



MWH Americas, Inc.
335 Phoenixville Pike
Malvern, Pennsylvania 19355

Boring ID: 24b-TB4 (Detailed)

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DeS4-13

Project Name: Valero
Location: Delaware City, DE
Project Number:
Date Started: 9/13/06
Date Finished: 9/15/2006
Drilling Method: Direct Push
Sampling Method:
State Permit Number: NA

Boring Location: Delaware City Refinery
Drilling Company: B. L. Myers Bros. ()
Ground Elevation (ft/msl): 31.0
Total Depth (ft): 80.0'
Boring Diameter (in): "
Water Level During Drilling (ft/bgs):
Weather Conditions:
Logged By: Bryn Welker, Dana Lombardo

Depth (feet)	Blow Counts	Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
0			0.0			ML		0' - 6' Dark brown (10YR 3/3) SILT, trace rootlets, damp	Estimated Coordinates
		4	0.0						
5			0.0			ML		6' - 14' Very dark gray (2.5Y 3/0) SILT, little clay, trace mica, moist, trace black wood fragments, slight HC odor	
		4.8	0.0						
10			0.0					10.5' 10.5-14 black (10YR 2/1) mottling	
		3.4	0.0						
15			0.0			ML		13.5' Black plastic debris	
			0.0					14' - 20.5' Very dark gray (2.5Y 3/0) SILT, some fine sand, moist, saturated 15' to 16'	
		3	0.0					15' Grades to Very dark gray (5Y 3/1)	
			0.0					16' Grades to Very dark gray (2.5Y 3/0)	
20			0.0			SW		20.5' - 20.8' Very dark gray (2.5Y 3/0) fine-grained SAND, trace coarse-grained gravel, trace coarse and medium sand, trace silt, moist	
		2.7	0.6			SM		20.8' - 25.2' Very dark gray (5Y 3/1) fine-grained SAND, some silt, trace coarse-grained sand, moist	
			1.6						
25			0.0			CL		25.2' - 25.5' Dark gray (5Y 3/1) CLAY, some silt, little mica, moist	
			0.0			SM			
		2.2	0.4			CL		25.5' - 26.5' Very dark gray (5Y 3/1) fine-grained SAND, some silt, little mica, moist, trace organics (rootlets, possible fragmitites, poss wood)	
			2.3						
			1.2					26.5' - 35' Very dark gray (5Y 3/1) CLAY, some silt, little mica trace possible fregmities, moist, HC odor	
30			11.4					27' Impacted soil stopped between 27' and 35'	

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pick

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Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
0							
3	0.0			SW ML ML SP CL ML		35' - 35.3' Grayish brown (2.5Y 5/2) medium-grained SAND, little coarse-grained sand, trace fine-grained sand, saturated	
3	0.0					35.3' - 35.8' Interbedded Olive gray (5Y 4/2) SILT, some fine-grained sand, little mica, saturated and Yellow (2.5Y 7/6) medium-grained SAND, trace coarse and fine-grained sand, saturated	
3	0.0			PT		35.8' - 36.2' Olive gray (5Y 4/2) SILT, some fine-grained sand, little mica, saturated	
3	0.0					36.2' - 36.5' Yellow (2.5Y 7/6) medium-grained SAND trace fine-grained sand, trace coarse-grained sand, saturated	
3	0.0					36.5' - 37' Very dark gray (2.5Y 3/0) CLAY, some silt, trace mica, saturated, stiff	
3	0.0					37' - 39.7' Black (2.5Y 2/0) SILT, some clay, trace mica, saturated, soft, trace rootlets	
3	0.0					39.7' - 46' Black (5YR 2.5/1) PEAT (lots of organics/rootlets, possible wood and fragmities), little silt, saturated	
2.2	0.0			ML PT		46' - 46.7' Very dark grayish brown (10YR 3/2) SILT, some clay, little organics (rootlets, possible fragmities, i.e. peat), saturated, semi stiff	
2.2	0.0			CL- ML		46.7' - 48' Black (5YR 2.5/1) PEAT (lots of organics/rootlets, possible wood and fragmities) some clay, with silt, saturated	
3.25	0.0					48' - 52.2' Brown (10YR 5/3) CLAY and SILT, trace mica, trace rootlets, trace possible fragmities, trace leaves and wood, saturated	
3.25	0.0			SM		52.2' - 57.5' Brown (10YR 5/3) fine-grained SAND, some silt, little mica, saturated	
3.3	0.0					57.5' - 57.6' 1/2" to 1" rounded pebbles, some fine to medium-grained sand	
3.3	0.0			GP SW		57.6' - 60' Brown (10YR 5/3) medium-grained SAND, some coarse-grained sand, little fine-grained sand, trace fine to coarse-grained gravel (sub angular to sub rounded, trace silt, saturated	
2.9	0.0			ML SM SM		60' - 60.5' Yellowish brown (10YR 5/8) mottled SILT with grayish brown (10YR 5/2) mottled SILT, little mica, trace fine-grained sand	
2.9	0.0					60.5' - 62' Yellowish Brown (10YR 5/3) medium-grained SAND, some silt, little sub to sub angular (fractured) pebbles, trace medium to coarse sub angular to sub rounded gravels, trace coarse sand, saturated	
	0.0			CL			



Depth (feet)	Blow Counts	Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
61			0.0					61' Grades to yellow (10YR 5/8) - oxidation, trace oxidation of coarse gravel	
62		0.8	0.0					62' - 65' Dark yellowish brown (10YR 4/8) fine-grained SAND, some silt, little medium-grained sand and mica, saturated	
65			0.0					65' - 75' Very dark gray (7.5YR 3/0) CLAY, some silt, some laminated mica	
70			0.0					70' Grading to SAA with fine-grained SAND and silty laminated with little mica	
75		1.5	0.0						
75			0.0						
75			0.1			ML		75' - 85' Very dark grayish Brown (2.5Y 3/2) SILT, little fine-grained sand, little mica, wet at 85'	
76			0.1					76' Little fine-grained sand, trace sub rounded to rounded pebbles (1" to 1.5")	
76.5			0.1					76.5' Some fine-grained sand and trace sub rounded coarse-grained gravel, wet	
80		2	0.1						
84			0.1					84' Grading to SAA with increasing amounts of fine-grained sand	
85									
90									
95									
100									