

SITE SUMMARY

Issue:

- Transformer Storage Area (TSA) at Norfolk Naval Base, Norfolk, Virginia.

Summary:

- A total of 125 grab soil samples were collected during two sampling events in November 1983 and August 1984. All soil samples were analyzed for PCBs. Soil at the TSA contains elevated levels of PCBs. Analytical results of some samples indicate PCB levels exceed EPA recommended action levels for PCB contaminated soils in industrial areas. Analytical data generated during these previous investigations included some inconsistent and anomalous results. Additional soil sampling will be performed to delineate areas of PCB soil contamination and address the inconsistencies and anomalies included in the analytical data generated from the previous investigations. This will also be done to determine the extent of PCB migration since the previous investigations. In addition, groundwater monitoring wells will be installed to determine whether the reported PCB soil contamination has impacted the shallow groundwater.

Background:

- The TSA is located south of Piersey Street, adjacent to tank P-78, and includes building 73 (Figure 2-1). The TSA was used to store new and out-of-service transformers from the 1940's until 1978. Transformer oil was reportedly drained from out-of-service transformers onto the ground surface in this area. The oil contained in transformers during this time period typically contained polychlorinated biphenyls (PCBs).
- Previous investigations at the site include the Initial Assessment Study, 1983 and a Remedial Investigation-Interim Report, 1988 (Interim RI).

Discussion:

- All soil samples were collected from 42 different soil boring locations. Figure 2-1 gives the boring locations. Table 2-1 gives the analytical results of the soil samples collected. Surface soils (zero to 1 foot) exhibited the highest average PCB concentrations with the most frequent occurrence of PCBs.

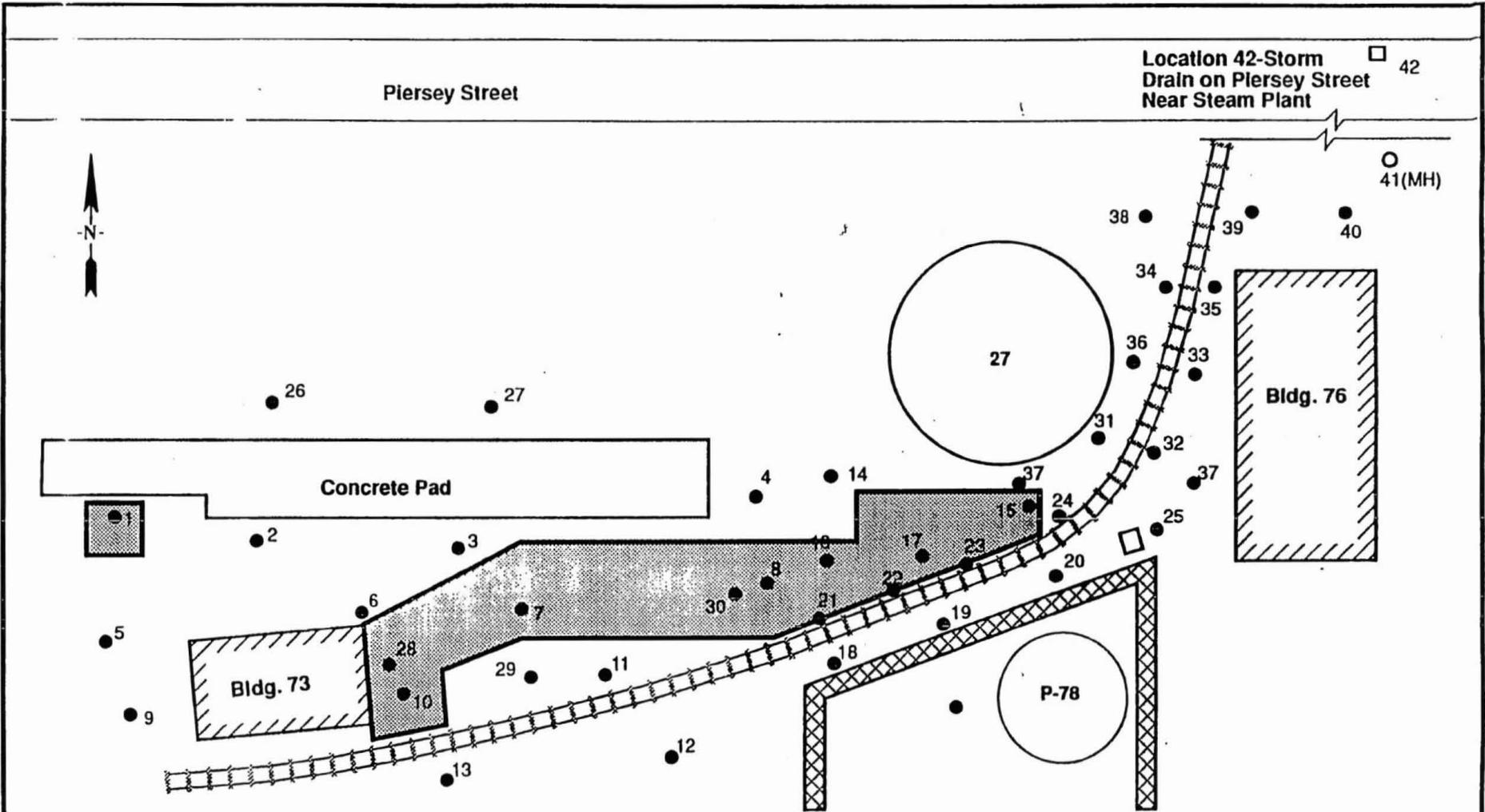
All other soil samples collected between 1 and 5 feet below grade contained PCB concentrations below 10 parts per million (ppm) with the exception of soil borings 7, 10, 15, 19, 21, 22 and 29.

- Duplicate surface soil samples collected at borings 21, 22 and 23 differed by as much as an order of magnitude.
- Soil samples collected between 3 to 4 and 4 to 5 feet below grade at boring 21 contained PCB concentrations two orders of magnitude greater than samples collected between zero and 2 feet below grade in this boring. In addition, no trace of PCB contamination was detected in the soil sample collected between 2 and 3 feet.

Future Plans:

- A total of 36 soil samples will be collected at the TSA. Figure 5-1 gives the soil sample locations. The samples include surface soil samples and samples at depth. The soil samples will be analyzed for PCBs. Analytical data will be used to determine the approximate areal extent and depth of soil contamination equal to or greater than 10 ppm of total PCBs.
- Three monitoring wells will be installed at the locations indicated in Figure 5-1. Two of the three wells (MW-1 and MW-2) will be installed at the approximate locations of soil borings 10 and 21 indicated in the Interim RI. The third well will be installed in an area where no soil contamination has been reported. This well is intended to serve as a possible background well. Groundwater samples will be collected from each of the three wells and analyzed for PCBs.
- Split spoon soil samples will be collected during the installation of MW-1 and MW-2. Soil samples collected at intervals 1 to 3, 3 to 5, and 5-7 feet will be analyzed for PCBs.
- CH2M HILL will prepare a Remedial Investigation/Feasibility Study (RI/FS) report that will be comprised of two general sections. The first section will be the remedial investigation which summarizes and interprets data collected during this investigation as well as previous investigations. Included in the remedial investigation section will be a base-line risk assessment. The base-line risk assessment will present an exposure assessment, toxicity assessment, and risk characterization. The second section will be the feasibility study (FS). The FS will develop and evaluate remedial action alternatives for mitigating contamination identified in the remedial investigation section.

The Remedial Action Plan (RAP) and Record of Decision (ROD) will be developed by CH2M HILL and submitted as separate documents. Each document will include a brief summary of the RI/FS report developed for the TSA. Remedial action alternatives presented in the feasibility study will also be presented in the RAP and ROD reports. Both documents will include the selected remedial alternative. The difference between the two documents is that the RAP will include an engineering budget cost estimate and the ROD will discuss key considerations involved in the remedial action selected process.



LEGEND

-  PCB Concentration Greater than 50 ppm (Malcom-Pernle)
-  Approximate Boring Location

Approximate Scale 1" = 40'

Source: Remedial Investigation-Interim Report, Malcolm Pirnie, March 1988.

Figure 2-1
 SITE SCHEMATIC
 TRANSFORMER STORAGE AREA
 Norfolk Naval Base



Table 2-1
SOIL ANALYTICAL RESULTS
CONCENTRATIONS OF AROCLOR 1260 (mg/kg-ppm)
TRANSFORMER STORAGE AREA

Sample Location	Sample Depth (Feet)				
	0-1	1-2	2-3	3-4	4-5
04S-01	59	--	2	--	<1 NT
04S-02	9/23	--	--	--	--
04S-03	20	4	--	--	--
04S-04	4	--	1	--	1
04S-05	2	3	--	--	--
04S-06	40	--	6	--	<1 NT
04S-07	93	--	16	--	<1 NT
04S-08	160	--	<1 NT	--	<1 NT
04S-09	2	--	<1 NT	--	1
04S-10	440	--	66	--	2
04S-11	2	--	2	--	<1 NT
04S-12	6	--	<1 NT	--	<1 NT
04S-13	11	--	<1 NT	--	<1 NT
04S-14	23	--	1	--	<1 NT
0RS-15	52	12	--	--	--
04S-16	16	--	1	--	<1 NT
04S-17	57	--	1	--	<1 NT
04S-18	<1 NT	--	<1 NT	--	<1 NT
04S-19	45	42	--	--	--
04S-20	17	--	--	--	--
04S-21	88/45	85	<1 T	7200	7800
04S-22	890/29	300	<1 NT	<1 T	<1 NT
04S-23	770/160	1	1	<1 NT	<1 NT
04S-24	35	--	--	--	--
04S-25	--	2	--	--	--

Table 2-1
SOIL ANALYTICAL RESULTS
CONCENTRATIONS OF AROCLOR 1260 (mg/kg-ppm)
TRANSFORMER STORAGE AREA

Page 2 of 2

Sample Location	Sample Depth (Feet)				
	0-1	1-2	2-3	3-4	4-5
04S-26	1	--	--	--	--
04S-27	2	--	--	--	--
04S-28	240	<1 T	<1 T	<1 T	<1 NT
04S-29	7	15	<1 NT	1	<1 NT
04S-30	200	6	1	1	<1 NT
04S-31	2	1	<1 NT	<1 NT	<1 NT
04S-32	1	<1 T	<1 T	--	--
04S-33	2	1	<1 NT	<1 NT	<1 NT
04S-34	<1 T	<1 NT	<1 NT	<1 NT	<1 NT
04S-35	<1 T	<1 T	<1 NT	<1 NT	<1 NT
04S-36	1	1	--	--	--
04S-37	34	5	--	--	--
04S-38	<1 T	<1 T	--	--	--
04S-39	<1 T	<1 T	--	--	--
04S-40	<1 T	<1 T	--	--	--
04S-41	<1 NT	--	--	--	--
04S-42	<1 NT	--	--	--	--

Notation: NT = No Trace
T = Trace
-- = No Sample Taken
9/23 = Two Samples Taken

Source: Remedial Investigations - Interim Report, Malcolm Pirnie, Inc., March 1988.

