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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region III
841 Chestnut Building
Philadelphia, PA 19107

SUBJECT: Record of Decision - Transmittal Memo **Date:** September 11, 1989

From: Stephen R. Wassersug, Director
Hazardous Waste Management Division (3HW00)

To: Edwin B. Erickson
Regional Administrator

Attached is a Record of Decision for the Havertown PCP Superfund Site. The decision outlines all necessary remedial actions which must be performed in order to be protective of the public health and the environment. I recommend that you sign the attached document.

AR300966

DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Havertown PCP Site (the site), Haverford Township, Delaware County, Pennsylvania

Statement of Basis and Purpose

This decision document presents the selected interim remedial actions addressing onsite soils, staged waste materials, and the storm sewer effluent at the catch basin in Naylors Run, a creek that drains the site area. These remedial actions were developed in accordance with the Comprehensive Environmental Response, Compensation Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and to the extent practicable, the National Contingency Plan. The attached index identifies the items that comprise the administrative record upon which the selection of the remedial actions are based. The Commonwealth of Pennsylvania has concurred on the selected remedies.

Description of Selected Remedy

The selected Remedial Action Alternatives (RAA) address the threats posed by the onsite soils, storm sewer effluent and drummed waste. These actions are described below. EPA will assume the site-lead for the Remedial Design and Remedial Action (RD/RA) for this Record of Decision.

Onsite Soils

The selected remedy for the onsite soils is the "No Action" alternative. This alternative achieves remedial action objectives because the potential threat to the public's health associated with the continued entrainment of contaminated dust and infiltration of contaminants into the environment poses no significant risk.

The next operable unit will address any potential impact of the soils on groundwater at the site. The chosen remedy in this Record of Decision will not interfere with any future remedial action.

Oil/Water separator for storm sewer effluent

The selected alternative for remediation of the storm drain effluent to Naylors Run is the installation and operation of an optimum, oil/water separator. Such separators, which are commercially available, are used in petroleum distribution and transportation facilities and in a variety of other industrial

and military operations. The oil/water separator complies with ARARs and provides overall, long-term protection to humans.

Staged Waste Materials

The recommended alternative for cleaning up the contaminated waste staged onsite is landfilling and offsite treatment of the aqueous waste. Offsite treatment and disposal of the waste was selected because it can be easily implemented, will not be affected by the lack of available working space, and will not impact the surrounding population or environment.

Summary of Risk and Rationale for Selection of Alternatives

The human health risk in terms of the maximum potential increased risk of contracting cancer from a 70-year lifetime exposure through inhalation or ingestion was calculated for each potentially carcinogenic chemical. The results, expressed in terms of risk per million people exposed, are as follows:

1. Inhalation of entrained particulates containing chromium VI, arsenic, and other metals from onsite soils and of VOCs emanating from the site by persons off site:

	DISTANCE FROM THE SITE				
	500 ft	1000 ft	1320 ft	2000 ft	2640 ft
Cancer risk (per million)	5.8	2.9	2.2	1.45	1.1

These values are considered to be higher than the actual risk because the analytical results for total chromium were used as if they were 100% hexavalent chromium. While the hexavalent chromium salt is a known human carcinogen through the inhalation route, sampling performed in July, 1989 did not identify the presence of hexavalent chromium in onsite soils.

2. Inhalation of benzene and other VOCs at the nearest residences (two within 75 m or 250 ft) to the catch basin 5.5 (per million)

3. Ingestion of onsite soils: 8 (per million) This value is considered to be higher than the actual risk because the analytical results for total arsenic were used as if they were 100% trivalent arsenic, the most carcinogenic species.

4. Ingestion of liquids from the underflow dam: 2 (per million)

5. The total risk from all sources for a person living within 500 ft of the site and within 250 ft of the underflow dam and ingesting the onsite soils and sediments, the sediments under Naylors Run, and the liquids in the underflow dam is not cumulative, however for multiple exposures to different media a slightly higher risk may be possible.

The "No Action" alternative for onsite soils, the oil/water separator for storm effluent at the catch basin, and offsite treatment and disposal of the staged waste were selected because they meet established remedial action objectives with regard to human health and the environment. The components of these alternatives are well demonstrated and represent both a reliable and a cost effective method for remediating site conditions.

Declaration

The remedy selected to address the onsite soils is protective of human health and the environment, attains acceptable levels of exposure for this remedial action and is cost effective.

The remedy selected for the effluent in the catch basin is also protective of the public's health and the environment, attains Federal and State requirements that are applicable, relevant and appropriate, satisfies the reduction of toxicity, mobility, or volume requirement, and is both easily implemented and cost effective.

The remedy selected for the staged waste materials is protective of human health and the environment, attains Federal and State requirements that are applicable, relevant and appropriate, reduces potential mobility and toxicity to other media, is easily implemented and has a higher degree of public acceptance than the onsite treatment option.

11/9/89
Date

Edwin B. Erickson
Regional Administrator
Region III

HAVERTOWN PCP SITE
Record of Decision

U.S. EPA Region III

Haverford Township, Delaware County, Pennsylvania

SITE DESCRIPTION

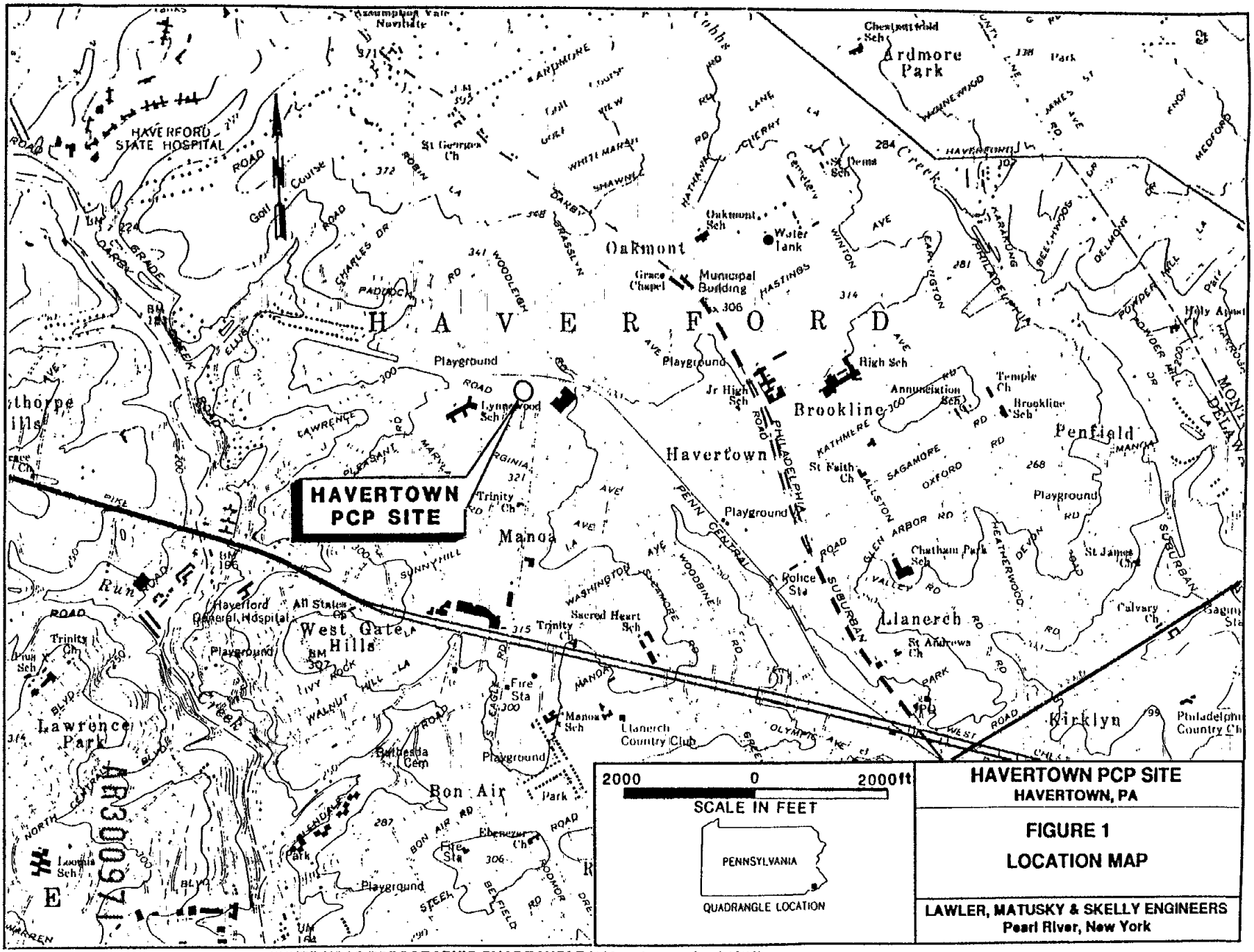
The Havertown PCP site consists of approximately 12 to 15 acres roughly delineated by Lawrence Road and Rittenhouse Circle to the south, the former Penn Central Railroad tracks to the north, and the fence between NWP and Continental Motors to the west. There is no distinct boundary to the east.

The investigation of the Havertown PCP site was performed by the Commonwealth of Pennsylvania. In June 1987, the State started a Remedial Investigation and Feasibility Study (RI/FS) to identify and define the hydrogeologic characteristics and extent of contamination at the site. The RI/FS identified appropriate corrective action to address actual or potential environmental and public health threats. Based upon a review of the Feasibility Study, a Record of Decision (ROD) recommends appropriate remedial actions. The site is located in Havertown, Haverford Township, Delaware County, in southeastern Pennsylvania. The site is located approximately 10 miles west of Philadelphia (Figure 1) and is surrounded by a mixture of commercial establishments, industrial companies, parks, schools, and private homes.

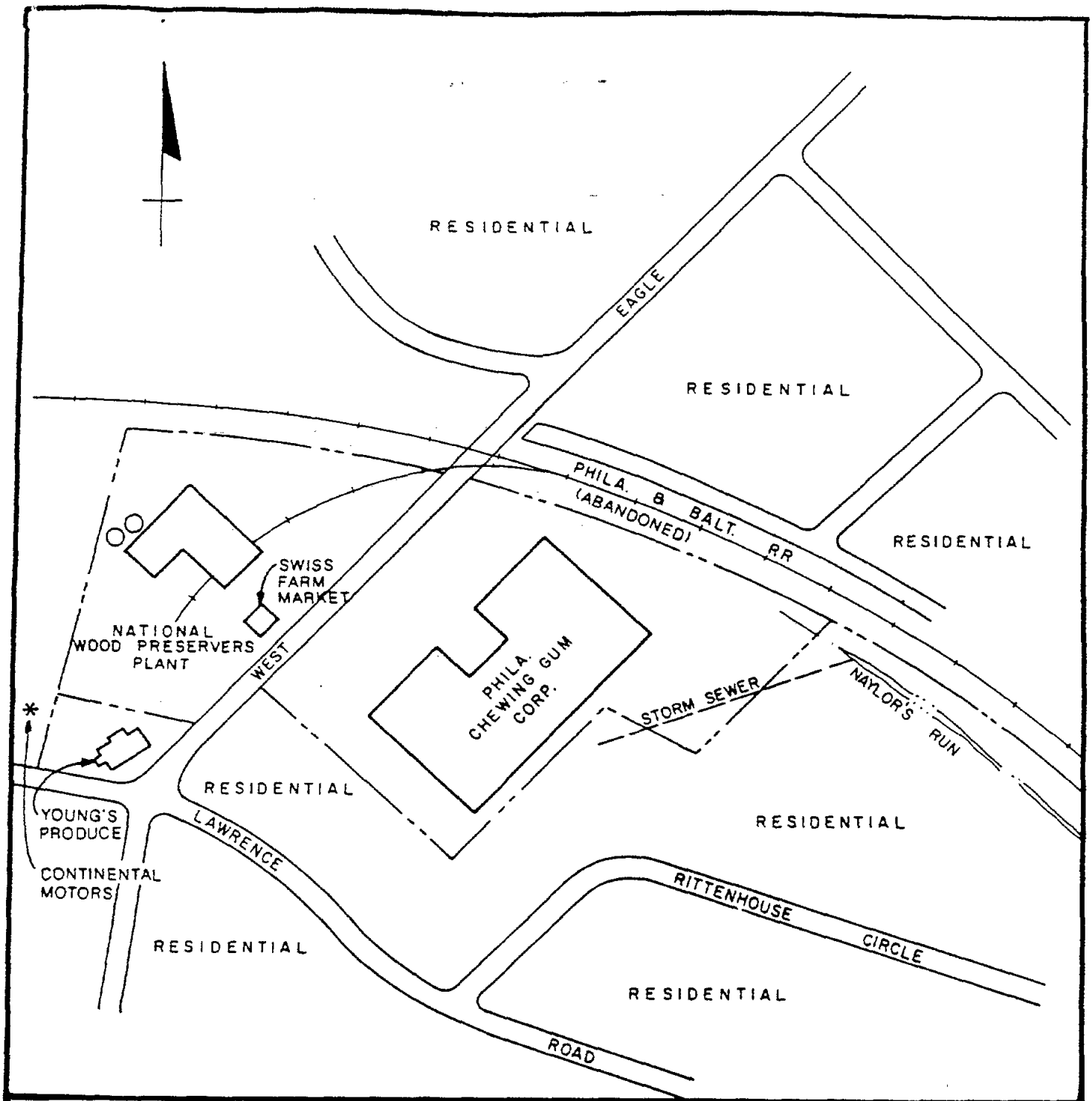
The investigated area consists of a wood-treatment facility operated by the National Wood Preservers site (NWP); the Philadelphia Chewing Gum Company (PCG) manufacturing plant adjacent to the wood-treatment facility: Naylors Run, a creek that drains the area; and neighboring residential and commercial properties (Figure 2).

NWP, the source of the contamination, is the focus of the investigation. Structures on the property include a sheet metal building with aboveground chemical storage tanks situated on a 2-acre property just north of the intersection of Eagle and Lawrence roads and the large PCG bubble gum production building.

The entire Havertown PCP site is drained by Naylors Run, a creek that flows in a southeasterly direction from the site. For the most part, surface runoff across the NWP site enters artificial drainage channels before discharging into Naylors Run. On the NWP property a significant amount of water accumulates in-



BASE MAP: LANSDOWNE, PA, 7 1/2 MINUTE USGS TOPOGRAPHIC QUADRANGLE (1967, photorevised 1973)



200' 0 200'

SCALE IN FEET

FIGURE 2

AR300972

HAVERTOWN PCP SITE
HAVERTOWN, PA

STUDY AREA MAP

drawn CCS	approved JNW	drawing no. 86021-013-AA
checked JST	date 4-22-88	

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the area of the pedestrian gate near Continental Motors and in the vicinity of NWP's main gate near Eagle Road. Under storm event conditions, the large amount of sheet flow that occurs on NWP property in the area of the main gate empties into the drainage ditch bordering the north edge of the property. The eventual fate of this runoff is Naylors Run. Naylors Run flows through natural channels, concrete-lined channels, and a variety of pipes before entering Cobbs Creek near East Lansdowne, approximately 4 miles southeast of the site. Cobbs Creek joins Darby Creek, which flows through the Tinicum National Environment Center before entering the Delaware River.

Site History

The NWP site was first developed as a railroad storage yard and later became a lumberyard. In 1947 the wood-preserving facility was constructed and operated by Mr. Samuel T. Jacoby. In 1963 the existing facility was purchased by the Harris Goldstein family.

In 1962, the Pennsylvania State Department of Health became aware of contaminants in Naylors Run, and linked the source of contamination to National Wood Preservers waste disposal practices. Mr. Jacoby was brought to trial by the Commonwealth of Pennsylvania in 1964, for the disposal activities that occurred at the Site. He was found not guilty.

The majority of the activities resulting in pollution to the water bearing strata (aquifer) beneath the site occurred during the years of 1947 to 1963. Approximately 1 million gallons of spent wood preservatives is believed to have been dumped into a 26-foot deep well on property adjacent to the site which was leased from Clifford Rogers to Shell Oil Company. This disposal event appears to be the major source of contamination to Naylors Run.

In 1972 the Pennsylvania Department of Environmental Resources (PADER) identified contaminated groundwater discharging from a storm sewer into Naylors Run. PADER ordered NWP,Philadelphia Chewing Gum Company (who owns the property downgradient from NWP), Shell Oil Company (who leased adjacent property from Clifford Rogers), and Mr. Clifford Rogers (owner of property leased to NWP) to clean up Naylors Run, since they occupy land where contaminated groundwater exists. The above parties appealed to the State Environmental Hearing Board, and later to the Commonwealth Court of Pennsylvania. The court sustained Philadelphia Chewing Gum and Shell Oil Company's appeals and ordered the cleanup to be executed by NWP and Mr. Rogers. Implementation and maintenance of the cleanup actions by NWP and Mr. Rogers were inadequate however, and failed to address all of the environmental concerns both onsite and off.

In response to a request from DER in 1976, the United States Environmental Protection Agency (USEPA) initiated cleanup activities under Section 311 of the Clean Water Act. Cleanup activities occurred in two phases. The first phase established containment operations at Naylors Run. Filter fences were installed to remove PCP contaminated oil from the surface water. These fences were located just downstream from the outfall of the 24-inch storm sewer pipe and a 12-inch sanitary sewer pipe. The second phase was carried out by the Emergency Response Team from the USEPA. Groundwater collection and treatment, and cement grouting of the two sewer pipes was attempted. The sanitary sewer was sealed; however, contaminated groundwater still discharges into Naylors Run from the 24-inch storm sewer pipe.

In 1982, the USEPA ended containment operations in Naylors Run, when National Wood Preservers agreed to maintain in-stream treatment measures pursuant to a consent agreement with EPA. Subsequent inspections, however, revealed NWP was not properly maintaining the filter fences.

Because of continuing releases of PCP-contaminated oil into Naylors Run, in 1988, EPA's Emergency Response Team installed a catch basin in Naylors Run to trap the discharge from the storm pipe. EPA still maintains the catch basin.

The Havertown PCP Site was listed on the National Priorities List by the USEPA in December, 1982. Subsequently, DER signed an agreement with EPA to conduct a RI/FS at the site.

The NWP facility has not changed significantly since its construction and today consists of a single metal-sheeted building, which contains the wood-treatment equipment, and several chemical storage tanks located immediately northwest of the building. The production facility is surrounded by a dirt-covered storage yard in which untreated and treated wood are stored. The entire NWP facility is enclosed by a chain-link fence. In 1963-1964 the Goldsteins had made some basic chemical containment and chemical recycling modifications to the facility at the request of the Pennsylvania Department of Environmental Resources (PADER).

NWP custom-treats wood as requested by clients, who supply the materials to be treated. Wood preservation is carried out to prevent decay or insect infestation of woods used for construction purposes where the wood will be constantly exposed to the environment. The type of wood treated at this facility is determined by the client, who supplies the material precut and dried, so that, other than loading, treating, unloading, and storing wood, essentially no other tasks are performed at this facility. The entire operation at this facility is presently manned by two employees.

Two wood-treating processes have been used at this facility: the "empty cell pressure treatment process" and the "non-pressure treatment dip treatment." The facility has three pressure treatment cylinders; two inside the building and one outside. Pressure-treated wood was air dried on drip tracks located on dirt areas around the perimeter of the site. Wood that was dipped into treatment solutions was similarly dried and handled. This activity would account for the presence of PCP and heavy metals in both onsite and drainage area soils. According to the Remedial Investigation performed by PADER in 1988, at least six wood-treatment chemical solutions have been used at the NWP facility since its construction. From 1947 to 1977-1978 three chemicals were used: pentachlorophenol (PCP) in P-9 Type A oil (diesel fuel), PCP in P-9 Type C oil (mineral oils), and fluoro-chrome arsenate phenol (FCAP) in water solution. PCP in oil (both types) was used in both the pressure treatment and the dip treatment processes. FCAP was used only in the pressure treatment process.

Chlorinated copper arsenate (CCA) in a 0.4 or 0.6% water solution, first used at the facility in the mid-1970s, eventually replaced PCP and FCAP during 1977-1978. Other chemicals used on-site since the 1970s include chromated zinc chloride (CZC, a fire retardant) and tributyl tin oxide (TBTO, an antifouling compound). All three water-soluble chemicals were used in the pressure treatment process.

The primary contaminants of concern at the site are the result of wood-treatment operations at NWP. These are PCP, chlorinated dioxins and dibenzofurans (typical low-level contaminants in the manufacture of PCP), fuel oil and mineral spirits components, heavy metals, certain volatile organic compounds, and phenols. A complete list of the detected contaminants is presented in Tables 1 thru 6. All these materials are primary constituents or impurities of the various wood-treatment solutions used at NWP since operation began in 1947.

Enforcement History

Between 1947 and 1963, National Wood Preservers, Inc. disposed of waste liquids (primarily oil contaminated by pentachlorophenol) by injection into a well which drained into groundwater beneath the NWP plant. Citizen complaints resulted in DER involvement. In 1973, DER ordered NWP (and other owners and occupiers of land located between the NWP plant and Naylors Run) to abate the pollution. All parties appealed, and seven years of litigation ensued, in which DER ultimately prevailed against NWP, but not against the other owners and occupiers.

In 1976, EPA commenced containment operations funded under Section 311 of the Clean Water Act. These operations were

TABLE 1

COMPARISON OF MEASURED CONCENTRATIONS TO APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

GROUND WATER (ROUND 1)

Pollutants	EPA RATING/ CATEGORY	MIN	MAX	REP. VALUES	MCL*	MCLG**	Priority
		ug/l	ug/l	ug/l	ug/l	ug/l	
CARCINOGENIC							
ARSENIC	A	BDL	7.9	BDL (2.3)	50		
BENZO(A)PYRENE	B2	BDL	3.4	BDL (20)			
BENZO(A)ANTHRACENE	B2	BDL	19	BDL (20)			
2,3,7,8-TCDD EQUIVALENTS	B2		6.68×10^{-4}	6.68×10^{-4}			
BETA BHC	C	BDL	18	BDL (0.05)			
TRICHLOROETHYLENE	B2	BDL	86	15			0
BENZENE	A	BDL	20	5	5		
CHLOROETHYLENE (VINYL-CHLORIDE)	A	BDL	9.4	BDL (5)		2	
BIS(2-ETHYLHEXYL)PHTHALATE	B2	BDL	7.8	BDL (20)			
NON-CARCINOGENIC							
ZINC	8	28	581	161			
COPPER	5	2.9	14	7			
ETHYLBENZENE	4	BDL	340	44			
LEAD	10	BDL	3.1	1	50	20	
TRANS-1,2-DICHLOROETHYLENE	5	BDL	52	13			
DICHLOROMETHANE (METHYLENE CHLORIDE)	10	1.2	62	10			
PENTACHLOROPHENOL	E	BDL	13000	2400			

* Maximum contaminant levels as per the National Primary Drinking Water Standards.

** Maximum contaminant level goals as per the National Primary Drinking Water Standards. Proposed MCL's under the Safe Drinking Water Act as amended June 19, 1986 Federal Register 46902, Nov. 13, 1985.

ug/1 identifies a unit of measure equivalent to 1 part of a contaminant for every 1 billion parts of medium.

TABLE 2

COMPARISON OF MEASURED CONCENTRATIONS TO APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

GROUND WATER - ROUND 2

CHEMICAL	MIN	MAX	REP. VALUE	MCL	MCLG
				ug/l	ug/l
CARCINOGENIC					
ARSENIC	BDL(1.5)	23	2	50	
2,3,7,8-TCDD EQUIVALENTS		7.84×10^{-4}	7.84×10^{-4}		
TRICHLOROETHYLENE	BDL (5)	1700	98		0
1,1-DICHLOROETHYLENE	BDL (5)	21	3		
BENZENE	BDL (5)	320	30	5	
1,2-DICHLOROETHANE	BDL (5)	37	2		0
DIELDRIN	BDL (0.1)	0.22	0		
CHLOROETHYLENE	BDL (10)	46	3	2	
NON-CARCINOGENIC					
NICKEL	BDL (39)	55	BDL (39)		
1,2-DICHLOROETHYLENE (TOTAL)	BDL (5)	720	48		
ZINC	8	253	52		
CADMIUM	BDL (5)	5.6	BDL (5)	10	
MERCURY	BDL (0.2)	0.39	BDL (0.2)	2	
LEAD	BDL (1.5)	8.5	1	50	20
ETHYLBENZENE	BDL (5)	160	11		
TOLUENE	BDL (5)	47	7		
PENTACHLOROPHENOL	BDL (100)	4100	1047		

TABLE 3

COMPARISON OF MEASURED CONCENTRATIONS WITH ARARS
SURFACE WATER BELOW OUTFALL

SURFACE WATER
(BELOW SS OUTLET)

CHEMICAL	MIN	MAX	REP. VALUE	MCL	MCLG
CARCINOGENIC		ug/l	ug/l	ug/l	ug/l
BENZENE	BDL (10)	70	18	5	
TRICHLOROETHYLENE	BDL (5)	16	5		
2,3,7,8-TCDD EQUIVALENTS		1.54×10^{-7}	1.54×10^{-7}		
NON-CARCINOGENIC					
ZINC	98	503	180		
COPPER	8.8	11	9		
LEAD	2.2	5.2	3	50	20
TRANS-1,2-DICHLOROETHYLENE	BDL (5)	9.1	2		
TOLUENE	BDL (5)	7.8	2		
DICHLOROMETHANE (METHYLENE CHLORIDE)	1.7	3.6	3		
PENTACHLOROPHENOL	BDL (20)	660	296		

TABLE 4

ONSITE SOIL CONCENTRATIONS

	SOIL	
CHEMICAL	MAX	REP VALUE
CARCINOGENIC	ug/kg	ug/kg
BENZO(A)PYRENE	7200	1658
ARSENIC*	6850	731
BENZO(A)ANTHRACENE	10000	3927
CHLORDANE	1300	371
BETA BHC	1300	140
2,3,7,8-TCDD EQUIVALENTS	0.0176	0.00266
BIS(2-ETHYLHEXYL)PHTHALATE	34000	5251
BENZENE	38	3
CHLOROFORM	2.7	0
TETRACHLOROETHYLENE	10	2
TRICHLOROETHYLENE	3.7	0
DIELDRIN	BDL (18)	BDL (18)
BENZO(K)FLUORANTHENE	19000	4995
NON-CARCINOGENIC		
COPPER	9790	835
ZINC	13000	2111
NICKEL	55	21
CADMIUM	44	4
LEAD	108	50
MERCURY	1.8	1
ETHYLBENZENE	490	39
TOLUENE	390	32
DICHLOROMETHANE	91	24
1,2-DICHLOROETHYLENE (TOTAL)	0	0
PENTACHLOROPHENOL	4500000	446613

* Arsenic values are for total arsenic and were assumed under a worst-case scenario to be 100% trivalent.

TABLE 5

SEDIMENT CONCENTRATIONS

CHEMICAL	SEDIMENTS (BELOW OUTFALL) MIN	SEDIMENTS (BELOW OUTFALL) MAX	DRAINAGE DITCH SED-10
CARCINOGENIC			
BENZO(A)PYRENE	340	14000	950
BENZO(A)ANTHRACENE	380	15000	340
DIELDRIN	BDL (11)	57	BDL (46)
ARSENIC	2.5	6.5	1050
BIS(2-ETHYLHEXYL)PHTHALATE	210	2100	1900
CHLOROFORM	BDL (6.3)	2.1	1.7
2,3,7,8-TCDD EQUIVALENTS		0.000047	0.006577
BENZENE	BDL (6.3)	1.5	BDL (7.2)
NON-CARCINOGENIC			
BENZO(A)PYRENE	340	14000	950
LEAD	16	401	231
ARSENIC	2.5	6.5	1050
NICKEL	7.8	18	16
COPPER	34	88	437
ZINC	86	231	3510
CADMIUM	BDL (1.1)	2.3	11
MERCURY	BDL (.11)	0.13	1.5
BENZENE	BDL (6.3)	1.5	BDL (7.2)
DICHLOROMETHANE	12	110	20

TABLE 6

STANDARDS CHEMICAL	AIR CONCENTRATIONS AIR (ROUND 2 of 3) MIN	MAX	REP. VALUE	ACGIH* VALUES	PA AIR
CARCINOGENS	ng/cu.m	ng/cu.m	ng/cu.m	ng/cu.m	ng/cu.m
CHROMIUM VI**	5.19	13.5	8	120	8.33
BENZENE	2500	4800	3400	31200	12500
ARSENIC	6.47	8.63	7	24	24
BERYLLIUM	0.52	10.4	6	10	10
CHLOROFORM	BDL (87)	300	118	31200	4350
TETRACHLOROETHYLENE	850	1500	1288	1560000	
NICKEL	7.54	17.3	12	240	240
CADMIUM	0.19	2.2	1	120	55.6
TRICHLOROETHYLENE	BDL (87)	400	100	1560000	76900
BIS(2-ETHYLEXYL) PHTHALATE	BDL (27)	100	27	---	
NON-CARCINOGENS					
BENZENE	2500	4800	3400	31200	12500
BERYLLIUM	0.52	10.4	6	10	10
ZINC	20114	42047	25966	- -	
NICKEL	7.54	17.3	12	240	240
ANTIMONY	7.48	11.5	10	1200	1200
TOLUENE	12000	32000	19750	- -	
ARSENIC	6.47	8.63	7	24	24
COPPER	16.5	164	91	- -	
SILVER	1.87	5.18	4	- -	
DICHLOROMETHANE	72000	90689	80774	3120000	
CADMIUM	0.91	2.2	1	120	55.6
ETHYLBENZENE	2200	5200	4200	- -	
CHROMIUM VI	5.19	13.5	8	120	8.33
LEAD	10.2	13.7	12	1500	1500
TETRACHLOROETHYLENE	850	1500	1288	1560000	
DIETHYLPHTHALATE	26	110	53	- -	120000
CHLOROBENZENE	BDL (87)		BDL (87)	- -	
1,1,1-TRICHLOROETHANE	BDL (87)		BDL (87)	- -	
MERCURY	BDL(.41)		BDL(.41)	240	240

Note: * American Conference of Government Industrial Health
** Hexavalent chromium values are for total chromium and were assumed under a worst-case scenario to be 100% hexavalent.

ng/cu.m is a unit of measure equivalent to 1 nanogram of contaminant for every cubic meter of air.

administered by the Coast Guard. As a result of negotiations following receipt of a CERCLA notice letter dated December 18, 1981, NWP assumed responsibility for operation and maintenance of the containment operations in Naylors Run as of February 1, 1982. In December of 1982, the Havertown PCP Site was placed on the NPL. Subsequent inspections throughout 1984, made by DER and EPA, found many deficiencies with the containment operations. After negotiations, an Administrative Order was executed on October 10 ,1984 between NWP and EPA which required NWP to perform various abatement activities. These activities involved the adequate operation and periodic maintenance of the filter fences on Naylors Run. During this period DER and subsequently EPA initiated the RI/FS. The RI/FS was concluded August 1989 by DER. On August 23, 1989, EPA sent a special notice letter to NWP to determine its interest in participating in the RD/RA for this remedial action. On September 6, 1989, EPA received a written response from NWP. It declined to participate.

Analytical Data

The July, 1989 Focused Feasibility Study prepared for the Pennsylvania Department of Environmental Resources (PADER) by Lawler, Matusky and Skelly Engineers, Pearl River, New York addressed three areas of concern: onsite soils, contaminated waste in tanks and drums stored on National Wood Preserver's property, and water and air releases at Naylors Run. Groundwater was not addressed in this study, but will be addressed in a later investigation.

Soil sampling at the NWP plant site revealed concentrations of fuel oil and PCP widely distributed across the site. Other base neutral acids (BNAs), metals, dioxins, and dibenzofurans were also identified. Soils in the tank area (Figure 3) had the highest detected levels of metals, BNAs (including PCPs), oil and grease, dioxins, and dibenzofurans. Because benzene was detected in onsite soils in the low part per billion range, onsite conditions are not considered to be responsible for air samples collected around the perimeter of the site which show benzene exceeding Pennsylvania's air standards. Benzene, a constituent of gasoline, is a common contaminant around gas stations, several of which are located near the site.

The chemicals detected in surface water samples included PCP, naphthalene, benzene, toluene, xylene, and phenanthrene. Concentrations of these chemicals were not detected in surface water samples, where the floating oil believed to be associated with the NWP facility was not present. The concentrations of pesticides and PCBs were below detection levels in all surface water samples. The toxicity equivalent factors (TEF) for total tetra- through octa-chlorinated dibenzodioxins and dibenzofurans in all surface water samples were less than 1 parts per trillion (0.033 to 0.164 ppt). Toxicity equivalent factors are

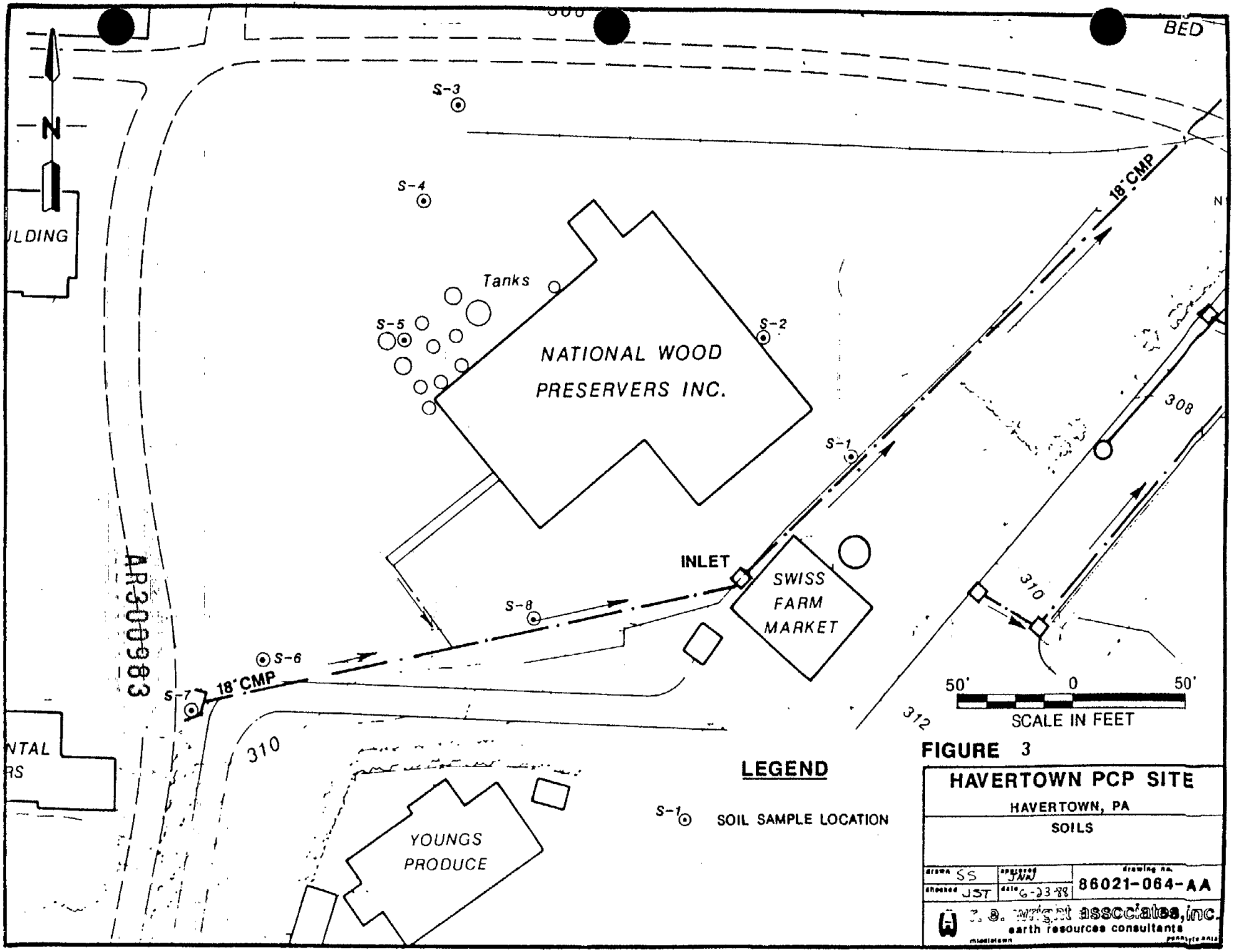

FIGURE 3

HAVERTOWN PCP SITE

HAVERTOWN, PA

SOILS

drawn SS	approved JNJ	drawing no. 86021-064-AA
checked JST	date 6-23-88	

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middletown pennsylvania

coefficiently assigned to isomers of dioxin and dibenzofurans and are based upon the toxicity of the most hazardous isomers. Contamination in the samples collected above the storm sewer outlet consists mainly of various heavy metals. The presence of arsenic, zinc, and copper may be associated with NWP because these metals are used in the wood-treatment process at the site.

Analytical results show that the sediments generally have higher levels of contaminants than the surface water. Several BNAs were found at elevated levels in all sediment samples. Total BNAs ranged from 221,000 to 6500 parts per billion (ug/kg) in Naylors Run. PCP levels in samples collected below the outfall decreased from 2300 ug/kg at SED-4 (Figure 4) to 120 ug/kg at SED-1 downstream. The highest level of PCP in sediment was 8700 ug/kg at SED-10. Total concentrations of metals were higher in the sediments than in surface water samples. Chromium, a wood preservative, was found at 40 ug/kg. No PCBs, dioxins, or dibenzofurans were found above detection limits.

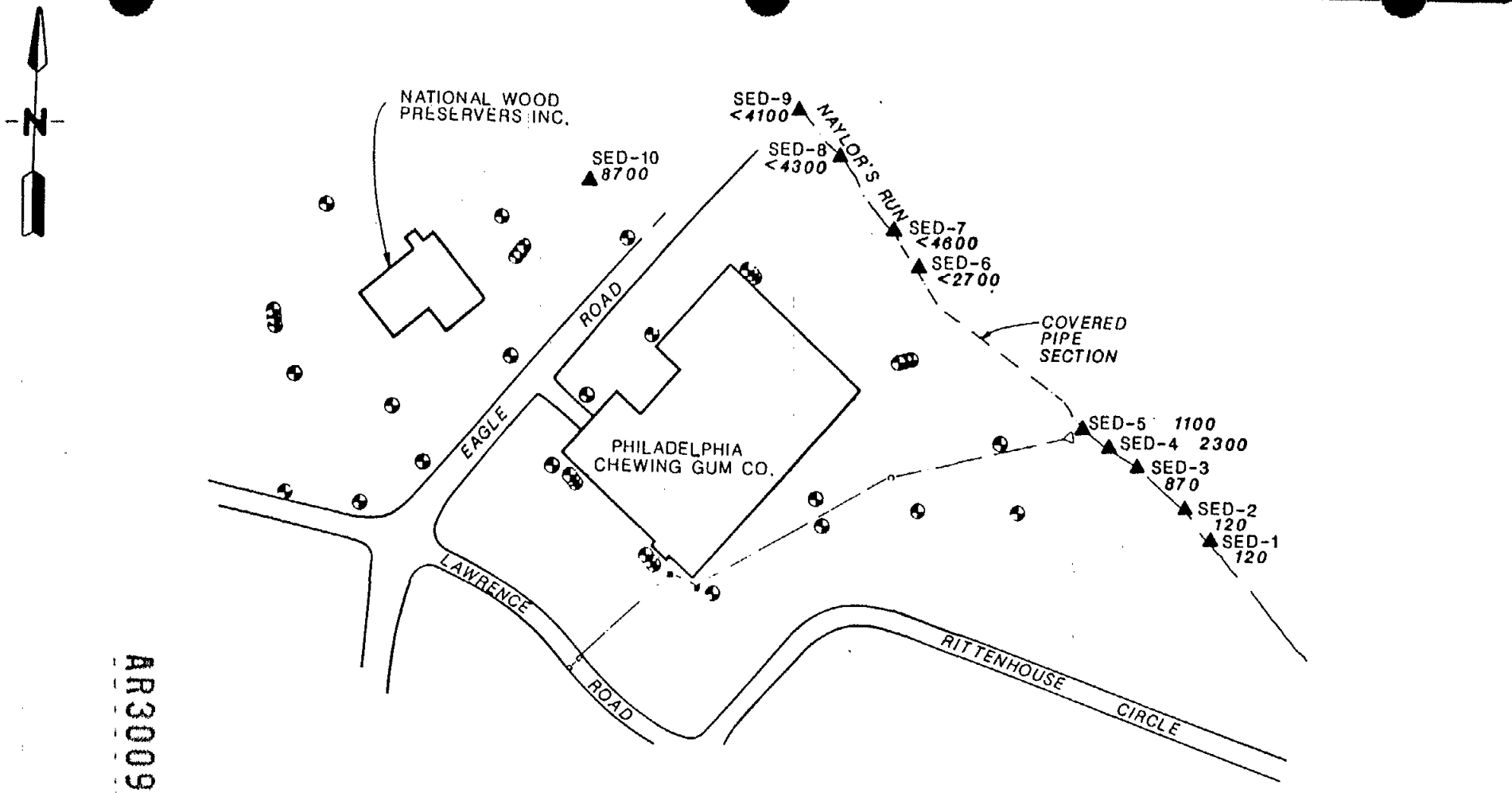
There are five holding tanks of contaminated water generated during monitoring well construction and over 100 drums of waste materials in a storage area northeast of the NWP building. The two 2500-gal tanks and three 500-gal tanks onsite contain contaminated water. The oil and grease concentrations in the water are less than 5 parts per million (mg/l). PCP concentration is high, about 11,000 ug/l. Toluene (up to 12 ug/l) and trichloroethene (2 ug/l) were also found in the tank water. Additional material was subsequently added to the tanks by PADER; however, no new sampling was performed.

Some of the 55-gallon drums were generated by PADER as a result of the remedial investigation (i.e., used protective clothing, soils, and various site debris). No analysis was performed on the contents of these drums. The majority of the 55-gallon drums were placed onsite by EPA, and typically contain PCP contaminated oil, absorbents, and soiled protected clothing from EPA's maintenance of the offsite catch basin.

Analysis for dioxin and an acid extractable/phenolic fraction was performed on the oil discharged at the catch basin in September, 1988. Some dioxin isomers were detected in the parts per trillion range, but no 2,3,7,8-tetrachlorodibenzo-p-dioxin (most toxic dioxin isomer) was identified. Naphthalene, 1,1,4-dichlorobenzene, acenaphthene, and phenanthrene were also found in trace amounts, but pentachlorophenol was detected at 2,951 ppm.

Risk Assessment

An evaluation of the contaminants present in each medium of the Havertown PCP site was prepared by Greeley-Polhemus Group, Inc. (June, 1989) for PADER. It addresses onsite soils and air



AR300985

LEGEND

- EXISTING WELL LOCATIONS
- STORM SEWER
- SED-9 SEDIMENT SAMPLING POINT
- <4100 ANALYSIS DETECTION LIMIT

FIGURE 4

HAVERTOWN PCP SITE
HAVERTOWN, PA

SEDIMENT
PENTACHLOROPHENOL (ug/kg)

drawn SS	approved JWW	drawing no. 86021-060-AA
checked JST	date 6-15-88	

E. B. Walsh & Associates, Inc.
earth resources consultants
middletown pennsylvania

groundwater, Naylors Run surface water, sediments in Naylors Run, and sediments in an onsite drainage ditch. The chemicals were ranked in accordance with their toxicity-concentration (TC) values. These values were summed for all media to obtain an indicator score (IS), and the chemicals were ordered in accordance with their IS values. Carcinogens were ranked separately from noncarcinogens. Six indicator chemicals were selected: arsenic, benzene, benzo(a)anthracene, benzo(a)pyrene, chromium VI, and 2,3,7,8-TCDD equivalents.

The arsenic and chromium probably come from the chromated copper arsenate used in the wood-preserving operations. The benzene, benzo(a)anthracene, and benzo(a)pyrene probably are contaminants in the PCP.

In addition to these indicator chemicals, all other chemicals detected onsite and in the area that could potentially cause human health effects were evaluated. These included PCP, several metals (antimony, beryllium, copper, lead, mercury, nickel, silver, and zinc), several volatile organic compounds (VOCs) (chloroform, chloroethylene, dichloromethane, dichloroethylene, tetrachloroethylene, and trichloroethylene), a phthalate, and three pesticides (chlordane, lindane, and dieldrin) that may have been used on site.

Based upon a review of all probable exposure pathways and the proximity of target organisms to the contaminants, the human health risk in terms of the maximum potential increased risk of contracting cancer from inhalation or ingestion was calculated for each potentially carcinogenic chemical. The results, expressed in terms of risk per million people exposed, are incremental, meaning that any increase in cancer cases would be in addition to the normal 250,000 cancers cases expected for every 1,000,000 people in the area, even if no contaminants were present at the site. The risk values are as follows:

1. Inhalation of entrained particulates containing chromium VI, arsenic, and other metals from onsite soils and of VOCs emanating from the site by persons off site:

	DISTANCE FROM THE SITE				
	500 ft	1000 ft	1320 ft	2000 ft	2640 ft
Cancer risk (per million)	5.8	2.9	2.2	1.45	1.1

These values are considered to be higher than the actual risk because the analytical results for total chromium were used as if they were 100% hexavalent chromium. While the hexavalent chromium salt is a known human carcinogen through the inhalation

route, sampling performed in July, 1989 did not identify the presence of hexavalent chromium in onsite soils.

2. Inhalation of benzene and other VOCs at the nearest residences (two within 75 m or 250 ft) to the catch basin: 5.5 (per million)

3. Ingestion of onsite soils: 8 (per million) This value is considered to be higher than the actual risk because the analytical results for total arsenic were used as if they were 100% trivalent arsenic.

4. Ingestion of sediments from Naylors Run: 7 (per million). This value is probably higher, since samples were collected prior to the construction of the catch basin on Naylors Run.

5. Ingestion of sediments from the onsite drainage ditch: 1 (per million)

6. Ingestion of liquids from the underflow dam: 2 (per million)

7. The total risk from all sources for a person living within 500 ft of the site and within 250 ft of the underflow dam and ingesting the onsite soils and sediments, the sediments under Naylors Run, and the liquids in the underflow dam is not cumulative; however, for multiple exposures to different media a slightly higher risk than would be calculated by adding together the risks stated above may be possible.

It should also be noted that none of the noncarcinogens or the noncarcinogenic effects were calculated to be such that the Acceptable Daily Intake (ADI) for any chemical was exceeded for any identified exposure. ADI's are the amounts of contaminants that a body can consume on a daily basis without experiencing any ill-effects. These values are contained in EPA's Integrated Risk Information System (IRIS) computer database.

Remedial Action Objectives

Remedial action objectives were broken down into three areas of concern; onsite soils, catch basin in Naylors Run, and staged waste materials.

Onsite Soils:

- The remediation objective for the contaminated soils onsite is to prevent wind entrainment of and access to the contaminants in excess of safe levels; and

- Although the risk was later found to be acceptable, alternatives were evaluated and are presented in Table #7.

Catch Basin in Naylors Run:

- Reduce PCP oil discharge to Naylors Run to less than 5 mg/l. Since the highest PCP level found in the floating oil was 2,951 mg/l, the highest PCP level expected in the water if the objective is reached would be approximately 17 ug/l PCP; and

- Reduce the concentration of benzene and other VOCs by 17%.

- These actions will bring the potential exposure risk to the public and the environment from the storm sewer effluent to within EPA's acceptable risk range.

Drummed Waste Materials:

- The remediation objective for the contaminated waste is to dispose of all materials in a safe and approved method.

Sediments:

In 1987, before installation of the catch basin, sediment samples were collected from nine locations in Naylors Run. The samples were found to be contaminated with arsenic, chromium VI, benzo(a)anthracene, benzo(a)pyrene, PCP, and dioxins. Based on these data and the limited analyses of samples collected in 1988, the sediments are judged to present a potential health risk. Remediation alternatives for the sediments are not addressed here because no data exist after the installation of the catch basin by EPA in 1988. Potential health risk due to the public's exposure to sediments from Naylors Run will be assessed in a second operable unit.

GENERAL RESPONSE ACTIONS

The following is a comprehensive list of general response actions which were screened to identify the remedial action alternatives which best address the contamination concerns for each of the following; onsite soils, Naylors Run storm sewer effluent, and staged waste material.

I. CONTAMINATED SOILS

A. Excavation With Off-Site Disposal

1. Excavation

   a. Grading
   b. Backfill
   c. Revegetation or paving
   d. Retaining walls

2. Landfill Disposal

3. Incineration

B. Excavation With Onsite Containment

1. Sorbents

2. Stabilization

3. Encapsulation

C. Excavation With Onsite Treatment

1. Biodegradation

2. Soil aeration

3. Solvent extraction

4. Chemical dechlorination

5. UV-ozonation

6. Oxidation

7. UV-PHOTOLYSIS

8. Incineration

9. Acid extraction

D. In Situ Containment of Soil

1. Capping

   a. Multi-media (gravel, clay, sand, soil)
   b. Asphalt
   c. Concrete

E. In Situ Treatment

1. Vitrification

2. Chemical dechlorination
3. Bioreclamation
4. Solvent flushing
5. Vacuum well

II. CATCH BASIN

A. Surface Water and Oil Control

1. Cover
2. Gas collection
3. Upstream sedimentation basin
4. Physical treatment (separation)

B. Surface Water and Air Treatment

1. Biological treatment
2. Neutralization
3. Precipitation
4. Oxidation
5. Hydrolysis
6. Reduction
7. Chemical dechlorination
8. UV and ozonation
9. Activated carbon water treatment
10. Air/stream stripping
11. Activated carbon air treatment

III. STAGED WASTE MATERIALS

A. Soils, Debris, and Oils

1. Landfill
2. Incineration
3. Chemical dechlorination

B. Aqueous Wastes (Handled Individually or Composited)

1. Liquid incineration

2. Landfill

3. Chemical dechlorination

4. Carbon adsorption

Based upon the limitations of existing technologies, the existence of a viable onsite business concern and the requirement of a permanent treatment remedy, all appropriate technologies are discussed below.

Description of Alternatives

The alternatives selected were determined to be both appropriate responses to conditions at the site and protective of the public health and welfare, and the environment. They were developed by combining feasible and applicable technologies based on their potential application within specified remediation scenarios. The alternatives are developed separately for each area of concern (contaminated soil on the NWP site, liquids at the catch basin in Naylors Run, and contaminated waste from tanks and drums).

The alternatives are further evaluated using the nine criteria specified in Section 121 of CERCLA. These are protectiveness of human health and the environment, compliance with all applicable, relevant and appropriate requirements (ARARs); reduction of toxicity, mobility, or volume; State acceptance; community acceptance; short-term effectiveness, long-term effectiveness, implementability, and cost.

Tables 7, 8, and 9 refer to a review of the suitable alternatives for onsite soils, Naylors Run storm sewer effluent, and staged waste materials based upon the nine criteria listed above.

EPA's Selected Remedies/Statutory Determinations

EPA's preferred alternatives for remediation of the Havertown PCP site are alternative #1 for soil, #3 for surface water, and #2 for the disposal of the onsite drums and tanks.

No-Action alternative for onsite soils

The No-Action alternative (#1) for soil achieves the remedial action objectives because the potential [illegible] the public's health associated with contaminated dust and infiltration of contaminants into the environment poses no

TABLE 7.1

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED SOIL ON NWP SITE

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 CAP SOIL WITH CONCRETE	ALTERNATIVE 3 CAP SOIL WITH ASPHALT	ALTERNATIVE 4 EXCAVATION WITH LANDFILL DISPOSAL
Short-Term Effectiveness				
Community protection	Risk to community not increased by remedy implementation.	Temporary increase in dust production through cap installation. Contaminated soils remain undisturbed.	Temporary increase in dust production through cap installation. Contaminated soils remain undisturbed.	Temporary increase in dust production through excavation and soil transportation.
Worker protection	No risk to workers.	Protection required against dermal contact and inhalation of contaminated dust during cap construction.	Protection required against dermal contact and inhalation of contaminated dust during cap construction.	Protection required against dermal contact and inhalation of contaminated dust during excavation and transportation.
Environmental	No change from existing conditions.	Cap installation may temporarily impact air quality.	Cap installation may temporarily impact air quality.	Excavation may temporarily impact air quality.

TABLE 7.2

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED SOIL ON NWP SITE

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 CAP SOIL WITH CONCRETE	ALTERNATIVE 3 CAP SOIL WITH ASPHALT	ALTERNATIVE 4 EXCAVATION WITH LANDFILL DISPOSAL
Time until action is complete	Not applicable.	Cap installed in three months.	Cap installed in two months.	Excavation complete in one year (75 trucks/week, 12 yd^3/truck); backfill with clean fill, grading complete after an additional two months.
Compliance With ARARs				
Chemical-specific ARARs	Not applicable.	Would meet Pennsylvania air standards at the site boundary.	Would meet Pennsylvania air standards at the site boundary.	Would meet Pennsylvania air standards at the site boundary.
Location-specific ARARs	Not applicable. There are no location-specific ARARs.	Not relevant. There are no location-specific ARARs.	Not relevant. There are no location-specific ARARs.	Not relevant. There are no location-specific ARARs.

TABLE 7.3

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED SOIL ON NWP SITE

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 CAP SOIL WITH CONCRETE	ALTERNATIVE 3 CAP SOIL WITH ASPHALT	ALTERNATIVE 4 EXCAVATION WITH LANDFILL DISPOSAL
Action-specific ARARs	Not applicable.	Would not meet RCRA landfill closure requirement (40 CFR 264.228, 40 CFR 264.310).	Would not meet RCRA landfill closure requirement (40 CFR 264.228, 40 CFR 264.310).	Would meet RCRA clean closure and land disposal requirement (40 CFR 264.111, 40 CFR 268.31).
Other criteria and guidance	Within EPA's acceptable cancer risk range of 10^{-7} to 10^{-4}.	Within EPA's acceptable cancer risk range of 10^{-7} to 10^{-4}.	Within EPA's acceptable cancer risk range of 10^{-7} to 10^{-4}.	Within EPA's acceptable cancer risk range of 10^{-7} to 10^{-4}.
Overall Protection				
Human health protection	Some reduction in access to risk through fence repair.	Cap reduces direct contact risk and soil ingestion risk to less than 1×10^{-6}.	Cap reduces direct contact risk and soil ingestion risk to less than 1×10^{-6}.	Excavation and off-site landfill reduce direct contact/soil ingestion to less than 1×10^{-6}.
Environmental protection	Contaminants remain on site.	Contaminant movement is reduced by use of cap.	Contaminant movement is reduced by use of cap.	Contaminant source is removed by use of excavation and landfill.

TABLE 7.4

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED SOIL ON NWP SITE

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 CAP SOIL WITH CONCRETE	ALTERNATIVE 3 CAP SOIL WITH ASPHALT	ALTERNATIVE 4 EXCAVATION WITH LANDFILL DISPOSAL
Reduction of Toxicity, Mobility, or Volume Through Treatment				
Treatment process used	None.	None.	None.	None.
Amount destroyed or treated	None.	None.	None.	All contaminated soil removed.
Reduction of toxicity, mobility, or volume	None.	Air and groundwater mobility reduced by capping.	Air and groundwater mobility reduced by capping.	Toxicity, mobility, and volume of contaminated soil reduced on site.
Irreversible treatment	None.	None.	None.	None.
Type and quantity of residuals remaining after treatment	None.	None.	None.	None.
Statutory preference for treatment	Does not satisfy.	Does not satisfy.	Does not satisfy.	Does not satisfy.

TABLE 7.5

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED SOIL ON NWP SITE

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 CAP SOIL WITH CONCRETE	ALTERNATIVE 3 CAP SOIL WITH ASPHALT	ALTERNATIVE 4 EXCAVATION WITH LANDFILL DISPOSAL
Long-Term Effectiveness and Permanence				
Magnitude of residual risk	Source has not been removed. Existing risk could potentially mitigate over time.	Risk eliminated as long as cap is maintained. Because source is only contained, inherent hazard of waste remains.	Risk eliminated as long as cap is maintained. Because source is only contained, inherent hazard of waste remains.	Source has been removed; risk will no longer exist.
Adequacy and reliability of controls	No controls over remaining contamination.	The cap controls contaminated soil. The cap is effective and reliable with minimal maintenance. Cap will withstand truck traffic.	The cap controls contaminated soil. The cap is effective and reliable only if regularly maintained. Cap cannot withstand constant truck traffic.	Excavation and offsite landfill are adequate and reliable to control contaminated soil.
Need for 5-year review	Review would be performed to ensure that protection of human health and the environment is maintained.	Review would be required since contaminated soil remains on site.	Review would be required since contaminated soil remains on site.	Not applicable. Contaminated soil would not be on site.

TABLE 7.6

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED SOIL ON NWP SITE

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 CAP SOIL WITH CONCRETE	ALTERNATIVE 3 CAP SOIL WITH ASPHALT	ALTERNATIVE 4 EXCAVATION WITH LANDFILL DISPOSAL
Implementability				
Ability to construct and operate	No construction or operation.	Simple to construct. Would require about 2150 yd^3 of reinforced concrete and 1620 yd^3 of gravel.	Simple to construct. Would require about 1350 yd^3 of asphalt and 1620 yd^3 of gravel.	Simple to construct. Would require backfilling of about 45,200 yd^3 of soil.
Ease of doing more action	If monitoring indicates more action is necessary, may need to go through the FS/ROD process again.	Simple to extend capping.	Simple to extend capping.	Can handle varying volumes.
Ability to monitor effectiveness	Monitoring would further document existing condition.	Inspection and monitoring would detect failure before significant exposure occurs.	Inspection and monitoring would detect failure before significant exposure occurs.	Not applicable.

TABLE 7.7

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED SOIL ON NWP SITE

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 CAP SOIL WITH CONCRETE	ALTERNATIVE 3 CAP SOIL WITH ASPHALT	ALTERNATIVE 4 EXCAVATION WITH LANDFILL DISPOSAL
Ability to obtain approvals and coordinate with other agencies	No approval necessary.	No approval necessary.	No approval necessary.	Need a permit for hauling contaminated soil; need approval for landfill disposal.
Availability of service and capacities	No services or capacities required.	Only basic construction services needed.	Only basic construction services needed.	Limited landfill availability.
Availability of equipment specialists, and materials	None required.	No special equipment, materials, or specialists required. Cap materials available within 20 miles.	No special equipment, materials, or specialists required. Cap materials available with 20 miles.	Need licensed drivers.
Availability of technology	None required.	Cap technology readily available.	Cap technology readily available.	Not applicable.
Cost				
Capital cost	$18,800	$668,900	$344,100	$19,144,000
Annual O&M cost (with monitoring)	$65,000	$55,000	$65,000	$281,400
Present worth cost	$335,000	$1,288,100	$1,075,900	$19,425,400

TABLE 7.8

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED SOIL ON NWP SITE

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 CAP SOIL WITH CONCRETE	ALTERNATIVE 3 CAP SOIL WITH ASPHALT	ALTERNATIVE 4 EXCAVATION WITH LANDFILL DISPOSAL
Acceptability by State	Moderate	Moderate	Moderate	Moderate
Public Acceptance	Moderate	Moderate	Moderate	Moderate

TABLE 8.1

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - LIQUID EFFLUENT CONTROL AT CATCH BASIN

AR301090

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 PRESENT SYSTEM FOR LIQUID CONTROL	ALTERNATIVE 3 OPTIMUM OIL/WATER SEPARATOR
Short-Term Effectiveness			
Community protection	Risk to community not increased by remedy implementation.	Risk to community not increased by remedy implementation.	Temporary disturbance of storm sewer discharge during installation of separator.
Worker protection	No significant risk to workers.	Protection required against VOCs inhalation and dermal contact during maintenance of filter fence.	Protection required against VOCs inhalation and dermal contact during servicing of oil/-water separator.
Environmental impact	Continued impact from existing conditions.	Continued impact to air quality.	Temporary increase in stream turbidity during construction.
Time until action is complete	Not applicable.	Currently in place.	Two months.
Compliance With ARARs			
Chemical-specific ARARs	Not applicable.	Does not meet Pennsylvania air standards past the site boundary. Would meet NPDES requirements at the site boundary.	Would meet Pennsylvania air standards past the site boundary. Would meet NPDES requirements at the site boundary.

TABLE 8.2

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - LIQUID EFFLUENT CONTROL AT CATCH BASIN

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 PRESENT SYSTEM FOR LIQUID CONTROL	ALTERNATIVE 3 OPTIMUM OIL/WATER SEPARATOR
Location-specific ARARs	Not applicable.	Not applicable.	Oil/water separator in 100-year flood zone.
Action-specific ARARs	Not applicable.	Would not meet NPDES requirements.	May meet NPDES requirements for oil and grease.
Other criteria and guidance	Not applicable.	Would allow inhalation of contaminated air exceeding 1×10^{-6} risk. Would reduce ingestion of surface water exceeding 1×10^{-6} risk.	Protects against ingestion of surface water and inhalation of contaminated air exceeding 1×10^{-6} risk.
Overall Protection			
Human health protection			
- Air inhalation	No reduction in risk.	No significant reduction in risk.	Can reduce air inhalation risk to less than 1×10^{-6}.
- Surface water ingestion	No reduction in risk.	Does not reduce surface water ingestion risk to less than 1×10^{-6}.	Can reduce surface water ingestion to less than 1×10^{-6}.

TABLE 8.3

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - LIQUID EFFLUENT CONTROL AT CATCH BASIN

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 PRESENT SYSTEM FOR LIQUID CONTROL	ALTERNATIVE 3 OPTIMUM OIL/WATER SEPARATOR
Environmental protection	Continued VOCs emission to air and contaminated oil discharge to Naylors Run.	Continued VOCs emmission to air and reduced contaminated oil discharge to Naylors Run.	VOCs emmission and contaminated oil discharge are mitigated by use of optimum oil/water separator.
Reduction of Toxicity, Mobility, or Volume Through Treatment			
Treatment process used	None.	Existing catch basin and filter fence.	Optimum Oil/water separation.
Amount destroyed or treated	None.	Treat less than 1.3 gpd oil.	Treat 1.3-8 gpd oil. 90% VOCs in the vapor removed.
Reduction of toxicity, mobility, or volume	None.	Toxicity of surface water reduced in the vicinity of catch basin.	Toxicity of air and surface water reduced in the vicinity of catch basin.
Irreversible treatment	None.	Present oil recovery system is reversible.	Oil/water separation is reversible.

TABLE 8.4

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - LIQUID EFFLUENT CONTROL AT CATCH BASIN

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 PRESENT SYSTEM FOR LIQUID CONTROL	ALTERNATIVE 3 OPTIMUM OIL/WATER SEPARATOR
Type and quantity of residual remaining after treatment	No residual remaining.	Residual oily absorbent materials; approximately four barrels per month.	Liquid oil residue; less than four barrels per month.
Statutory preference for treatment	Does not satisfy.	Satisfies.	Satisfies.
Long-Term Effectiveness and Permanence			
Magnitude of residual risk			
- Air inhalation	Source has not been removed; existing risk will remain.	Source has not been removed; existing risk would remain.	Risk eliminated through air containment within separator.
- Surface water ingestion	Source has not been removed; existing risk will remain.	Risk reduced through inspection and maintenance of existing catch basin.	Risk eliminated through optimum oil/water separator.

TABLE 8.5

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - LIQUID EFFLUENT CONTROL AT CATCH BASIN

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 PRESENT SYSTEM FOR LIQUID CONTROL	ALTERNATIVE 3 OPTIMUM OIL/WATER SEPARATOR
Adequacy and reliability of control	No controls over remaining contamination. No reliability.	Present system can reduce contaminated oil discharge, but is not reliable. No control of air contamination.	The alternative is adequate and reliable to control contaminated oil and air.
Need for 5-yr review	Review would be required to assess impact of discharge.	Review would be required to ensure that minimal protection of human health and the environment is maintained.	Review would be required to ensure that adequate protection of human health and the environment is maintained.
<u>Implementability</u>			
Ability to construct and operate	No construction or operation.	Simple to maintain filter fence.	Installation will require excavation of soil and rock near catch basin; operation is routine.
Ease of doing more action if needed	Not applicable.	If monitoring indicates more action is necessary, may need to go through the FS/ROD process again.	Can treat 200 gpm. If volumes exceed maximum separator capacity due to severe storms, they must bypass separator.
Ability to monitor	Monitoring would better define extent of contamination.	Monitoring would determine effectiveness of treatment.	Monitoring would determine effectiveness of treatment.

TABLE 8.6

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - LIQUID EFFLUENT CONTROL AT CATCH BASIN

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 PRESENT SYSTEM FOR LIQUID CONTROL	ALTERNATIVE 3 OPTIMUM OIL/WATER SEPARATOR
Ability of obtain approvals and coordinate with other agencies	No approval necessary.	No approval necessary.	No permit required, however, EPA must attempt to meet standards for construction and operation of separator.
Availability of services and capacities	No services or capacities required.	Need continued sorbent boom maintenance.	Oil/water separator maintenance services available from commercial sources. Oil to be hauled by licensed carrier to permitted disposal facility.
Availability of equipment, specialists, and materials	None required.	Present system is currently maintained; no special equipment, etc., required.	Oil/water separator service requires pump, barrels - readily available.
Availability of technologies	None required.	None required.	Oil/water separation technology well developed and available.

TABLE 8.7

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - LIQUID EFFLUENT CONTROL AT CATCH BASIN

CRITERIA	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 PRESENT SYSTEM FOR LIQUID CONTROL	ALTERNATIVE 3 OPTIMUM OIL/WATER SEPARATOR
Cost			
Capital cost	$50,000	$50,000	$158,500
Annual O&M cost (with monitoring)	$20,000	$45,000	$45,000
Present worth cost	$275,000	$556,600	$665,100
Acceptability by State	Low	Moderate	High
Public Acceptance	Low	Low	High

TABLE 9.1

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED WASTE FROM TANKS AND DRUMS

CRITERIA	ALTERNATIVE 1 LANDFILL OF SOIL AND OILY DEBRIS, CARBON ADSORPTION OF AQUEOUS WASTE	ALTERNATIVE 2 LANDFILL OF SOIL AND OILY DEBRIS, OFFSITE TREATMENT OF AQUEOUS WASTE
Short - Term Effectiveness		
Community protection	Temporary increase in dust production through loading and transportation of soil and debris.	Temporary increase in dust production through loading and transportation of soil and debris.
Worker protection	Protection required against dermal contact and inhalation of contaminated waste during loading, transportation, and treatment.	Protection required against dermal contact and inhalation of contaminated waste during loading, transportation, and treatment.
Environmental impact	Loading, transportation, and treatment may temporarily impact air quality.	Loading, transportation, and treatment may temporarily impact air quality.
Time until action is complete	Offsite landfill of soil and debris and carbon adsorption of aqueous waste may be completed in two months.	Offsite landfill of soil and debris and bulk transfer of liquids may be completed in two months.
Compliance With ARARs		
Chemical-specific ARARs	Would meet Pennsylvania air standards at the site boundary.	Would meet Pennsylvania air standards at the site boundary.

TABLE 9.2

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED WASTE FROM TANKS AND DRUMS

CRITERIA	ALTERNATIVE 1 LANDFILL OF SOIL AND OILY DEBRIS, CARBON ADSORPTION OF AQUEOUS WASTE	ALTERNATIVE 2 LANDFILL OF SOIL AND OILY DEBRIS, OFFSITE TREATMENT OF AQUEOUS WASTE
Location-specific ARARs	Not relevant. There are no location-specific ARARs.	Not relevant. There are no location-specific ARARs.
Action-specific ARARs	Would meet RCRA clean closure and land disposal requirements (40 CFR 264.111, 40 CFR 268.31).	Would meet RCRA clean closure and land disposal requirements (40 CFR 264.111, 40 CFR 268.31).
Other criteria and guidance	Protects against inhalation of contaminated air to less than 1×10^{-6} risk.	Protects against inhalation of contaminated air to less than 1×10^{-6} risk.
Overall Protection		
Human health protection	Eliminates potential for ingestion, inhalation.	Eliminates potential for ingestion, inhalation.
Environmental protection	Potential contaminant release to environment eliminated.	Potential contaminant release to environment eliminated.

TABLE 9.3

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED WASTE FROM TANKS AND DRUMS

CRITERIA	ALTERNATIVE 1 LANDFILL OF SOIL AND OILY DEBRIS, CARBON ADSORPTION OF AQUEOUS WASTE	ALTERNATIVE 2 LANDFILL OF SOIL AND OILY DEBRIS, OFFSITE TREATMENT OF AQUEOUS WASTE
Reduction of Toxicity, Mobility, or Volume Through Treatment		
Treatment process used	Carbon adsorption of water	Offsite treatment (possibly carbon adsorption)
Amount destroyed or treated	99.9% PCP in the aqueous waste removed by carbon adsorption.	99.9% PCP in the aqueous waste removed by carbon adsorption.
Reduction of toxicity, mobility, or volume	Toxicity of contaminated water reduced.	Toxicity of contaminated water reduced.
Irreversible treatment	Carbon adsorption with regeneration of carbon is irreversible.	Carbon adsorption with regeneration of carbon is irreversible.
Type and quantity of residuals remaining after treatment	Metals and chlorinated compounds are residual in the waste. Carbon requires regeneration or disposal.	Metals and chlorinated compounds are residual in the waste. Carbon requires regeneration or disposal.
Statutory preference for treatment	Satisfies.	Satisfies.

TABLE 9.4

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED WASTE FROM TANKS AND DRUMS

CRITERIA	ALTERNATIVE 1 LANDFILL OF SOIL AND OILY DEBRIS, CARBON ADSORPTION OF AQUEOUS WASTE	ALTERNATIVE 2 LANDFILL OF SOIL AND OILY DEBRIS, Offsite TREATMENT OF AQUEOUS WASTE
Long-Term Effectiveness and Permanence		
Magnitude of residual risk	Risk eliminated through off-site land-fill and carbon adsorption.	Risk eliminated through off-site land-fill and treatment.
Adequacy and reliability of control	Actions are adequate and reliable to control contaminated waste.	Actions are adequate and reliable to control contaminated waste.
Need for 5-yr review	Not applicable.	Not applicable.
Implementability		
Ability to construct and operate	Carbon adsorption requires some operation.	No operation required.
Ease of doing more action if needed	Carbon adsorption can handle varying aqueous/waste volumes or concentrations of contaminants.	Offsite treatment facility will have flexibility to treat waste as required.
Ability to monitor effectiveness	Visual inspection adequate to ensure removal. Carbon adsorption effluent will be monitored.	Visual inspection adequate to ensure removal.

TABLE 9.5

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED WASTE FROM TANKS AND DRUMS

CRITERIA	ALTERNATIVE 1 LANDFILL OF SOIL AND OILY DEBRIS, CARBON ADSORPTION OF AQUEOUS WASTE	ALTERNATIVE 2 LANDFILL OF SOIL AND OILY DEBRIS, OFFSITE TREATMENT OF AQUEOUS WASTE
Ability to obtain approvals and coordinate with other agencies	Need a permit for hauling the waste and an approval for landfill disposal. May need NPDES discharge permit for carbon adsorption process.	Need a permit for hauling the waste and an approval for landfill disposal.
Availability of service and capacities	Need carbon adsorption services. Limited approved landfill site availability.	Limited approved landfill site availability. Treatment facility available nearby.
Availability of equipment, specialists, and materials	Needs operator to install and operate carbon adsorption. Need licensed drivers.	Need licensed drivers. Need bulk liquid handling trucks.
Availability of technology	Carbon adsorption is conventional technology.	Treatment facilities are available.

TABLE 9.6

INDIVIDUAL EVALUATION OF FINAL ALTERNATIVES - CONTAMINATED WASTE FROM TANKS AND DRUMS

CRITERIA	ALTERNATIVE 1 LANDFILL OF SOIL AND OILY DEBRIS, CARBON ADSORPTION OF AQUEOUS WASTE	ALTERNATIVE 2 LANDFILL OF SOIL AND OILY DEBRIS, OFFSITE TREATMENT OF AQUEOUS WASTE
Cost		
Capital cost	$153,000	$161,200
Continue first year annual O&M cost	0	0
Present worth cost	$153,000	$161,200
Acceptability by State	Moderate	Moderate
Public Acceptance	Moderate	Moderate

significant risk to human health. Any potential impact from the soil on groundwater will be addressed in the next operable unit.

Because of the location and size of the site (2 acres) in the middle of a commercial/industrial area, surrounded by a residential community, no wildlife is expected to be impacted by the continuance of present site conditions. No wetlands, parks, critical habitats or habitats of endangered species are within close proximity to the site, and based on sediment and surface water data, runoff from the site exerts a negligible effect on Naylors Run.

Even though compliance with the provisions of Section 121 of SARA regarding the degree of cleanup is not triggered by the No Action alternative, it is appropriate to demonstrate that this alternative is protective of human health and the environment.

The chosen alternative meets current ACGIH, NIOSH and Pennsylvania Air Standards for all contaminants which originated from the site. While no legislated quantitative cleanup levels for hazardous wastes in soils exists, the risk assessment determines the degree of cleanup necessary. Since risks at the site for the different media are within EPA's acceptable range of 10^{-7} to 10^{-4} for an incremental cancer risk, the requirements of the No Action alternative is protective of the public's health.

Since there is minimal remedial construction, capital and O&M costs are low (Table 10) and monitoring costs are moderate.

The no action alternative complies with all appropriate criteria for selection as the remedial response for onsite soil contamination.

Because the selected remedy provides for a security fence around the site perimeter and an ongoing business currently occupies the site, it is unlikely that children will be found frequently playing on the property. Therefore, the possibility of onsite soil ingestion by the public is not considered a probable event.

The No Action alternative for onsite soils is protective of both human health and the environment. All potential pathways from direct contact were examined in order to make this determination.

A 5-year program for soil monitoring will be implemented and results will be reviewed yearly. A determination will then be made by EPA concerning the appropriateness of taking further actions. Upon completion of this program, EPA will determine if additional sampling or remedial action are necessary.

Oil/Water separator for storm sewer effluent

TABLE 10

NO ACTION - CONTAMINATED SOIL ON NWP SITE

A.	CAPITAL COSTS			
	1. Fencing	$ 15,000		
	2. Contingency (25%) of construction costs	3,800		
	Total Capital Costs.....			$ 18,800
B.	CONTINUING O&M COST			
	1. Monitoring	$ 65,000	1yr	
	Present worth (8% for 5 years).....			$316,200
C.	PRESENT WORTH.....			$335,000

The recommended alternative for remediation of the storm drain effluent to Naylors Run is the installation and operation of an oil/water separator (Alternative 3). Such separators, which are commercially available, are used in petroleum distribution and transportation facilities and in a variety of other industrial and military operations. Of the three alternatives, only the oil/water separator complies with ARARs and provides overall, long-term protection to humans (Table #11). The unit is expected to remain in place for 30-years, however a periodic review of site conditions may alter this time-frame. Discharge criteria was previously discussed in the Remedial Action Objectives section of this ROD.

Installation of a carbon adsorption air treatment unit is not considered necessary since the oil/water separator is a closed vessel with only a small vent from which VOCs could be released. Also, since the existing risk due to inhalation of organics from the catch basin at the two residences nearest to the basin is based on limited empirical data, the following additional actions are to be conducted in the area of the catch basin:

- Measurement of flow volumes from the stormwater pipe draining the NWP site area and in Naylors Run
- Air sampling for VOCs near the catch basin
- Perform a one time water and oil sampling program within the catch basin for PCP, VOCs and other contaminants of concern to update the historical sampling data
- Perform yearly monitoring of sediments, water, and biota to determine current site conditions and the need for further remedial actions

Landfill and offsite treatment for staged waste materials

The recommended alternative for cleaning up the contaminated waste staged on site is alternative #2 - landfill of soil and oily debris and offsite treatment of aqueous waste (Table #12). While the two alternatives evaluated are similar, offsite treatment of the liquid waste is recommended for two reasons:

- It can be implemented more readily; a carbon adsorption unit does not have to be brought on site, effluent testing is not required, and compliance with NPDES standards is not needed.
- Offsite treatment will not require discharging of effluent (albeit treated) to Naylors Run and therefore will be more acceptable to the community.

TABLE 11

OPTIMUM OIL/WATER SEPARATOR -
LIQUID EFFLUENT CONTROL AT NAYLORS RUN CATCH BASIN

A.	CAPITAL COSTS	
1.	Initial monitoring of sediments, water, and biota	$ 50,000
2.	Oil/water separator, including installation	35,000
3.	Health and safety	2,000
4.	Predesign data acquisition	25,000
5.	Engineering and design (25% of Nos. 2-4)	15,500
6.	Legal and administrative (20% of Nos. 2-4)	12,400
7.	Contingency (25% of Nos. 2-4)	15,500
	Total Capital Costs.....	$155,400
B.	CONTINUING O&M COST	
1.	O&M of oil/water separator	$ 30,000/yr
2.	Monitoring of water and sediments	15,000/yr
	Total O&M	$ 45,000/yr
	Present worth (8% for 30 years).....	$506,600
C.	PRESENT WORTH.....	$662,000

TABLE 12

LANDFILL OF SOIL AND OILY DEBRIS AND OFFSITE TREATMENT OF WATER FROM CONTAMINATED WASTE IN TANKS AND DRUMS

A. CAPITAL COSTS		
1.	Sampling, analysis, and labeling of soil and oily debris (200 drums)	$ 30,000
2.	Offsite disposal (landfill) of soil and oily debris	35,000
3.	Sampling and analysis of aqueous waste	5,000
4.	Offsite hauling and treating of aqueous waste (6000 gal @ $4/gal)	24,000
5.	Health and safety	10,000
6.	Engineering and design (10%)	10,400
7.	Legal and administrative (20%)	20,800
8.	Contingency (25%)	26,000
	Total capital costs	161,200
B.	CONTINUING O&M COST	0
C.	PRESENT WORTH	$161,200

The State has concurred with these selected remedies.

Applicable, Relevant and Appropriate Requirements (ARARs)

The remedial action alternatives selected for two of the three problem areas of concern (the catch basin and the onsite staged materials) must meet or exceed all applicable, relevant and appropriate requirements (ARARs) unless a waiver provided by CERCLA Section 121(d)(4) is invoked.

Remedial action alternatives for the catch basin are not intended as final remedial actions for the site. ARARs are waived (CERCLA Section 121(d)(4)(A)) for this portion because it is only part of a total remedial action alternative to be developed in an upcoming operable unit. Offsite disposal requirements for generated wastes from the catch basin and existing onsite staged material will comply with all RCRA transport and disposal regulations.

As described in Section 121 of SARA, no review of ARARs is to be made when the No-Action Alternative is selected as in the case of onsite soils.

Community Relations

EPA considers public participation in the decision-making process associated with site remediations to be vital. Consequently, the Agency makes site-related documents available to the public at a particular location in the community. For this Site, the information repository is the:

Haverford Township Building
2325 Darby Road
Havertown, PA 19083-2251

Since this was a State-lead site, the State was required to announce the availability of the FS Report and to provide a public comment period. The comment period for the Havertown PCP Site began on August 25, 1989, and extended until September 25, 1989.

A responsiveness summary is provided in Appendix A.

Comments, inquiries, and requests for additional information may also be made by contacting the following EPA/PADER representatives:

Ms. Nanci Sinclair (3PA00)
Community Relations Coordinator
(215) 597-4164

Mr. Nick DiNardo (3HW22)
Regional Project Manager
(215) 597-8541

US EPA
841 Chestnut Street
Philadelphia, PA 19107

Thomas Leaver
PA Dept. of Environmental Resources
P. O. Box 2063
Harrisburg, PA 17120
(717) 783-7816

Appendix "A"

Responsiveness Summary

On August 25, 1989, the Delaware County Times ran an EPA advertisement announcing the preferred cleanup alternatives for the Havertown PCP Superfund Site. The comment period extended from August 25, 1989 to September 25, 1989 and, was announced in this ad.

Throughout the Superfund process, EPA and PADER have never received written comments from Havertown residents regarding the site. No comments were received during the past comment period.

Appendix B

Description of Work at the Havertown PCP site

A summary of the major work to be completed under this Remedial Action, as outlined in the September 30, 1989 ROD.

The major components of the selected remedy include:

- Installation of an oil/water separator into the existing catch basin in Naylor's Run.

- Offsite treatment and disposal of all staged waste materials on National Wood Preservers property.

The selected remedies are the first phase of two for remediation of this site and will be consistent with the final remedy.