APPENDIX C

BOREHOLE AND DRIVE-POINT LOGS

BOREHOLE RECORD

BH 1 (MW)

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 9, 2009 WATER LEVEL December 10, 2009 TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	DEPTH (ft)	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
0	236.3	ASPHALT: 100 mm	0			
		FILL: Brown, compact SAND and GRAVEL	1	SS	1	6
1	234.9	TOPSOIL: silty SAND with light organic content and rootlets	3	SS	2	14
2	233.7	Grey, dense SAND and GRAVEL (SW-GW) trace silt and clay	6	SS	3	2
		- PHC odour between 3.8 and 4.4 m	8	SS	4	48
3			11	SS	5	31
4		- wet	13	SS	6	44
5	230.8	Grey, very stiff clayey SILT (ML) trace of sand	16	SS	7	35
		- wet	18	SS	8	NA
6			21	SS	9	19
7		- silty clay pockets, below 7.0 m	23	SS	10	18
8	228.0	END OF BOREHOLE at approximately 8.2 m	26	SS	11	18
9			27			

VAPOUR CONCENTRATIONS

● %LEL ▲ ppm

● 20 40 60 80

▲ 100 200 300 400

WELL CONSTRUCTION

50 mm ID Solid Schedule 40 PVC Pipe packed in bentonite

50 mm ID Machine Slotted Schedule 40 PVC Screen packed in well sand

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 1A

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 9, 2009 WATER LEVEL -- TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● %LEL ▲ ppm (● 20 40 60 80 / ▲ 100 200 300 400)	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
0		ASPHALT: 50 mm FILL: SAND and GRAVEL			0 1	●	SS	1	10	
1		FILL: Brown, silty SAND with gravel and silt - PHC staining and odours from 0.8 to 1.4 m			2 3 4	●>>	SS	2	6	
2		Dark brown, compact organic silty SAND (OL) - with wood and organic inclusions - PHC odours from 1.5 to 2.1 m			5 6	●>>	SS	3	16	
3		Grey, compact to dense SAND and GRAVEL (SW-GW), trace of silt and clay, moist to wet			7 8 9 10	▲	SS	4	20	
4		Grey, stiff to very stiff clayey SILT (ML), trace of sand - wet			11 12 13 14	▲	SS	5	31	Backfilled with Bentonite
5		- clay partings and seams			15 16 17	▲	SS	6	14	
6					18 19 20	▲	SS	7	20	
7		END OF BOREHOLE at approximately 6.7m			21 22 23	▲	SS	8	11	
8					24 25 26		SS	9	15	

LABORATORY ANALYSES: Soil sample BH1A-3, BH1A-3 duplicate, and BH1A-5 submitted for BTEX and PHC F1-F4 analysis

BOREHOLE RECORD

BH 2 (MW)

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 10, 2009 WATER LEVEL December 10, 2009 TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
0	237.2				
0		FILL: Brown, compact SAND and GRAVEL	SS	1	10
	236.6				
1		FILL : Brown, silty SAND, with gravel and silt	SS	2	4
	235.8				
2		Dark grey, loose organic silty SAND (OL) - wood and organic inclusions	SS	3	4
	234.7				
3		Grey, firm to stiff clayey SILT (ML), trace of sand, wet - clay partings and seams	SS	4	6
			SS	5	8
4					
5			SS	6	6
6					
	230.5		SS	7	5
7		END OF BOREHOLE at approximately 6.7m			
8					
9					

VAPOUR CONCENTRATIONS ● %LEL ▲ ppm

● 20 40 60 80

▲ 100 200 300 400

DEPTH (ft): 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

WELL CONSTRUCTION

50 mm ID Solid Schedule 40 PVC Pipe packed in bentonite

50 mm ID Machine Slotted Schedule 40 PVC Screen packed in well sand

LABORATORY ANALYSES:

BOREHOLE RECORD

BH 2A

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 10, 2009 WATER LEVEL -- TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
0	237.7					
		FILL: Brown, loose silty SAND with topsoil inclusions, some gravel, damp to moist	SS	1	5	Backfilled with Bentonite and Auger Cuttings
1	236.4		SS	2	3	
		FILL: Brown, firm silty CLAY, trace gravel				
	235.8		SS	3	4	
2		Brown, soft to stiff clayey SILT (ML), trace sand, moist to wet ▽	SS	4	3	
3			SS	5	12	
		- grey at 3.7 m				
4						
5	232.5		SS	6	6	
		END OF BOREHOLE at approximately 5.2m				
6						

VAPOUR CONCENTRATIONS ● %LEL ▲ ppm

● 20 40 60 80

▲ 100 200 300 400

DEPTH (ft): 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 3 (MW)

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 10, 2009 WATER LEVEL December 10, 2009 TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● %LEL ▲ ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
	246.6					● 20 40 60 80 ▲ 100 200 300 400				
0		FILL: Brown, compact SAND and GRAVEL	F		0		SS	1	10	50 mm ID Solid Schedule 40 PVC Pipe packed in bentonite
	246.0				1					
1		FILL: Brown, loose silty SAND, trace gravel, moist to wet - containing gravel, roots and topsoil	F	▼	2		SS	2	6	
					3					
					4		SS	3	3	
2					5					
					6		SS	4	3	
					7					
					8		SS	5	7	
3					9					
	243.1	- topsoil pocket at 3.2 m			10					
		Gery, compact silty SAND (SM), trace of gravel			11					
					12					
4					13					
					14					
					15		SS	6	19	
5					16					
					17					
					18					
					19					
6					20					50 mm ID Machine Slotted Schedule 40 PVC Screen packed in well sand
					21		SS	7	26	
					22					
					23					
7					24					
					25					
					26		SS	8	24	
8	238.4				27					
		END OF BOREHOLE at approximately 8.2m			28					
					29					
9					30					
					31					
					32					
10					33					
					34					
					35					
11					36					

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 3A

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 10, 2009 WATER LEVEL -- TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● %LEL ▲ ppm ● 20 40 60 80 ▲ 100 200 300 400	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
0	246.9	ASPHALT: 50mm			0					
		FILL: Brown, loose SAND and GRAVEL			1		SS	1	8	
	246.3	FILL: Brown, very loose to compact silty SAND, moist to wet - occasional topsoil inclusions			2					
1					3		SS	2	20	
					4					
					5		SS	3	2	
2					6					
					7		SS	4	WH	
					8					
					9					Backfilled with Auger Cuttings
3					10		SS	5	15	
	243.6	- pulverized asphalt and fragments at 3.2 m			11					
		Grey, compact silty SAND (SM), moist to wet		▽	12					
4					13					
					14					
					15					
5					16		SS	6	22	
	241.7	END OF BOREHOLE at approximately 5.2m			17					
					18					
					19					
6					20					
					21					

LABORATORY ANALYSES:

BOREHOLE RECORD

BH 4

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 11, 2009 WATER LEVEL -- TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	DEPTH (ft)	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
0	286.1		0				
	285.7	FILL: Brown, loose SAND and GRAVEL	1	SS	1	9	Backfilled with Bentonite and Auger Cuttings
		FILL: Brown, loose silty SAND, trace clay and gravel, moist to wet	2				
1			3	SS	2	5	
			4				
			5				
			6	SS	3	6	
2			7				
	283.8						
		Dark grey, very loose organic silty SAND (OL) - rootlets and shell fragments	8	SS	4	2	
			9				
3			10				
			11	SS	5	WH	
			12				
	282.1						
4		Grey, firm to very stiff clayey SILT (ML), trace sand, moist to wet - silty clay pockets	13	SS	6	6	
			14				
			15				
			16	SS	7	30	
5	280.9		17				
		END OF BOREHOLE at approximately 5.2m	18				
			19				
6			20				
			21				

VAPOUR CONCENTRATIONS ● %LEL ▲ ppm

● 20 40 60 80

▲ 100 200 300 400

LABORATORY ANALYSES:

BOREHOLE RECORD

BH 4A (MW)

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 11, 2009 WATER LEVEL December 10, 2009 TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● %LEL ▲ ppm ● 20 40 60 80 ▲ 100 200 300 400	SAMPLES TYPE	NUMBER	N-VALUE	WELL CONSTRUCTION
0	**285.9**				0					
	285.6	FILL: Brown, compact SAND and GRAVEL	F		1		SS	1	15	
1		FILL: Brown, compact, Brown, Silty SAND, wet	F		2					
			F		3		SS	2	12	
			F		4					
2	283.7		F	▼	5					
		Dark grey, loose organic SILT (OL)			6		SS	3	20	
		- shell fragments			7					
		- topsoil parting and seams, 3.0 m to 3.7 m			8		SS	4	5	
3					9					
	282.2				10		SS	5	4	50 mm ID Solid Schedule 40 PVC Pipe packed in bentonite
		Grey, hard clayey SILT (ML), some sand, moist to wet			11					
4					12					
					13					
					14					
					15					
5					16		SS	6	44	
					17					
					18					
					19					
6					20					
					21		SS	7	64	
					22					
					23					
7					24					
					25					
					26		SS	8	72	50 mm ID Machine Slotted Schedule 40 PVC Screen packed in well sand
8					27					
					28					
					29					
					30					
9					31		SS	9	53	
	276.1				32					
10		END OF BOREHOLE at approximately 9.7m			33					
					34					
					35					
11					36					
					37					
					38					
12					39					
					40					
					41					
13					42					

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 5A (MW)

CLIENT Enbridge Gas Distribution Inc.

PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario

DATUM Geodetic

DATES: BORING November 12, 2009

WATER LEVEL December 10, 2009

TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● %LEL ▲ ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
0	225.0				0	● 20 40 60 80 ▲ 100 200 300 400				
0		TOPSOIL			0		SS	1	19	Stickup Pipe
1		FILL: Brown, loose to compact silty SAND, with silt - organic inclusions - some gravel, trace clay		▼	3		SS	2	7	
	223.5				5					
2		Grey, firm to hard clayey SILT (ML)			6		SS	3	29	50 mm ID Solid Schedule 40 PVC Pipe packed in bentonite
					8		SS	4	4	
3					10		SS	5	89	
4					13					
5					15		SS	6	53	
					17					
6					18					50 mm ID Machine Slotted Schedule 40 PVC Screen packed in well sand
					20		SS	7	31	
7					23					
8	216.8				25		SS	8	59	
		END OF BOREHOLE at approximately 8.2m			26					
9					27					
					28					
					29					
10					30					
					31					
					32					
					33					
11					34					
					35					
					36					

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 5C

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 30, 2009 WATER LEVEL -- TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● %LEL ▲ ppm ● 20 40 60 80 ▲ 100 200 300 400	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
0	228.1				0					
		ASPHALT: 125 mm								
		FILL: Brown, SAND and GRAVEL			1		SS	1	19	
	227.4				2					
1		FILL: Brown, compact SILT with sand and gravel			3		SS	2	29	
					4					
					5		SS	3	37	
2					6					
					7		SS	4	27	Backfilled with Bentonite
					8					
					9					
3					10		SS	5	29	
					11					
					12					
4					13					
					14					
	223.5				15					
		FILL: Brown, compact SAND and GRAVEL (SW-GW), wet			16		SS	6	10	
5					17					
					18					
					19					
					20					
6					21		SS	7	15	
					22					
					23					
7					24					
	220.5				25					
		Grey, compact silty CLAY (CL-ML), trace of gravel, wet			26		SS	8	16	
8					27					
					28		SS	9	63	
	219.1				29					
9		END OF BOREHOLE at approximately 9.0m			30					
					31					
					32					
10					33					
					34					
					35					
11					36					
					37					

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 6A (MW)

CLIENT Enbridge Gas Distribution Inc.

PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario

DATUM Geodetic

DATES: BORING November 13, 2009

WATER LEVEL December 10, 2009

TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
0	233.6				
	233.2	ASPHALT: 50 mm			
		FILL: SAND and GRAVEL			
		FILL: Brown, compact to very dense silty SAND with asphalt inclusions	SS	1	41
1			SS	2	96
2	231.3		SS	3	17
		Dark brown, loose organic SILT (OL), occasional rootlets	SS	4	6
3	229.9		SS	5	5
		Brown to grey, dense silty SAND (SM) with gravel till, moist - grey at 4.6 m - wet at 5.2 m			
4					
5			SS	6	32
6	227.5				
		Grey, stiff to very stiff clayey SILT (ML), trace sand, wet - occasional wet sand seams	SS	7	12
7					
8	225.4		SS	8	19
		END OF BOREHOLE at approximately 8.2m			
9					
10					
11					

VAPOUR CONCENTRATIONS

● %LEL ▲ ppm

● 20 40 60 80

▲ 100 200 300 400

DEPTH (ft): 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

WELL CONSTRUCTION

50 mm ID Solid Schedule 40 PVC Pipe packed in bentonite

50 mm ID Machine Slotted Schedule 40 PVC Screen packed in well sand

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 6C

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 30, 2009 WATER LEVEL -- TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● %LEL ▲ ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
	234.0					● 20 40 60 80 ▲ 100 200 300 400				
0	233.9	ASPHALT: 125 mm			0					
		FILL: Brown, dense to very dense SAND and GRAVEL, wet			1		SS	1	50/130	
					2					
1					3		SS	2	30	
					4					
	232.4				5					
		Brown, loose to compact clayey SILT (ML), with sand and gravel, moist to wet			6		SS	3	6	
2					7					
					8		SS	4	14	Backfilled with Bentonite
					9					
3					10					
					11		SS	5	8	
	230.2				12					
		Brown, dense SAND and GRAVEL (SW-GW), very wet			13		SS	6	36	
4	229.6				14					
		END OF BOREHOLE at approximately 4.4m			15					
					16					
5					17					
					18					
					19					
6					20					
					21					

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 7 (MW)

CLIENT Enbridge Gas Distribution Inc.

PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario

DATUM Geodetic

DATES: BORING November 13, 2009

WATER LEVEL December 10, 2009

TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● %LEL ▲ ppm (● 20 40 60 80 / ▲ 100 200 300 400)	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
0	248.8				0					
	248.5	TOPSOIL: 300 mm		▼	1		SS	1	3	Stickup Pipe
		Brown, very loose to compact SILT (MH) with clay, trace sand, wet - grey at 1.2 m - clay partings and seams below 3.0 m			2					
1					3		SS	2	11	
					4					
					5					
2					6		SS	3	6	50 mm ID Solid Schedule 40 PVC Pipe packed in bentonite
					7					
					8		SS	4	15	
					9					
3					10					
				▽	11		SS	5	17	
					12					
4					13					
					14					
					15					
5					16		SS	6	10	
					17					
					18					
6					19					
					20					
					21		SS	7	13	50 mm ID Machine Slotted Schedule 40 PVC Screen packed in well sand
7					22					
					23					
					24					
					25					
					26		SS	8	18	
8	240.6				27					
		END OF BOREHOLE at approximately 8.2m			28					
					29					
9					30					
					31					
					32					
10					33					
					34					
					35					
11					36					

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 7B

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 13, 2009 WATER LEVEL -- TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	DEPTH (ft)	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
	251.8		0				
0		ASPHALT: 38 mm					
	251.3	FILL: SAND and GRAVEL, moist	1	SS	1	14	
		FILL: Brown SAND, moist	2				
1	250.5		3	SS	2	9	
		FILL: Grey, compact silty SAND (SP), trace gravel, moist	4				
	249.9		5				
		FILL: Grey, loose to compact silty SAND with gravel, moist	6	SS	3	8	
2			7				
			8	SS	4	6	Backfilled with Bentonite
			9				
3			10				
			11	SS	5	18	
		- trace clay	12				
4			13				
			14				
			15				
	246.9		16	SS	6	6	
5		Black, loose silty SAND (SP), trace rootlets	17				
			18				
			19				
6	245.5		20				
		Grey, loose sandy SILT (SP-ML), wet	21	SS	7	8	
	245.1		22				
		END OF BOREHOLE at approximately 6.7m	23				
7			24				
			25				
8			26				

VAPOUR CONCENTRATIONS ● %LEL ▲ ppm

● 20 40 60 80

▲ 100 200 300 400

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 8

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 11, 2009 WATER LEVEL -- TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	DEPTH (ft)	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
0	239.6		0				
	239.3	FILL: Brown, SAND and GRAVEL	1	SS	1	10	Backfilled with Bentonite and Auger Cuttings
1		FILL: Brown, compact silty SAND - organic pockets at 1.8 m	2				
			3	SS	2	26	
			4				
			5				
			6	SS	3	15	
2	237.3		7				
		Dark brown, loose to compact organic SILT (OL) - topsoil inclusions	8	SS	4	3	
			9				
3			10				
	236.2		11	SS	5	10	
		Grey, compact SAND and GRAVEL (SW-GW), trace silt and clay, wet - silt parting at 4.9 m	12				
			13				
4			14				
			15				
			16	SS	6	18	
5	234.4		17				
		END OF BOREHOLE at approximately 5.2m	18				
			19				
6			20				
			21				

VAPOUR CONCENTRATIONS ● %LEL ▲ ppm

● 20 40 60 80

▲ 100 200 300 400

LABORATORY ANALYSES:

BOREHOLE RECORD

BH 8A (MW)

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 11, 2009 WATER LEVEL December 10, 2009 TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE
0	239.4				
	239.0	ASPHALT: 50 mm FILL: Brown, SAND and GRAVEL			
1		FILL: Brown, silty SAND with gravel and silt - grey at 1.7 m	SS	1	27
			SS	2	44
2			SS	3	76
	236.6		SS	4	4
3	235.8	Dark brown, organic SILT (OL) with peat inclusions	SS	5	18
4		Grey, compact SAND and GRAVEL (SW-GW), trace silt and clay, wet			
			SS	6	17
5					
6	233.3				
	232.6	Grey, dense silty SAND (SM), trace of gravel, wet	SS	7	50
7		END OF BOREHOLE at approximately 6.7m			
8					
9					

VAPOUR CONCENTRATIONS ● %LEL ▲ ppm

● 20 40 60 80

▲ 100 200 300 400

DEPTH (ft): 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

WELL CONSTRUCTION

50 mm ID Solid Schedule 40 PVC Pipe packed in bentonite

50 mm ID Machine Slotted Schedule 40 PVC Screen packed in well sand

LABORATORY ANALYSES:

Stantec

BOREHOLE RECORD

BH 9 (MW)

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 10, 2009 WATER LEVEL December 10, 2009 TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● %LEL ▲ ppm	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
	220.1					● 20 40 60 80 ▲ 100 200 300 400				
0		FILL: Brown, SAND and GRAVEL	F		0		SS	1	9	Stickup Pipe
	219.7				1					
		Dark brown to grey, very loose organic SILT (OH) with sand, wet - occasional peat inclusions with rootlets		▼	2		SS	2	3	
1					3					
					4		SS	3	WH	50 mm ID Solid Schedule 40 PVC Pipe packed in bentonite
					5					
2					6					
					7		SS	4	WH	
					8					
					9					
3					10		SS	5	WH	
					11					
					12					
				▽	13					
4					14					
	215.5				15					
		Grey, very soft to firm clayey SILT (ML), trace of sand, wet - clay partings and seams			16		SS	6	WH	50 mm ID Machine Slotted Schedule 40 PVC Screen packed in well sand
5					17					
					18					
					19					
					20					
6					21		SS	7	5	
	213.4				22					
		END OF BOREHOLE at approximately 6.7m			23					
7					24					
					25					
					26					
8					27					
					28					
					29					
9										

LABORATORY ANALYSES:

BOREHOLE RECORD

BH 9A

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 10, 2009 WATER LEVEL -- TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS ● %LEL ▲ ppm ● 20 40 60 80 ▲ 100 200 300 400	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
0	220.5				0					
		FILL: Brown, SAND and GRAVEL			1		SS	1	8	
	220.0									
		FILL: Brown, silty SAND with gravel, moist to wet			2					
1					3		SS	2	65	
					4					
					5		SS	3	3	
2	218.3				6					
		Dark brown to grey, very loose organic SILT (OH) with sand - occasional rootlets			7					
					8		SS	4	WH	
					9					Backfilled with Auger Cuttings
3					10					
					11		SS	5	WH	
					12					
4					13					
					14					
					15					
					16		SS	6	WH	
5	215.3				17					
		END OF BOREHOLE at approximately 5.2m			18					
					19					
6					20					
					21					

LABORATORY ANALYSES:

BOREHOLE RECORD

BH 10 (MW)

CLIENT Enbridge Gas Distribution Inc. PROJECT No. 122300138

LOCATION Proposed Pipeline to Serve the York Energy Centre, Township of King, Ontario DATUM Geodetic

DATES: BORING November 10, 2009 WATER LEVEL December 10, 2009 TPC ELEV. --

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES N-VALUE	WELL CONSTRUCTION
0	222.5					
0		TOPSOIL: silty SAND with high organic content	SS	1	3	Stickup Pipe
	221.8					
1		Grey, loose to compact SAND and SILT (SM-MH), trace of clay, wet	SS	2	11	50 mm ID Solid Schedule 40 PVC Pipe packed in bentonite
2			SS	3	9	
3			SS	4	4	
			SS	5	6	50 mm ID Machine Slotted Schedule 40 PVC Screen packed in well sand
4						
5	217.3		SS	6	9	
		END OF BOREHOLE at approximately 5.2m				
6						
7						

STRATA PLOT / WATER LEVEL

DEPTH (ft): 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

VAPOUR CONCENTRATIONS

● %LEL ▲ ppm

● 20 40 60 80

▲ 100 200 300 400

LABORATORY ANALYSES:

Drive-Point: DP1-09

Project:	Pipeline to Serve the York Energy Centre	**Drilling method:**	Fence-post driver
Client:	Jacques Whitford Stantec Limited	**Date started/completed:**	Nov 19, 2009
Location:	North York, Ontario	**Ground surface elevation:**	n/a
Number:	122300138	**Top of casing elevation:**	235.72 m AMSL
Field investigator:	R.Dong	**Easting:**	610365
Contractor:	Stantec Consulting LTD	**Northing:**	4871869

SUBSURFACE PROFILE				WELL DETAILS	
Depth (ft)	Depth (m)	Graphic Log	Lithologic Description	Depth (m BGS)	Well Diagram	Description
						1.07 m Stick-up
-2						25 mm diameter steel casing
					▽	Surface Water Level 1.00 m BTOC
0	0		Ground Surface No Lithological Description	0.00		
2						Top of screen 1.06 m BGS
4						19 mm diameter Ingleton drive-point
			End of Hole	1.48		Bottom of screen 1.48 m BGS
6	2					
8						
10						

Screen Interval: n/a
Sand Pack Interval: n/a
Well Seal Interval: n/a

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
m AGS - metres above ground surface
m BTOC - metres below top of casing
n/a - not available/applicable

Drawn By/Checked By: OR/KM

Stantec

Drive-Point: DP2-09

Project:	Pipeline to Serve the York Energy Centre	**Drilling method:**	Fence-post driver
Client:	Jacques Whitford Stantec Limited	**Date started/completed:**	Nov 19, 2009
Location:	North York, Ontario	**Ground surface elevation:**	n/a
Number:	122300138	**Top of casing elevation:**	236.73 m AMSL
Field investigator:	R.Dong	**Easting:**	610761
Contractor:	Stantec Consulting LTD	**Northing:**	4872067

SUBSURFACE PROFILE				WELL DETAILS	
Depth (ft) (m)	Graphic Log	Lithologic Description	Depth (m BGS)	Well Diagram	Description
-2					1.02 m Stick-up
					25 mm diameter steel casing
				▽	Surface Water Level 0.90 m BTOC
0 — 0		Ground Surface No Lithological Description	0.00		
2					
4					Top of screen 1.11 m BGS
					19 mm diameter Ingleton drive-point
		End of Hole	1.53		Bottom of screen 1.53 m BGS
6 — 2					
8					
10					

Screen Interval: n/a
Sand Pack Interval: n/a
Well Seal Interval: n/a

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
m AGS - metres above ground surface
m BTOC - metres below top of casing
n/a - not available/applicable

Drawn By/Checked By: OR/KM

Stantec

Drive-Point: DP3-09

Project:	Pipeline to Serve the York Energy Centre	**Drilling method:**	Fence-post driver
Client:	Jacques Whitford Stantec Limited	**Date started/completed:**	Nov 19, 2009
Location:	North York, Ontario	**Ground surface elevation:**	n/a
Number:	122300138	**Top of casing elevation:**	245.22 m AMSL
Field investigator:	R.Dong	**Easting:**	611595
Contractor:	Stantec Consulting LTD	**Northing:**	4872332

SUBSURFACE PROFILE				WELL DETAILS	
Depth (ft)	Depth (m)	Graphic Log	Lithologic Description	Depth (m BGS)	Well Diagram	Description
-2						1.02 m Stick-up
						25 mm diameter steel casing
0	0		Ground Surface No Lithological Description	0.00		Surface Water Level 0.98 m BTOC
2						
4						Top of screen 1.11 m BGS
						19 mm diameter Ingleton drive-point
			End of Hole	1.53		Bottom of screen 1.53 m BGS
6	2					
8						
10						

Screen Interval: n/a
Sand Pack Interval: n/a
Well Seal Interval: n/a

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
m AGS - metres above ground surface
m BTOC - metres below top of casing
n/a - not available/applicable

Drawn By/Checked By: OR/KM

Stantec

Drive-Point: DP4-09

Project:	Pipeline to Serve the York Energy Centre	**Drilling method:**	Fence-post driver
Client:	Jacques Whitford Stantec Limited	**Date started/completed:**	Nov 19, 2009
Location:	North York, Ontario	**Ground surface elevation:**	n/a
Number:	122300138	**Top of casing elevation:**	283.87 m AMSL
Field investigator:	R.Dong	**Easting:**	614313
Contractor:	Stantec Consulting LTD	**Northing:**	4873784

SUBSURFACE PROFILE				WELL DETAILS	
Depth (ft) (m)	Graphic Log	Lithologic Description	Depth (m BGS)	Well Diagram	Description
-2					0.96 m Stick-up
					25 mm diameter steel casing
				▽	Surface Water Level 0.73 m BTOC
0 — 0		Ground Surface No Lithological Description	0.00		
2					
4					Top of screen 1.17 m BGS
					19 mm diameter Ingleton drive-point
		End of Hole	1.59		Bottom of screen 1.59 m BGS
6 — 2					
8					
10					

Screen Interval: n/a
Sand Pack Interval: n/a
Well Seal Interval: n/a

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
m AGS - metres above ground surface
m BTOC - metres below top of casing
n/a - not available/applicable

Drawn By/Checked By: OR/KM

Stantec

Drive-Point: DP5-09

Project:	Pipeline to Serve the York Energy Centre	**Drilling method:**	Fence-post driver
Client:	Jacques Whitford Stantec Limited	**Date started/completed:**	Nov 19, 2009
Location:	North York, Ontario	**Ground surface elevation:**	n/a
Number:	122300138	**Top of casing elevation:**	224.20 m AMSL
Field investigator:	R.Dong	**Easting:**	614477
Contractor:	Stantec Consulting LTD	**Northing:**	4876648

SUBSURFACE PROFILE | WELL DETAILS

Depth (ft)	Depth (m)	Graphic Log	Lithologic Description	Depth (m BGS)	Well Diagram	Description
-2						1.14 m Stick-up
						25 mm diameter steel casing
					▽	Surface Water Level 1.00 m BTOC
0	0		Ground Surface No Lithological Description	0.00		
2						Top of screen 0.99 m BGS
4						19 mm diameter Ingleton drive-point
			End of Hole	1.41		Bottom of screen 1.41 m BGS
6	2					
8						
10						

Screen Interval: n/a
Sand Pack Interval: n/a
Well Seal Interval: n/a

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
m AGS - metres above ground surface
m BTOC - metres below top of casing
n/a - not available/applicable

Drawn By/Checked By: OR/KM

Stantec

Drive-Point: DP6-09

Project:	Pipeline to Serve the York Energy Centre	**Drilling method:**	Fence-post driver
Client:	Jacques Whitford Stantec Limited	**Date started/completed:**	Nov 19, 2009
Location:	North York, Ontario	**Ground surface elevation:**	n/a
Number:	122300138	**Top of casing elevation:**	230.57 m AMSL
Field investigator:	R.Dong	**Easting:**	615371
Contractor:	Stantec Consulting LTD	**Northing:**	4876966

SUBSURFACE PROFILE				WELL DETAILS	
Depth (ft) (m)	Graphic Log	Lithologic Description	Depth (m BGS)	Well Diagram	Description
-2					1.10 m Stick-up
					Surface Water Level 0.63 m BTOC
					25 mm diameter steel casing
0 — 0		Ground Surface No Lithological Description	0.00		
2					Top of screen 1.03 m BGS
4					19 mm diameter Ingleton drive-point
		End of Hole	1.45		Bottom of screen 1.45 m BGS
6 — 2					
8					
10					

Screen Interval: n/a
Sand Pack Interval: n/a
Well Seal Interval: n/a

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
m AGS - metres above ground surface
m BTOC - metres below top of casing
n/a - not available/applicable

Drawn By/Checked By: OR/KM

Stantec

Drive-Point: DP7-09

Project:	Pipeline to Serve the York Energy Centre	**Drilling method:**	Fence-post driver
Client:	Jacques Whitford Stantec Limited	**Date started/completed:**	Nov 19, 2009
Location:	North York, Ontario	**Ground surface elevation:**	n/a
Number:	122300138	**Top of casing elevation:**	247.54 m AMSL
Field investigator:	R.Dong	**Easting:**	616393
Contractor:	Stantec Consulting LTD	**Northing:**	4877299

SUBSURFACE PROFILE				WELL DETAILS	
Depth (ft)	Depth (m)	Graphic Log	Lithologic Description	Depth (m BGS)	Well Diagram	Description
-2						0.64 m Stick-up
						25 mm diameter steel casing
					▽	Surface Water Level 0.55 m BTOC
0	0		Ground Surface No Lithological Description	0.00		
2						Top of screen 0.58 m BGS 19 mm diameter Ingleton drive-point
			End of Hole	1.00		Bottom of screen 1.00 m BGS
4						
6	2					
8						
10						
12						

Screen Interval: n/a
Sand Pack Interval: n/a
Well Seal Interval: n/a

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
m AGS - metres above ground surface
m BTOC - metres below top of casing
n/a - not available/applicable

Drawn By/Checked By: OR/KM

Stantec

Drive-Point: DP8-09

Project:	Pipeline to Serve the York Energy Centre	**Drilling method:**	Fence-post driver
Client:	Jacques Whitford Stantec Limited	**Date started/completed:**	Nov 19, 2009
Location:	North York, Ontario	**Ground surface elevation:**	n/a
Number:	122300138	**Top of casing elevation:**	238.44 m AMSL
Field investigator:	R.Dong	**Easting:**	617514
Contractor:	Stantec Consulting LTD	**Northing:**	4878860

SUBSURFACE PROFILE				WELL DETAILS	
Depth (ft)	Depth (m)	Graphic Log	Lithologic Description	Depth (m BGS)	Well Diagram	Description
0	0		Ground Surface No Lithological Description	0.00		1.69 m Stick-up 25 mm diameter steel casing Surface Water Level at 1.59 m BGS Top of screen 0.45 m BGS 19 mm diameter Ingleton drive-point Bottom of screen 0.87 m BGS
			End of Hole	0.87		

-4, -2, 2, 4, 6, 8 (ft); 2 (m)

Screen Interval: n/a
Sand Pack Interval: n/a
Well Seal Interval: n/a

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
m AGS - metres above ground surface
m BTOC - metres below top of casing
n/a - not available/applicable

Drawn By/Checked By: OR/KM

Stantec

Drive-Point: DP9-09

Project:	Pipeline to Serve the York Energy Centre	**Drilling method:**	Fence-post driver
Client:	Jacques Whitford Stantec Limited	**Date started/completed:**	Nov 19, 2009
Location:	North York, Ontario	**Ground surface elevation:**	n/a
Number:	122300138	**Top of casing elevation:**	219.60 m AMSL
Field investigator:	R.Dong	**Easting:**	617073
Contractor:	Stantec Consulting LTD	**Northing:**	4881191

SUBSURFACE PROFILE				WELL DETAILS	
Depth (ft)	Depth (m)	Graphic Log	Lithologic Description	Depth (m BGS)	Well Diagram	Description
-2						0.87 m Stick-up
						25 mm diameter steel casing
0	0		Ground Surface		▽	Surface Water Level at 0.77 m BGS
			No Lithological Description	0.00		
2						
4						Top of screen 1.27 m BGS
						19 mm diameter Ingleton drive-point
				1.69		Bottom of screen 1.69 m BGS
6			End of Hole			
	2					
8						
10						
12						

Screen Interval: n/a
Sand Pack Interval: n/a
Well Seal Interval: n/a

Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
m AGS - metres above ground surface
m BTOC - metres below top of casing
n/a - not available/applicable

Drawn By/Checked By: OR/KM

Stantec

Drive-Point: DP10-09

Project:	Pipeline to Serve the York Energy Centre	**Drilling method:**	Fence-post driver
Client:	Jacques Whitford Stantec Limited	**Date started/completed:**	Nov 19, 2009
Location:	North York, Ontario	**Ground surface elevation:**	n/a
Number:	122300138	**Top of casing elevation:**	223.21 m AMSL
Field investigator:	R.Dong	**Easting:**	617270
Contractor:	Stantec Consulting LTD	**Northing:**	4880147

SUBSURFACE PROFILE				WELL DETAILS	
Depth (ft)	Depth (m)	Graphic Log	Lithologic Description	Depth (m BGS)	Well Diagram	Description
-2						0.98 m Stick-up
						25 mm diameter steel casing
0	0		Ground Surface		▽	Surface Water Level at 0.88 m BGS
			No Lithological Description	0.00		
2						
4						Top of screen 1.16 m BGS
						19 mm diameter Ingleton drive-point
				1.58		Bottom of screen 1.58 m BGS
			End of Hole			
6	2					
8						
10						

Screen Interval: n/a
Sand Pack Interval: n/a
Well Seal Interval: n/a

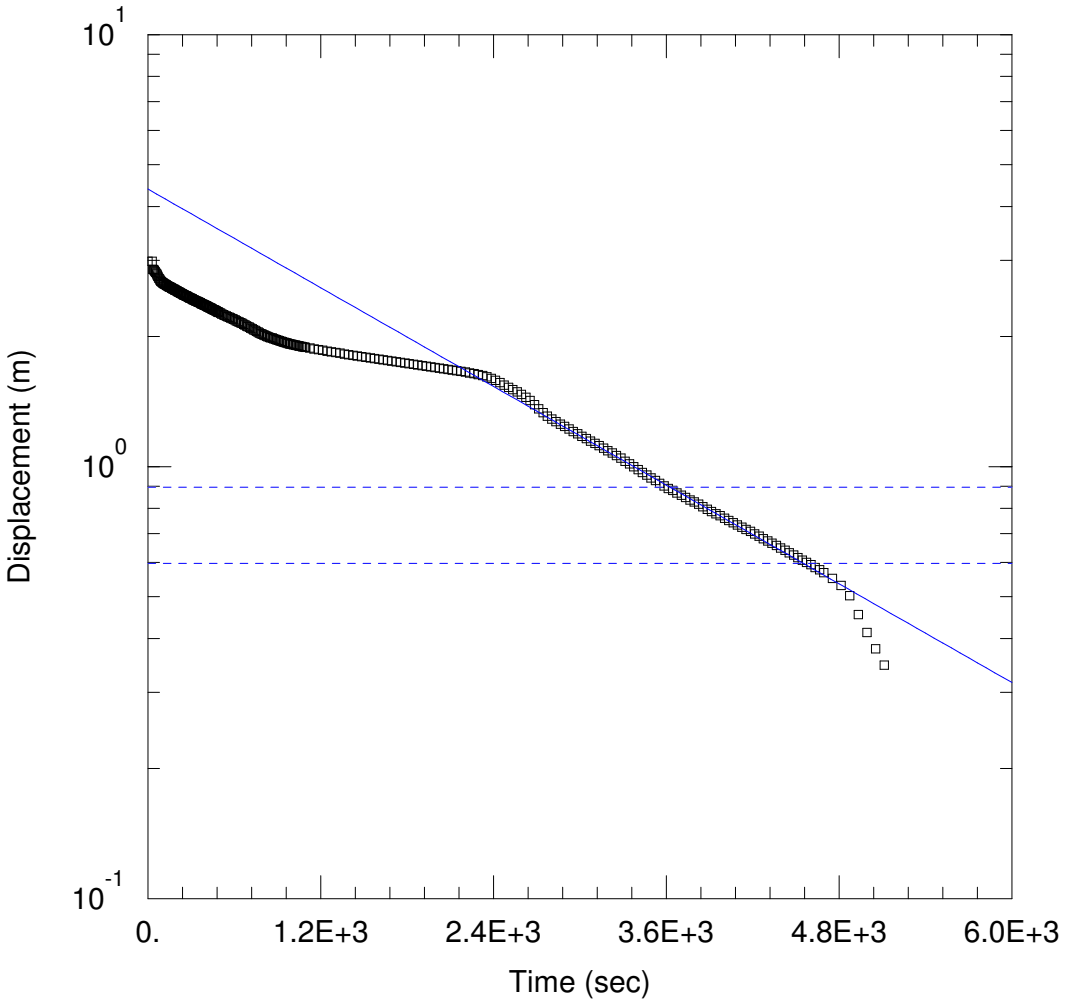
Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
m AGS - metres above ground surface
m BTOC - metres below top of casing
n/a - not available/applicable

Drawn By/Checked By: OR/KM

Stantec

APPENDIX D

SINGLE WELL RESPONSE TESTING ANALYSIS



WELL TEST ANALYSIS

Data Set: V:\01609\active\122300138_Enbridge_York\planning\analysis\Aqtesolv\BH2.aqt
Date: 12/21/09 Time: 10:33:35

PROJECT INFORMATION

Company: Stantec Consulting Ltd.
Project: 112300138
Location: Enbridge
Test Well: BH3
Test Date: 12/16/2006

AQUIFER DATA

Saturated Thickness: 3.04 m Anisotropy Ratio (Kz/Kr): 1.

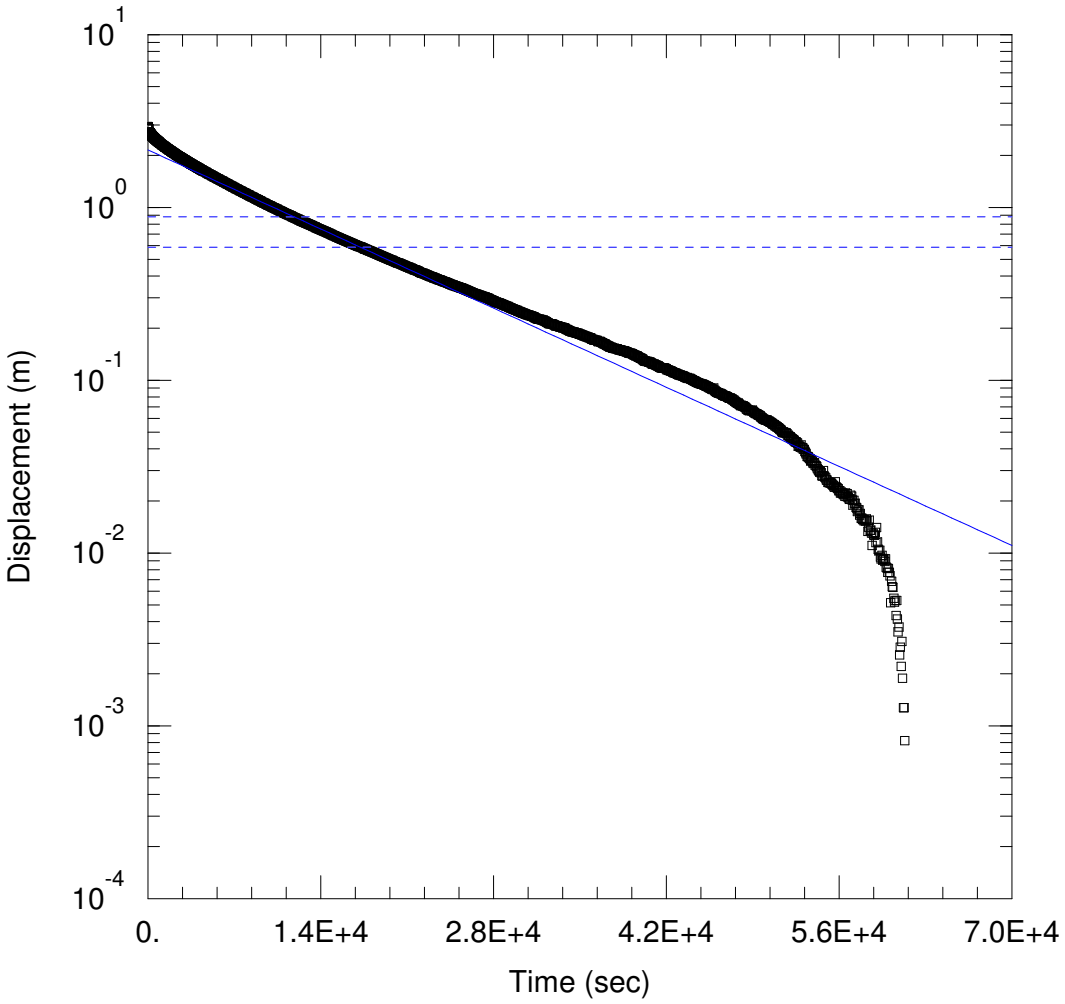
WELL DATA (BH2)

Initial Displacement: 2.985 m
Total Well Penetration Depth: 3.56 m
Casing Radius: 0.0254 m
Static Water Column Height: 3.04 m
Screen Length: 3.04 m
Well Radius: 0.0254 m
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.764E-7 m/sec y0 = 4.389 m



WELL TEST ANALYSIS

Data Set: V:\01609\active\122300138_Enbridge_York\planning\analysis\Aqtesolv\BH3.aqt
Date: 12/21/09 Time: 10:29:41

PROJECT INFORMATION

Company: Stantec Consulting Ltd.
Project: 112300138
Location: Enbridge
Test Well: BH3
Test Date: 12/16/2006

AQUIFER DATA

Saturated Thickness: 7.27 m Anisotropy Ratio (Kz/Kr): 1.

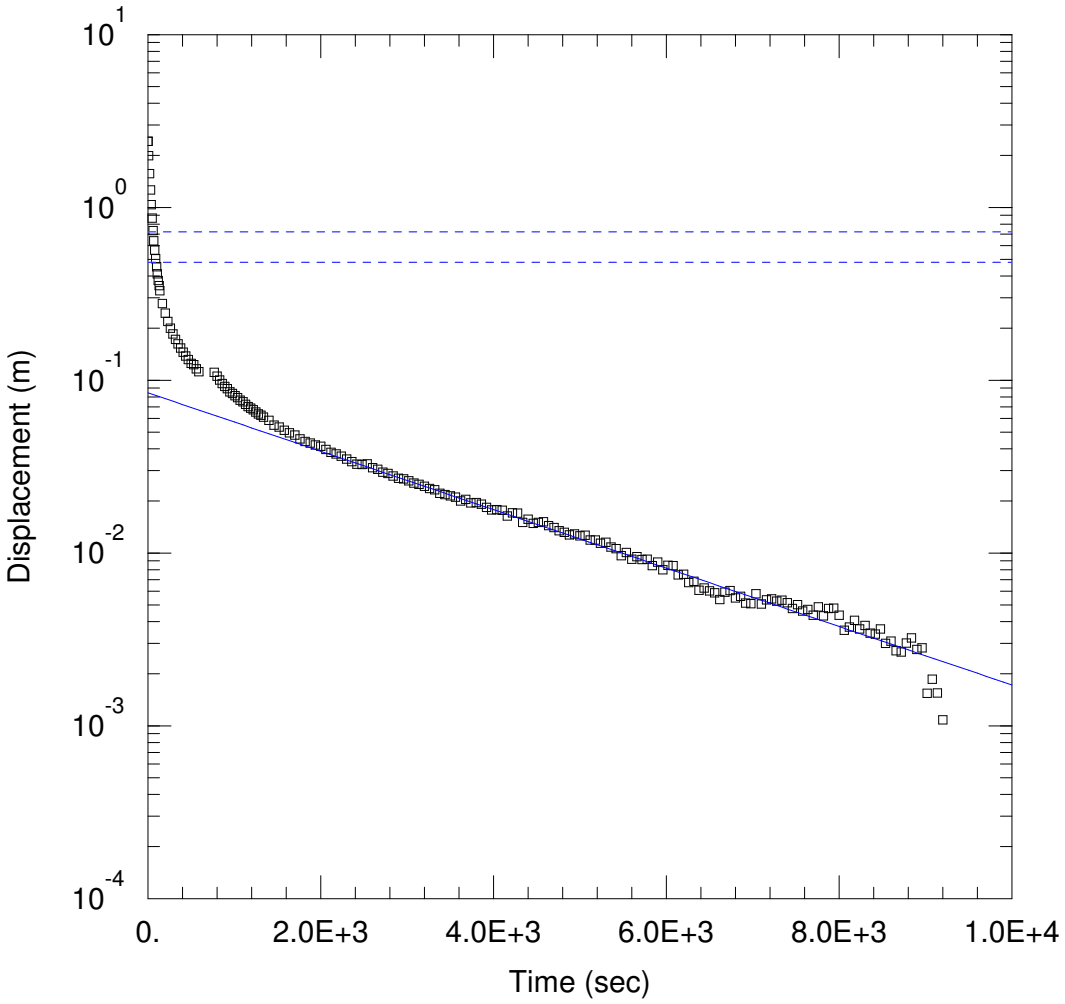
WELL DATA (BH3)

Initial Displacement: 2.941 m
Total Well Penetration Depth: 6.738 m
Casing Radius: 0.0254 m
Static Water Column Height: 7.27 m
Screen Length: 3.048 m
Well Radius: 0.0254 m
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.089E-8 m/sec y0 = 2.151 m



WELL TEST ANALYSIS

Data Set: V:\01609\active\122300138_Enbridge_York\planning\analysis\Aqtesolv\BH5A.aqt
Date: 12/21/09 Time: 10:30:55

PROJECT INFORMATION

Company: Stantec Consulting Ltd.
Project: 112300138
Location: Enbridge
Test Well: BH3
Test Date: 12/16/2006

AQUIFER DATA

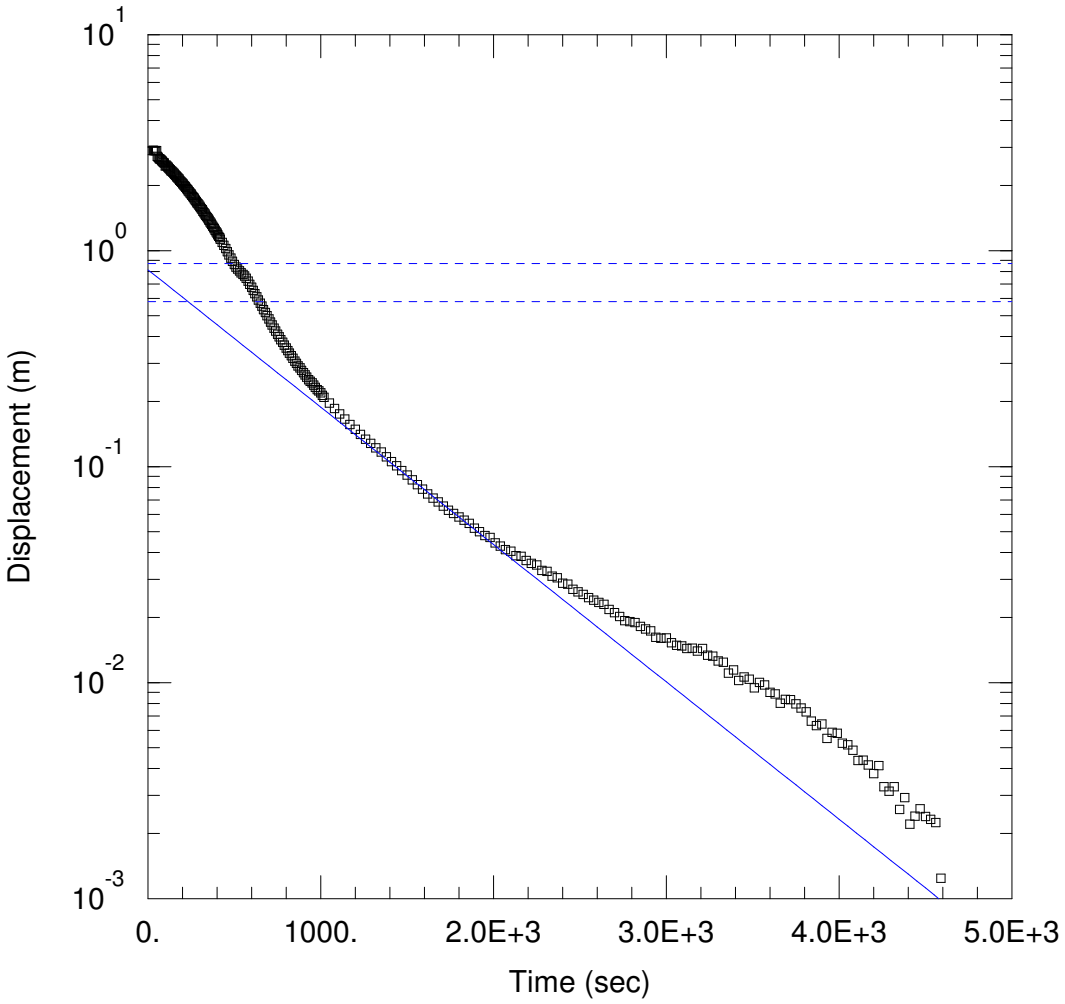
Saturated Thickness: 6.36 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH5A)

Initial Displacement: 2.41 m
Total Well Penetration Depth: 6.36 m
Casing Radius: 0.0254 m
Static Water Column Height: 6.36 m
Screen Length: 2.868 m
Well Radius: 0.0254 m
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.579E-6 m/sec
y0 = 0.08449 m



WELL TEST ANALYSIS

Data Set: V:\01609\active\122300138_Enbridge_York\planning\analysis\Aqtesolv\BH8A.aqt
Date: 12/21/09 Time: 10:31:58

PROJECT INFORMATION

Company: Stantec Consulting Ltd.
Project: 112300138
Location: Enbridge
Test Well: BH3
Test Date: 12/16/2006

AQUIFER DATA

Saturated Thickness: 2.9 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BH8A)

Initial Displacement: 2.9 m
Total Well Penetration Depth: 2.902 m
Casing Radius: 0.0254 m
Static Water Column Height: 2.9 m
Screen Length: 2.332 m
Well Radius: 0.0254 m
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 7.328E-7 m/sec y0 = 0.8148 m