10 - 71.0 11		BORING MET	DESCRIPTION	nscs	GRAPHIC	ELEV. DEPTH (fl)	NUMBER	TYPE	per 6 in	Ń	REC/ATT	WATER	20 CONTE	30 NT (PE	RCENT)	1	1
1 in to 3 ft DRILLING CONTRACTOR: Cascade Drilling Inc CHECKED: R. Luark Golder	SRD 07393375001BS.GPJ GLDR,WA.GDT 1/1/1008	nch inner diameler hollow stem auger with auto-hammer	Stiff to hard, light gray, massive, Stiff, trace fine sand, trace while fine sand partings, trace fine sand, trace medium and seame, damp to wel (ML) (PRE-FRASER FINE-GRAINED DEPOSITS) (Continued)	Mt			10	SS	8-12-18 8-12-18 7-11-13	24	1.5					Solid 2-Inch diameter PVC pipe >= embedded in sand.	
	된 1 in SE DRI	LLING	CONTRACTOR: Cascade Drilling	inc	.1	<u> </u>	CH	IECK	ED: R. Lua			<u> </u>				Gold	er .

PR	OJECT	: McLeod/Lake St. S. Geotech NUMBER: 073-93375.001 V: Center of Site	RILLING I DRILLING I DRILLING I	WETH DATE	OO; F	foliow Str ember 13	em Au 2007		DATUM: I DATUM: I AZIMUTH COORDIN	VISL N/A		surveyed -		ELE	EET 4 VATI LINAT	of 4 On: 35 NON: -90	
S DEPTH (ft)	BORING METHOD	SOIL PF	ROFILE	nsos	GRAPHIC LOG	ELEV. DEPTH (ft)	NUMBER	ТУРЕ	BLOWS per 6 in 140 to hammer 30 inchdrap	N	REC/ATT	PENETR/ 8 10 WATERC W, I	ATION R LOWS/ 20 CNTEN	30 4 F(PERC	e ENT) -IW	NOTE WATER LE GRAPH	
-	iuto-hammer	1.0 - 71.0 Stiff to hand, light gray, massive, Stiff to hand, light gray, massive, Stiff the sand, trace white fine sand part trace fine to medium sand seams, duret (ML) (PRE-FRASER FINE-GRA DEPOSITS) (Continued) Sample increases in moisture conte					12	83	8-11-i6	27	1.5 1.5					PVC ppe embedded in sand.	
-65	4-inch inner dameter hollow stem auger with auto-hammer	-Sample decréases in moisture cont	ent.	ÀIL.			13	SS	8-13-15	28	1.5 1.5						
-70		Boring completed at 71.0 ft.				_36.0 71.0	14	S9	6-11-13	24	1.5 1.0						
-75																	
-80 1 in	to 3 ft	<u>-</u>					JO	Ser	D: A. Denni	Son							
DRIL	LING	CONTRACTOR: Cascade I Dave Grose	Drilling Inc	3			ÇH	ECKI	ED: R. Luar 1/11/2007						(Gold	er iates

