# APPENDIX 'A'

# **GEOTECHNICAL REPORT**

## 16-0107-003 Corydon Avenue

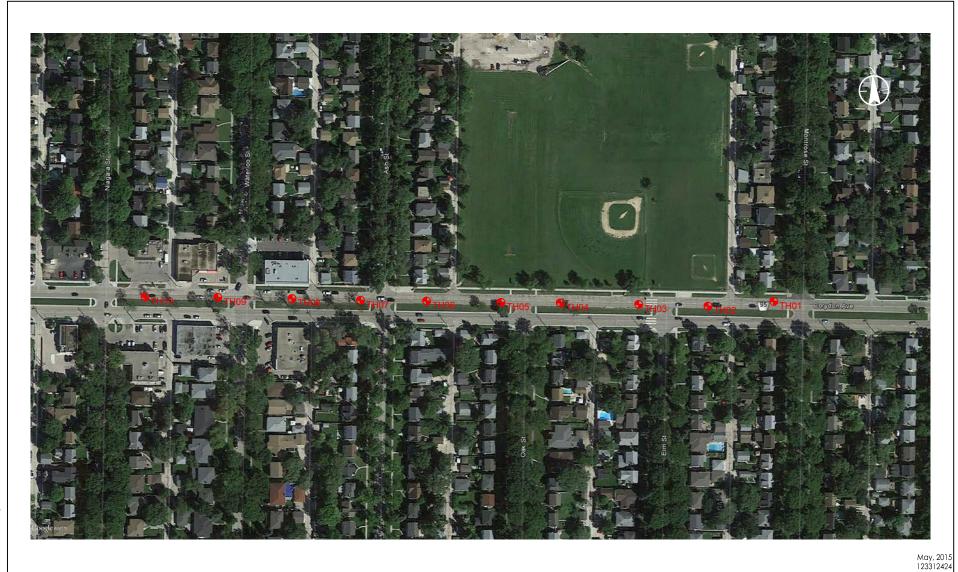
Geotechnical Investigation Corydon Avenue Westbound from Niagara Street to Montrose Street



Prepared for: KGS Group Inc. 3rd Floor – 865 Waverley Street Winnipeg, MB R3T 5P4

Prepared by: Stantec Consulting Ltd. 500-311 Portage Avenue Winnipeg, MB R3B 2B9

April 4, 2016



#### ORIGINAL SHEET - ISO 8.5x11 H - v14.06



Stantec Consulting Ltd. Suite 500, 311 Portage Avenue Winnipeg MB Canada R3B 2B9 Tel. 204.489.5900 Fax. 204.453.9012 www.stantec.com Legend

## Notes

- IMAGE SOURCE: GOOGLE EARTH
- CORYDON AVENUE WESTBOUND FROM NIAGARA STREET TO MONTROSE STREET

#### Client/Project

KGS GROUP INC. 16-0107-003 CORYDON AVENUE WINNIPEG, MB

Figure No.

Title

<u>|</u>\_\_\_\_\_

TESTHOLE LOCATION PLAN

RCE:

#### TABLE 1 16-0107-003 CORYDON AVENUE CORYDON AVENUE WESTBOUND FROM NIAGARA STREET TO MONTROSE STREET GEOTECHNICAL INVESTIGATION

		Paveme	ent Surface	Pavement S	tructure Material		Sample	Moisture		Particle Si	ze Analysis			Atterberg Lim	its
Testhole ID	Testhole Location	Туре	Thickness (mm)	Туре	Thickness (mm)	Sample Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH01	Corydon Avenue Westbound 14.0 m West of Northwest corner Corydon Avenue and Montrose Street approximately 1.0 m South of North curb	Asphalt Concrete	100 300		-	Clay	0.9	42	0.0	2.0	7.1	90.9	93	26	67
TH02	Corydon Avenue Westbound 60.0 m West of Northwest corner Corydon Avenue and Montrose Street approximately 1.5 m North of South curb	Asphalt Concrete	100 290		-	-	-	-	-	-	-	-	-	-	-
TH03	Corydon Avenue Westbound 110.0 m West of Northwest corner Corydon Avenue and Montrose Street approximately 1.5 m North of South curb	Asphalt Concrete	65 205		-	-	-	-	-	-	-	-	-	-	-
TH04	Corydon Avenue Westbound 160.0 m West of Northwest corner Corydon Avenue and Montrose Street approximately 1.5 m North of South curb	Asphalt Concrete	65 235		-	-	-	-	-	-	-	-	-	-	-
TH05	Corydon Avenue Westbound 210.0 m West of Northwest corner Corydon Avenue and Montrose Street approximately 1.5 m North of South curb	Asphalt Concrete	60 255		-		-	-	-	-	-	-	-	-	-
TH06	Corydon Avenue Westbound 30.0 m East of Northeast corner Corydon Avenue and Ash Street approximately 1.5 m North of South curb	Asphalt Concrete	70 230		-	Clay Fill	0.6	30	0.0	7.0	35.4	57.6	55	18	37
TH07	Corydon Avenue Westbound 10.5 m West of Northwest corner Corydon Avenue and Ash Street 1.5 m North of South curb	Asphalt Concrete	50 220		-	-	-	-	-	-	-	-	-	-	-
TH08	Corydon Avenue Westbound 30.0 m East of Northeast corner Corydon Avenue and Waterloo Street approximately 1.5 m North of South curb	Asphalt Concrete	50 225	-	-	-	-	-	-	-	-	-	-	-	-
TH09	Corydon Avenue Westbound 10.0 m West of Northwest corner Corydon Avenue and Waterloo Street approximately 1.5 m North of South curb	Asphalt Concrete	50 230	-	-	Clayey Silt	0.9	21	0.0	9.9	69.2	20.9	26	17	9
TH10	Corydon Avenue Westbound 28.0 m East of Northeast corner Corydon Avenue and Niagara Street approximately 1.5 m North of South curb	Asphalt Concrete	70 210		-	-	-	-	-	-	-	-	-	-	-



			TH01 TEST KGS Group Inc. 16-0107-003 Corydon Avenue												312424	
L	OCA	TION	Winnipeg, MB DATE March 14, 2016 DRILLING CO. Maple		E	ELEVA	ΓΙΟΝ				EA	STING	ř _			
			DATE March 11, 2010 DATE NO CO. Maps			LES	🗆 Insi	itu Shea	ar Var	e (kPa)	T D			b Sample		
(m)	TYPE	SYMBOL			к	RE (%)			netron IkPa	neter (kPa 10	a) OkPa	1	50kPa	20	0kPa	(£f)
DEPTH (m)	SOILT	SOIL SYI	SOIL DESCRIPTION	ТҮРЕ	NUMBER	MOISTURE CONTENT (%)	₩ <sub>P</sub>	-0		Moisture Standard	Peneti	ration T	est, N V	alue	30 90	DEPTH (ft)
- 0	AS		Asphalt					0 2		30 4	+U	50	60			0
-	со		Concrete													-
	FL		FILL: black to brown clay with trace fine to medium sand - some silt	GS		35				0						
-	-		Stiff brown fat CLAY (CH) - trace fine to coarse sand - trace silt	GS		37				o						- 2
- 1 -	-		Particle Size Analysis at 0.9 m: 0.0% Gravel, 2.0% Sand, 7.1% Silt, 90.9% Clay	GS		42			•		0					-
-	СН			GS		42					o					- <b>4</b> -
	-			GS		43					o					-
-				GS		48					c	<b>)</b>				- 6
- 2 -				GS		52						o				
-			PROJECT LOCATION: Corydon Avenue Westbound from Niagara Street to Montrose Street.													-
	-		TESTHOLE LOCATION: 14.0 m West of Northwest corner Corydon Avenue and Montrose Street, approximately 1.0 m South of North curb.													- 8
-	-		<ul> <li>No groundwater seepage or soil sloughing was observed during or upon completion of drilling.</li> <li>Testhole terminated at a depth of 2.1 m.</li> </ul>													
- 3 -																- 10
			Spre: GS - Grab Sample         SPT - Standard Penetration Test           ST - Shelby Tube         PT - Piston Tube         VT - Shear Va		t 🗖	ogged by eviewed.		nea Bun man Lea	1		$\mathcal{C}$		C+-	ant	tec	
	Piez Bac	zome kfill	er Type: Bentonite Drill Cuttings Sand Slou	gh				nun Lea				ノ	JL			•

P L	ROЛ ОСА	ECT TION	TH02TESTKGS Group Inc.16-0107-003 Corydon AvenueWinnipeg, MBMBDATE March 14, 2016DRILLING CO. Maple			NOI EAS	RTHIN STING	G		312424						
DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	TYPE	NUMBER	MOISTURE CONTENT (%)		ket Per 50	netrom IkPa W <sub>L</sub> ⊢ N	e (kPa) eter (kPa 10 10 10isture (	a) 0kPa Content	15 t & Atter	0kPa	mits	es (kPa) 0kPa ⊣	DEPTH (ft)
- 0	AS	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Asphalt Concrete	-		0	1	0 2	20	30 4	HO 4	50 6	50	70 8	0 90	0
	- FL		FILL: black to brown clay with trace fine to medium sand - some silt	GS		33				o						- 2
- 1 -	-		Stiff brown fat CLAY (CH) - trace fine to coarse sand - trace silt	XGS XGS		31 40				0	Þ					-
	CH			GS GS		29				o						- <b>4</b> - -
	-			XGS XGS		39 51						0				- 6
- 2 -	-		PROJECT LOCATION: Corydon Avenue Westbound from Niagara Street to Montrose Street. TESTHOLE LOCATION: 60.0 m West of	GS		52						0				-
	-		<ul> <li>Northwest corner Corydon Avenue and Montrose Street, approximately 1.5 m North of South curb.</li> <li>No groundwater seepage or soil sloughing was observed during or upon completion of drilling.</li> <li>Testhole terminated at a depth of 2.1 m.</li> </ul>													- <b>8</b> - - - -
- 3 -	Pie	zomet	Type: GS - Grab Sample SPT - Standard Penetration Test         ST - Shelby Tube PT - Piston Tube VT - Shear Va         er         Γype:         Bentonite         Drill Cuttings         Sand         Slow		t 🗖	ogged by		nea Bun man Lea	1		C		Sta	ant	tec	10

			TH03 TEST KGS Group Inc. 16-0107-003 Corydon Avenue												312424	
L	OCA	TION	Winnipeg, MB		E	ELEVA	ΓΙΟΝ				EAS	TING				
D	RILI I	LING	DATE March 14, 2016 DRILLING CO. Maple			-	Ltd.		DRILI	LING M	ETHOI	<u> </u>	mm	SSA		
		Ч		S	AMP	LES		itu Shea cket Per		e (kPa) eter (kPa		rvane	on Grab	Sample	es (kPa)	
H (m)	ΥPΕ	SYMBOL			ĸ	JRE (%)			kPa		0kPa	15	0kPa	20	0kPa	H (ft)
DEPTH (m)	SOIL TYPE		SOIL DESCRIPTION	ТҮРЕ	NUMBER	DISTU	₩p	w		loieture	Content	8 Atto	rhora Li	mite	,	DEPTH (ft)
	S	SOIL			z	MOISTURE CONTENT (%)			• s	tandard	Penetra	tion Te	st, N Va	alue		
- 0	AS		Asphalt				1	10 2	20	30 4	40 5	06	50 7	70 8	60 90	0
-			Concrete													_
-	СО															-
-		$\bigotimes$	FILL: black to brown clay with trace fine to medium sand	GS		32				0						_
	FL	$\bigotimes$	- some silt													-
-		$\bigotimes$														- 2
-			Stiff brown fat CLAY (CH) - trace fine to coarse sand	GS		27			0							
-			- trace silt													_
-				GS		25			0							Ē
- 1 -				Vas		23										-
-																
-				GS		31				0						- 4
-	СН															_
-																-
				GS		35				0						_
-																-
-																6
-				GS		46					0					
- 2 -																-
-				GS		43					0					_
-			PROJECT LOCATION: Corydon Avenue Westbound from Niagara Street to Montrose Street.													-
-																_
-			TESTHOLE LOCATION: 110.0 m West of Northwest Corydon Avenue and Montrose Street,													- 8
			approximately 1.5 m North of South curb.													_
-			No groundwater seepage or soil sloughing was													-
-			<ul><li>observed during or upon completion of drilling.</li><li>Testhole terminated at a depth of 2.1 m.</li></ul>													_
-			resultie terminateu at a depui 01 2.1 III.													-
- 3 -																- 10
	San	nple 7	Type: GS - Grab Sample         SPT - Standard Penetration Test           ST - Shelby Tube         PT - Piston Tube         VT - Shear Va	ne Tes	. –	ogged by		nea Bun			1		C+-			
	Piez Bac	zomet kfill		R	eviewed	uy: Geri	man Lea	1				JL		tec	•	

P L	ROЛ ОСА	ECT TION	TH04TESTKGS Group Inc.16-0107-003 Corydon AvenueWinnipeg, MBDATE March 14, 2016DRILLING CO. Maple		I F	DATUM	і ГІОN				N E	NORT EASTI	HINC NG	i	<u>1233</u>		
			DATE <u>Match 14, 2010</u> DRILLING CO. <u>Mapic</u>			LES	🗆 Insi	itu She	ar Va	ne (kPa	) [				Sample		
DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	ТҮРЕ	NUMBER	MOISTURE CONTENT (%)	Wp F	W O	$W_{L}$ $W_{L}$ = 20	Moistur Standa 30		tent &	Atterb	t, N Va	nits alue	0kPa ⊣	DEPTH (ft)
- 0	AS CO		Asphalt Concrete														
	FL		FILL: black to brown clay with trace fine to medium sand - some silt	XGS		44					0						-
· · ·	-		Stiff brown fat CLAY (CH) - trace fine to coarse sand - trace silt	GS		42					o						- 2
- 1 -				GS		35				o							-
	СН			GS		43					0						- <b>4</b> - -
	-			GS		42					o						-
- 2 -	-			GS		51						þ					- 6 - -
			PROJECT LOCATION: Corydon Avenue Westbound from Niagara Street to Montrose Street.	GS		50						0					-   -   -
	-		TESTHOLE LOCATION: 160.0 m West of Northwest corner Corydon Avenue and Montrose Street, approximately 1.5 m North of South curb.														- <b>8</b> - <b>8</b> 
- 3 -	-		<ul> <li>No groundwater seepage or soil sloughing was observed during or upon completion of drilling.</li> <li>Testhole terminated at a depth of 2.1 m.</li> </ul>														-
5	Sar	nple T	ype: GS - Grab Sample SPT - Standard Penetration Test		L	ogged by	7: Sotl	nea Bun									10
	Pie Bao	zomet ckfill	ST - Shelby Tube PT - Piston Tube VT - Shear Var er Type: Bentonite Drill Cuttings Sand		t R	eviewed	by: Geri	man Lea	ıl		_(		) S	Sta	ant	tec	-

Р	RОЛ	ECT	TH05 TEST KGS Group Inc. 16-0107-003 Corydon Avenue		I		ſ				_ NO		NG	1233		
Ε	RILI	LING	DATE March 14, 2016 DRILLING CO. Maple	e Leat	f Dr	illing	Ltd.		DRIL	LING I	METHO	DD_12	5 mm	SSA		
(m)	ΡE	SYMBOL		S/		LES		cket Pe		ie (kPa) neter (kl			on Grat 50jkPa	o Sample 200	es (kPa) OkPa	
DEPTH (m)	SOIL TYPE	SOIL SYN	SOIL DESCRIPTION	ТҮРЕ	NUMBER	MOISTURE CONTENT (%)	W <sub>P</sub>	W O	₩ <sub>L</sub> 1	<b>Moisture</b> Standar	e Conter d Peneti	nt & Atte	erberg Li est, N V	mits alue	1	DEPTH (ft)
- 0	AS		Asphalt					10	20	30	40	50	60	70 8	09	0
	со		Concrete													-
	-		Soft tan CLAYEY SILT (CL-ML) - trace fine to medium sand	GS		22			0							-
	-			GS		22			0							- 2
	CL ML			AGS												-
- 1 -				GS		23			0							
1	-		Stiff brown fat CLAY (CH)	-												-
	_		<ul><li>trace fine to coarse sand</li><li>trace silt</li></ul>	GS		37				c	)					- <b>4</b>   -
	СН			GS		42					o					-
				GS		40					<b>0</b>					- 6
- 2 -	-															-
	-		PROJECT LOCATION: Corydon Avenue Westbound from Niagara Street to Montrose Street.	GS		48						<b>o</b>				
	-		TESTHOLE LOCATION: 210.0 m West of Northwest corner Corydon Avenue and Montrose													- 8
	-		<ul> <li>Street, approximately 1.5 m North of South curb.</li> <li>No groundwater seepage or soil sloughing was showned during on unon completion of drilling.</li> </ul>													-
	-		<ul><li>observed during or upon completion of drilling.</li><li>Testhole terminated at a depth of 2.1 m.</li></ul>													-
- 3 -	Sar	nple 7	Type: GS - Grab Sample SPT - Standard Penetration Test			ogged by	/: Sof	hea Bur	1							10
	Pie	zome	ST - Shelby Tube PT - Piston Tube VT - Shear Van		t 🗖	eviewed							Sta	ant	ec	-

P L	ROJI OCA	ECT ATION	TH06TESTKGS Group Inc.16-0107-003 Corydon AvenueWinnipeg, MBDATE March 14, 2016DRILLING CO. Maple		I F	DATUM	ι ΓΙΟΝ					NOF EAS	RTHIN TING	NG _	_123		
			DATE <u>Match 14, 2010</u> DRILLING CO. <u>Mapic</u>	1		LES	🗆 Ins	itu She	ar Va	ine (kP	a)	<b>D</b> To			ab Samp		a)
DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	ТҮРЕ	NUMBER	MOISTURE CONTENT (%)	Wp F	W O	$W_L$ $W_L$ -1 $\bullet$ 20	Moist	ure C	)kPa Content Penetra 0 5	& Atte	-	_imits	00kPa	06 DEPTH (ft)
- 0	AS CO		Asphalt Concrete	-													0
			FILL: black to brown clay with trace fine to medium sand - some silt	XGS		31				o							-
	FL		Particle Size Analysis at 0.6 m: 0.0% Gravel, 7.0% Sand, 35.4% Silt, 57.6% Clay	GS		30				0			<b>.</b>				- 2  -
- 1 -			Stiff brown fat CLAY (CH) - trace fine to coarse sand - trace silt	GS		33				o							
	-			GS		40					¢	Þ					
	СН			GS		45						o					-
- 2 -	-			GS		45						o					- 6
			PROJECT LOCATION: Corydon Avenue Westbound from Niagara Street to Montrose Street.	GS		48						o					
	-		TESTHOLE LOCATION: 30.0 m East of Northeast corner Corydon Avenue and Ash Street, approximately 1.5 m North of South curb.														8
	-		<ul> <li>No groundwater seepage or soil sloughing was observed during or upon completion of drilling.</li> <li>Testhole terminated at a depth of 2.1 m.</li> </ul>														
- 3 -	Sar	nple 7	Type: GS - Grab Sample SPT - Standard Penetration Test			.ogged by	/: Sotl	hea Bun									10
	Pie	zome	ST - Shelby Tube PT - Piston Tube VT - Shear Van		4	eviewed						Q		St	an	te	С

P. L	ROЛ ОСА	ECT TION	TH07TESTKGS Group Inc.16-0107-003 Corydon AvenueWinnipeg, MBDATE March 14, 2016DRILLING CO. Maple		I F	DATUN	ί				NOF EAS	RTHING TING	G	<u>1233</u> SSA		
					AMP	LES	🗆 Insi	itu She	ear Va	ne (kPa) meter (kPa	<b>D</b> To			Sample	s (kPa)	
DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	ТҮРЕ	NUMBER	MOISTURE CONTENT (%)	₩p ⊢	W O	0kPa <i>W</i> L 	Moisture Standard	Penetra	& Atter	st, N Va	mits	0kPa ⊣ 0 90	DEPTH (ft)
- <b>0</b>	AS CO	А. Р. А. Р. А. Ф.	Asphalt Concrete FILL: black to brown clay with trace fine to	XGS		21			0							- 0 
	FL		medium sand - some silt Soft tan CLAYEY SILT (CL-ML) - trace fine to medium sand	XGS XGS		23			0							- 2
- 1 -	-			GS		22			0							-
	CL ML			GS		21			o							- - 4 -
				GS		23			o							-
- 2 -	-			GS GS		24			0							- 6
	-		PROJECT LOCATION: Corydon Avenue Westbound from Niagara Street to Montrose Street. TESTHOLE LOCATION: 10.5 m West of													-
	-		<ul><li>Northwest corner Corydon Avenue and Ash Street, approximately 1.5 m North of South curb.</li><li>No groundwater seepage or soil sloughing was observed during or upon completion of drilling.</li></ul>													- <b>8</b> - - -
- 3 -	Sar	nple T	• Testhole terminated at a depth of 2.1 m. ype: GS - Grab Sample SPT - Standard Penetration Test			ogged by	r: Sott	nea Bur	1							- 10
	Pie	zomet	ST - Shelby Tube PT - Piston Tube VT - Shear Va		t 🗖	eviewed					Q		Sta	ant	ec	-

P	RОЛ	ECT	TH08 TEST KGS Group Inc. 16-0107-003 Corydon Avenue		I	DATUM	[				NOI	RTHIN	G	1233		
			Winnipeg, MB DATE <u>March 14, 2016</u> DRILLING CO. <u>Maple</u>							LLING M		sting d <u>125</u>		SSA		
DEPTH (m)	SOIL TYPE	SYMBOL	SOIL DESCRIPTION	TYPE (S	NUMBER			cket Pe 5(	enetror OkPa	ne (kPa) meter (kPa 10(			on Grab	o Sample 200	es (kPa) 0kPa ⊣	DEPTH (ft)
DEF DEF		SOIL		Ľ	NUN	MOISTURE CONTENT (%)	₩ <sub>P</sub> ⊢	-0		Moisture C Standard 30 4	Penetra	ation Te	st, N Va		090	
- 0	AS CO		_Asphalt Concrete	-												
-	FL		FILL: black to brown clay with trace fine to medium sand some silt	GS		28				0						-
	СН		Firm brown fat CLAY (CH) - trace fine to coarse sand - trace silt	GS		31				o						- 2
-			Soft tan CLAYEY SILT (CL-ML) - trace fine to medium sand	XGS		24			0							-
- 1 -	-			GS		24			0							- 4
	CL ML			X GS		24			o							-
- 2 -	-			GS		24			0							- 6
-	-		PROJECT LOCATION: Corydon Avenue Westbound from Niagara Street to Montrose Street.	GS		25			o							
	-		TESTHOLE LOCATION: 30.0 m East of Northeast corner Corydon Avenue and Waterloo Street, approximately 1.5 m North of South curb.													- 8
- 3 -			<ul> <li>No groundwater seepage or soil sloughing was observed during or upon completion of drilling.</li> <li>Testhole terminated at a depth of 2.1 m.</li> </ul>													
- 3 -	Sar	nple 7	ype: GS - Grab Sample SPT - Standard Penetration Test			ogged by		nea Bun			1					- 10
	Pie	zomet	ST - Shelby Tube PT - Piston Tube VT - Shear Van		t R	eviewed	by: Ger	man Lea	al		C		Sta	ant	cec	
Piezometer Backfill Type: Bentonite Drill Cuttings Sand											V					

P. L	RОЛ ОСА	ECT TION	TH09TESTKGS Group Inc.16-0107-003 Corydon AvenueWinnipeg, MBMarch 14, 2016DATEMarch 14, 2016		I E	DATUM	ι ΓΙΟΝ				NOR EAST		i			
	ТҮРЕ	SYMBOL		S	AMP	LES	🗆 Insi	itu She ket Pe	ear Va	ne (kPa) meter (kPa	To	rvane or 150	n Grab	Sample	s (kPa) )kPa	
DEPTH (m)	SOIL T	SOIL SY	SOIL DESCRIPTION	ТҮРЕ	NUMBER	MOISTURE CONTENT (%)		-0	<i>W</i> <sub>L</sub> → 20	Moisture ( Standard 30 4		tion Test	t, N Val	lue	0 90	DEPTH (ft)
- <b>0</b>	AS CO		Asphalt Concrete	/												- 0 - - -
	FL		FILL: black to brown clay with trace fine to medium sand some silt	GS		26			¢	<b>D</b>						-
			Soft tan CLAYEY SILT (CL-ML) - trace fine to medium sand	GS		23			o							- 2
- 1 -	CL ML		Particle Size Analysis at 0.9 m: 0.0% Gravel, 9.9% Sand, 69.2% Silt, 20.9% Clay	GS		21		F	o							-
-	-			GS		23			0							- 4
 - -	СН		Stiff brown fat CLAY (CH) - trace fine to coarse sand - trace silt	X GS		31				o						-
- 2 -				GS		40				¢	Þ					- 6
- 2 -	-		PROJECT LOCATION: Corydon Avenue Westbound from Niagara Street to Montrose Street.	GS		49					o					-
			TESTHOLE LOCATION: 10.0 m West of Northwest corner Corydon Avenue and Waterloo Street, approximately 1.5 m North of South curb.													- - 8 -
· ·	-		<ul> <li>No groundwater seepage or soil sloughing was observed during or upon completion of drilling.</li> <li>Testhole terminated at a depth of 2.1 m.</li> </ul>													-
- 3 -		nple 7	Type: GS - Grab Sample SPT - Standard Penetration Test ST - Shelby Tube PT - Piston Tube VT - Shear Va		t 🗖	ogged by eviewed		nea Bur man Le					Sta	ant	ec	- 10
	Bac	kfill	Type: Bentonite Drill Cuttings Sand	ıgh												

P	RОЛ	ECT	TH10 TEST KGS Group Inc. 16-0107-003 Corydon Avenue		Γ	DATUM	[				. NOF		G		312424	
			DATE March 14, 2016 DRILLING CO. Maple			illing	Ltd.		DRII	LING M	IETHO	D_12:	5 mm	SSA		
(u	ш	SOL		S	AMP	LES		ket Pe	netror	ne (kPa) neter (kPa	a)			-	es (kPa)	
DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	ТҮРЕ	NUMBER	MOISTURE CONTENT (%)	₩ <sub>P</sub>			10 Moisture Standard		& Atte		mits	0kPa ⊣	DEPTH (ft)
- 0	AS		Asphalt			0	1	0 2	20	30 4	40 5	50	60 7	70 8	<b>0 9</b> 0	0
-	CO		Concrete													-
-	FL		FILL: black to brown clay with trace fine to medium sand	GS		44					0					-
			Soft tan CLAYEY SILT (CL-ML) - trace fine to medium sand													- 2
-	CL ML		- frace fille to incertain saile	XGS		20			<b>ф</b>							
- 1 -	-		Stiff brown fat CLAY (CH) - trace fine to coarse sand - trace silt	X GS		31				o						-
-	-			GS		33				0						- - 4 -
	СН			GS		34				0						-
-	-			GS		46					0					- 6
- 2 -			PROJECT LOCATION: Corydon Avenue	GS		51						0				-
-			Westbound from Niagara Street to Montrose Street. TESTHOLE LOCATION: 28.0 m East of Northeast													-
	-		corner Corydon Avenue and Niagara Street, approximately 1.5 m North of South curb.													- 8
-			<ul> <li>No groundwater seepage or soil sloughing was observed during or upon completion of drilling.</li> <li>Testhole terminated at a depth of 2.1 m.</li> </ul>													
- 3 -																- 10
	Sar	nple 7	Sype: GS - Grab Sample         SPT - Standard Penetration Test           ST - Shelby Tube         PT - Piston Tube         VT - Shear Va	ne Tes	t 🗖	ogged by		nea Bun	1		1		C+-			
		zomet ckfill			R	eviewed	uy: Geri	man Lea	1				JL	ani	tec	•





Photo 1 - TH01 Core



Photo 2 – TH02 Core





Photo 3 – TH03



Photo 4 – TH04





Photo 5 – TH05 Core



Photo 6 – TH06 Core





Photo 7 – TH07 Core



Photo 8 – TH08 Core





Photo 9 – TH09 Core



Photo 10 – TH10 Core



#### LABORATORY

199 Henlow Bay Winnipeg MB R3Y 1G4 Tel: (204) 488-6999

# PARTICLE SIZE ANALYSIS ASTM D422

KGS Group Inc. PROJECT: 16-0107-003 Corydon Avenue 3rd Floor - 865 Waverley Street Corydon Avenue Westbound from Winnipea, Manitoba Niagara Street to Montrose Street R3T 5P4 PROJECT NO.: 123312424 Attention: Craig Rowbotham SAMPLED BY: Sothea Bun, C.E.T. DATE RECEIVED: March 14, 2016 SAMPLE ID: TH01 @ 0.9 m **TESTED BY: Nestor Abarca** 100 90 80 8 70 Percent Passing 60 50 40 30 20 10 0 100 10 0.1 0.01 0.001 1 Particle Size (mm) PARTICLE PARTICLE PERCENT PERCENT SIZE PASSING SIZE PASSING 37.50 mm 100.0 99.4 1.18 mm 25.00 mm 100.0 0.425 mm 98.9 100.0 0.250 mm 19.00 mm 98.6 16.00 mm 100.0 0.150 mm 98.4 12.50 mm 100.0 0.075 mm 98.0 9.50 mm 100.0 0.005 mm 92.3 4.75 mm 100.0 0.002 mm 90.9 99.9 2.00 mm 0.001 mm 90.6 Sand, % Gravel, % Silt, % Clay, % Colloids, % Coarse Medium Fine <0.075 to 0.002 mm 75 to 4.75 mm <0.002 mm < 0.001 mm <4.75 to 2.0 mm <2.0 to 0.425 mm <0.425 to 0.075 mm 0.0 0.1 1.0 0.9 7.1 90.9 90.6 [**⊂i**l∕ March 24, 2016 **REPORT DATE:** REVIEWED BY: German E. Leal, B.Sc., P. Eng.

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of the test results is provided only on written request. The data presented above is for the sole use of the client stipulated above. Stantec is not responsible, nor can be held liable, for the use of this report by any other party, with or without the knowledge of Stantec.



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# PARTICLE SIZE ANALYSIS ASTM D422

KGS Group Inc. PROJECT: 16-0107-003 Corydon Avenue 3rd Floor - 865 Waverley Street Corydon Avenue Westbound from Winnipea, Manitoba Niagara Street to Montrose Street R3T 5P4 PROJECT NO.: 123312424 Attention: Craig Rowbotham Sothea Bun, C.E.T. SAMPLED BY: DATE RECEIVED: March 14, 2016 SAMPLE ID: TH06 @ 0.6 m **TESTED BY: Nestor Abarca** 100 90 80 6% 70 Percent Passing 60 50 40 30 20 10 0 100 10 0.1 0.01 0.001 1 Particle Size (mm) PARTICLE PARTICLE PERCENT PERCENT SIZE PASSING SIZE PASSING 37.50 mm 100.0 99.0 1.18 mm 25.00 mm 100.0 0.425 mm 97.8 100.0 0.250 mm 97.2 19.00 mm 16.00 mm 100.0 0.150 mm 96.7 12.50 mm 100.0 0.075 mm 93.0 9.50 mm 100.0 0.005 mm 64.2 4.75 mm 100.0 0.002 mm 57.6 2.00 mm 100.0 0.001 mm 52.5 Sand, % Gravel, % Silt, % Clay, % Colloids, % Coarse Medium Fine <0.075 to 0.002 mm 75 to 4.75 mm <0.002 mm < 0.001 mm <4.75 to 2.0 mm <2.0 to 0.425 mm <0.425 to 0.075 mm 0.0 0.0 2.2 4.8 35.4 57.6 52.5 ⊂cil≝ March 24, 2016 REVIEWED BY: German E. Leal, B.Sc., P. Eng. **REPORT DATE:** 

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# PARTICLE SIZE ANALYSIS ASTM D422

KGS Group Inc. PROJECT: 16-0107-003 Corydon Avenue 3rd Floor - 865 Waverley Street Corydon Avenue Westbound from Winnipea, Manitoba Niagara Street to Montrose Street R3T 5P4 PROJECT NO.: 123312424 Attention: Craig Rowbotham SAMPLED BY: Sothea Bun, C.E.T. DATE RECEIVED: March 14, 2016 SAMPLE ID: TH09 @ 0.9 m **TESTED BY: Nestor Abarca** 100 90 80 8 70 Percent Passing 60 50 40 30 20 10 0 100 10 0.1 0.01 0.001 1 Particle Size (mm) PARTICLE PARTICLE PERCENT PERCENT PASSING SIZE PASSING SIZE 37.50 mm 100.0 99.8 1.18 mm 25.00 mm 100.0 0.425 mm 99.6 100.0 0.250 mm 99.4 19.00 mm 99.2 16.00 mm 100.0 0.150 mm 12.50 mm 100.0 0.075 mm 90.1 9.50 mm 100.0 0.005 mm 26.9 4.75 mm 100.0 0.002 mm 20.9 2.00 mm 100.0 0.001 mm 17.6 Sand, % Gravel, % Silt, % Clay, % Colloids, % Coarse Medium Fine <0.075 to 0.002 mm 75 to 4.75 mm <0.002 mm < 0.001 mm <4.75 to 2.0 mm <2.0 to 0.425 mm <0.425 to 0.075 mm 0.0 0.0 0.4 9.5 69.2 20.9 17.6 [**⊂i**l∕ March 24, 2016 REVIEWED BY: German E. Leal, B.Sc., P. Eng. **REPORT DATE:** 

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