

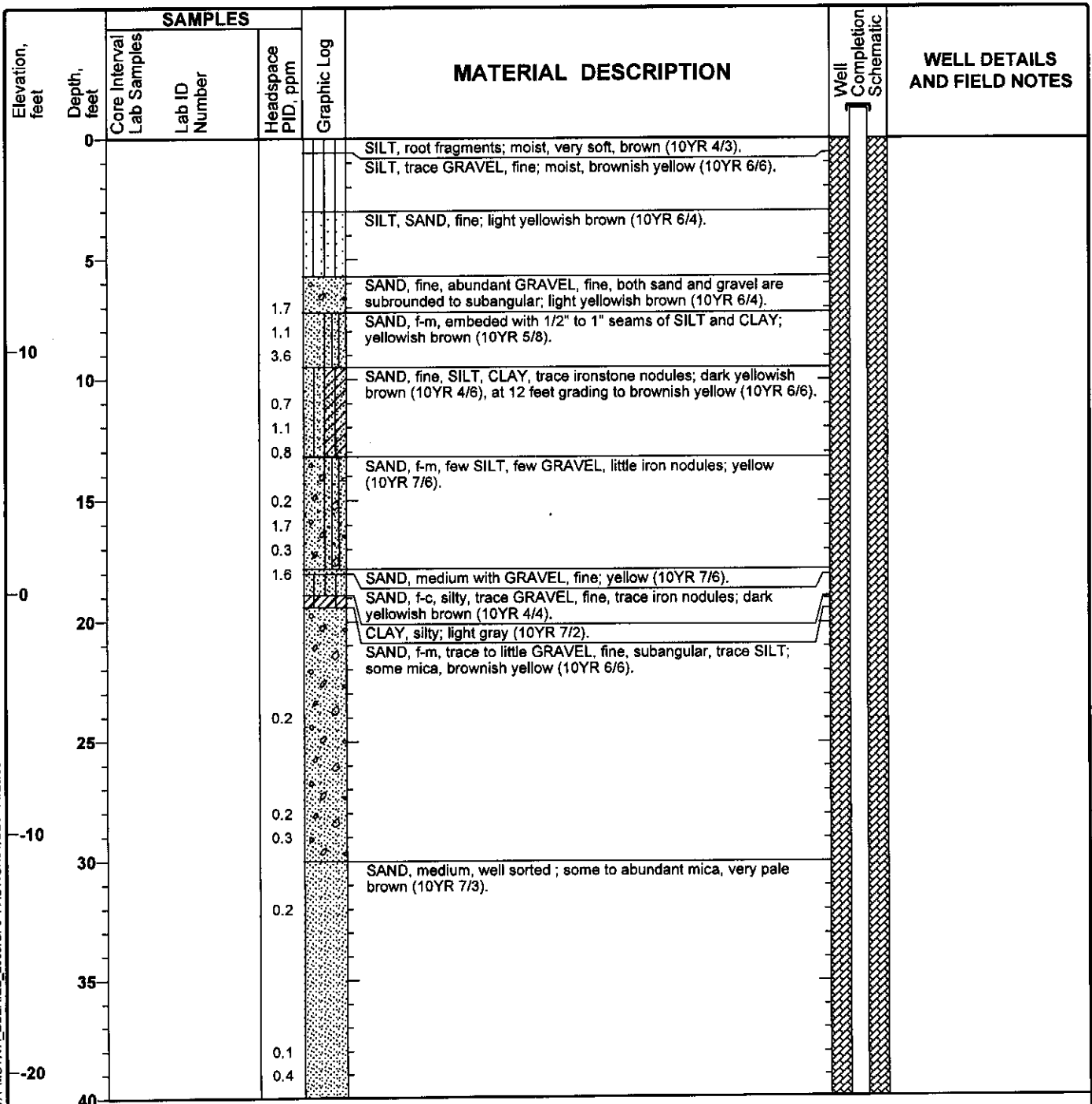
Project: Motiva Perimeter Wells  
 Project Location: DCR Delaware City, DE  
 Project Number:

EC13-27

Log of Monitoring Well D44E

Sheet 1 of 5

Date(s) Drilled	6/03/06	Logged By	Stephen Zahniser	Checked By	Cyrstal Kirby
Drilling Method	Roto Sonic	Drill Bit Size/Type	NA	Total Depth of Borehole	209.0 feet
Drill Rig Type	Roto Sonic	Drilling Contractor	ProSonic Drilling	Surface Elevation	18.80
Groundwater Level(s)		Sampling Method(s)	4" Core Barrel	Top of Casing Elevation	
Location	DCR, Delaware City, DE	Borehole Completion			



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Elevation, feet	Depth, feet	SAMPLES		Headspace PID, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	WELL DETAILS AND FIELD NOTES
		Core Interval Lab Samples	Lab ID Number					
40				0.2				
				1				
				0.3		SAND, medium, GRAVEL, fine, subrounded; yellowish brown (10YR 5/4).		
				0.2		SAND, m-c, trace GRAVEL, fine, subrounded; yellowish brown (10YR 5/4).		
45				0.4				
				0.5				
				0.3				
				0.4				
-30				1.3				
50				0.9				
				0.7				
				0.9				
				1.9				
				0.2				
55				0.5		Sand, medium, GRAVEL, fine, subrounded; yellowish brown (10YR 5/4).		
				0.1		SAND, medium, trace GRAVEL, fine; yellowish brown (10YR 5/4).		
				0.3				
-40				0.2				
60				1.4				
				0.3				
				0.3		SAND, m-c, trace GRAVEL, fine, subrounded; yellowish brown (10YR 5/4).		
65				0.5				
				0.3		- fine gravelly zones at 69.6' and 76.8'		
				0.2				
				1				
-50				0.6				
70				0.3				
				0.8				
				0.2				
				1.7				
75				0.7				
				0.4				
				0.6				
				0.3				
-60				1.3		SAND, m-c, some GRAVEL, f-m, subrounded to rounded; yellowish brown (10YR 5/4).		
80				1		- Gravel increases in abundance with depth.		
				0.5		SAND, m-c, trace GRAVEL, fine, subrounded; brownish yellow (10YR 6/8).		
				0.8		SAND, coarse with some SAND, medium; brownish yellow (10YR 6/8).		
85				0.3		SAND, coarse, with 20% medium (poorly sorted), loose; yellow (10YR 8/6).		
				0.4				

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Elevation, feet	Depth, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	WELL DETAILS AND FIELD NOTES
		Core Interval Lab Samples	Lab ID Number	Headspace PID, ppm				
-70	90			0.4 0.9 2.5 0.4		SAND, medium, trace GRAVEL, f-c; yellowish brown (10YR 5/8) with a 2" layer of dark yellowish brown (10YR 3/6) at 95.7'.	-95/5 Cement Bentonite Mix - 6" boring	
	95			0.5 1.2				
-80	100			0.5		SAND, m-c; moist, loose, yellow (10YR 7/6).		
	105			0.2 0.3		SAND, medium, loose, with iron fragments; yellowish brown (10YR 5/4), at 107 feet grading to yellowish brown (10YR 5/8).		
	110			0.4 1.4		SAND, medium, loose, trace GRAVEL, f-c; reddish yellow (7.5YR 6/8).		
	115			0.1 0.3 0.4		GRAVEL, f-c, very poorly sorted, m-c, sandy; yellowish brown (10YR 5/4). SAND, f-vf, moist, loose, light gray (10YR 7/1), at 111', grades to light gray (2.5Y 7/2), at 112.8' grades to yellow (2.5Y 7/6), at 115.9' grades to pink (5YR 7/4).	Columbia-Potomac Contact (110')	
	120			0.3 0.6		CLAY; moist, soft light gray (5YR 7/1). SAND, medium; yellow (2.5Y 7/6), at 118' grades to pale yellow (2.5Y 7/4), at 118.8' grades to light gray (2.5Y 7/1).		
-100	125			1.2		CLAY; light gray (2.5Y 7/1). CLAY, SAND, medium; gray (2.5Y 7/1), at 119.5 feet grades to pale yellow (2.5Y 7/4). SAND, coarse, silty, trace GRAVEL, fine; light brown (7.5YR 6/4). SAND, fine, silty; loose, moist, reddish brown (2.5YR 5/4). CLAY, coarse sandy; gray (2.5Y 6/1).		
	130			0.1		SILT; white (10YR 8/1), at 122.8 feet grades to white (10YR 8/1) mottled with reddish brown (5YR 5/4) and olive yellow (5Y 6/6), at 123.2 feet grades to white (10YR 8/1) again, at 124 feet grades to white (10YR 8/1). CLAY; very stiff, reddish brown (5YR 4/4) mottled with olive yellow (5Y 6/6) and purple, at 128' grades to light gray (10YR 7/1), at 129.3' trace black lignite, at 129.8' grades to reddish brown (5YR 4/4), at 130' grades to light gray (10YR 7/1), at 130.8' grades to light gray (10YR 7/1) mottled with purple.		
						SILT, trace SAND, very fine; soft to very soft, light gray (10YR 7/1). SAND, f-vf, silty; pale yellow (2.5Y 7/3), at 133.3' grades to red		

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Elevation, feet	Depth, feet	SAMPLES		Graphic Log	MATERIAL DESCRIPTION	Well Completion Schematic	WELL DETAILS AND FIELD NOTES
		Core Interval Lab Samples	Lab ID Number				
					(2.5YR 4/6), at 133.5' grades to pale yellow (2.5Y 7/3).		
	135			0.9			
				0.3	GRAVEL, f-c, silty, trace SAND, f-vf; pale yellow (2.5Y 7/3).		
				0.3	SAND, f-vf, silty; pale yellow (2.5Y 7/3), at 133.3 feet grades to red (2.5YR 4/6).		
	120			4.5	SAND, f-vf; moist, loose, pale yellow (2.5Y 7/3).		
					SAND, f-vf, silty; pale yellow (2.5Y 7/3), at 133.3 feet grades to red (2.5YR 4/6).		
	140			0.6	SAND, v-f, silty; wet, light gray (10YR 7/1).		
				2.5	SILT, v-f, sandy; soft, light gray (10YR 7/1).		
				3.3	SAND, v-f, silty; wet, light gray (10YR 7/1).		
	145			0.6	SILT, v-f, sandy; light gray (10YR 7/1), at 144.1' becomes light gray (10YR 7/1) mottled with yellowish red (5YR 5/6).		
				2.2			
				0.4	SILT, trace SAND, very fine; light gray (10YR 7/1).		
				1.7	SILT, v-f, sandy; light gray (10YR 7/1) mottled with yellowish red (5YR 5/6).		
	130				SAND, fine; loose, light gray (10YR 7/1).		
				0.4	SILT, v-f, sandy; light gray (10YR 7/1) mottled with yellowish red (5YR 5/6).		
	150			3.1	SAND, very fine, silty; moist, loose, light gray (10YR 7/1) mottled with yellowish red (5YR 5/6).		
				1.9			
				3.3	SILT, v-f, sandy; light gray (10YR 7/1) mottled with yellowish red (5YR 5/6).		
	155				SILT, trace to little CLAY, trace SAND, very fine; moist, stiff to very stiff, light gray (10YR 7/1) mottled with yellowish red (5YR 5/6).		
				3.3	SILT, trace to little CLAY; stiff to very stiff, light gray (10YR 7/1).		
				4.3	CLAY; high plasticity, yellowish red (5YR 5/6), at 157.5 feet grades to light gray (10YR 7/1).		
	140			1			
				2.1	SILT, clayey; stiff, light gray (10YR 7/1).		
	160			0.8	SILT, trace SAND, very fine; light gray (10YR 7/1).		
				0.4	SILT, clayey; light gray (10YR 7/1).		
				0.9	SILT, trace SAND, very fine; light gray (10YR 7/1).		
					SILT, trace SAND, very fine; light gray (10YR 7/1).		
	165			1.4	SAND, very fine, trace SILT; moist, loose, light gray (10YR 7/1) mottled with yellowish red (5YR 5/6).		
				1.2	CLAY, silty; light gray (10YR 7/1) mottled with yellowish red (5YR 5/6).		
				1.7			
				0.6	SAND, very fine, embedded with 1/8" thick light gray CLAY lenses and ironstone modules; yellowish red (5YR 4/6).		
				1.2	SILT, clayey, with various 1/4" to 1/2" very fine SAND lenses; light gray (10YR 7/1) mottled with yellowish red (5YR 4/6).		
	150			1.7			
				1.5	SAND, f-vf, silty; wet, loose, light gray (10YR 7/1).		
	170			1.8			
				0.3	SAND, very fine, silty, interbedded with 1/4" to 1/2" thick very fine sand lenses; light gray (10YR 7/1).		
				1.3	SAND, v-f; light gray (10YR 7/1), at 176.5 feet grades to yellowish red (5YR 4/6).		
				0.8			
	175			5.3			
				0.5			
				0.3			
	160			0.2	SAND, f-vf, silty; light gray (10YR 7/1) mottled with yellowish red (5YR 4/6).		
	180						

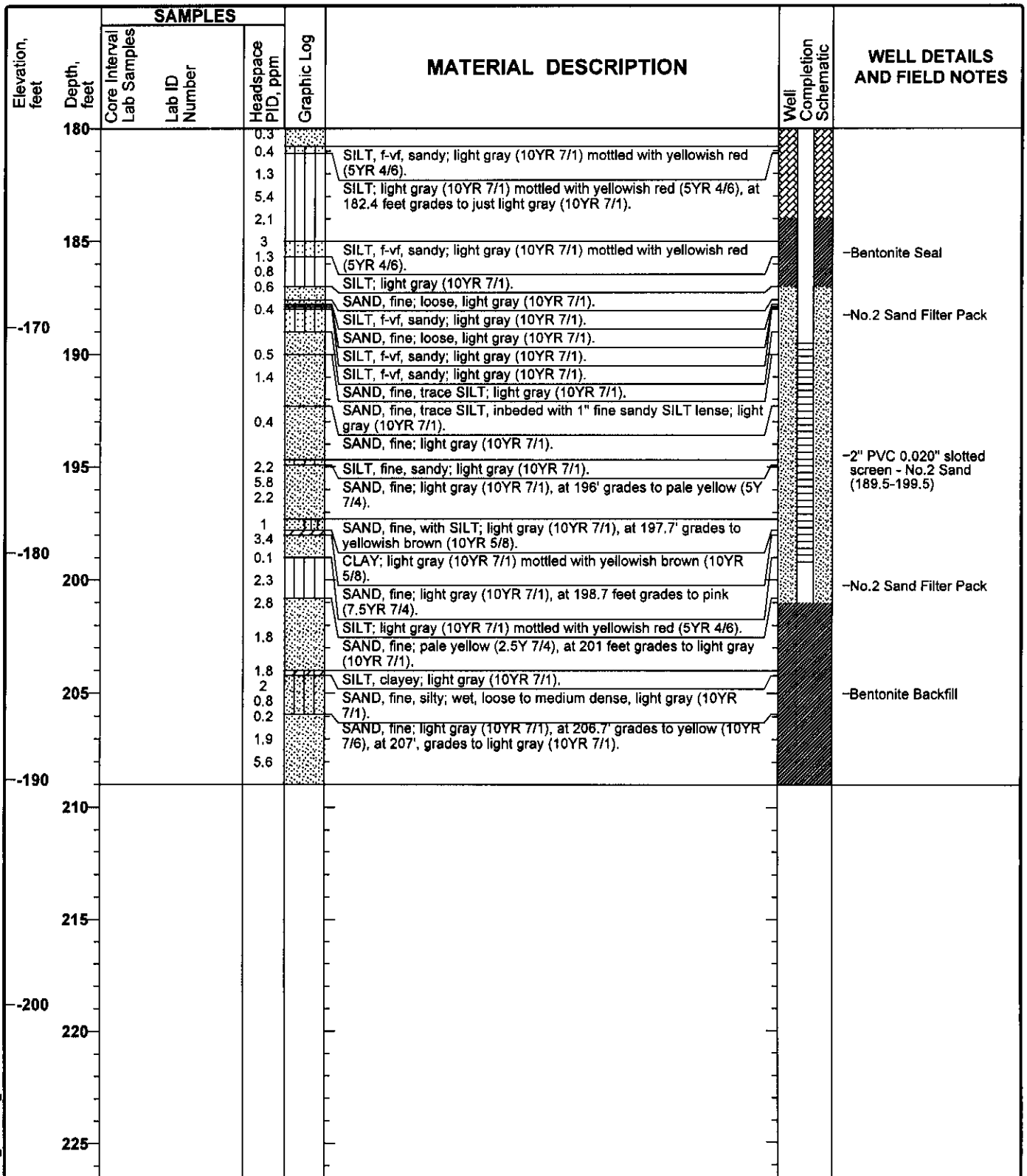
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