APPENDIX 'A' GEOTECHNICAL TEST HOLE LOGS

Template Version: C320080526 - C LR

APPENDIX 'A' - GEOTECHNICAL TEST HOLE LOGS

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The geotechnical test hole logs are provided to aid in the Contractor's evaluation of the existing pavement structures and/or soil conditions. The information presented is considered accurate at the locations shown on the Drawings and at the time of drilling. However, variations in pavement structure and/or soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally and may occur as a result of construction activities. The nature and extent of variations may not become evident until construction commences.

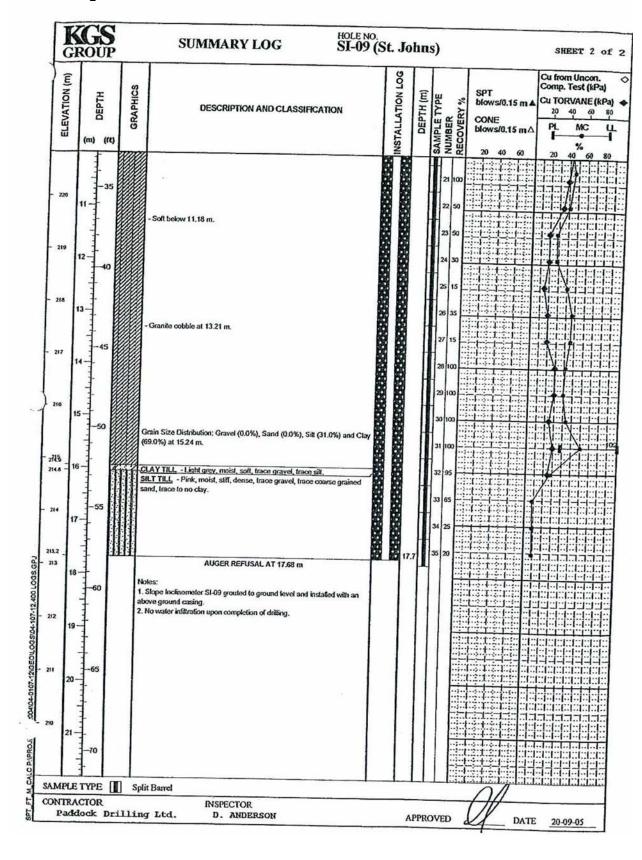
Geotechnical Test Hole Logs for St John's Park

Test Hole Log SI-09 for St John's Park

CLI		2	SUMMARY LOG SI-09 (St.		113)			SHEET 1 of
/	ENT	CITY	OF WINNIPEG		_	JOI	B NO. 04-	107-12.400
PRO	DJECT	FLOC	DD PUMPING STATIONS - CONDITION ASSESSMENT	STUDY	Y		OUND 230	.83 m
SITI			hn's Flood Pumping Station		•	TO	P OF PVC	377.200.0
LOC			ast from Station			ELE	EV.	
DRI	LLING	200 mi	m ø Hollow Stem Auger, ACKER SS Drill Rig				TER ELEV.	
MET	HOD	T				UAI	E DRILLED 12-	Oct-04
Œ				NSTALLATION LOG				Cu from Uncon. Comp. Test (kPa)
ELEVATION	표	GRAPHICS		S E	TYPE	. %	SPT blows/0.15 m A	Cu TORVANE (kPa)
TA!	DEPTH	N N	DESCRIPTION AND CLASSIFICATION	ALLATIC	1	~ &	CONE	20 40 60 80
E.E.	_	9		ALL DE	1	BEF	blows/0.15 m	PL MC LL
	(m) (ft)			NS	SAMPLE	NUMBER RECOVERY	20 40 60	%
230,6 -	1	//	TOPSOIL CLAY FILL - Black, moist, stiff, high plasticity, crumbly, trace gravel,	28	I		20 40 60	20 40 60 80
250.2	Ŧ		trace rootlets, trace organics, trace exidation.			1 85		
230	1		CONCRETE			2 20		
	1-		3	8	Н			
229,4	1.	//××	CLAY FILL - Black, moist, stiff, high plasticity, crumbly, trace gravet,			3 15		
	T		race organics, frace oxidation.	器	Н			
229	2-	77777	NO RECOVERY			1		
	1		Sit.TY CLAY - Brown, moist, firm, intermediate plasticity, trace to some sift, trace fine grained sand.		П	5 25		1-1-1-1-1-1-1-1
28.3	1		NO RECOVERY		Ш			
228	3-10		19			6		
	- ["		CLAYFILL - Black, moist, stiff, high plasticity, crumbly, trace gravel, trace rootlets, trace organics, trace exidation. CONCRETE CLAYFILL - Black, moist, stiff, high plasticity, crumbly, trace gravel, trace organics, trace oxidation. NO RECOVERY SILTY CLAY - Brown, moist, firm, intermediate plasticity, trace to some silt, trace fine grained sand. NO RECOVERY LACUSTRINE SILTY CLAY (CH) - Brown, motifed brown to dark brown, moist, stiff, high plasticity, trace oxidation. - Silt layer (light brown, moist, soft, crumbly) from 3.38 to 3.43 m. - Silt layer (light brown, moist, soft, crumbly) from 3.63 to 3.71 m. - Trace silt lenses (<1 mm thick) at 4.06 m. Grain Size Distribution: Gravel (0.0%), Sand (0.0%), Silt (20.3%) and Clay (79.7%) at 4.06 m. - Grey at 5.51 m. - Firm, trace silt nodules, facustrine origin below 5.59 m. - Brown, mottled brown to dark brown, skiff, trace silt kenses (<1 mm thick) at 6.10 m. - Brown, mottled brown for dark brown, skiff, trace silt kenses (<1 mm thick) at 6.10 m.		Н			1-1-1-1-1-1-1-1-1
-	- 1		- Sift layer (light brown, moist, soft, crumbly) from 3.38 to 3.43 m.		Ш	7 100		
227			- Silt layer (light brown, moist, soft, crumbly) from 3.63 to 3.71 m.			8 100		
1	4 T	<i>‱</i>	- Trace silt lenses (<1 mm thick) at 4,06 m.	8	Ш	-		
- 1	1		Grain Size Distribution: Gravel (0.0%), Sand (0.0%), Silt (20.3%) and Clay (79.7%) at 4.06 m.			100		1:
26	-15		3			1 3		
5	5-{				1	0 100		
- 1	1				1			
1	7	/////////////////////////////////////	Grey at 5.51 m.		H	1 =		
6	1		Firm, trace six nodules, lacustrine origin below 5.59 m.		1	100		
	-20	<i>WA</i> :	Brown, mottled brown to dark brown, stiff, trace sit tenses (<1 mm thick)		H		-1	i i i Ni i i i
	1			20	113	100		
٠ _	1 1	88	Brown, mottled brown-grey at 6.60 m.		1	100		
1'	7 1				П.			
1	1	<i>‱</i> -	Grey at 7.37 m.		15	100		
,	25	<i>‱</i> .	Firm, trace gravel below 7.62 m.		H			
8	1 1		. 88 8		16	100		1:1:1:1
	1 1		BR 8		1,,	100	1312111	
	7 1				Ц"			
9.	1 1		SA 8		18	100		
	-30			H	H	::3:	1313131	
	1 1			8	19	100		
	1		Grey at 7.37 m. Firm, Irace gravel below 7.62 m.		20	100		
MPLE	ETYPE	S S	plit Barrel	4_18	L		01	1.1.19
NTRA	ACTOR		INSPECTOR ng Ltd. D. ANDERSON				1111-	

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Test Hole Log SI-09 for St John's Park



Test Hole Log SI-10 for St John's Park

	ROUP	y Y	SUMMARY LOG	HOLE NO. SI-10 (S	St. Jo	hn	s)				SHEET	l of
CLI	ENT	CITY	OF WINNIPEG					JOB	NO.	04-L07-	12.400	
PR	OJECT	FL00	D PUMPING STATIONS - CONDITION A	SSESSMEN	IT STU	DY		GROU		227.63 t	n	
SIT	E	St. Jo	hn's Flood Pumping Station					TOP	OF PVC			
LO	CATION		Bank, 3 m West of Path					ELEV	R ELEV.			
DRI	LLING	200 mr	n ø Hollow Stem Auger, ACKER SS Drill Riç	9					DRILLED	12 0.4 (
	l		T		0		_	1	Dimeceo		from Unco	n.
ELEVATION (m)	_	93			NSTALLATION LOG	=			SPT		np. Test (k	
Ď.	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICAT	TON!	ě	DEPTH (m)	SAMPLE TYPE NUMBER	%	blows/0.15		TORVANE	200
EVA.	8	1 8	DESCRIPTION AND CENSOR FOR I	ION	3	EPT	ERT	ER	CONE		0 40 60 L MC	- \$0 - LL
긥	(m) (ft)	1			1 E	ā	MPL	8	blows/0.15	n^ I	•	-ï
227.6 -	1 10	855580	TOPSOIL				& S	A.	20 40 6	0 2	0 40 60	80
-2.772	1 1	1	CLAY FILL - Brown, moist, stiff, intermediate plasticity, to	race fine			1	40			*	
227	1		grained sand, trace silt, trace organics, trace rootlets, trace	e oxidation.		-		=			4444	X
	1-1						2	20	1:1:1		1114	
outes.	1					-	3	20	isisi			N
226.1 _ 22960 _	-5		Light brown silt layer (2.5 cm thick) at 1.52 m.			-					7-1-1-1	
	,}		SILT - Light brown, moist, soft, crumbly. CLAY FILL - Brown, moist, stiff, intermediate plasticity, to	ace sitt. Irace			4	55			Ni i i	
	^ }		rootlets, trace oxidation. - Mottled brown to dark brown, stiff, high plasticity, trace gy			1	$H_{\cdot}I$.1.1.1.1.	1
225	+		precipitate at 2.03 m.	psum			5 1	00	1:1:1			1 1
	1						6 1	00				
- 1	3-10			8		Н	HI	-	1 2 1 2 1		1-1-1-	
- 1	1			i i		- 11	7 1	00	13.13.1		1411	
224	1			ĝ		Ħ	8 10		tintin:			
23.6	4		LACUSTRINE SILTY CLAY (CH) - Grey, motified brown-gr	ov moist		Н	4"	~	1 1 1 1	111	1	1
	1		stiff, high plasticity, trace silt nodules, lacustrine origin.	cy, moisi,		- 11	9 10	α :::	t:::t:::::::::::::::::::::::::::::::::			
23	1-15			ě		H	11			111	11111	-1/1-
- 1	5-			6		Ш	10 10	0 :::				::j*:i::
- 1	1			ğ		П	11 10				#1-1-1-1	1
722	1			6		Н						444
	6-			8			12 10	0	t:::::::::::::::::::::::::::::::::::::			11:
	20							1			1.1.1/1	1.1.
21	1						13 100	P			1	
	,I			8			14 100					
	1	/////////////////////////////////////	Firm below 7.11 m.	8				-1:	1:2:1:2:1:0	1-1-1-1		1-1-1
_	1.			8			15 100				411	
×	-25	/////////////////////////////////////	Till inclusion at 7.72 m.		18	H			ciriri		\id=i=i=i	
1	8-{					Ш	16 100				1	
	1				H		17 100			1.1.1	WI-1-1	
9	1			A		H						1.7.
9	-[18 100		34344			1:1:1
	1					H	***				<i> [</i>]	
8	1			60			19 100		##			
	1			8	8		20					i::i::
		II s	olit Barrel		***				OI			-
	ACTOR	m4 7 7 4	INSPECTOR D. ANDERSON				1000000		(///			\neg
Fac	mock 1	'LLLLL	ng Ltd. D. ANDERSON		- 1	APPR	OVE		1	DATE	20-09-05	1

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KGS HOLE NO. SI-10 (St. Johns) **SUMMARY LOG** GROUP SHEET 2 of 2 INSTALLATION LOG Cu from Uncon. ELEVATION (m) Comp. Test (kPa) SPT blows/0.15 m A SAMPLE TYPE NUMBER RECOVERY % Cu TORVANE (kPa) DESCRIPTION AND CLASSIFICATION 40 CONE (m) (m) 217 Large cobble in the end of the split barrel at 11.68 m. AUGER REFUSAL AT 11.05 m (on cobbles, rock or till) 210 1. Slope Inclinometer SI-10 grouted to ground level and installed with an 214 213 212 211 2004/04-0107-12/GEO/LOGS/04-107-12-400 LOGS/GPJ SAMPLE TYPE Split Barrel INSPECTOR Paddock Drilling Ltd. D. ANDERSON APPROVED DATE 20-09-05

Test Hole Log PN-09 & PN-10 for St John's Park

1	ROUE		SUMMARY LOG	PN-09 & P	., .	-JOL	ooms)	SHEET 1
1	ENT		OF WINNIPEG					1-107-12.400
	OJECT	FL00	D PUMPING STATIONS - CONDITION	ASSESSMENT ST	UDY		OUND 22 EV.	7.43 m
SIT			hn's Flood Pumping Station			TO	P OF PVC EV.	
957,232			Bank, 4.5 m West of Path n ø Hollow Stem Auger, ACKER SS Drill R	No		WA	TER ELEV.	
	THOD	7	TOTO Stan Auga, ACKER 33 DMI R			DAT	TE DRILLED 13.	-Oct-04
Ê	1			8				Cu from Uncon. Comp. Test (kPa)
ELEVATION (m)	DEPTH	GRAPHICS	DESCRIPTION AND STATEMENT	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Ē	SAMPLE TYPE NUMBER RECOVERY %	SPT blows/0.15 m	Cu TORVANE (KE
S.	Ë	P. B.	DESCRIPTION AND CLASSIFICA	TION IS	DEPTH (m)	ERY ERY	CONE	20 40 60
=======================================	(m) (ft)	-		JATAL	ä	MBE	blows/0.15 m 2	
227.4 -	1	27788)TOPSOIL	/ MARKET	\vdash	8 2 8		20 40 60 8
- 227	1		CLAY FILL - Brown, moist, stiff, intermediate plasticity, grained sand, trace silt, trace organics, trace rootets, tra	trace fine				
	1			() ()	1			
	1-1							
- 2 23 % _	-5		Light brown silt layer (2.5 cm thick) at 1.52 m.		1.5			
725.4			SILT - Light brown, moist, soft, crumbly. CLAY FILL - Brown, moist, stiff, intermediate plasticity,					
	2-		rootlets, trace oxidation. - Mottled brown to dark brown, stiff, high plasticity, trace	KUMUM				
- 225	+		precipitate at 2.03 m.	gypsum Harri				
	3-1							
	10							
224	1							
223.4	4			200	3.8			
223	}		LACUSTRINE SILTY CLAY (CH) - Grey, mottled brown- stiff, high plasticity, trace silt nodules, lacustrine origin.	grey, moist,				
	-15				- 1			
	5-					111		
222	1			8 2 8	5.3			1-1-1-1-1-1-1-1
	1							
	6-20				6.1			
221	1							
	1							
1	7		Firm halou 7 ff as					
220	1.		Firm below 7.11 m.					
	-25	/////	Till inclusion at 7.72 m.	1				14444444
8	1		on de volucies Constante Constant de Const					
219	1							
	1							
9	30							
218	1						1:1:1:1:1	
	1							
	E TYPE			E f Bibli	Ш	1 1	1-1-1-1-1	

Test Hole Log PN-09 & PN-10 for St John's Park

DESCRIPTION AND CLASSIFICATION 10.7 11.	GI	ROUP		SUMMARY LOG PN-09	& PN	V-1() (St. J	Johns)	SHEET 2 o
END OF HOLE AT 10,7 m Note: 1. Stratigraphy based on St-10 located approximately 1.5 m cast. 2. Installed Strategies Presentation PN-40 at 10,67 m, Gental No. 20543) and PN-40 at 6,10 m (Setal No. 20541) with above ground casings. 12—45 13—45 14—45 15—55 214 225 226 227 227 228 229 230 240 250 260 270 280 280 280 280 280 280 28	ELEVATION (m)		GRAPHICS	DESCRIPTION AND CLASSIFICATION	NSTALLATION LOG	DEPTH (m)	SAMPLE TYPE NUMBER RECOVERY %	SPT blows/0.15 m ▲ CONE blows/0.15 m △	PL MC
Notes: 1. Strakigraphy based on St-10 located approximately 1.5 m east. 2. Installado Standpipo Pneumatica PN-03 at 10.67 m, Gerial No. 296.95) and PN-1-03 at 6.10 m (Serial No. 29641) with above ground casings. 13— 14— 15— 15— 16— 16— 18— 16— 18— 19— 16— 19— 10— 10— 10— 10— 10— 10— 10— 10— 10— 10	0-74/2011	1-35				10.1			20 40 60 8
13	- 216	#		Notes: 1. Stratigraphy based on St-10 located approximately 1.5 m east. 2. Installed Standoloe Pneumatics PN-09 at 10.67 m (Sprint No. 29635)					
214	215	4							
15	214	45							
16 - 16 - 16 - 16 - 16 - 16 - 16 - 16 -	213	15 -							
17 — 55 18 — 60 19 — 65 20 — 65		1							
18—60	ti	-1 1							
19— 20— 21— 21— 21— 21— 21— 21— 21— 21	18	1 1		5				A de contrate de la	1111111
20—		1							
21		-							
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		70							
MPLE TYPE	MPLE	ETYPE				11	1 ::::		

Test Hole Log SP-05 for St John's Park

G	ROUP		SUMMARY LOG	fole no. SP-05 (St	. Joh	ns)		SHEET 1 of
CL	IENT	CITY	OF WINNIPEG			JO	B NO. 04-	107-12.400
PR	OJECT	FLOO	D PUMPING STATIONS - CONDITION ASS	ESSMENT	STUDY	GR EL	ROUND 227	7.54 m
SIT			nn's Flood Pumping Station			то		2.39 m
			Bank, 5 m West of Path				TER ELEV.	
	THOD	1	n ø Hollow Stem Auger, ACKER SS Drill Rig			DA	TE DRILLED 13-	Oct-04
Ê		_			8			Cu from Uncon. Comp. Test (kPa)
ELEVATION (m)	DEPTH	GRAPHICS	DESCRIPTION AND OLARS TO THE PARTY OF A PART		NSTALLATION LOG DEPTH (m)	SAMPLE TYPE NUMBER RECOVERY %	SPT blows/0.15 m A	Cu TORVANE (kPa)
EVA.	ä	P. P.	DESCRIPTION AND CLASSIFICATION	1 :	DEPTH (m)	ERY ERY	CONE	20 40 60 80 PL MC 11
屲	(m) (ft)	"			STAI	MPI	. blows/0.15 m△	11
227.5	1	2000	TOPSOIL	(60)	Z	SZZ	20 40 60	20 40 60 80
727	1		CLAY FILL - Brown, moist, stiff, intermediate plasticity, trace of grained sand, trace sit, trace organics, trace rootets, trace oxi	ine dation.				
	. 1							
	7				F			
25.9 -	-5	7	Light brown silt layer (2.5 cm thick) at 1.52 m.		1.5			
	2-	///XXI	SILT - Light brown, moist, soft, crumbly. CLAY FILL - Brown, moist, stiff, intermediate plasticity, trace si	it, trace	इक्ट्रक्र			
	1	//XXXI	rooflets, trace oxidation. - Mottled brown to dark brown, stiff, high plasticity, trace gypsun	,				
25	1		precipitate at 2.03 m.	888	8			111111111
-1	3-10	▓	•	88	8			
24	}			888				
	1			্রা রা রা রা রা রা রা রা রা রা	য়ড়য়ড়য়ড়য়ড়য়ড়য়ড়			
15	4	, 	ACUSTRINE SILTY CLAY (CH) - Grey, moltied brown-grey, rr	voist,				
23	-15	/////////////////////////////////////	tiff, high plasticity, trace sit nodules, lacustrine origin.	88	88			
	-			8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
	1			88	8			
2	7 1			888	8			
- 1	5-20			200	88			
1	1 1				8			
1	7							
7	1	/////////////////////////////////////		8	88			
	1	/////////////////////////////////////	im below 7.11 m.		888			
	25	//// -1	ill inclusion at 7.72 m.		88			
8	1 1			100 A	X			
	1			3	OXX			
	1			3	Xox			
9	-30			<u>য়ড়য়ড়য়ড়য়ড়য়ড়ড়ড়ড়ড়ড়ড়ড়ড়ড়ড়ড়ড়ড়ড়ড়ড়ড়</u>	200	1 12	.1.3.1.3.1	1-1-1-1-1-1-1-1-1-1
	1 1			889				
	1			\$50.5 \$0.5 \$0.5 \$0.5 \$0.5				
	ETYPE						00	120222
MIR	ACTOR		INSPECTOR g Ltd. D. ANDERSON			OVED	1111	

1	ROUP	_	SUMMARY LOG SP-05		T	13) T	-		SHEET 2
ELEVATION (m)	DEPTH	GRAPHICS	DESCRIPTION AND CLASSIFICATION	INSTALLATION LOG	DEPTH (m)	SAMPLE TYPE	VERY %	SPT blows/0.15 m A CONE blows/0.15 m △	Cu from Uncon. Comp. Test (kPa Cu TORVANE (k 20 40 60 PL MC
ᆸ	(m) (ft)			INSTA		SAMP	RECO	20 40 60	%
- 217 216.5	35				10.1				20 40 60
210.5	1"]	SCISIO.	- Suspect IiI, no samples recovered below 11.05 m.						-1-1-1-1-1-1-1
- 216	12-		- Large cobbie in the end of the split barrel at 11,68 m.						
- 215	13-				12.5				
214,1 _ - 214	14-		AUGER REFUSAL AT 13.40 m (on cobbles, rock or till) Notes:		13.4				
213			 Stratigraphy based on SI-10 located approximately 2 m east. Installed Casagrande Standpipe SP-05 at 13.41 m. Stick up height is 0.85 m. Water level 13.245 m on October 12, 2004. 						
212	15-50								
211	-55								
210	18								
209	9-								
204	-65								
207	1								
206	70								
	ETYPE		INSPECTOR					111	