

**Project: Motiva - Monitoring Well and Soil Boring Data**

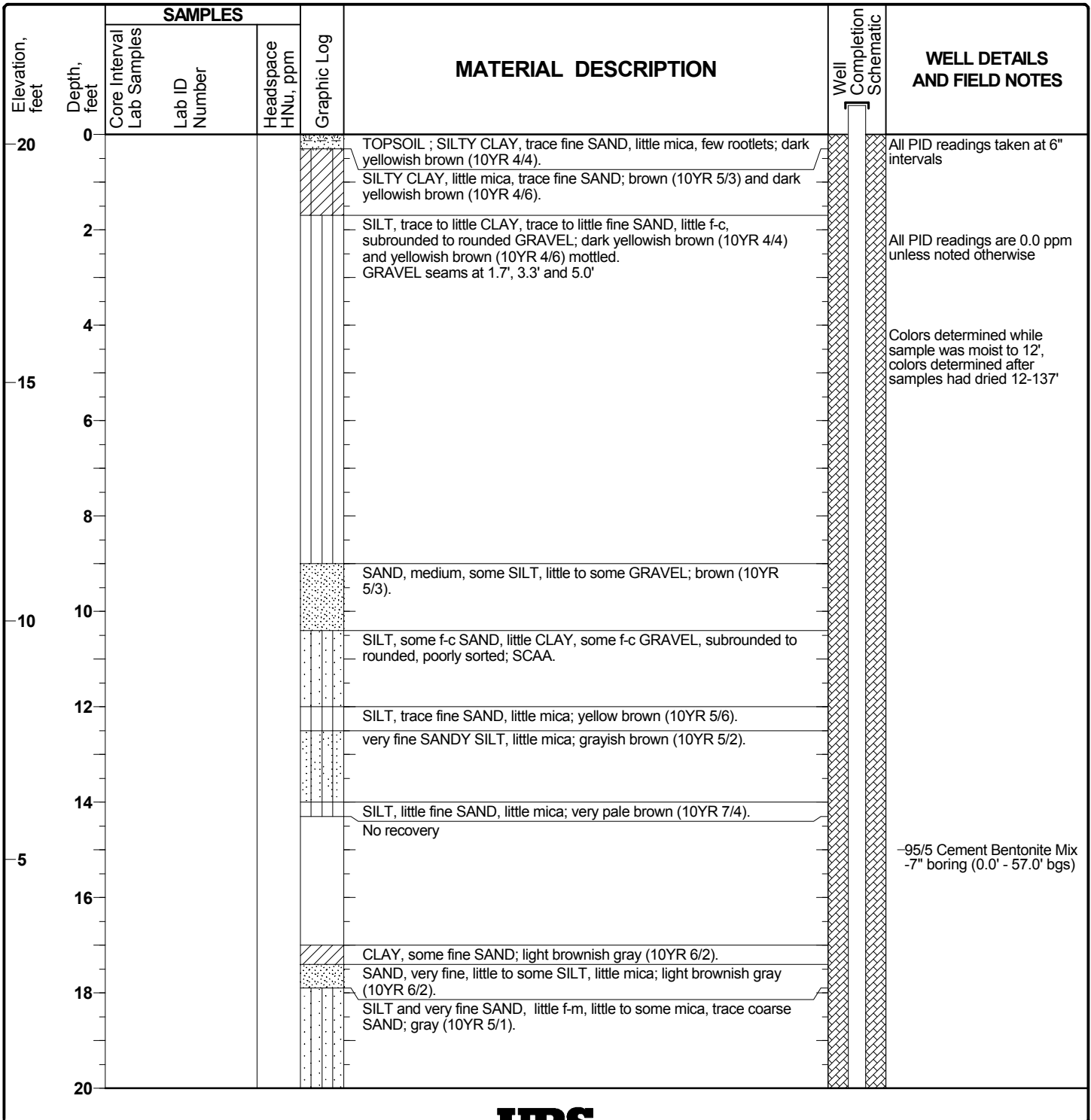
**Project Location: Delaware City Refinery**

**Project Number: 20240412.W1000**

**Log of Monitoring Well D55B**

Sheet 1 of 7

Date(s) Drilled	5/30/2007	Logged By	Stephen Zahniser	Checked By	
Drilling Method	Roto Sonic	Drill Bit Size/Type		Total Depth of Borehole	137.0 feet
Drill Rig Type	Roto-Sonic	Drilling Contractor	Boart Longyear	Surface Elevation	20.20 NAVD88
Groundwater Level(s)		Sampling Method(s)		Top of Casing Elevation	
Location	Delaware City Refinery - Soy Field		Borehole Completion		



MOTIVA MOTIVA-ALL.GPJ FAGWGN01.GDT 5/13/08



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**Log of Monitoring Well D55B**

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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 HNu, ppm				
0	20							
	22							
	24							
-5	26							
	28							
-10	30							
	32							
	34							
-15	36							
	38							
-20	40							
	42							

interbedded SILT, SAND, very fine, CLAY; gray (10YR 5/1), clay at base is (10YR 8/5).

SAND, vf-f, some mica;  
 - yellowish brown (10YR 5/6) to 23.5'  
 - SCAA mottled with light brownish gray (10YR 6/2) to 24.0'  
 - brownish gray (10YR 6/2) to 27.0'  
 - pale brown (10YR 6/3) and strong brown (7.5YR 5/6) mottled 27-27.1'.

SAND, vf-f, little to some SILT, micaceous; gray (2.5Y 5/1).

SILT, some fine SAND, micaceous; light yellowish brown (2.5Y 6/3).  
 SAA, mica is more coarse; olive gray (5Y 5/2).

SILT, little very fine SAND, micaceous; dark gray (2.5Y 4/1).  
 - CLAY seam, pale olive (10YR 6/3) at 35.3 (0.1' thick)

-95/5 Cement Bentonite Mix  
 -7" boring (0.0' - 57.0' bgs)

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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 HNu, ppm				
44								
-25								
46					SILTY CLAY, trace to little very fine SAND, trace coarse well rounded SAND, micaceous; SCAA.		Quaternary-Merchantville Contact (45.7')	
48								
-30								
50								
52								
54								
-35								
56								
58								
-40								
60								
62								
64								
-45								
66							-95/5 Cement Bentonite Mix - 6" boring	

MOTIVA MOTIVA-ALL.GPJ FAGWGN01.GDT 5/13/08



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**Log of Monitoring Well D55B**

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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 HNu, ppm				
68								
-50	70							
	72							
	74							
-55	76							
	78							
-60	80							
	82							
-65	84				SILTY CLAY, trace very fine SAND, trace coarse, well rounded SAND, micaceous, occasional glauconitic lenses; SCAA. - pyritized bioturbation and lignite at 85'			
	86							
	88				SILTY CLAY, little mica, glauconitic; SCAA.			
	90							

MOTIVA MOTIVA-ALL.GPJ FAGWGN01.GDT 5/13/08



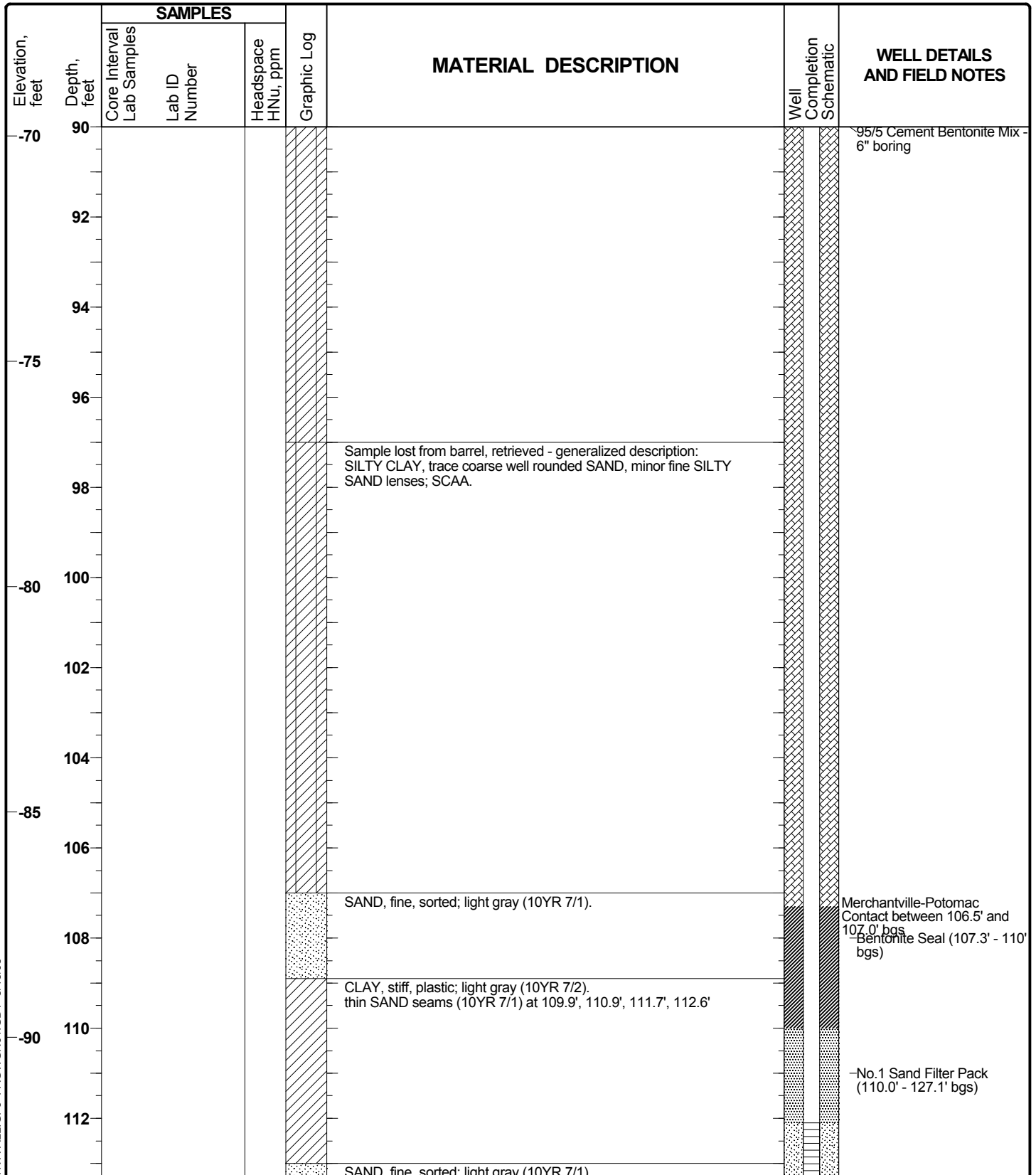
**Project: Motiva - Monitoring Well and Soil Boring Data**

**Project Location: Delaware City Refinery**

**Project Number: 20240412.W1000**

**Log of Monitoring Well D55B**

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MOTIVA MOTIVA-ALL.GPJ FAGWGN01.GDT 5/13/08



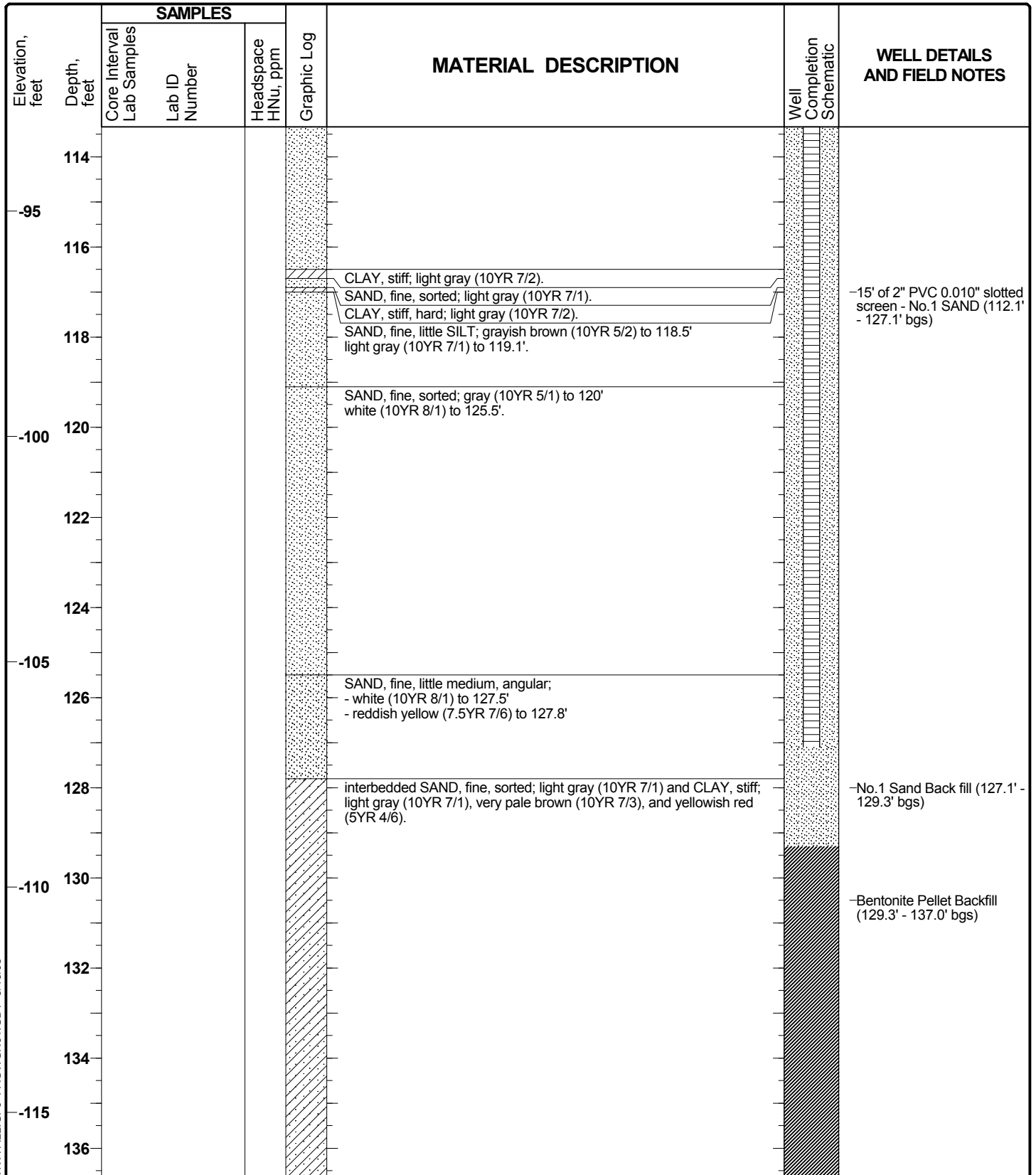
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**Log of Monitoring Well D55B**

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**Log of Monitoring Well D55B**

Sheet 7 of 7

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 HNu, ppm				
					EOB (137.0')			
	138							
-120	140							
	142							
	144							
-125	146							
	148							
-130	150							
	152							
	154							
-135	156							
	158							
	160							

MOTIVA MOTIVA-ALL.GPJ FAGWGN01.GDT 5/13/08



06/12/2007 che

**Project Name:** Valero  
**Location:** Delaware City, DE  
**Project Number:**  
**Date Started:** Unknown  
**Date Finished:** Unknown  
**Drilling Method:** Roto-Sonic  
**Sampling Method:**  
**State Permit Number:** NA

**Boring Location:** Delaware City Refinery  
**Drilling Company:** ProSonic ()  
**Ground Elevation (ft/msl):**  
**Total Depth (ft):** 137.0'  
**Boring Diameter (in):** "  
**Water Level During Drilling (ft/bgs):**  
**Weather Conditions:**  
**Logged By:** Stephon

Depth (feet)	Blow Counts	Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
0						CL		0' - 0.3' Dark yellowish brown (10YR 4/4) silty CLAY, little mica, trace fine-grained sand, few rootlets	
1						CL		0.3' - 1.7' Brown (10YR 5/3) and dark yellowish brown (10YR 4/6) silty CLAY, little mica, trace fine-grained sand	
2						ML		1.7' - 9' Dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) mottled SILT, little fine-coarse-grained subrounded to rounded gravel, trace to little fine-grained sand and clay	
3								gravel appear to have some layer minor at 1.7'bgs, 3.3' bgs and 5.0' bgs	
4									
5									
6									
7									
8									
9						SP-SM		9' - 10.4' Brown (10YR 5/3) medium-grained SAND, some silt, little to some gravel	
10									
11						ML		10.4' - 12' SILT, some fine-coarse-grained subrounded to rounded gravel and fine-coarse-grained sand, little clay, reworked sediments, very poorly sorted	
12						ML		12' - 12.5' Yellowish brown (10YR 5/6) SILT, little mica, trace fine-grained sand,	
13						ML		12.5' - 14' Grayish brown (10YR 5/2) very fine-grained sandy SILT, little mica	
14						ML		14' - 14.3' Very pale brown (10YR 7/4) SILT, little fine-grained sand	
15								14.3' - 17' No Lithology	





Depth (feet)	Blow Counts	Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
15									
16									
17						CL		17' - 17.4' CLAY, some fine-grained sand	
18						SP-SM		17.4' - 17.9' Light brownish gray (10YR 6/2) very fine-grained SAND, little to some silt, little mica	
19						ML		17.9' - 20.5' Gray (10YR 5/1) SILT and very fine-grained SAND, little to some mica, little fine-medium-grained sand, trace coarse-grained sand	
20									
21						ML		20.5' - 23.2' Gray (10YR 5/1) SILT, very fine-grained SAND and CLAY interbedded	
22								(10YR 8/5) CLAY at 23.0' bgs	
23									
24						SP		23.2' - 27.1' Yellowish brown (10YR 5/6) very fine-grained SAND, some mica	
25								23.5' mottled with light brownish gray (10YR 6/2)	
26								24' (10YR 6/2)	
27						SP-SM		27' pale brown (10YR 6/3) and strong brown (7.5YR 5/6) mottled	
28								27.1' - 28.4' Gray (2.5Y 5/1) very fine-grained SAND, little to some silt, micaceous	
29						ML		28.4' - 33.3' Light yellowish brown (2.5Y 6/3) SILT, some fine-grained sand, micaceous	
30								28.8' olive gray (5Y 5/2), mica more coarse	
31									
32									
33									



Depth (feet)	Blow Counts	Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
33						ML		33.3' - 45.7' Dark gray (2.5Y4/1) SILT, little very fine-grained SAND, micaceous	
34									
35									
36								35.5' pale olive (10YR 6/3) clay seam (0.1')	
37									
38									
39									
40									
41									
42									
43									
44									
45									
46						CL		45.7' - 83.4' Silty CLAY, micaceous, trace to little very fine-grained sand, trace coarse-grained well rounded sand	
47									
48									
49									
50									
51									



Depth (feet)	Blow Counts	Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
52								52' Silty CLAY, micaceous, trace to little very fine-grained sand, trace coarse-grained well rounded sand	
53									
54									
55									
56									
57									
58									
59									
60									
61									
62									
63									
64									
65									
66									
67									
68									
69									



Depth (feet)	Blow Counts	Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
70								70' Silty CLAY, micaceous, trace to little very fine-grained sand, trace coarse-grained well rounded sand	
71									
72									
73									
74									
75									
76									
77									
78									
79									
80									
81									
82									
83								83.4' - 87.6' Silty CLAY, micaceous, trace very fine and coarse-grained well rounded sand, glauconite lenses throughout <i>cannot read handwriting</i> Pyrite ? lignite at 85' bgs	
84						CL			
85									
86									
87									

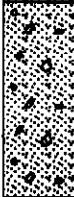



Depth (feet)	Blow Counts	Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
88						CL		87.6' - 97' Silty CLAY, glauconite, little mica	
89									
90									
91									
92									
93									
94									
95									
96									
97						CL		97' - 107' Lost recovery, pulled top from mud tub bottom from shoe	
98								Silty CLAY, minor fine-grained silty sand lenses, little coarse-grained well rounded sand	
99									
100									
101									
102									
103									
104									
105									



Depth (feet)	Blow Counts	Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
106									
107						SP		107' - 108.9' Light gray (10YR 7/1) fine-grained sorted SAND	
108									
109						CH		108.9' - 113' Light gray (10YR 7/2) CLAY, stiff, plastic, at 109.9' bgs and 110.9' bgs thin sand seam	
110									
111									
112									
113						SP		113' - 116.5' Light gray (10YR 7/1) fine-grained sorted SAND	
114									
115									
116									
117						CH SP CH SP SM		116.5' - 116.7' (10YR 7/2) CLAY, stiff 116.7' - 116.9' (10YR 7/1) fine-grained sorted SAND 116.9' - 117' (10YR 7/2) CLAY, stiff, hard 117' - 119.1' Grayish brown (10YR 5/2) fine-grained SAND, little silt	
118								118.5' light gray (10YR 7/1)	
119						SP		119.1' - 125.5' Gray (10YR 5/1) fine-grained sorted SAND	
120								120' white (10YR 8/1)	
121									
122									
123									



Depth (feet)	Blow Counts	Recovery (inches)	PID (ppm)	Sample ID	Sample Interval	USCS	Lithology	Lithologic Description	Remarks
124									
125									
126						SP		125.5' - 127.8' White (10YR 8/1) fine-grained SAND, little medium-grained angular gravel, reddish yellow (7.5YR 7/6) at base	
127									
128						SP-SC		127.8' - 137' Interbedded light gray (10YR 7/1) fine-grained sorted SAND and light gray (10YR 7/2, very pale brown (10YR 7/3) and yellowish red (5Y 4/6) CLAY,	
129									
130									
131									
132									
133									
134									
135									
136									
137								137' End of Boring	
138									
139									
140									
141									