

JJB

January 17, 2002

Ms. Tracy Bell  
KeySpan Energy  
One Metrotech Center  
Brooklyn, New York 11202

Subject: Delineation of Fuel Oil Contaminated Soil at the  
Former Philadelphia Coke Company Site, Philadelphia, Pennsylvania  
Project No. 42-87C2839A.00 00012

Dear Ms. Bell:

URS Corporation (URS) is pleased to provide our letter report summarizing results of a subsurface investigation to delineate the extent of visible fuel oil contamination in soil at the Former Fuel Oil Blending Area (Site) on the Former Philadelphia Coke Company Property in Philadelphia, Pennsylvania (**Figure 1**). The report also provides estimates of contaminated soil volumes, based on both these recent and previous investigations. This work was performed for KeySpan Energy (KeySpan) by URS in accordance with KeySpan Purchase Order No. 61301 (Revision 1) dated November 29, 2001.

## **BACKGROUND**

In connection with KeySpan's evaluation of environmental conditions at the former Philadelphia Coke Company Property (Property) acquired by KeySpan as part of its acquisition of Eastern Enterprises, Inc. (former owners of the Property), KeySpan investigated existing pipeline segments associated with a former fuel oil blending operation. No. 2 fuel oil was discovered and subsequently removed from the pipe segments in 2001 by Miller Environmental Group, Inc. (Miller) of Paulsboro, New Jersey under contract to KeySpan.

During this oil removal process and related excavations, oil was discovered as a light non-aqueous phase liquid (LNAPL) floating on the perched groundwater near the western terminus of the pipe segments (**Figure 1**). This discovery led to the further evaluation of the extent of fuel oil contamination, as discussed in this report.

## **Fuel Blending Area History**

It is not known when the fuel oil blending operation was initiated. However, the storage tanks and blending appurtenances were demolished in the 1985 timeframe. It is also not known whether the fuel oil presently in the subsurface was sourced from blending operations or from the demolition. When URS (formerly Woodward-Clyde) first began working on another area of the Property in 1986, all former fuel oil blending equipment had been removed and the Site was open land.

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In 1988 during a regulatory agency inspection of the Property, oily residue was observed on the soil surface near a former pump house within the Area. This prompted a series of investigations of Area contamination between 1988 and 1991 and resulted in design and construction of a comprehensive remediation project. The project was constructed in 1991 and initiated in 1992. It involved excavation and removal of fuel oil sources like subsurface interconnecting piping (between the former aboveground tanks and the pump house) and oily residue in the basement of the former pump house. The project also involved a complex bioremediation process that targeted both the surface and subsurface soils. The process was operated for almost two years with moderate success in reducing hydrocarbon concentrations in the surface (0 to 3 ft) soils but with limited success with the deeper contamination. The process was shut down in late 1993 and above-grade facilities dismantled and removed in early 1998. There has been no significant activity at the Area since that time.

Two groundwater-monitoring wells (MW-13 and MW-14) were installed in late 1989 in response to regulatory agency requests. These wells were sampled quarterly, beginning in January 1990 and ending in October 1998. Groundwater from Well MW-13 has consistently met Pennsylvania Department of Environmental Protection (PADEP) water quality criteria. Groundwater from Well MW-14 has consistently been very silty and has shown detectable levels of polycyclic aromatic hydrocarbons (PAHs) in unfiltered samples. However, filtered samples of water from MW-14 showed the groundwater met water quality criteria, thus indicating the PAH contaminants are associated with the sediment.

## **SUBSURFACE INVESTIGATION**

On Wednesday, November 28, 2001, URS coordinated the subsurface investigation and Miller provided the excavation equipment and labor. A total of 18 test pits were excavated, 15 near the western terminus of the former oil pipeline and within Site, and three at the eastern oil pipeline terminus near the former coal pier head (**Figure 1**). Observations made from the test pit excavations are summarized in **Table 1**. Test pit logs are included in **Appendix A**. Photographs of test pits and the excavation areas are included in **Appendix B**.

Test Pit 1 was excavated near the reported location of an oil leak from the western end of the former oil pipeline. The pipeline was not located, but some oil contamination was observed in the soil in a layer approximately 4 feet thick, above and immediately below the water table. A thin layer of fuel oil was observed floating on the water table in the test pit excavation. Based on these observations, Test Pits 2 through 10 were excavated within the soil-bermed area of the Site to evaluate the extent of visible oil contamination.

Test Pits 11 through 15 were excavated outside the soil-bermed area of the Site to define the areal extent of contamination downgradient (groundwater gradient per **Figure 1**) of the pipeline leak and Site. Of these five test pits, visible soil contamination was only observed in Test Pit 12, located between the railroad and the soil-bermed Site, approximately 25 feet east of the pipeline leak area (**Table 1, Figure 1**).

Observations made from Test Pits 1 through 15 are summarized as follows:

- Visible fuel oil contamination present in the soil as a result of the apparent leak at the western terminus of the pipeline is limited in extent to an estimated 25-foot radius.
- Fuel oil contamination from former (i.e., pre-1986) fuel oil blending operations are apparent within the Site.
- Fuel oil contamination, from either the western pipeline terminus leak or operations at the Site, does not appear to extend in a downgradient (groundwater) direction beyond the western side of the railroad.
- Visible fuel oil contamination is generally present in a relatively thin soil zone between 1 and 2 feet above and 1 to 2 feet below the observed water table. Exceptions were observed in Test Pits, 1 and 12 that were closest to the western pipeline terminus leak area where the visible soil contamination was approximately 4 feet thick.

Test Pits 16, 17, and 18 were excavated at the former coal pier head near the eastern terminus of the oil pipeline(s). From **Table 1**, no significant fuel oil contamination was observed in the soil at these locations.

### **ESTIMATES OF CONTAMINATED SOIL VOLUME**

In order to estimate the total volume of soil visually contaminated with fuel oil, URS made several assumptions:

1. Based on the test pits observed within the Site area (e.g., Test Pits 1 through 10), residual fuel oil remains in a relatively thin soil zone immediately above and below the perched water table throughout most of the Site.
2. Comparison of the 2001 subsurface data to previous (1988, 1989, and 1990) soil boring and test pit data for the entire Site area suggests that much of the historic fuel oil contamination remains at or near the water table.
3. Comparison of these same data also suggest that the remediation activities performed in the 1992 and 1993 timeframe removed visible fuel oil and reduced petroleum hydrocarbon concentrations in the upper several feet of the unsaturated zone throughout the Site area.
4. From **Table 1**, the average estimated thickness of the visibly contaminated soil zone is 3 feet.

Using these conditions as a basis, and assuming they are representative of the entire Site area (approximately 2.8 acres), a volume of 13,800 cubic yards is estimated. This estimate may be conservative, but is based on the assumptions noted above.

Contamination resulting directly from the apparent pipeline leak is limited to a relatively small area (25-foot radius estimated) and accounts for approximately 75 cubic yards of visibly contaminated soil (assuming a 4-foot thickness per Test Pits 1 and 12).

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Of particular importance is the indication that fuel oil contamination is apparently not spreading in a downgradient (groundwater) direction toward the Delaware River beyond the Site area defined by previous (1988 - 1990) investigations. This observation, coupled with KeySpan's recent removal of oil within the remaining pipeline segment and remediation work completed in 1992-1993 by Eastern Enterprises to remove fuel oil source material (subsurface interconnecting pipes between the former aboveground tanks and oily debris from the former pump house basement), should eliminate potential fuel oil sources at the Site.

URS appreciates this opportunity to be of service to KeySpan and looks forward to future assignments. Please do not hesitate to call at (215) 619-4119 should you have any questions pertaining to this report.

Very truly yours,

James V. Husted, P.E.  
Principal Engineer

Attachments

cc: G. Riehle, URS

**Table 1**  
**Summary of Observed Subsurface Conditions**  
**Area of Former Oil Pipeline(s) and Fuel Blending Area**  
**Former Philadelphia Coke Company Property**  
**Philadelphia, Pennsylvania**

Test Pit Description		Subsurface Conditions Observed					Notes
Number	Location	Fuel Oil Contamination Present	Estimated Depth Range of Visible Fuel Oil Contamination (ft)	Estimated Thickness of Visible Fuel Oil Contamination (ft)	Depth to Groundwater (ft)	Extent of Fuel Oil Observed on Groundwater	
1	In soil berm of former blending area near western pipeline terminus	Yes	2.5 - 6.5	4	5.5	Thin Layer	
2	In former tank farm area approx. 20 ft west of Pit 1	Yes	4.5 - 7.0	2.5	6	Thin Layer	
3	In former tank farm area approx. 30 ft west of Pit 2	Yes	4.0 - 6.5	2.5	5	Thin Layer	
4	In former tank farm area approx. 30 ft west of Pit 2	Odor Only	Not Observed	N/A	5.5	Not Observed	Strong fuel oil odor in saturated zone soil but no visible contamination
5	In former tank farm area approx. 35 ft south of Pit 1	Yes	4.5 - 7.0	2.5	5.5	Slight Sheen	
6	In former tank farm area approx. 40 ft south of Pit 5	Yes	4.5 - 8.0	3.5	5.5	Thin Layer	
7	In former tank farm area approx. 35 ft south of Pit 5	Yes	4.5 - 8.0	3.5	5.5	Slight Sheen	
8	In former tank farm area approx. 35 ft south of Pit 5	Yes	4.5 - 8.0	3.5	5.5	Thin Layer	
9	At southern end of former tank farm area next to former recovery well	Yes	4.5 - 7.0	2.5	5.5	Not Observed	
10	In former tank farm area near former pump test well	Yes	4.5 - 7.0	2.5	5.5	Slight Sheen	
11	Between railroad and former tank farm area berm south of oil line(s)	Yes	4.5 - 6.5	2	5	Slight Sheen	
12	Between railroad and former tank farm area berm over former plant RCP drain line	Yes	2.0 - 6.0	4	5	Thin Layer	Crown of 24 or 30-inch RCP former plant drain line encountered at 4 ft.
13	Between railroad and former tank farm area berm north of oil line(s)	No	Not Observed	N/A	5.5	Not Observed	
14	East side of railroad and west of oil line(s) end	No	Not Observed	N/A	5	Not Observed	
15	East side of railroad and west of oil line(s) end between Pits 11 and 14	No	Not Observed	N/A	5.5	Not Observed	Lot of brick, concrete and metal rubble
16	At head of former coal pier	Odor Only	Not Observed	N/A	6	Not Observed	Slight petroleum odor but no contamination observed
17	Approx. 35 ft south of Pit 16	No	Not Observed	N/A	6	Not Observed	
18	Approx. 22 ft northwest of Pit 16	No	Not Observed	N/A	5.5	Not Observed	Slight petroleum odor but no contamination observed



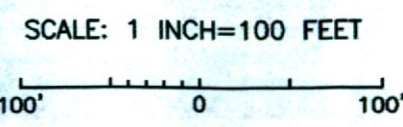
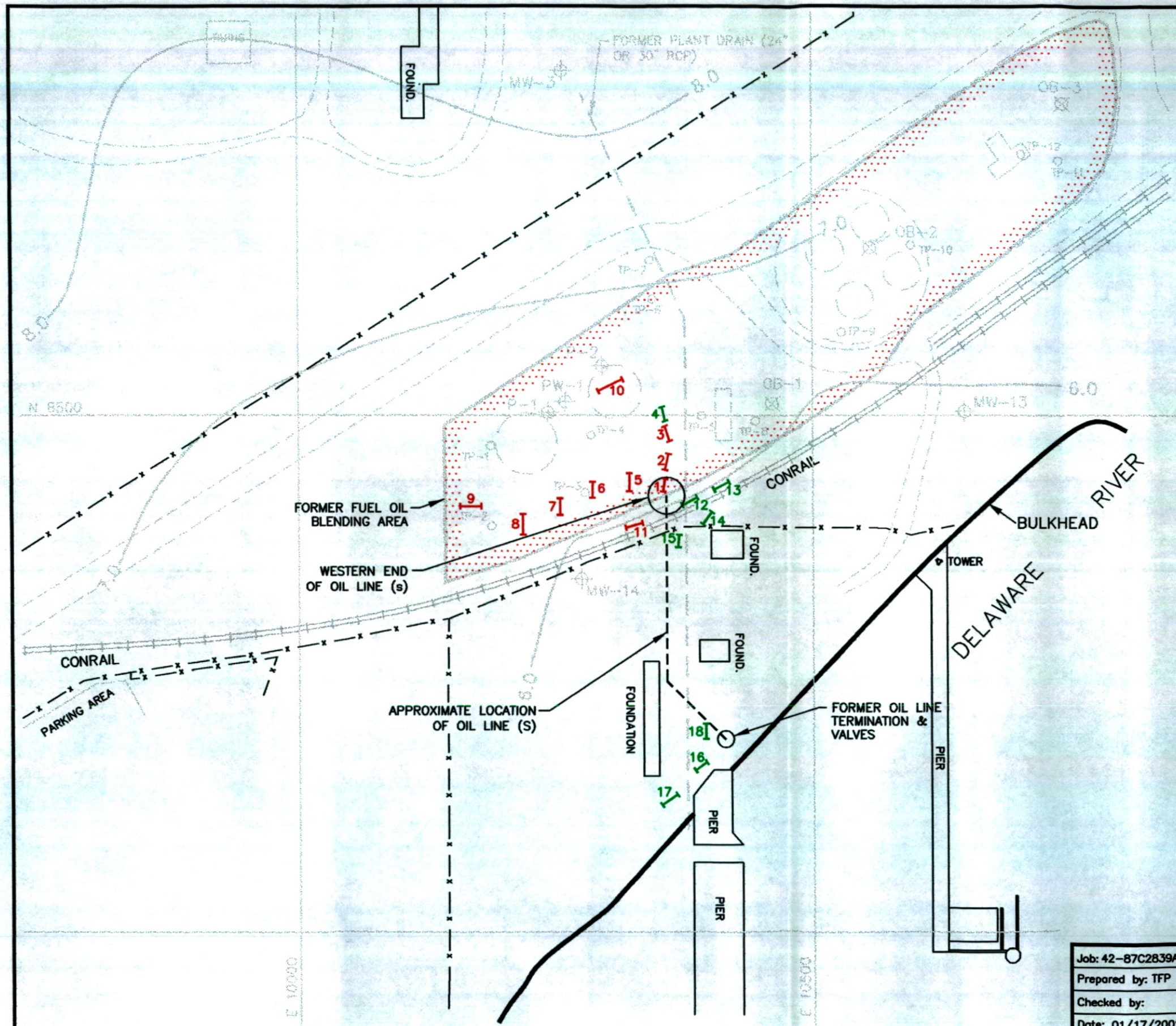
LOG OF TEST PIT TP-18

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.		FOREMAN Morris Robinson	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		DATE STARTED 11/28/01	
COMPLETION DEPTH (FT) 7.0	APPROX. DIMENSIONS (FT) L x W x D 8 x 2 x 7	NO. SAMPLES WATER LEVEL 5.5 ft	DIST INSPECTOR Gary Riehle
TEST PIT LOCATION TP-18			

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 1: Dry; Black, silty fine to coarse SAND.		0	
		- 1 -	
1 - 7: Wet at 5.5 ft; Brown, silty coarse to fine SAND with some fine to coarse gravel and few small cobbles; minor light fuel oil odor; no floating product observed; 0.0 ppm organic vapors.		- 2 -	
		- 3 -	
		- 4 -	
		- 5 -	
		- 6 -	
		- 7 -	
END OF TEST PIT @ 7 FT BGS		- 8 -	
		- 9 -	
		- 10 -	
		- 11 -	

**Note:** Test pit located adjacent to coal pier head.





- LEGEND:**
- 9 TEST PITS (2001) WITH VISIBLE OIL CONTAMINATION
  - 18 TEST PITS (2001) WITH NO VISIBLE OIL CONTAMINATION
  - MW-13 WELLS / PIEZOMETERS
  - TP-20 TEST PITS (1989)
  - OB-3 BORINGS (1990)
  - 6.0 1995 INTERPOLATED WATER TABLE ELEVATION CONTOURS (1' INTERVAL; FT, MSLD)

NOTE: ALL LOCATIONS APPROXIMATE

Job: 42-87C2839A.00  
 Prepared by: TFP  
 Checked by:  
 Date: 01/17/2002

2001 SUBSURFACE INVESTIGATION  
 FORMER FUEL OIL BLENDING AREA  
 FORMER PHILADELPHIA COKE COMPANY PROPERTY  
 PHILADELPHIA, PENNSYLVANIA

FIGURE 1





**LOG OF TEST PIT TP-17**

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST
		WATER LEVEL	6 ft
COMPLETION DEPTH (FT) 7.0	APPROX. DIMENSIONS (FT) L x W x D 8 x 2 x 7	TEST PIT LOCATION TP-17	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 2.5: Dry, Black, silty fine to coarse SAND with little fine to coarse gravel.		0	
		- 1 -	
		- 2 -	
2.5 - 7: Wet at 6 ft; Light brown to brown, silty coarse to fine SAND with little grading to and coarse to fine gravel and few small cobbles; no product odors or floating product observed; 0.0 ppm organic vapors.		- 3 -	
		- 4 -	
		- 5 -	
		- 6 -	
		- 7 -	
END OF TEST PIT @ 7 FT BGS		- 8 -	
		- 9 -	
		- 10 -	
		- 11 -	

**Note:** Test pit located adjacent to coal pier head.





LOG OF TEST PIT TP-16

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST
		WATER LEVEL	6 ft
COMPLETION DEPTH (FT) 7.0	APPROX. DIMENSIONS (FT) L x W x D 10 x 2 x 7	TEST PIT LOCATION TP-16	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 1.5: Dry; Black, silty fine to coarse SAND with little fine to coarse gravel.		0	
		- 1 -	
1.5 - 7: Wet at 6 ft; Brown to light greyish-brown, silty coarse to fine SAND with some to and fine to coarse gravel and few small cobbles; minor light fuel oil odors; no floating product observed; 17.7 ppm organic vapors.		- 2 -	
		- 3 -	
		- 4 -	
		- 5 -	
		- 6 -	
		- 7 -	
END OF TEST PIT @ 7 FT BGS		- 8 -	
		- 9 -	
		- 10 -	
		- 11 -	

Note: Test pit located adjacent to coal pier head.



LOG OF TEST PIT TP-15

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST.
COMPLETION DEPTH (FT) 7.0	APPROX. DIMENSIONS (FT) L x W x D 8 x 2 x 7	WATER LEVEL 5.5 ft	TEST PIT LOCATION TP-15
		INSPECTOR Gary Riehle	

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 7: Wet at 5.5 ft; Brown, dark brown, and blackish brown, silty coarse to fine SAND with little to some fine to coarse gravel; some brick, concrete, and metallic debris; no product odors or floating product observed; 0.0 ppm organic vapors.		0	
		- 1 -	
		- 2 -	
		- 3 -	
		- 4 -	
		- 5 -	
		- 6 -	
		- 7 -	
END OF TEST PIT @ 7 FT BGS		- 8 -	
		- 9 -	
		- 10 -	
		- 11 -	

**Note:** Test pit located adjacent to eastern side of rail line.



# LOG OF TEST PIT TP-14

SHEET 1 OF 1

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)		PROJECT NUMBER	
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.		FOREMAN Morris Robinson		DATE COMPLETED 11/28/01	
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		DATE STARTED 11/28/01		NO. SAMPLES	
COMPLETION DEPTH (FT) 7.5		APPROX. DIMENSIONS (FT) L x W x D 8 x 2 x 7.5		WATER LEVEL 5 ft	
		TEST PIT LOCATION TP-14		INSPECTOR Gary Riehle	

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 4' Dry; Light brown, silty fine to coarse SAND with little fine to coarse gravel.		0	
		- 1 -	
		- 2 -	
		- 3 -	
		- 4 -	
4 - 7.5' Wet at 5 ft; Grey, SILT; no product odors or floating product observed; 0.0 ppm organic vapors.		- 5 -	
		- 6 -	
		- 7 -	
END OF TEST PIT @ 7.5 FT BGS		- 8 -	
		- 9 -	
		- 10 -	
		- 11 -	

**Note:** Test pit located adjacent to eastern side of rail line.





**LOG OF TEST PIT TP-13**

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST
		WATER LEVEL	5.5 ft
COMPLETION DEPTH (FT) 7.5	APPROX. DIMENSIONS (FT) L x W x D 10 x 2 x 7.5	TEST PIT LOCATION TP-13	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 2: Dry; Dark brown to black, silty coarse to fine SAND.		0	
		1	
2 - 4: Dry; Light brown and light greyish-brown, silty coarse to fine SAND with little fine to coarse gravel.		2	
		3	
		4	
4 - 5.5: Dry; Light grey, silty coarse to fine SAND with little fine to coarse gravel.		5	
		6	
5.5 - 7.5: Wet; Black, decayed organic rich, silty coarse to fine SAND with little to some grading to some fine to coarse gravel with trace clayey areas; wood debris; no product odors or floating product observed; 0.0 ppm organic vapors.		7	
		8	
		9	
		10	
		11	

END OF TEST PIT @ 7.5 FT BGS

**Note:** Test pit located adjacent to western side of rail line.



# LOG OF TEST PIT TP-12

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST
COMPLETION DEPTH (FT) 6.0	APPROX. DIMENSIONS (FT) L x W x D 12 x 2 x 6	WATER LEVEL 5 ft	TEST PIT LOCATION TP-12
		INSPECTOR Gary Riehle	

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 6: Wet at 5 ft; Dark blackish-brown becoming black and greyish-brown, silty coarse to fine SAND with little fine to coarse gravel; strong heavy fuel oil odor; thin black floating product layer on water surface; 115 ppm organic vapors.		0	
Note: Crown of 30 - 36-inch underground pipe encountered 4 ft bgs.		1	
		2	
		3	
		4	
		5	
<b>END OF TEST PIT @ 6 FT BGS</b>		6	
		7	
		8	
		9	
		10	
		11	

Note: Test pit located adjacent to western side of rail line.



**LOG OF TEST PIT TP-11**

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST
		WATER LEVEL	5 ft
COMPLETION DEPTH (FT) 6.5	APPROX. DIMENSIONS (FT) L x W x D 10 x 2 x 6.5	TEST PIT LOCATION TP-11	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 2: Dry; Dark brown, silty coarse to fine SAND.		0	
		1	
		2	
2 - 4: Dry ; Light brown, silty coarse to fine SAND with little to some fine to coarse gravel.		3	
		4	
4 - 6.5: Wet at 5 ft; Alternating dark grey and greyish-black, silty coarse to fine SAND with little grading to some to and fine to coarse gravel; no product odors observed; slight product sheen on water surface; 0.0 ppm organic vapors.		5	
		6	
<b>END OF TEST PIT @ 6.5 FT BGS</b>		7	
		8	
		9	
		10	
		11	

**Note:** Test pit located adjacent to western side of rail line.





**LOG OF TEST PIT TP-10**

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)		PROJECT NUMBER	
EXCAVATION CONTRACTOR Miller Environmental Group, Inc		FOREMAN Morris Robinson		DATE STARTED 11/28/01	
				DATE COMPLETED 11/28/01	
EXCAVATION EQUIPMENT John Deere 310SE Backhoe			NO. SAMPLES	DIST	
			WATER LEVEL	5.5 ft	
COMPLETION DEPTH (FT) 8.0	APPROX DIMENSIONS (FT) L x W x D 10 x 2 x 8		TEST PIT LOCATION TP-10		INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 2: Dry, Brown to greyish-brown, silty fine to coarse SAND with little fine to coarse gravel, some glass and brick fill debris.		0	
		1	
		2	
2 - 4: Dry, Light brown, silty coarse to fine SAND with little fine to coarse gravel.		3	
		4	
		5	
		6	
		7	
		8	
4 - 8: Wet at 5.5 ft; Grey to dark grey, silty coarse to fine SAND with little grading to some to and fine to coarse gravel; minor light fuel oil odor; light product sheen on water surface; 14.9 ppm organic vapors.		9	
		10	
		11	

**END OF TEST PIT @ 8 FT BGS**

**Note:** Test pit located within former blending area



**LOG OF TEST PIT TP-9**

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO SAMPLES	DIST
		WATER LEVEL	5.5 ft
COMPLETION DEPTH (FT) 7.0	APPROX DIMENSIONS (FT) L x W x D 12 x 2 x 7	TEST PIT LOCATION TP-9	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 1: Dry; Black, organic rich silty SAND with few brick fragments.		0	
1 - 4: Dry; Light brown, silty coarse to fine SAND with little to some fine to coarse gravel.		1	
4 - 7: Wet at 5.5 ft; Brown to greyish-brown, silty coarse to fine SAND with little to some fine to coarse gravel; minor product stained soils; minor light fuel oil odor; no observed floating product, 27.7 ppm organic vapors.		2	
		3	
		4	
		5	
		6	
		7	
END OF TEST PIT @ 7 FT BGS		8	
		9	
		10	
		11	

**Note:** Test pit located within former blending area.



LOG OF TEST PIT TP-8

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST
		WATER LEVEL	5.5 ft
COMPLETION DEPTH (FT) 8.0	APPROX. DIMENSIONS (FT) L x W x D 12 x 2 x 8	TEST PIT LOCATION TP-8	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 3: Dry; Brown to light brown, silty coarse to fine SAND with little to some fine to coarse gravel.		0	
		1	
		2	
		3	
3 - 8: Wet at 5.5 ft; Grey to greyish-black, silty coarse to fine SAND with some fine to coarse gravel; strong light fuel oil odor; thin brownish-black floating product layer on water surface; 47.4 ppm organic vapors.		4	
		5	
		6	
		7	
		8	
END OF TEST PIT @ 8 FT BGS		9	
		10	
		11	

**Note:** Test pit located within former blending area.





LOG OF TEST PIT TP-7

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST
		WATER LEVEL	5.5 ft
COMPLETION DEPTH (FT) 8.0	APPROX. DIMENSIONS (FT) L x W x D 12 x 2 x 8	TEST PIT LOCATION TP-7	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 3 Dry; Light brown to brown, silty coarse to fine SAND with little to some fine to coarse gravel		0	
		1	
		2	
		3	
3 - 5.5: Dry; Brown, silty coarse to fine SAND with little to some fine to coarse gravel; minor light fuel oil odor; 27.7 ppm organic vapors.		4	
		5	
		6	
5.5 - 8 Wet; Greyish brown, silty coarse to fine SAND with some to little fine to coarse gravel; black decayed organic materials within 5.5 - 6.5 ft depth; minor light fuel oil odor; thin product sheen on water surface; 10.4 ppm organic vapors.		7	
		8	
END OF TEST PIT @ 8 FT BGS		9	
		10	
		11	

**Note:** Test pit located within former blending area.



**LOG OF TEST PIT TP-6**

PROJECT NAME/LOCATION <b>Former Philadelphia Coke Company Site - Fuel Oil Blending Area</b>		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR <b>Miller Environmental Group, Inc.</b>	FOREMAN <b>Morris Robinson</b>	DATE STARTED <b>11/28/01</b>	DATE COMPLETED <b>11/28/01</b>
EXCAVATION EQUIPMENT <b>John Deere 310SE Backhoe</b>		NO. SAMPLES	DIST.
COMPLETION DEPTH (FT) <b>9.0</b>	APPROX. DIMENSIONS (FT) L x W x D <b>12 x 2 x 9</b>	WATER LEVEL <b>5.5 ft</b>	TEST PIT LOCATION <b>TP-6</b>
		INSPECTOR <b>Gary Riehle</b>	

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 3: Dry; Light brown, silty coarse to fine SAND with little fine to coarse gravel and few small cobbles.		0	
		- 1 -	
		- 2 -	
		- 3 -	
3 - 8: Wet at 5.5 ft; Grey, and brownish-grey silty coarse to fine SAND with some grading to some to and fine to coarse gravel; strong light fuel oil odor; thin black floating product layer on water surface; 54.7 ppm organic vapors.		- 4 -	
		- 5 -	
		- 6 -	
		- 7 -	
		- 8 -	
8 - 9: Wet; Brownish-grey, silty coarse to fine SAND with some to little fine to coarse gravel and few small to medium cobbles.		- 9 -	
<b>END OF TEST PIT @ 9 FT BGS</b>		- 10 -	
		- 11 -	

**Note:** Test pit located within former blending area.



LOG OF TEST PIT TP-5

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO SAMPLES	DIST
		WATER LEVEL	5.5 ft
COMPLETION DEPTH (FT) 7.0	APPROX. DIMENSIONS (FT) L x W x D 12 x 2 x 7	TEST PIT LOCATION TP-5	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 3: Dry; Light brown, silty coarse to fine SAND with little fine to coarse gravel and few small cobbles.		0	
		1	
		2	
		3	
3 - 7: Wet at 5.5 ft; Alternating grey and light brown, silty coarse to fine SAND with some to little fine to coarse gravel; minor light fuel oil odor; thin product sheen on water surface; 28.7 ppm organic vapors.		4	
		5	
		6	
		7	
END OF TEST PIT @ 7 FT BGS		8	
		9	
		10	
		11	

**Note:** Test pit located within former blending area.





### LOG OF TEST PIT TP-4

SHEET 1 OF 1

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST
		WATER LEVEL	5.5 ft
COMPLETION DEPTH (FT) 8.0	APPROX. DIMENSIONS (FT) L x W x D 15 x 2 x 8	TEST PIT LOCATION TP-4	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 3: Dry; Brown, silty coarse to fine SAND with some fine to coarse gravel.		0	
		- 1 -	
		- 2 -	
		- 3 -	
3 - 8: Wet at 5.5 ft; Grey, silty coarse to fine SAND with little grading to some to and fine to coarse gravel; strong light fuel oil odor; no floating product observed; 172 ppm organic vapors.		- 4 -	
		- 5 -	
		- 6 -	
		- 7 -	
		- 8 -	
END OF TEST PIT @ 8 FT BGS		- 9 -	
		- 10 -	
		- 11 -	

**Note:** Test pit located within former blending area.



**LOG OF TEST PIT TP-3**

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST
		WATER LEVEL	5 ft
COMPLETION DEPTH (FT) 6.5	APPROX. DIMENSIONS (FT) L x W x D 15 x 2 x 6.5	TEST PIT LOCATION TP-3	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 3: Dry, Brown, silty coarse to fine SAND with some fine to coarse gravel.		0	
		- 1 -	
		- 2 -	
		- 3 -	
3 - 6.5: Wet at 5 ft; Light grey to brownish-grey, silty coarse to fine SAND with little grading to some fine to coarse gravel; strong light fuel oil odor; thin black floating product layer on water surface; 84.7 ppm organic vapors.		- 4 -	
		- 5 -	
		- 6 -	
<b>END OF TEST PIT @ 6.5 FT BGS</b>		- 7 -	
		- 8 -	
		- 9 -	
		- 10 -	
		- 11 -	

**Note:** Test pit located within former blending area



LOG OF TEST PIT TP-2

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)	PROJECT NUMBER
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.	FOREMAN Morris Robinson	DATE STARTED 11/28/01	DATE COMPLETED 11/28/01
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES	DIST
		WATER LEVEL	6 ft
COMPLETION DEPTH (FT) 7.5	APPROX. DIMENSIONS (FT) L x W x D 15 x 2 x 7.5	TEST PIT LOCATION TP-2	INSPECTOR Gary Riehle

DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
0 - 3: Dry; Light brown, silty coarse to fine SAND with some to and fine to coarse gravel and few medium cobbles.		0	
		- 1 -	
		- 2 -	
		- 3 -	
3 - 7: Wet at 6 ft; Light grey, silty coarse to fine SAND with some fine to coarse gravel; strong heavy fuel oil odor; thin black floating product layer on water surface; 54 ppm organic vapors.		- 4 -	
		- 5 -	
		- 6 -	
		- 7 -	
7 - 7.5: Wet; Grey SILT; no product odors or staining observed.		- 8 -	
		- 9 -	
		- 10 -	
		- 11 -	

END OF TEST PIT @ 7.5 FT BGS

**Note:** Test pit located within former blending area.

# URS

## LOG OF TEST PIT

SHEET 2 OF

PROJECT NAME		GROUND ELEVATION (FT)		PROJECT NUMBER	
LOCATION Philadelphia Coke Company, Former Fuel Oil Blending Area					
EXCAVATION CONTRACTOR		FOREMAN		DATE STARTED	
Miller Environmental Group, Inc.					
EXCAVATION EQUIPMENT		NO. SAMPLES		DIST	
		WATER LEVEL			
COMPLETION DEPTH (FT)		APPROX. DIMENSIONS (FT) L x W x D		TEST PIT LOCATION	
				INSPECTOR	
				Gary Riehle	

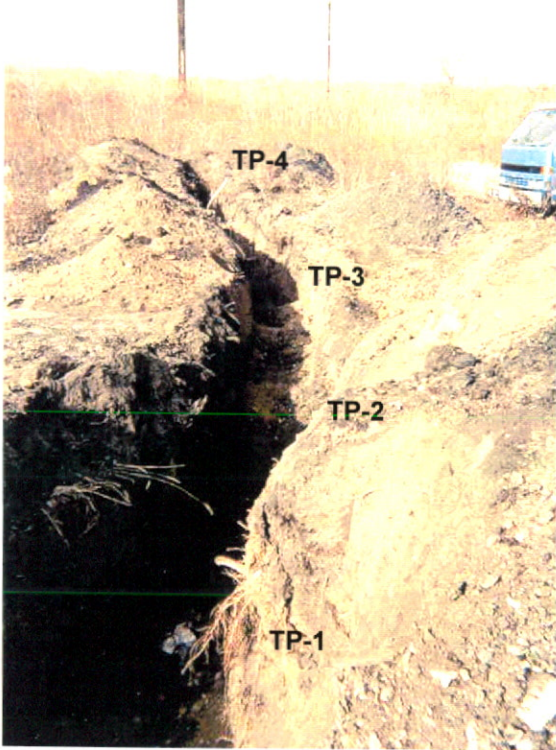
DESCRIPTION	Sample Interval	Depth (ft)	Sample Number
		- 11 -	
		-	
		- 12 -	
		-	
		- 13 -	
		-	
		- 14 -	
		-	
		- 15 -	
		-	
		- 16 -	
		-	
		- 17 -	
		-	
		- 18 -	
		-	
		- 19 -	
		-	
		- 20 -	
		-	
		- 21 -	
		-	
		- 22 -	



**LOG OF TEST PIT TP-1**

PROJECT NAME/LOCATION Former Philadelphia Coke Company Site - Fuel Oil Blending Area		GROUND ELEVATION (FT)		PROJECT NUMBER		
EXCAVATION CONTRACTOR Miller Environmental Group, Inc.		FOREMAN Morris Robinson		DATE COMPLETED 11/28/01		
EXCAVATION EQUIPMENT John Deere 310SE Backhoe		NO. SAMPLES		DIST.		
		WATER LEVEL		5.5 ft		
COMPLETION DEPTH (FT) 6.5	APPROX. DIMENSIONS (FT) L x W x D 15 x 2 x 6.5	TEST PIT LOCATION TP-1		INSPECTOR Gary Riehle		
DESCRIPTION				Sample Interval	Depth (ft)	Sample Number
0 - 1.5: Dry; Light brown and greyish-brown, silty coarse to fine SAND with some to and fine to coarse gravel and few medium cobbles.					0	
1.5 - 6.5: Wet at 5.5 ft. Blackish-grey, product stained silty coarse to fine SAND with some to little fine to medium gravel; heavy fuel oil odor; thin black floating product layer on water surface.					- 1 -	
					- 2 -	
					- 3 -	
					- 4 -	
					- 5 -	
					- 6 -	
					- 7 -	
END OF TEST PIT @ 6.5 FT BGS					- 8 -	
					- 9 -	
					- 10 -	
					- 11 -	

**Note:** Test pit located within former blending area

<b>Site Location:</b> Former Philadelphia Coke Company Property; Fuel Oil Blending Area		<b>Project No.</b> 42-87C2839A.00
<b>Photo No.</b> 1	<b>Date:</b> 11/28/01	
<b>Direction Photo Taken:</b> Northwest		
<b>Description:</b> Test Pits 1-4		

<b>Photo No.</b> 2	<b>Date:</b> 11/28/01	
<b>Direction Photo Taken:</b> NA		
<b>Description:</b> Test Pit No. 5		



**Site Location:**

Former Philadelphia Coke Company Property; Fuel Oil Blending Area

**Project No.**

42-87C2839A.00

**Photo No.**  
3**Date:**  
11/28/01**Direction Photo Taken:**

NA

**Description:**

Test Pit No. 6

**Photo No.**  
4**Date:**  
11/28/01**Direction Photo Taken:**


NA


**Description:**

Test Pit No. 7





<b>Site Location:</b> Former Philadelphia Coke Company Property; Fuel Oil Blending Area		<b>Project No.</b> 42-87C2839A.00
<b>Photo No.</b> 5	<b>Date:</b> 11/28/01	
<b>Direction Photo Taken:</b> NA		
<b>Description:</b> Test Pit No. 11		

<b>Photo No.</b> 6	<b>Date:</b> 11/28/01	
<b>Direction Photo Taken:</b> NA		
<b>Description:</b> Test Pit No. 12		

Crown of RCP



**Site Location:**

Former Philadelphia Coke Company Property; Fuel Oil Blending Area

**Project No.**

42-87C2839A.00

**Photo No.**  
7

**Date:**  
11/28/01

**Direction Photo Taken:**

**Description:**

Test Pit No. 16.  
Delaware River and  
North Pier in  
background.

**Photo No.**  
8

**Date:**  
11/28/01

**Direction Photo Taken:**

NA

**Description:**

Test Pit No. 16



**Site Location:**

Former Philadelphia Coke Company Property; Fuel Oil Blending Area

**Project No.**

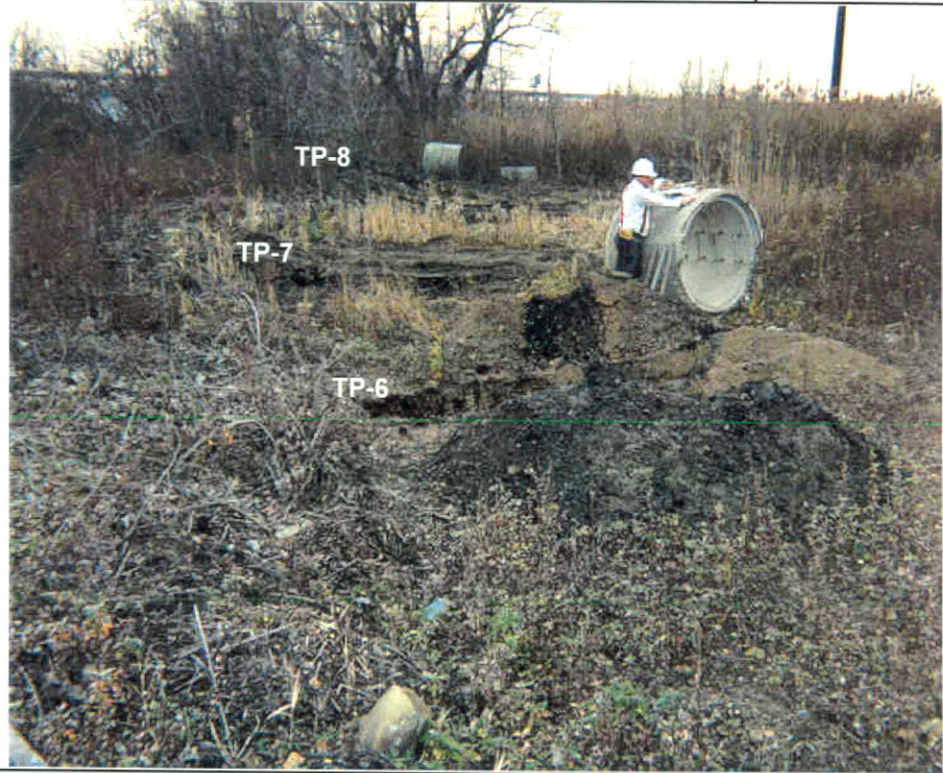
42-87C2839A.00

**Photo No.**  
9**Date:**  
11/28/01**Direction Photo Taken:**

Southwest

**Description:**

Test Pits Nos. 6, 7, and 8

**Photo No.**  
10**Date:**  
11/28/01**Direction Photo Taken:**

North-Northeast

**Description:**

Test Pits Nos. 1, 2, 3, 4, and 5





**Site Location:**  
Former Philadelphia Coke Company Property; Fuel Oil Blending Area

**Project No.**  
42-87C2839A.00

**Photo No.**  
11

**Date:**  
11/28/01

**Direction Photo Taken:**

Northeast

**Description:**

Test Pits Nos. 11, 12, 13, and 14



**Photo No.**  
12

**Date:**  
11/28/01

**Direction Photo Taken:**

North-Northeast

**Description:**

Test Pits Nos. 16, 17, and 18 (not visible behind brush)





**Site Location:**

Former Philadelphia Coke Company Property; Fuel Oil Blending Area

**Project No.**

42-87C2839A.00

**Photo No.**  
13

**Date:**  
11/28/01

**Direction Photo Taken:**

NA

**Description:**

Heavy sheen of fuel oil on fine-coarse gravel from Test Pit No. 3 (typical of water table interface conditions within fuel oil blending area).

