BOREHOLE LOG

BORING/WELL ID: **MW-122D (PLS-08-05)**

TOTAL DEPTH (ft.): **269'**

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fishbeck, thompson, carr & huber, inc.

PROJECT: Pall Life Sciences	**START DATE:** 11/14/08	**DRILLING CO.:** Stearns Drilling
SITE LOCATION: Ann Arbor, Michigan	**END DATE:** 12/1/08	**DRILLER:** Jerry, Pat, Sam, Tony
PROJECT NO.: F96502	**TOC ELEV.:** 941.31'	**RIG TYPE:** CME 95
PROJECT MANAGER: James W. Brode, Jr., CPG	**GROUND ELEV.:** approx. 942'	**METHOD OF DRILLING:** Hollow Stem Auger
LOGGED BY: Todd C. Campbell, CPG	**STATIC WATER LVL.:** 72.85'	**SAMPLING METHODS:** Split Spoon, Simulprobe

NOTES: 3024 Dexter Ave., Field GPS Coordinates: N42.28850,W083.78967, acc, 25'. Copyright 2009. All Rights Reserved. Fishbeck, Thompson, Carr & Huber

▼ Static Water Level

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Revovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
TOPSOIL: Sand; Silt. Dark brown, dry			0					Sand Pack
DIAMICTON: Silt; Sand, fine grained (30%); Clay (20%). Brown, moderately sorted, very stiff, dry			2, 4, 6, 8					Refusal between 175 and 180' during first two attempts to drill to bedrock (Lost 40 and 45 feet of augers during first and 2nd attempt, respectively). Grouted borings and moved 5' southeast after refusal. Descriptions from 179 feet to bedrock continued on original log.
as above			10		2.0'		3,9,10,10	
			12, 14, 16, 18					
SAND: Sand, fine to medium grained (90%); Gravel, fine (10%). Brown, well sorted, medium dense, dry			20		2.0'		7,8,10,11	
			22, 24, 26, 28					Bentonite Grout 2" Galvanized Casing
DIAMICTON: Silt; Clay (20%); Sand, fine grained (20%); trace Gravel, fine. Grayish brown, moderately sorted, stiff, dry			30		1.7'		4,7,7,8	
			32, 34, 36, 38					
Silt; Sand, fine grained (30%); Clay (20%); Gravel, fine (10%). Gray, well sorted, stiff, dry			40		2.0'		4,5,5,6	
			42, 44, 46, 48					
as above			50		1.8'		6,9,9,10	
			52, 54, 56, 58					
as above			60		1.9'		11,25, 30,20	
			62, 64, 66, 68					
as above, decreasing clay content			70		1.8'		9,16,22,20	

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			70					
			72					
			74					
			76					
			78					
as above			80		1.9'		8,17,20,21	
			82					
			84					
			86					
			88					
			90		1.6'		5,11,21,25	
SAND: Driller notes Sand			92					
			94					
			96					
			98					
Infer Sand, fine to medium grained (from drilling and from heave in "AW" rods observed while pulling Simulprobe sampler)			100		0'		5,9,21	Simulprobe sample 99'-100.5' (4 ug/L)
			102					
			104					Bentonite Grout 2" Galvanized Casing
			106					
			108					Simulprobe sample 109'-110.5' (2 ug/L)
Sand, very fine to fine grained with trace medium grains. Grayish brown, well sorted, wet			110		0.6'		29,70, 50 (3")	Added approximately 30 gallons of water to augers
			112					
			114					
			116					Simulprobe sample 119'-120.5' (2 ug/L)
			118					
Sand, fine to medium grained. Brown, well sorted, wet			120		0.5'		27,59, 50 (2")	Added approximately 30 gallons of water to augers
Gravel seams throughout			122					
			124					
			126					Simulprobe sample 129'-130.5' (2 ug/L)
			128					
As above with Gravel, fine (10%)			130		<0.1'		5,7,11	Added approximately 30 gallons of water to augers
			132					
			134					
			136					Simulprobe sample 139'-140.5' (2 ug/L)
			138					
Sand, fine grained with trace medium grains; trace Gravel, fine.			140					Added approximately

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Grayish brown, well sorted, wet (sample obtained from Sand bailer)			140		0.1'		16,18,29	30 gallons of water to augers
			142					
			144					
			146					Simulprobe sample 149'-150.5' (2 ug/L)
			148					
Sand, fine grained with trace medium grains. Grayish brown, well sorted, wet			150		<0.1'		25,22,48	Added approximately 30 gallons of water to augers
			152					
			154					Bentonite Grout
			156					2" Galvanized Casing Simulprobe sample 159'-160.5' (3 ug/L)
			158					
Sand, medium to fine grained with trace coarse grains; trace Gravel, fine. Grayish brown, moderately sorted, wet (sample obtained from Sand bailer)			160		0'		75,150	Added approximately 30 gallons of water to augers
			162					
			164					
			166					
			168					
as above			170		1.2'		37,57, 100 (3")	Simulprobe sample 169'-170.5' (33 ug/L)
			172					
			174					
SAND AND GRAVEL: Coarse Gravel, Cobbles (based on drilling)			176					
			178					
			180		0.1'		100 (5")	
			182					
SILTY SAND: Sand, fine grained with trace medium and coarse grains (70%); Silt; trace Gravel, fine. Grayish brown, moderately sorted, wet			184		<0.1'		100	Simulprobe sample 184-184.5' (5 ug/L)
			186					
			188					
			190					
DIAMICTON: Driller notes Till			192					
Sand, fine grained (50%); Silt (50%); trace Gravel, fine. Grayish brown, well sorted, hard, dry			194		0.3'		150	
			196					
			198					
			200					
			202					
Silt; Sand, fine grained (30%); Gravel, fine (10%); trace Clay. Grayish brown, moderately sorted, hard, dry			204		0.5'		150	Bentonite Grout
			206					2" Galvanized Casing
			208					

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as above			210, 212, 214, 216, 218, 220, 222		0.5'		100	
as above			224, 226, 228, 230, 232		0.5'		100 (5")	
as above			234, 236, 238		0.5'		100 (5")	
SILT AND SAND: Silt (50%); Sand fine grained (40%); Gravel, fine. Grayish brown, very dense, moist. Based on drilling observations, diamicton with sand seams throughout. Sand interval, determined by gamma log observations			240, 242, 244, 246		0.2'		150 (3")	#6 Sand Pack 2" Stainless Steel Screen (10 slot) set between 242 and 247 feet bgs
Cobble/Coarse Gravel			248					
DIAMICTON: Hard drilling, infer Diamicton with interbedded Sand seams			250, 252					Simulprobe sample 254'-254.5' (<1 ug/L)
Sand, medium to fine grained (70%); Silt; trace Clay. Grayish brown, well sorted, very dense, moist. Based on drilling observations, thin sand seams in Diamicton			254, 256, 258, 260, 262		0.2'		74, 100 (2")	Added approximately 50 gallons of water to augers
Silt; Clay; trace Sand, fine grained; trace Gravel, fine. Grayish brown, hard, dry			264, 266		0.4'		100 (2")	Added approximately 50 gallons of water to augers
SHALE: Shale, weathered. Gray, platy, hard, dry			268, 270		0.2'		100 (0")	Bentonite Hole Plug