



Permit # - 202312

LOG OF BORING

Dc53-51
BORING NO. PU-03
SHEET 1 OF 5

CLIENT USEPA Region 3.	PROJECT Standard Chlorine of DE	PROJECT NO. 047118.
PROJECT LOCATION New Castle, DE	COORDINATES	ELEVATION (DATUM)
SURFACE CONDITIONS Field South of Cal. Lea Rd - Along fence line	TOTAL DEPTH 147 ft.	DATE START 08-03-04
DRILLING CONTRACTOR Unitech Drilling Co.		DATE FINISH 08-05-04

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2ND 6"	3RD 6"	N VALUE	SAMPLE RECOV.	DRILL RIG Midway 1500	DRILLER Joe Jester	INSPECTOR Anita Buggins	
CORING							CHECKED BY			APPROVED BY

CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOV.	RQD RECOV.	PERCENT RECOV.	RQD	DEPTH IN FEET	SAMPLE TYPE	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1				Advanced borehole
							2				mud rotary. Sample
							3				taken w/ 2" spoon
							4				Wire Line (not spt)
							5				5/4" drug bit.
SPT 1	5	7	7	14	0.3		6			SAND; yellowish brown 10YR 6/8, angular	
							7			contains some gravel; wet; med-coarse	Oppm
							8			graded; med density	
							9				
SPT 2	7	7	8	15	0.75		10			SAND; yellow 10YR 7/8; med dense, sub	Oppm
							1			angular, well sorted; dry (med coarse)	
							2				
							3				
							4				
SPT 3	7	8	8	16	0.55		15			As above; very pale brown 10YR 7/3	Oppm
							6			grading -> wet.	
							7				
							8				
							9				
SPT 4	7	11	15	26	0.5		20			As above; Brownish yellow 10YR 6/6	Oppm.
							1			grading -> dry	
							2				
							3				
							4				
SPT 5	9	11	11	22	0.8		25			As above; Yellow 2.5YR 7/8	Oppm.
							6				
							7				
							8				
							9				
							20				

COLUMBIA FORMATION



LOG OF BORING

BORING NO. PN-03

SHEET 2 OF 5

CLIENT USEPA Region 3	PROJECT Standard Chlorine of DE	PROJECT NO. 047118
PROJECT LOCATION New Castle, DE	COORDINATES	ELEVATION (DATUM)
SURFACE CONDITIONS field S. of gov. wa Rd, along fence line - overgrown, dry.		TOTAL DEPTH 147 ft
		DATE START 08-03-04
		DATE FINISH 08-05-04

SAMPLING		DRILLING CONTRACTOR Unitech Drilling Co.	
SAMPLE TYPE	SAMPLE NUMBER	DRILL RIG Midway 1500	DRILLER Joe Lester
SET 6"	2ND 6"	INSPECTOR Anita Buggins	
3RD 6"	N VALUE	CHECKED BY	
SAMPLE RECOV.		APPROVED BY	

CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOV.	ROD RECOV.	PERCENT RECOV.	ROD	DEPTH IN FEET	SAMPLE TYPE	LOG	CLASSIFICATION OF MATERIAL	REMARKS
SPT 6	7	9	9	18	0.6		31			SAND; yellow 2.5R 7/6; med. dense. med-fine grained, well sorted; sub rounded; dry + trace quartz gravel.	0ppm
							2				
							3				
							4				
SPT 7	8	12	14	26	0.45		35			Same as above; grading → wet.	0ppm
							6				
							7				
							8				
							9				
SPT 8	6	6	7	13	0.9		40			Same as above; grading → less dense coarser grained; trace quartz grains	0ppm
							1				
							2				
							3				
							4				
SPT 9	7	8	12	20	0.9		45			Same as above; brownish yellow 10YR 6/6 grading → med-grain	0ppm
							6				
							7				
							8				
							9				
SPT 10	7	7	8	15	1.1		50			SAND; med grained, med. density, subrounded, med-dry; well sorted strong brown 7.5YR 5/8.	0ppm
							1				
							2				
							3				
							4				
SPT 11	5	6	6	12	1.2		55			As above; brownish yellow 10YR 6/6	0ppm
							6				
							7				
							8				
							9				
							60				

Columbia Formation



Permit # 202312. LOG OF BORING

BORING NO. PW-03
SHEET 3 OF 5

CLIENT USEPA Region 3	PROJECT Standard Chlorine of DE	PROJECT NO. 047118
PROJECT LOCATION New Castle, DE	COORDINATES	ELEVATION (DATUM)
SURFACE CONDITIONS		TOTAL DEPTH 147ft.
		DATE START 08-03-04
		DATE FINISH 08-05-04

SAMPLING		DRILLING CONTRACTOR Unitedech Drilling Co.	
SAMPLE TYPE	SAMPLE NUMBER	DRILL RIG Midway 500	DRILLER J. Jester
SET 6"	2ND 6"	INSPECTOR Amita Buggins	
3RD 6"	N VALUE	CHECKED BY	
SAMPLE RECOV.		APPROVED BY	

CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOV.	RQD RECOV.	PERCENT RECOV.	RQD	DEPTH IN FEET	SAMPLE TYPE	LOG	CLASSIFICATION OF MATERIAL	REMARKS
SPT 12	12	21	28	49	0.7		61			SAND; shaly brown 7.5 R 5/8. poorly sorted; many quartz grains (gravel size); dense; med. wet; coarse ang. grained.	Oppm
SPT 13	4	4	8	155			65			SILTY CLAY; very dark grayish green GLEY 1 - 5G 2.5/2. medium stiff. low plasticity	6" steel casing to 66' 6" bit. (08-04-04)
SPT 14	6	11	12	23	1.8		70			As above; very dark greenish gray. GLEY 1 5G 3/1. stiff	Oppm
SPT 15	4	4	4	8	1.5		71			As above; greenish black 10G 2.5/1.	Oppm
SPT 16	4	5	5	10	1.6		72			As above; grading 15-20% mica v. dry low plasticity.	Oppm
SPT 17	6	6	7	13	2.0		73			As above;	Oppm
SPT 18	7	7	13	20	1.8		74			As above;	Oppm
SPT 19	8	12	13	25	2.0		75			As above; grading → v. stiff	Oppm
SPT 20	5	6	6	12	1.6		76			As above;	Oppm
SPT 21	6	6	9	15	1.9		77			As above; coarse grained sand in bit. (bottom 1.5")	Oppm
SPT 22	25	50/4	-	-	0		78			no recovery	
SPT 23	30	50/3	-	-	0.4		85			SAND; light gray (GLEY 1) N7/W, med. grained; well sorted, wet;	Oppm
SPT 24	44	50/2	-	-	0.2		86			As above;	Oppm

Merchenville Formation

15ft



LOG OF BORING

CLIENT USEPA Region 3	PROJECT Standard Chlorine of DE	PROJECT NO. 047118
PROJECT LOCATION New Castle DE	COORDINATES	ELEVATION (DATUM)
SURFACE CONDITIONS Dump, cooler (71°F), overcast. S side of gov. Lea Rd near fence line w/ concrete		TOTAL DEPTH 167ft
		DATE START 08-03-04
		DATE FINISH 08-05-04

SAMPLING		DRILLING CONTRACTOR Unitech Drilling Co.	
SAMPLE TYPE	SAMPLE NUMBER	DRILL RIG Mohaw 1500	DRILLER J. Kester
SET 6"	2ND 6"	INSPECTOR Amata Buggins	
3RD 6"	N VALUE	CHECKED BY	
SAMPLE RECOV.		APPROVED BY	

CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOV.	RQD RECOV.	PERCENT RECOV.	RQD	DEPTH IN FEET	SAMPLE TYPE LOG	CLASSIFICATION OF MATERIAL	REMARKS
SPT 25	50/5	-	-	-	-	0	0-1		No recovery;	
SPT 26	50/5	-	-	-	-	0-05	1-2		SAND; As previous.	Oppm.
SPT 27	39	50/3	-	-	-	0-7	2-5		SAND; 2.5Y 7/2 Light gray; med-fine grained; well sorted; wet	Oppm.
SPT 28	50/5	-	-	-	-	0-5	5-7		As above; mixed w/clay	
SPT 29	8	16	17	33	1.0		7-9		SILTY SAND; light gray 2.5Y 7/1 v. fine grained dense; well sorted; dry; clay in very bp.	Oppm.
SPT 30	6	10	10	20	1.4		9-10		CLAYEY SILT; light gray 2.5YR 7/1 dense; well sorted; mod. dry; high % clay + bp of core.	Oppm.
SPT 31	10	13	17	30	1.2		10-11		SILTY CLAY; As above	Oppm.
SPT 32	18	18	23	41	1.5		11-12		SILT; light gray 2.5YR 7/1 grading into CLAY - pale red 10R 7/3 @ 105 ft.	Oppm.
SPT 33	17	17	19	36	1.25		12-13		As above; silt/clay mix to 106.5'	Oppm.
SPT 34	13	16	50/3	-	1.4		13-14		CLAY - red; pale red 10R 7/3	Oppm.
SPT 35	7	13	17	30	1.3		14-15		SILTY CLAY → CLAY; PALE red 10R 7/3 → light gray 5YR 7/1. v. stiff → hard.	Oppm.
SPT 36	7	11	15	26	1.9		15-16		SILTY CLAY; as above light gray 5YR 7/1 hard.	Oppm.
SPT 37	17	34	50/4	-	1.1		16-17		As above; some iron staining	Oppm.
SPT 38	22	34	50/4	-	0.9		17-18		SILTY CLAY → SAND (@ 114.8')	Oppm.
SPT 39	8	10	16	26	0.8		18-19		(same as above) pink 7.5YR 7/3.	Oppm.
							19-20		SAND; light reddish gray 2.5YR 7/1 med-fine grained, well sorted; silt lenses; wet	Oppm.
							20-21		SAND w/ SILT lenses. As above	Oppm.

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LOG OF BORING

BORING NO. PW-03

SHEET 5 OF 5

CLIENT USEPA - Region 3				PROJECT Standard Chlorine of DE.				PROJECT NO. 047118	
PROJECT LOCATION Newcastle, DE				COORDINATES		ELEVATION (DATUM) NA 84		TOTAL DEPTH 147'	
SURFACE CONDITIONS As before				DRILLING CONTRACTOR Unitech Drilling Co				DATE START 08-03-04	
DATE FINISH 08-05-04				SAMPLE TYPE		SAMPLE NUMBER		SET	
SAMPLING				2ND 6"		3RD 6"		N VALUE	
SAMPLE RECOV.				SAMPLE RECOV.		SAMPLE RECOV.		SAMPLE RECOV.	
CORING				CORING		CORING		CORING	
CORE SIZE				RUN NUMBER		RUN LENGTH		RUN RECOV.	
RUN RECOV.				RQD		PERCENT RECOV.		RQD	
DEPTH IN FEET				SAMPLE TYPE		LOG		CLASSIFICATION OF MATERIAL	
REMARKS				REMARKS		REMARKS		REMARKS	

DEPTH IN FEET	SAMPLE TYPE	LOG	CLASSIFICATION OF MATERIAL	REMARKS
121			As above layers of CLAY and SILT.	0ppm
2			SILTY SAND; same color as above.	0ppm
3			well sorted, v-dense; wet.	
4			SAND; light greenish gray 7/104 clay	1. 0ppm
5			Fine grained, well sorted, wet, dense	
6			As above SILTY SAND; as above	0ppm
7			higher % silt.	
8			SAND; light greenish gray 7/104 clay	0ppm
9			as above	
130			Same as above;	0ppm
1				
2			As above; silt/sand mix.	0ppm
3				
4				
5				
6			SAND; light greenish gray; 7/104 clay	0ppm
7			Med. grained, well sorted; festering	
8			v-compacted.	driller noted gravel @ 136' & clay @ 138'
9				
140			CLAY; bluish black, clay 2 50 25/1	(color change also)
1			high organic content; very stiff; gravel @	
2			very top of spoon.	
3				
4				
5				
6			CLAY; light gray GLEY 1 7/N.	end of boring 147'
7			Hard; high plasticity.	
8				LOGGED BY DGS 8/6/2004
9				
0				

EOB