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June 1991

EPA

Superfund Record of Decision:

Resin Disposal, PA

50272-101

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Resin Disposal, PA
First Remedial Action

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14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The 26-acre Resin Disposal site is an inactive industrial landfill and former coal strip mining area in Jefferson Borough, Allegheny County, Pennsylvania. The site is bordered to the north and west by residential areas, and to the east and south by undeveloped land. The site overlies a bedrock aquifer, and is also in contact with the Pittsburgh Coal Formation, a source of non-potable ground water. Prior to 1950, coal strip mining operations were conducted on and near the site. From 1950 to 1964, 85,000 tons of process wastes consisting of petroleum and coal-derived chemicals mixed with clay were disposed of in a previously mined onsite area, and earthen dikes were used to contain these wastes. Between 1980 and 1984, private investigations identified that contaminants from the landfill had migrated to the Pittsburgh Coal Formation, and the soil and perched ground water downslope. Subsequently, the site owners installed a leachate collection system and an oil/water separator. EPA investigations in 1988 further characterized contaminated media and analyzed potential contaminant pathways. This Record of Decision (ROD) addresses source control, as well as preventing migration of contaminated ground water in the Pittsburgh Coal Formation. A subsequent ROD will address any remediation of ground water that may be necessary. The primary

(See Attached Page)

17. Document Analysis a. Descriptors
Record of Decision - Resin Disposal, PA
First Remedial Action
Contaminated Media: soil, debris, gw
Key Contaminants: VOCs (benzene, toluene, xylenes), other organics (PAHs, phenols)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

Availability Statement	19. Security Class (This Report) None	21. No. of Pages 48
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse* OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

Abstract (Continued)

contaminants of concern affecting soil, debris, and ground water are VOCs including benzene, toluene, and xylenes; and other organics including napthalene, PAHs and phenols.

The selected remedial action for this site includes capping the landfill with a multi-layer cap, and upgrading the landfill dike; relocating a sanitary sewer located along the northeast border of the landfill to allow future access without disturbing the landfill cap; installing a new oil/water separator for leachate treatment, with discharge of aqueous phases to a publicly owned treatment works (POTW), and possible offsite reclamation of NAPLs for use as an energy source; installing a skimmer well system to remove NAPLs from ground water for use as an energy source; monitoring ground water and surface water; and implementing institutional controls including deed restrictions, and site access restrictions such as fencing. The estimated present worth cost for this remedial action is $4,348,000, which includes an annual O&M cost of $132,000 for 30 years.

PERFORMANCE STANDARDS OR GOALS: Chemical-specific goals were not provided.

RECORD OF DECISION
RESIN DISPOSAL SITE

DECLARATION

SITE NAME AND LOCATION

Resin Disposal Site
Jefferson Borough
Allegheny County, Pennsylvania

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Resin Disposal Site (site) in Jefferson Borough, Allegheny County, Pennsylvania, developed and chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, (CERCLA) 42 U.S.C. §§ 9601 et seq. and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. This decision is based on the Administrative Record file for this site.

The Commonwealth of Pennsylvania, Department of Environmental Resources has concurred with the selected remedy.

ASSESSMENT OF THE SITE

Pursuant to duly delegated authority, I hereby determine, pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606, that actual or threatened releases of hazardous substances from this site, as specified in Section II Summary of Site Risks, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to the public health, welfare, or the environment.

DESCRIPTION OF THE REMEDY

The selected remedy is a permanent remedy for containing the waste material which is the source of soil and ground water contamination at the site. The selected remedy includes the following major components:

- Installation of a multi-layer cap and infiltration control system for the landfill to prevent further migration of contaminants

- Installation of a skimmer well system downgradient of the landfill to collect floating product in ground water that may otherwise migrate offsite via the mine voids

- Upgrading of the lower landfill dike to increase its stability

- Relocation of the sanitary sewer along the northeast border of the landfill to allow future access without unduly disturbing the landfill cap system

- Installation of an upgraded oil/water separator downslope of the leachate collection trench

- Construction of a fence around the perimeter of the site to prevent unauthorized site access

- Instituting deed restrictions

- Monitoring ground and surface water and implementing a site maintenance program.

STATUTORY DETERMINATIONS

Pursuant to duly delegated authority, I hereby determine that the selected remedy is protective of human health and the environment, complies with Federal and State requirements that legally are applicable or relevant and appropriate requirements (ARARs) to the remedial action, and is cost effective. The remedy satisfies the statutory preference for remedial actions in which treatment that reduces toxicity, mobility, or volume is a principal element. Finally, it is determined that this remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. See Section 121(b) and (d) of CERCLA, 42 U.S.C. § 9621(b) and (d).

Because this remedy will result in hazardous substances remaining onsite above health-based levels, a review will be conducted every five years after commencement of remedial action in accordance with Section 121(c) of CERCLA, 42 U.S.C. § 9621(c) to ensure that human health and the environment continue to be adequately protected by the remedy.

Edwin B. Erickson
Regional Administrator
Region III

6/28/91
Date

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RECORD OF DECISION

RESIN DISPOSAL SITE

DECISION SUMMARY

I. SITE NAME, DESCRIPTION, AND LOCATION

A. Site Name and Location

The site is located about one half mile west of the town of West Elizabeth in Jefferson Borough, Allegheny County, Pennsylvania and comprises approximately 26 acres (Figure 1). West Elizabeth is a mixed commercial, industrial and residential area with a stable population. According to U.S. Census Bureau 1990 records, the population within a one-mile radius of the site is 1,819. The landfill is located in the head of a narrow valley on the site of a former coal mine and comprises approximately 2 of the 26 acres. The site was operated as a landfill between 1950 and 1964.

The site is surrounded by a surburban residential area to the north and west and by undeveloped property to the south and east. A trailer park and several residential homes are located approximately 1/4-mile southeast and downslope of the site. The topography of the area is characterized as relatively level highland, with deeply eroded stream valleys. Coal was strip mined from the valley prior to 1950 in the area surrounding the site. Although the site is not totally fenced, there is fencing with gates at the major access points.

Although quantities of ground water are available for domestic use, most of the residents in the site area are connected to the public water supply. However, six residential wells were also identified in the site area.

B. Site History and Enforcement Activities

Between 1950 and 1964, prior to the Resource Conservation and Recovery Act, as amended (RCRA), 42 U.S.C. §§ 6901 et seq. the Pennsylvania Industrial Chemical Corporation (PICCO) Plant generated and deposited an estimated 85,000 tons of production wastes into the onsite landfill. As a result of these activities, the site is also known as the PICCO Resin Landfill. The wastes consisted mainly of clay poly cakes and dechlor cakes, which are composed of petroleum and coal derived chemicals mixed with clay. The waste was deposited in the landfill by dumping it down a topographic chute above the landfill as a wet viscous sludge. The waste was contained within the landfill behind earthern dikes (Figure 2). No records exist of the actual wastes deposited in the landfill.

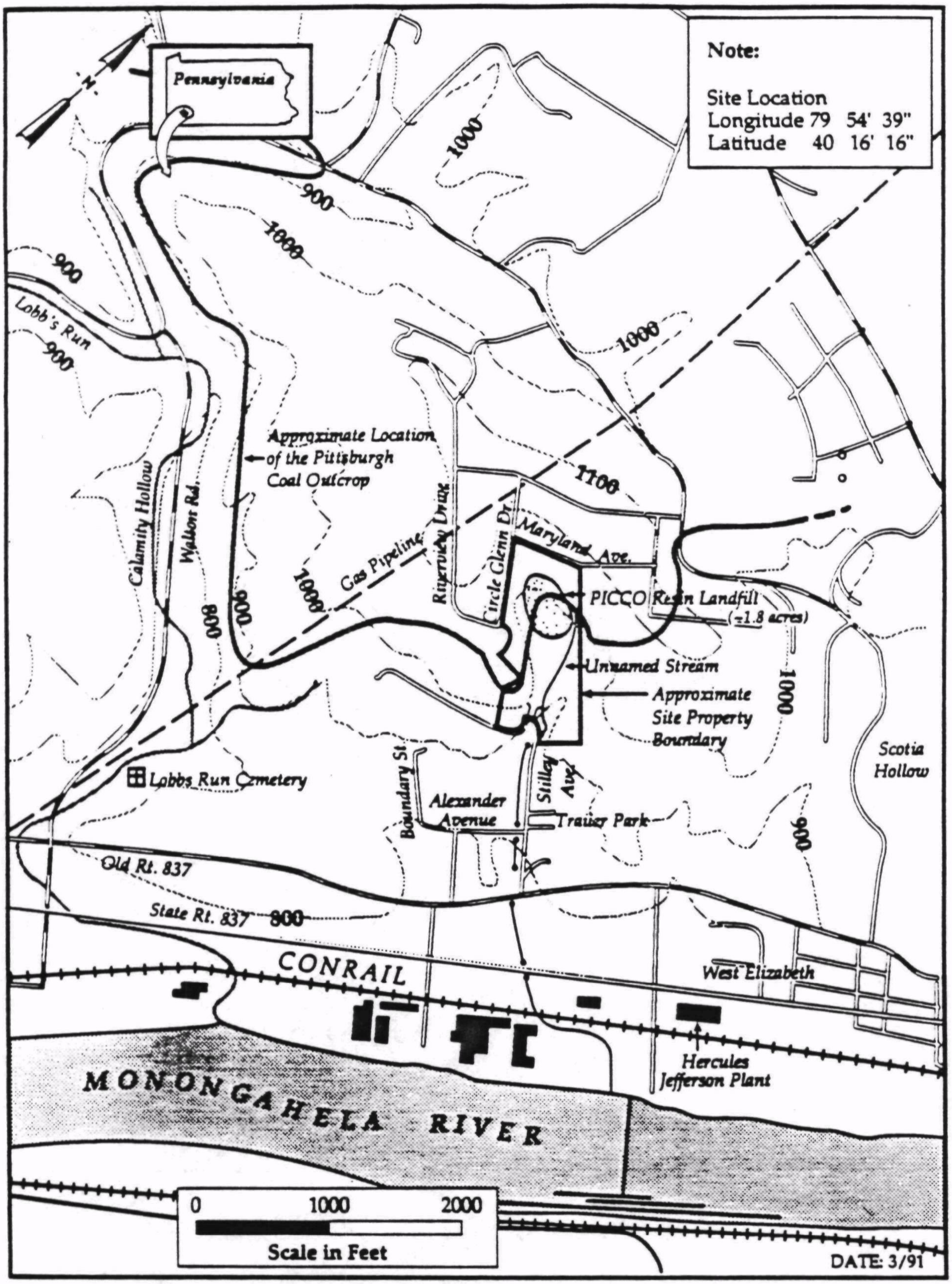

Figure 1 Site Location Map

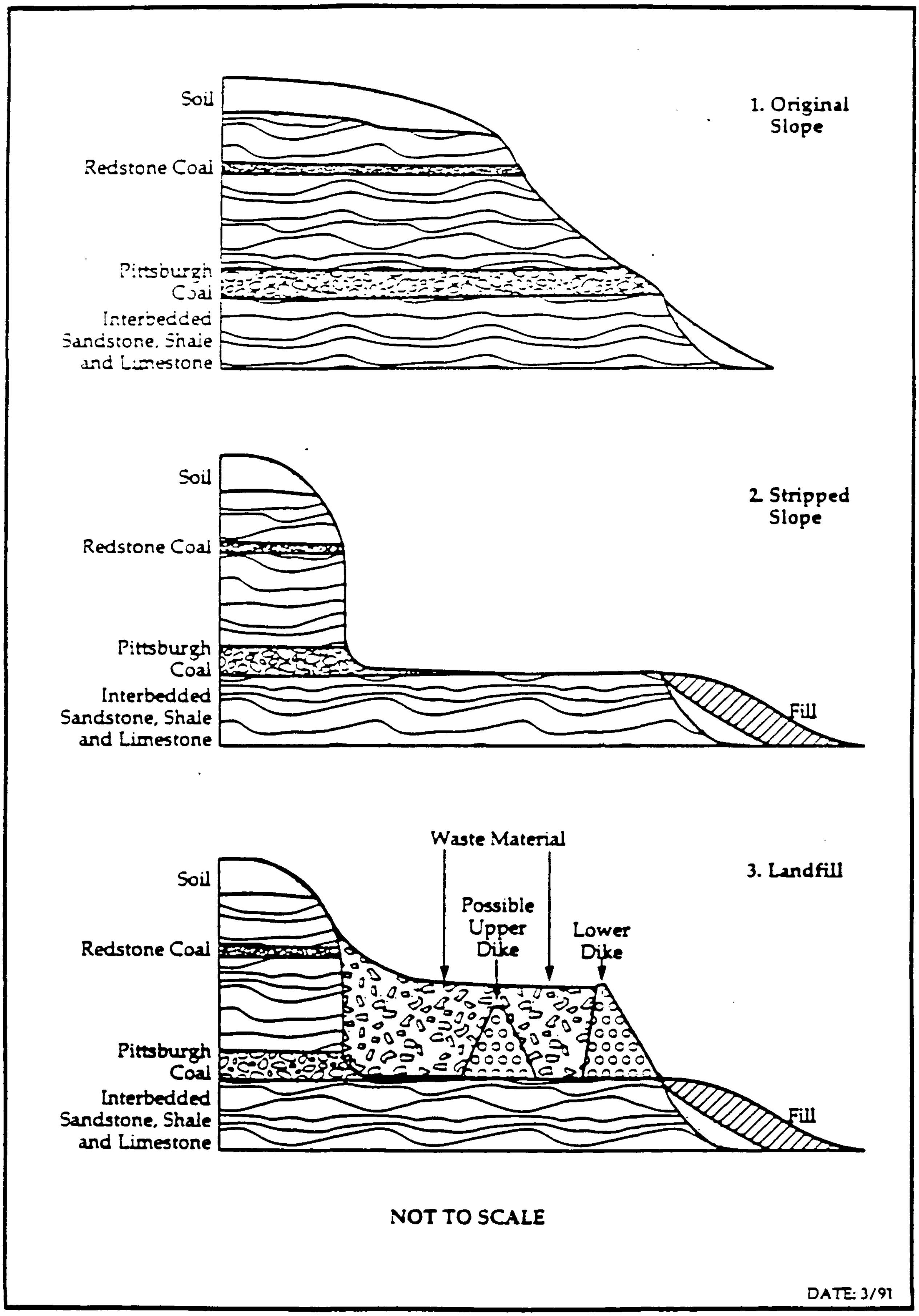
Soil
Redstone Coal
Pittsburgh Coal
Interbedded Sandstone, Shale and Limestone
1. Original Slope
Soil
Redstone Coal
Pittsburgh Coal
Interbedded Sandstone, Shale and Limestone
2. Stripped Slope
Fill
Waste Material
Soil
Redstone Coal
Pittsburgh Coal
Interbedded Sandstone, Shale and Limestone
3. Landfill
Possible Upper Dike
Lower Dike
Fill
NOT TO SCALE
DATE: 3/91

Figure 2

Prior to 1950, the original coal was strip and deep mined throughout the valley. The deep mining was done through a process known as room and pillar mining, which resulted in mine voids throughout the site. At the location of the landfill, approximately 20 feet of waste was deposited in place of the mined coal.

Hercules Incorporated (Hercules) purchased the business and facilities, which includes the landfill property, from PICCO in 1973. Between 1980 and 1984, a series of field investigations were conducted to provide information on ground water conditions in the coal formation, deep bedrock, and soils downslope of the landfill, and on the extent of contaminated soils downslope of the landfill. These field investigations were conducted for Hercules and were performed by Roy F. Weston, Inc. (Weston) and Murray Associates. The data from these early investigations indicated that contaminants had migrated beyond the buried waste in the landfill and could be found in ground water in the Pittsburgh Coal Formation and in downslope soils and perched ground water. As a result of these investigations, Weston recommended that Hercules install a leachate collection trench below the lower landfill dike to collect leachate and ground water (See Figure 3). This trench was installed in 1983. Liquids collected in the trench are directed to an oil/water separator. The oil is presently burned at the Hercules Jefferson Plant boiler, and the water is discharged to the Jefferson Borough Sanitary Sewer System and then to the West Elizabeth waste treatment plant.

A Site Investigation was completed in April 1982, and the site received a Hazard Ranking Score of 37.69 in December 1982. The site was proposed for the National Priority LIst (NPL) in December 1982 and was placed on the NPL in September 1983. On November 2, 1987, Hercules entered into a Consent Order and Agreement with the Pennsylvania Department of Environmental Resources (PADER) to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the site. The Remedial Investigation (RI) work plan was approved by PADER and EPA in February 1988, and work began on March 17, 1988. The purpose of the RI/FS was to characterize the site for potential remediation. This included an extensive study of the extent of contamination of the soils, ground water, and surface water associated with the landfill and related activities onsite. A final RI was submitted to PADER and EPA in March 1991, and the final FS was submitted in May 1991.

C. <u>Highlights of Community Participation</u>

In complying with Sections 113(k) and 117(a) of CERCLA, 42 U.S.C. § 9613(k) and 9617(e), EPA performed the activities set forth in this Section. The RI/FS and Proposed Plan for the Resin Disposal site were released to the public in April 1991. These documents were made available to the public in the local information and administrative record repository at the Jefferson Borough Municipal Building, 925 Old Clairton Road, Jefferson Borough, Pennsylvania, and at EPA Region III offices. The notice of availability for these documents was published in the

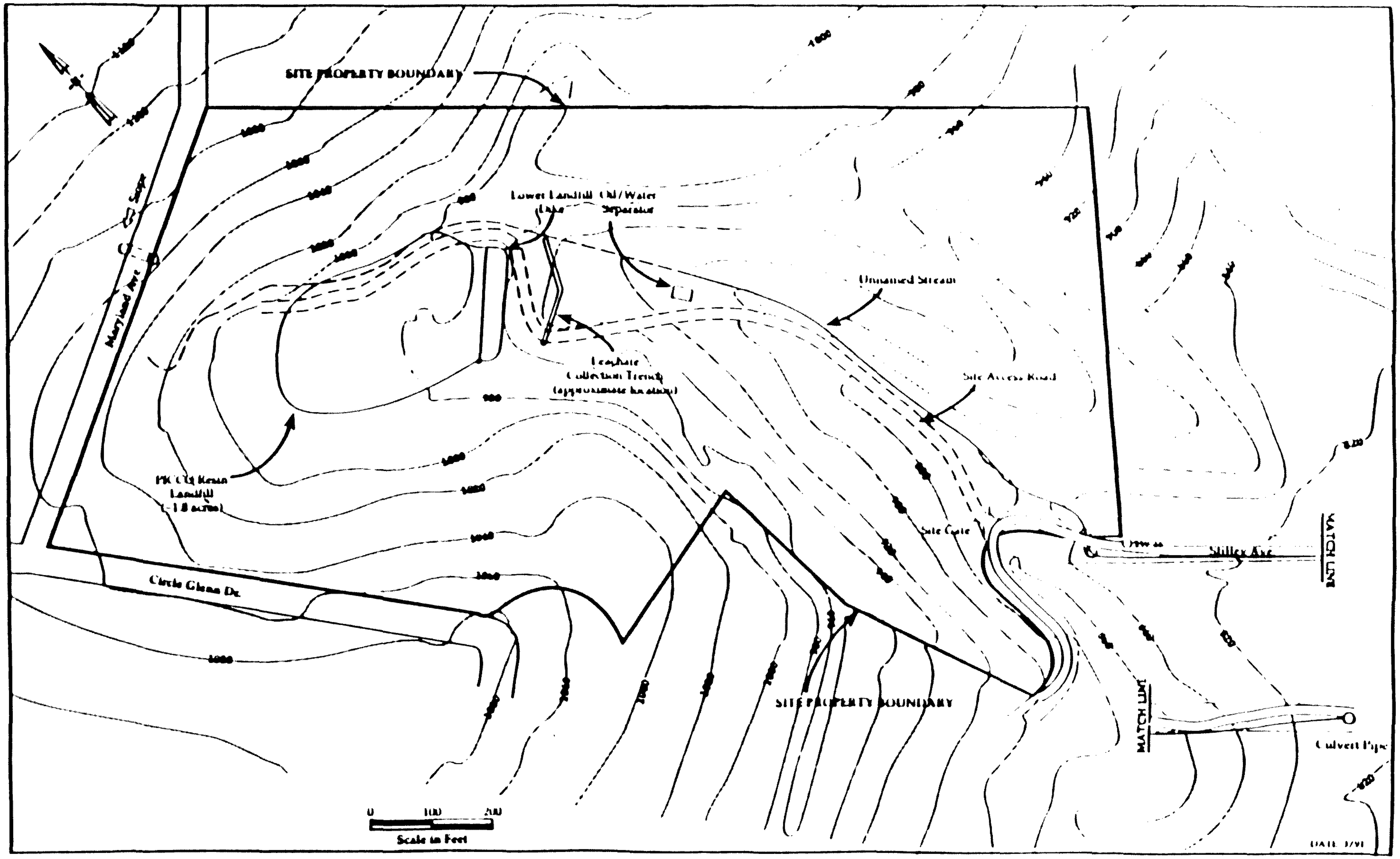

Figure 3 Site Base Map of the PICCO Resin Landfill

McKeesport Daily News on April 19, 1991. A public comment period was held from April 19, 1991, through May 18, 1991. Additionally, a public meeting was held on May 6, 1991, at the Jefferson Borough Municipal Building. At this meeting, representatives from EPA and PADER answered questions about the site and the remedial alternatives under consideration. Response to the comments received during this period are included in the responsiveness summary, which is part of this Record of Decision. This decision document presents the selected remedial action for the site chosen in accordance with CERCLA and the NCP. This decision for this site is based on the Administrative Record file.

D. Scope and Role of Operable Units

EPA has chosen to categorize the site into two operable units.

1. Operable Unit One

Operable Unit One (OU-1) authorized by this ROD addresses remediation of the waste material in the landfill, the adjacent contaminated soils and non-aqueous floating product present in the subsurface Pittsburgh Coal mine voids.

The waste material, defined by OU-1, poses a threat to human health and the environment because of the risks associated with ingestion of contaminated ground water; dermal contact, ingestion, and inhalation of wind blown contaminated soils. It also poses a risk to the environment because of the threat of contamination migrating to and adversely impacting the unnamed stream which runs through the site and slightly impacting the forest community adjacent to the unnamed stream.

The predominant risk to human health was based on the potential that a future resident might ingest water contaminated with benzene if the source of water is ground water from a well. Benzene was detected in some of the ground water wells above the Federal Maximum Contaminant Level (MCL) of the Safe Drinking Water Act, which is 5 parts per billion.

2. Operable Unit Two

Operable Unit Two (OU-2) will address any ground water remediation at the site that may be deemed necessary. OU-2 will be addressed in a subsequent ROD after additional data about the ground water is collected. In order to coordinate completion of the remedy for OU-1 with the ground water study for OU-2 in accordance with the NCP 40 CFR 300.430, it is EPA's intention to do the following:

A. Complete the OU-2 ground water study prior to construction of the OU-1 multi-layer cap and

B. upon completion of the OU-2 ground water study, evaluate the effectiveness of the OU-1 remedy to determine whether it is inconsistent with the results of the ground water study and whether it will preclude implementation of the final remedy for OU-2. Based on this criteria, EPA will determine, as appropriate, whether the ROD for OU-1 requires modification.

E. Site Characteristics

The site is located on a 26-acre parcel of land of which the landfill itself covers approximately 2-acres and is located on a former coal strip mine at the head of a narrow valley. The unnamed stream, which originates onsite, runs through the site from the northeast and flows downslope to the southeast, ultimately discharging into the Monangahela River approximately 1/2-mile from the site boundary. No parks, recreation areas, wildlife refuges, historic and/or archeological sites, or wild and scenic rivers are located on or adjacent to the site.

Major sources of ground water in the area are alluvial valley fill aquifers in the large river valleys, however, ground water within the site area is limited to storage in fractured bedrock, the Pittsburgh Coal mine voids, and as perched ground water in the unconsolidated soils downslope of the landfill. Ground water quantities are low in the bedrock due to the generally unfractured condition of the deep bedrock. The coal seam contains ground water, however, it is not considered potable due to its acidic nature and high concentrations of metals. The flow of ground water in the unconsolidated soils downslope generally parallels the surface topography. Although the communities surrounding the site are connected to a public water supply, some homes still use wells for their water supply.

The unconsolidated soils located downslope of the landfill, perched ground water in those unconsolidated soils and ground water in the Pittsburgh Coal formation, and the unnamed stream surface waters and sediments are all potential pathways for migrating contaminants to reach potential receptors.

F. Nature and Extent of Contamination

Previous remedial activities at the site resulted in the installation of a leachate collection trench downslope of the lower landfill dike. Although the construction of this trench (1983) effectively eliminated leachate seepage from the landfill, early investigations indicated that contamination had migrated into downslope site soils, ground water, and surface water and sediments prior to construction of the trench. Further studies were needed to determine the nature and the extent of the contamination. The primary contaminants of concern are organic compounds which comprise approximately 5% of the waste volume and include: benzene, toluene, total xylenes, ethylbenzene, styrene, naphthalene, and 2-methylnaphthalene. The remainder of the landfill waste consists mainly of water, clay, lime, zinc salts, and other solids.

Ground water analyses found volatile organic compounds at elevated levels in both the perched ground water in the unconsolidated soils downslope of the landfill and in the ground water in the Pittsburgh Coal Formation. None of the ground water samples taken from residential wells during the RI exhibited elevated levels of site-related compounds. However, there is the potential for migration of these contaminants into ground water used by residents, and therefore, the possibility of ingestion of contaminated ground water by local residents exists. In addition, there is an adverse impact to the surface water quality and sediments in the unnamed stream that runs through the site and to the adjacent forest community.

II. SUMMARY OF SITE RISKS

Potential Contaminants of Concern

Air, soil, surface water, sediment, seeps and shallow ground water were identified as the media of concern at the site to which populations may be exposed. Each of these media were analysed for various organic and inorganic constituents. The results of these analyses were evaluated with respect to toxicity, measured concentrations, frequency of detection, and potential human exposure to determine the potential contaminants of concern (PCOCs) for each media. The following PCOCs were identified for each media:

Air

- Benzene
- 2-Butanone
- Carbon disulfide
- Carbon tetrachloride
- Chloroform
- Chloromethane
- Ethylbenzene
- 2-Hexanone
- 4-Methyl-2-pentanone
- Styrene
- Tetrachloroethene
- Toluene
- 1,1,1-Trichloroethane
- Trichloroethene
- Xylenes (total)

Soil

- Acetone
- Bis(2-ethylhexyl)phthalate
- Dibenzofuran
- Di-n-butylphthalate
- Methylene chloride
- 2-Methylnaphthalene
- Naphthalene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Chrysene
- Fluoranthene
- Phenanthrene
- Pyrene

Surface Water

- Benzene
- Benzoic acid
- Bis(2-ethylhexyl)phthalate
- 2,4-Dimethylphenol
- Di-n-butylphthalate
- Ethylbenzene
- 2-Methylnaphthalene
- 4-Methylphenol
- Naphthalene

2-Nitrophenol
Phenol
Toluene
Xylenes (total)

Sediment

- Acetone
- Benzoic acid
- Bis(2-ethylhexyl)phthalate
- Butylbenzyl phthalate
- Dibenzofuran
- Di-n-butylphthalate
- Di-n-octylphthalate
- Methylene chloride
- 2-Methyl naphthalene
- Naphthalene
- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Chrysene
- Dibenzo(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Pyrene
- Phenanthrene

Pentachlorophenol
Phenol
Toluene
1,1,1-Trichloroethane
Xylenes (total)

Seeps
- Acetone
- Benzene
- Chlorobenzene
- Toluene
- Trichloroethene

Ground water

- Acetone
- Benzene
- Bis (2-ethylhexyl) phthalate
- 2-Butanone
- Carbon Disulfide
- Di-n-butylphthalate
- Ethylbenzene
- 2-Hexanone

2-methylnaphthalene
2-methylphenol
4-methylphenol
Naphthalene
Phenol
Styrene
Toluene
Xylenes

TABLE 1

RISK ASSESSMENT INPUT DATA BY MEDIA, RESIN DISPOSAL SITE

CONSTITUENT	MOST PROBABLE CONCENTRATION	MAXIMUM PLAUSIBLE CONCENTRATION
AIR (ng/m^3)		
Benzene	721.6	897.4
2-Butanone	316.5	460.3
Carbon disulfide	115.7	140.7
Carbon tetrachloride	270.9	330.3
Chloroform	94.4	121.7
Chloromethane	870.1	1,420.1
Ethylbenzene	1,023.2	2,299.9
2-Hexanone	301.4	389.6
4-Methyl-2-pentanone	254.6	315.8
Styrene	344.2	750.9
Tetrachloroethene	262.3	286.3
Toluene	2,467.4	4,473.0
1,1,1-Trichloroethane	488.1	542.4
Trichloroethene	102.8	129.2
Xylenes (total)	10,996.2	27,192.4
SOIL (ug/kg)		
Acetone	892.6	2,046.5
Bis(2-ethylhexyl)phthalate	595.2	916.1
Dibenzofuran	503.6	804.0
Di-n-butyl phthalate	499.1	778.7
Methylene chloride	18.4	31.4
2-Methylnaphthalene	1,069.7	1,750.9
Naphthalene	4,512.5	9,396.8
Benzo(a)anthracene	576.2	912.2
Benzo(a)pyrene	511.8	775.4
Benzo(b)fluoranthene	498.7	757.4
Benzo(k)fluoranthene	497.3	733.5
Chrysene	536.7	808.5
Fluoranthene	804.8	1,556.2
Phenanthrene	1,083.6	2,113.3
Pyrene	664.7	1,176.5

TABLE 1
(Continued)

RISK ASSESSMENT INPUT DATA BY MEDIA, RESIN DISPOSAL SITE

CONSTITUENT	MOST PROBABLE CONCENTRATION	MAXIMUM PLAUSIBLE CONCENTRATION
SURFACE WATER (ug/l)		
Benzene	3.1	4.0
Benzoic acid	44.6	80.6
Bis(2-ethylhexyl)phthalate	10.1	20.9
2,4-Dimethylphenol	4.1	5.2
Di-n-butyl phthalate	2.5	3.6
Ethylbenzene	24.6	54.2
2-Methylnaphthalene	4.5	5.2
4-Methylphenol	4.1	5.2
Naphthalene	21.6	39.1
2-Nitrophenol	3.9	5.1
Phenol	4.5	5.7
Toluene	9.5	19.4
Xylenes (total)	24.6	47.0
SEDIMENT (ug/kg)		
Acetone	26.7	45.4
Benzoic acid	1,318.9	1,601.4
Bis(2-ethylhexyl)phthalate	372.2	592.9
Butylbenzyl phthalate	372.6	594.0
Dibenzofuran	679.8	1,323.0
Di-n-butyl phthalate	355.6	590.4
Di-n-octyl phthalate	373.3	594.3
Methylene chloride	6.4	11.5
2-Methylnaphthalene	1,097.1	2,158.4
Naphthalene	4,093.3	8,539.4
Acenaphthene	440.3	808.3
Acenaphthylene	369.4	590.6
Anthracene	3,959.4	8,197.9
Benzo(a)anthracene	450.6	664.4
Benzo(b)fluoranthene	413.3	623.7
Benzo(g,h,i)perylene	388.9	603.3
Benzo(k)fluoranthene	396.7	609.3
Chrysene	553.9	803.4
Dibenzo(a,h)anthracene	380.0	597.8
Fluoranthene	811.1	1,763.5

TABLE 1
(Continued)

RISK ASSESSMENT INPUT DATA BY MEDIA, RESIN DISPOSAL SITE

CONSTITUENT	MOST PROBABLE CONCENTRATION	MAXIMUM PLAUSIBLE CONCENTRATION
SEDIMENT (ug/kg) (Continued)		
Fluorene	780.0	1,438.5
Indeno(1,2,3-cd)pyrene	378.3	596.7
Phenanthrene	1,932.4	4,083.0
Pyrene	661.7	1,096.6
Pentachlorophenol	2,005.6	3,070.8
Phenol	393.9	607.7
Toluene	6.4	11.1
1,1,1-Trichloroethane	3.0	3.0
Xylenes (total)	61.2	153.0
SEEPS (ug/l)		
Acetone	195.9	438.8
Benzene	2.7	3.1
Chlorobenzene	3.2	4.2
Toluene	3.3	4.4
Trichloroethene	2.6	3.0
GROUND WATER (ug/l)*		
Acetone	2,523.4	4,914.7
Benzene	78.9	150.5
Bis(2-ethylhexyl)phthalate	587.9	1,570.1
Carbon disulfide	120.5	325.2
Ethylbenzene	444.4	1,144.6
2-Butanone	9.1	14.8
Di-n-butylphthalate	3.3	4.6
2-Hexanone	11.1	23.7
2-Methylnaphthalene	2,128.0	5,910.2
2-Methylphenol	1,125.0	3,096.0
4-Methylphenol	635.9	1,614.7
Methylene Chloride	84.1	176.0
naphthalene	10,375.0	28,430.8
Phenanthrene	565.0	1,550.0
phenol	585.6	1,567.6
styrene	48.3	136.3
toluene	692.7	1,665.1
xylenes	1,445.2	3,056.2

* Ground water values include both Pittsburgh Coal data and unconsolidated zone data. The highest overall concentration for each chemical is listed.

The data review is limited to organics only. After reviewing the Phase I RI sampling results, it was determined by EPA and PADER that heavy metals, pesticides, and PCBs were not chemicals of concern at the site. The concentrations of the PCOCs used for the risk assessment are presented in Table 1. The concentrations represented are average concentrations from the RI (most probable exposure concentrations) and the 95 percent upper confidence limit of the arithmetic mean (maximum plausible exposure concentrations).

Exposure Assessment

The Resin Disposal was evaluated with respect to physical characteristics, current and future land and water uses, and exposed populations to identify potential exposure pathways. The most probable and maximum plausible exposure concentrations were determined for the PCOCs. The following potential exposure pathways were identified:

Air Pathway
- Inhalation

Soil Pathway
- Incidental soil ingestion
- Dermal absorption
- Inhalation of airborne soil
- Ingestion of garden vegetables/fruits

Surface Water
- Dermal absorption
- Ingestion

Sediment
- Incidental sediment ingestion
- Dermal absorption

Seeps
- Dermal absorption

Ground water
- Ingestion of drinking water
- Noningestion household water contact
- Dermal absorption through swimming
- Incidental ingestion of water through swimming.

Three exposure scenarios were selected for evaluation: a current (offsite) resident, a trespasser, and a future (onsite) resident. These scenarios represented the potential current and future receptors that are most likely to come into contact with site-related contaminants. The populations identified include:

(1) Current residents of all age groups with exposure occurring through household ground water use. Three age groups were analyzed for each residence, a child aged 1-6, a child aged 6-11 and an adult.

(2) A child trespasser, age 6-11 years, and an adult were examined in the trespasser scenario. The child is assumed to be onsite for two hours per exposure event for 3 days per week, 8 months per year. The adult is assumed to trespass one day per week, and eight months per year.

(3) A child future resident, age 1-6 years, having a body weight of 16 kg, and assumed to be onsite 7 days per week, 12 months per year.

(4) A child future resident (age 6-11) having a body weight of 27 kg, and assumed to be onsite 7 days per week, 12 months per year.

(5) An adult future resident having a body weight of 70 kg, and assumed to be onsite 7 days per week, 12 months per year.

Toxicity Assessment

The relationship between the extent of exposure to a contaminant and the potential for adverse effects was evaluated during the toxicity assessment process. Cancer potency factors (CPFs) also known as slope factors, were identified for potential carcinogenic contaminants, and reference doses (RfDs) were identified for chemicals exhibiting noncarcinogenic effects. The CPFs and RfDs used for the toxicity assessment are presented in Tables 2 and 3, respectively.

CPFs have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. EPA assumed, when developing CPFs, that the risk of cancer is linearly related to dose. The CPFs, which are expressed in units of $(mg/kg/day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, which is expressed in mg/kg/day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

RfDs have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting noncarcinogenic effects. The RfDs, which are expressed in units of mg/kg/day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals, at which no adverse health effects are noted. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) are compared to the RfD. The RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). These uncertainty factors help ensure that the RfDs will not

TABLE 2. CANCER POTENCY (SLOPE) FACTORS USED IN RESIN DISPOSAL SITE RISK CHARACTERIZATION $(mg/kg/day)^{-1}$

CHEMICAL	INHALATION FACTOR	SOURCE	ORAL FACTOR	DERMAL SOURCE	FACTOR[a]
Benzene	2.90E-02	EPA, 1990e	2.90E-02	EPA, 1990e	3.22E-02 (v)
Bis(2-ethylhexyl)phthalate	1.40E-02	OSF	1.40E-02	EPA, 1990e	2.80E-02 (sv)
Butylbenzyl phthalate	NC	N/A	NSF	N/A	NSF
Carbon tetrachloride	1.30E-01	EPA, 1990e	NC	N/A	NC
Chloroform	8.10E-02	EPA, 1990e	NC	N/A	NC
Chloromethane	6.30E-03	EPA, 1990e	NC	N/A	NC
Methylene chloride	1.40E-02	EPA, 1990e	7.50E-03	EPA, 1990e	8.33E-03 (v)
Benzo(a)anthracene	8.84E-01	EPA, 1990h	1.67E+00	EPA, 1990h	3.34E+00 (sv)
Benzo(a)pyrene	6.10E+00	EPA, 1990h	1.15E+01	EPA, 1990h	2.30E+01 (sv)
Benzo(b)fluoranthene	8.54E-01	EPA, 1990h	1.61E+00	EPA, 1990h	3.22E+00 (sv)
Benzo(g,h,i)perylene	1.34E-01	EPA, 1990h	2.53E-01	EPA, 1990h	5.06E-01 (sv)
Benzo(k)fluoranthene	4.03E-01	EPA, 1990h	7.59E-01	EPA, 1990h	1.52E+00 (sv)
Chrysene	2.68E-02	EPA, 1990h	5.06E-02	EPA, 1990h	1.01E-01 (sv)
Dibenzo(a,h)anthracene	6.77E+00	EPA, 1990h	1.28E+01	EPA, 1990h	2.56E+01 (sv)
Indeno(1,2,3-cd)pyrene	1.42E+00	EPA, 1990h	2.67E+00	EPA, 1990h	5.34E+00 (sv)
Styrene	2.00E-03	EPA, 1990e	3.00E-02	EPA, 1990e	3.30E-02 (v)
Tetrachloroethene	3.30E-03	EPA, 1990e	NC	N/A	NC
Trichloroethene	1.70E-02	EPA, 1990e	1.10E-02	EPA, 1990e	1.22E-02 (v)

[a] Dermal slope factors were calculated from the oral slope factors as described in the Baseline Risk Assessment.

(sv) - Chemical was treated as a semi-volatile in deriving the dermal slope factor.
(v) - Chemical was treated as a volatile in deriving the dermal slope factor.
N/A - Not applicable.
NC - Chemical is not of concern through this exposure route at the Resin Disposal site.
NSF - No slope factor was available.
OSF - Oral slope factor.

EPA, 1990e - Health Effects Assessment Summary Tables. Third Quarter FY 1990. Office of Solid Office of Solid Waste and Emergency Response. Washington, DC.

EPA, 1990h - Updated Risk-Based Concentration Table. Memo from Roy Smith, EPA Region III, to Staff. December 7, 1990.

TABLE 3.

CHRONIC REFERENCE DOSES (RfDs) USED IN RESIN DISPOSAL SITE RISK CHARACTERIZATION
(mg/kg/day)

CHEMICAL	CHRONIC INHALATION RfD	SOURCE	CHRONIC ORAL RfD	SOURCE	CHRONIC DERMAL RfD[a]
Acetone	3.00E+00	EPA, 1990g	1.00E-01	EPA, 1990e	9.00E-02 (v)
Benzene	3.26E-02	ACGIH-TWA	1.00E-03	Derived	9.00E-04 (v)
Benzoic acid	NC	N/A	4.00E+00	EPA, 1990e	2.00E+00 (sv)
Bis(2-ethylhexyl)phthalate	5.10E-03	ACGIH-TWA	2.00E-02	EPA, 1990e	1.00E-02 (sv)
2-Butanone	9.00E-02	EPA, 1990e	5.00E-02	EPA, 1990e	NC
Butylbenzyl phthalate	NC	N/A	2.00E-01	EPA, 1990e	1.00E-01 (sv)
Carbon disulfide	2.90E-03[b]	EPA, 1990e	1.00E-01	EPA, 1990e	9.00E-02 (v)
Carbon tetrachloride	3.16E-02	ACGIH-TWA	NC	N/A	NC
Chlorobenzene	NC	N/A	NCO (2.00E-02)	EPA, 1990e	1.80E-02 (v)
Chloroform	5.00E-02	ACGIH-TWA	NC	N/A	NC
Chloromethane	1.05E-01	ACGIH-TWA	NC	N/A	NC
Dibenzofuran	NTV	N/A	NRD	N/A	NRD
2,4-Dimethylphenol	NC	N/A	2.00E-02	EPA, 1990e	1.00E-02 (sv)
Di-n-butyl phthalate	5.10E-03	ACGIH-TWA	1.00E-01	EPA, 1990e	5.00E-02 (sv)
Di-n-octyl phthalate	NC	N/A	2.00E-02	EPA, 1990e	1.00E-02 (sv)
Ethylbenzene	4.40E-03	ACGIH-TWA	1.00E-01	EPA, 1990e	9.00E-02 (v)
2-Hexanone	2.04E-02	ACGIH-TWA	1.00E-01	EPA, 1990g	NC
Methylene chloride	8.60E-01	EPA, 1990e	6.00E-02	EPA, 1990e	5.40E-02 (v)
2-Methylnapthalene	5.00E-01	ORD	5.00E-01	EPA, 1990g	2.50E-01 (sv)
4-Methyl-2-pentanone	2.68E-03	ORD	NCO (2.68E-03)	Derived	NC
2-Methylphenol	2.24E-02	ACGIH-TWA	5.00E-02	EPA, 1990e	2.50E-02 (sv)
4-Methylphenol	2.24E-02	ACGIH-TWA	5.00E-02	EPA, 1990e	2.50E-02 (sv)
Naphthalene	5.31E-02	ACGIH-TWA	4.00E-03	EPA, 1990e	2.00E-03 (sv)
2-Nitrophenol	NC	N/A	1.30E-01	EPA, 1990g	6.50E-02 (sv)

TABLE 3.
(Continued)

CHRONIC REFERENCE DOSES (RfDs) USED IN RESIN DISPOSAL SITE RISK CHARACTERIZATION
(mg/kg/day)

CHEMICAL	CHRONIC INHALATION RfD	SOURCE	CHRONIC ORAL RfD	SOURCE	CHRONIC DERMAL RfD[a]
Acenaphthene	NC	N/A	6.00E-02	EPA, 1990e	3.00E-02 (sv)
Acenaphthylene	NC	N/A	3.00E-02[c]	EPA, 1990e	1.50E-02 (sv)
Anthracene	NC	N/A	3.00E-01	EPA, 1990e	1.50E-01 (sv)
Benzo(a)anthracene	3.00E-02	ORD	3.00E-02[c]	EPA, 1990e	1.50E-02 (sv)
Benzo(a)pyrene	3.00E-02	ORD	3.00E-02[c]	EPA, 1990e	1.50E-02 (sv)
Benzo(b)fluoranthene	3.00E-02	ORD	3.00E-02[c]	EPA, 1990e	1.50E-02 (sv)
Benzo(g,h,i)perylene	NC	N/A	3.00E-02[c]	EPA, 1990e	1.50E-02 (sv)
Benzo(k)fluoranthene	3.00E-02	ORD	3.00E-02[c]	EPA, 1990e	1.50E-02 (sv)
Chrysene	3.00E-02	ORD	3.00E-02[c]	EPA, 1990e	1.50E-02 (sv)
Dibenzo(a,h)anthracene	NC	N/A	3.00E-02[c]	EPA, 1990e	1.50E-02 (sv)
Fluoranthene	4.00E-02	ORD	4.00E-02	EPA, 1990e	2.00E-02 (sv)
Fluorene	NC	N/A	4.00E-02	EPA, 1990e	2.00E-02 (sv)
Indeno(1,2,3-cd)pyrene	NC	N/A	3.00E-02[c]	EPA, 1990e	1.50E-02 (sv)
Phenanthrene	3.00E-02	ORD	3.00E-02[c]	EPA, 1990e	1.50E-02 (sv)
Pyrene	3.00E-02	ORD	3.00E-02	EPA, 1990e	1.50E-02 (sv)
Pentachlorophenol	NC	N/A	3.00E-02	EPA, 1990e	1.50E-02 (sv)
Phenol	1.94E-02	ACGIH-TWA	6.00E-01	EPA, 1990e	3.00E-01 (sv)
Styrene	2.17E-01	ACGIH-TWA	2.00E-01	EPA, 1990E	1.80E-02 (v)
Tetrachloroethene	3.45E-01	ACGIH-TWA	NC	N/A	NC
Toluene	2.00E+00	EPA, 1990e	3.00E-01	EPA, 1990e	2.70E-01 (v)

TABLE 3.
(Continued)

CHRONIC REFERENCE DOSES (RfDs) USED IN RESIN DISPOSAL SITE RISK CHARACTERIZATION
(mg/kg/day)

CHEMICAL	CHRONIC INHALATION RfD	SOURCE	CHRONIC ORAL RfD	SOURCE	CHRONIC DERMAL RfD[a]
1,1,1-Trichloroethane	3.00E-01	EPA, 1990e	9.00E-02	EPA, 1990e	8.10E-03
Trichloroethene	2.74E-01	ACGIH-TWA	7.40E-03	EPA, 1987a	6.70E-03 (v)
Xylenes (total)	3.00E-01	EPA, 1990e	2.00E+00	EPA, 1990e	1.80E+00 (v)

[a] Dermal RfDs were calculated from oral RfDs as described in Subsection 1.4.3.3 of the Baseline Risk Assessment.
[b] Calculated from the oral RfD, expressed in mg/m^3 assuming an inhalation rate of 20 m^3/day and a body weight of 70 kg (EPA, 1990f).
[c] The RfD for pyrene was used as an approximation.
(sv) - Chemical was treated as a semi-volatile in deriving the dermal RfD.
(v) - Chemical was treated as a volatile in deriving the dermal RfD.
N/A - Not applicable.
ACGIH-TWA - American Conference of Government Industrial Hygienists Time-Weighted Average.
NC - Chemical is not of concern through this exposure route at the Resin Disposal site.
NCO - Chemical is not of concern through the oral exposure route; the oral RfD listed in parentheses was used to calculate the dermal RfD and/or was used as the inhalation RfD.
NRD - No RfD or toxicity data from which to derive an RfD were available.
ORD - Oral RfD.

EPA, 1987 - Health Advisories for 25 Organics. Office of Drinking Water. Washington, DC. PB87-235578.
EPA, 1990e - Health Effects Assessment Summary Tables. Third Quarter FY 1990. Office of Solid Waste and Emergency Response. Washington, DC. OERR 9200.6-303-(90-3).
EPA, 1990g - Updated Reference Concentration Table. Memo from Roy Smith, EPA Region III, to Staff. December 7, 1990.

underestimate the potential for adverse noncarcinogenic effects to occur.

Risk Characterization

Excess lifetime cancer risks for the site were determined by multiplying the daily intake of chemicals from environmental media by the CPFs. These risks are probabilities expressed in scientific notation (i.e., 1E-6). An excess lifetime cancer risk of 1E-6 indicates that an individual has a one in a million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime. The U.S. EPA recommended upper bound for lifetime cancer risks is between 10E-4 and 10E-6. The most significant exposure pathway, in terms of impacting human health, was to a future resident via ingestion of contaminated ground water.

For the trespasser, the lifetime cancer risk was not significant. The risk based on the most probable exposure concentrations is approximately 1 in 1,000,000 (i.e., 1.39E-06). The risk based on the maximum plausible exposure concentrations is approximately 2 in 1,000,000 (1.87E-06). For the future resident, the lifetime cancer risk is approximately 3 in 10,000 (3E-04) based on the most probable exposure concentrations and 7 in 10,000 (7E-04) based on the maximum plausible exposure concentrations. The total lifetime cancer risks that were estimated for the future resident is slightly above the risk range that is generally considered to be acceptable by the U.S. EPA (i.e., 1 in 1,000,000 to 1 in 10,000), and within which risk is regulated at Superfund sites. To the trespasser and the future resident scenarios, a small contribution to total cancer risk, less than one percent each, was made by the remaining exposure routes. These include sediment ingestion, dermal absorption from sediment, dermal absorption from surface water, dermal absorption from seeps, and the inhalation of the airborne soil. The estimated excess lifetime cancer risks for each of the exposure pathways are presented in Tables 4 and 5.

Potential concern for noncarcinogenic effects of a single contaminant in a single medium is expressed as the hazard quotient (HQ) (i.e., the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminant's reference dose). The HQs for all contaminants in a medium are added to obtain the Hazard Index (HI). The HI provides a reference point for gauging the significance of multiple contaminant exposures within a single medium or across media. A HI less than or equal to 1 indicates that there is no significant risk of adverse health effects. The HIs derived for each medium are summarized in Tables 6 and 7.

There is no apparent risk of noncarcinogenic health effects posed to the trespasser or the current resident. The total chronic and short-tern hazard indices that were calculated for these potential receptors were less than one. However, a HI above one was found for a future resident using the Pittsburgh

TABLE 4.

LIFETIME CARCINOGENIC RISK
MOST PROBABLE EXPOSURE CONCENTRATIONS

	EXPOSED POPULATION	
EXPOSURE ROUTE	FUTURE RESIDENT[a]	FUTURE RESIDENT[b]
Inhalation of Vapors	1.20E-05	1.20E-05
Incidental Soil Ingestion	1.34E-05	1.34E-05
Dermal Absorption from Soil	3.86E-06	3.86E-06
Inhalation of Airborne Soil	2.29E-08	2.29E-08
Vegetable/Fruit Ingestion	1.06E-05	1.06E-05
Dermal Absorption from Surface Water	1.59E-10	1.59E-10
Incidental Sediment Ingestion	9.34E-08	9.34E-08
Dermal Absorption from Sediment	4.49E-08	4.49E-08
Dermal Absorption from Seeps	1.40E-11	1.40E-11
Ingestion of Surface Water	5.76E-09	5.76E-09
Drinking Water Ingestion	3.03E-05	3.03E-05
Noningestion Household Uses	7.43E-05	2.59E-05
Ingestion while Swimming	3.65E-07	5.58E-07
Absorption while Swimming	7.92E-08	1.40E-07
TOTAL CARCINOGENIC RISK	1.45E-04	3.46E-04

[a] Based on domestic use of Unconsolidated Zone ground water.

[b] Based on domestic use of Pittsburgh Coal ground water.

The total carcinogenic risk to a trespasser was 1.39E-06, and was not significant from any of the exposure routes.

TABLE 5.

LIFETIME CARCINOGENIC RISK
MAXIMUM PLAUSIBLE EXPOSURE CONCENTRATIONS

	EXPOSED POPULATION	
EXPOSURE ROUTE	FUTURE RESIDENT[a]	FUTURE RESIDENT[b]
Inhalation of Vapors	1.20E-05	1.20E-05
Incidental Soil Ingestion	2.06E-05	2.06E-05
Dermal Absorption from Soil	5.93E-06	5.93E-06
Inhalation of Airborne Soil	3.52E-08	3.52E-08
Vegetable/Fruit Ingestion	1.70E-05	1.70E-05
Dermal Absorption from Surface Water	3.02E-10	3.02E-10
Incidental Sediment Ingestion	1.10E-07	1.10E-07
Dermal Absorption from Sediment	5.30E-08	5.30E-08
Dermal Absorption from Seeps	1.40E-11	1.40E-11
Ingestion of Surface Water	1.04E-08	1.04E-08
Drinking Water Ingestion	8.48E-05	9.33E-05
Noningestion Household Uses	2.04E-04	5.11E-04
Ingestion While Swimming	1.02E-06	1.12E-06
Absorption While Swimming	2.22E-07	2.86E-07
TOTAL CARCINOGENIC RISK	3.46E-04	6.61E-04

[a] Based on domestic use of Unconsolidated Zone ground water.

[b] Based on domestic use of Pittsburgh Coal ground water

The total carcinogenic risk to a trespasser was 1.87E-06, and was not significant from any of the exposure routes.

TABLE 6.
CHRONIC HAZARD QUOTIENTS AND INDICES MOST PROBABLE EXPOSURE CONCENTRATIONS

	EXPOSED POPULATION					
EXPOSURE ROUTE	FUTURE RESIDENT (1-6)[a]	FUTURE RESIDENT (6-11)[a]	FUTURE RESIDENT (ADULT)[a]	FUTURE RESIDENT (1-6)[b]	FUTURE RESIDENT (6-11)[b]	FUTURE RESIDENT (ADULT)[b]
Inhalation of Vapors	2.73E-01	2.42E-01	1.25E-01	2.73E-01	2.42E-01	1.25E-01
Incidental Soil Ingestion	1.62E-02	4.82E-03	1.89E-03	1.62E-02	4.82E-03	1.89E-03
Dermal Absorption from Soil	3.46E-03	2.77E-03	4.98E-04	3.46E-03	2.77E-03	4.98E-04
Inhalation of Airborne Soil	7.12E-06	6.33E-06	3.26E-06	7.12E-06	6.33E-06	3.26E-06
Vegetable/Fruit Ingestion	9.30E-06	8.66E-02	5.05E-02	9.30E-02	8.66E-02	5.05E-02
Dermal Absorption - Surface Water	5.28E-05	4.24E-05	N/A	5.28E-05	4.24E-05	N/A
Ingestion - Surface Water	2.13E-03	1.26E-03	N/A	2.13E-03	1.26E-03	N/A
Incidental Sediment Ingestion	2.91E-04	8.67E-05	N/A	2.91E-04	8.67E-05	N/A
Dermal Absorption - Sediment	9.93E-05	8.24E-05	N/A	9.93E-05	8.24E-05	N/A
Dermal Absorption - Seeps	N/A	4.28E-06	1.35E-06	N/A	4.28E-06	1.35E-06
Drinking Water Ingestion	1.39E+00	1.10E+00	1.06E+00	1.03E+02	8.11E+01	7.82E+01
Household Water Uses (Noningestion)	7.15E+00	6.35E+00	3.27E+00	3.25E+01	2.89E+01	1.49E+01
Ingestion while Swimming	3.23E-02	1.91E-02	7.38E-03	2.38E+00	1.41E+00	5.45E-01
Absorption while Swimming	4.39E-03	3.80E-03	2.64E-03	5.41E-01	4.68E-01	3.25E-01
TOTAL HAZARD INDEX	8.96E+00	7.81E+00	4.51E+00	1.38E+02	1.12E+02	9.41E+01

[a] - Based on domestic use of unconsolidated zone ground water.
[b] - Based on domestic use of Pittsburgh Coal ground water.
The trespaser scenario was not significant from any of the exposure routes

TABLE 7
CHRONIC HAZARD QUOTIENTS AND INDICES MAXIMUM PLAUSIBLE EXPOSURE CONCENTRATIONS

	EXPOSED POPULATION					
EXPOSURE ROUTE	FUTURE RESIDENT (1-6)[a]	FUTURE RESIDENT (6-11)[a]	FUTURE RESIDENT (ADULT)[a]	FUTURE RESIDENT (1-6)[b]	FUTURE RESIDENT (6-11)[b]	FUTURE RESIDENT (ADULT)[b]
Inhalation of Vapors	2.73E-01	2.42E-01	1.25E-01	2.73E-01	2.42E-01	1.25E-01
Incidental Soil Ingestion	3.28E-02	9.74E-03	3.83E-03	3.28E-02	9.74E-03	3.83E-03
Dermal Absorption from Soil	7.00E-03	5.60E-03	1.01E-03	7.00E-03	5.60E-03	1.01E-03
Inhalation of Airborne Soil	1.22E-05	1.08E-05	5.57E-06	1.22E-05	1.08E-06	5.57E-06
Vegetable/Fruit Ingestion	2.01E-01	1.87E-01	1.09E-01	2.01E-01	1.87E-01	1.09E-01
Dermal Absorption - Surface Water	8.95E-05	7.20E-05	N/A	8.53E-08	7.20E-05	N/A
Incidental Sediment Ingestion	5.77E-04	1.72E-04	N/A	5.77E-04	1.72E-04	N/A
Dermal Absorption - Sediment	1.97E-04	1.63E-04	N/A	3.22E-09	1.63E-04	N/A
Dermal Absorption - Seeps	N/A	6.25E-06	1.98E-06	N/A	6.25E-06	1.98E-06
Ingestion Surface Water	3.52E-03	2.08E-03	N/A	3.52E-03	2.08E-03	N/A
Drinking Water Ingestion	3.79E+00	2.99E+00	2.89E+00	2.78E+02	2.20E+01	2.12E+01
Household Water Uses (Noningestion)	1.90E+01	1.69E+01	8.70E+00	8.20E+01	7.29E+01	3.75E+01
Ingestion while Swimming	8.80E-02	5.21E-02	2.01E-02	6.45E+00	3.82E+00	1.47E-01
Absorption while Swimming	1.08E-02	1.04E-02	7.21E-03	1.47E-00	1.27E-00	8.85E-01
TOTAL HAZARD INDEX	2.34E+01	2.04E+01	1.19E+01	3.68E+02	2.98E+02	2.52E+02

[a] - Based on domestic use of unconsolidated zone ground water.
[b] - Based on domestic use of Pittsburgh Coal ground water.
The trespasser scenario was not significant from anv of the exposure routes.

Coal or unconsolidated zone aquifers as their water supply. The chemicals of greatest concern, in terms of their noncarcinogenic effects, are benzene, carbon disulfide, ethylbenzene, 2-methylnaphthalene, 2-methylphenol, naphthalene and xylenes. There is no apparent noncarcinogenic health risks posed to individuals, such as trespassers, that may currently be exposed to site-related chemicals. The exposure route which made the greatest contribution to all of the trespasser HIs was the inhalation of vapors. Ethylbenzene and 4-methyl-2-pentanone were the chemicals which made the largest contribution.

In terms of ecological risk, the media of primary concern were surface water and soil. No threatened or endangered plant or animal species were identified at the site. Potential risks to the aquatic ecosystem were evaluated by comparing most probable and maximum plausible surface water concentrations to EPA and PADER ambient water quality criteria. These criteria were developed to provide protection of ninety-five percent of all freshwater aquatic life. Results of this evaluation indicated that aquatic life is at minimal risk of chronic adverse effects, and at no apparent risk of acute effects. The most probable and maximum plausible HIs for chronic risk were 1.20 and 1.85 respectively.

Potential adverse impacts to terrestrial organisms were evaluated by selecting a target species that may be significantly exposed to chemicals found at the site. The white-tailed deer was selected as an appropriate target species because it may be exposed to chemicals via several environmental pathways; its dietary habits and behavioral characteristics are well-documented; and it is a species of both economic and recreational importance. Exposure concentrations for the white-tailed deer were determined for plant, soil, and surface-water ingestion pathways. Cumulative exposure concentrations were calculated for all chemicals by summing exposures through all proposed pathways. Potential risk of adverse effects to white-tailed deer were determined by comparing exposure concentrations with appropriate critical toxicity values. The results of these comparisons indicate that there is no apparent potential for adverse effects to white-tailed deer inhabiting this site.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or, the environment.

III. DESCRIPTION OF ALTERNATIVES

A number of remedial alternatives were developed with the goal of significantly reducing the risk to human health and the environment from ingestion of contaminated ground water as well as dermal contact and accidental ingestion of contaminated soils. The following sections briefly summarize each of these alternatives. The time to implement that is described for each alternative is the time of actual remediation, it does not include the time required to design the remedy.

Alternative 1 - No Action

Evaluation of the No Action alternative is required by the NCP. This alternative serves as a point of reference for comparing all other alternatives. If other alternatives offer no substantial advantages over the no action alternative, no action may be considered feasible. EPA would review the site every five years to assure continued protection of human health and the environment. Capital cost for this alternative is $0 with an annual operation and maintenance (O&M) cost of $103,000 which covers the sampling costs for the existing wells. This alternative has a present worth of $2,452,000 and would require no time to implement.

Alternative 2 - Limited Action

This alternative includes an environmental monitoring program, access restrictions, and provisions for institutional controls. The monitoring locations would include existing monitoring and residential wells, seeps, and the unnamed stream. Also two additional deep bedrock wells would be drilled downgradient of the site as additional monitoring points. The data from this program would aid in the evaluation of contaminant migration and health and environmental risk variations. The lower landfill dike would also be upgraded to increase its stability. Leachate would continue to be collected via the existing oil/water separator. The water from this separation would be treated in the West Elizabeth Treatment Plant. The oil from this separation may be RCRA Hazardous Waste under the Toxicity Characteristic Rule for benzene. Thus, the oil collected in this manner may have to be transported and disposed of as a RCRA characteristic waste.

Institutional controls would prohibit future development onsite and would limit unauthorized access to the site. Institutional controls would include filing deed restrictions which would alert prospective buyers as to the presence of hazardous substances onsite. A fence with locked access gates would be constructed around the entire perimeter of the property to provide a physical barrier to limit unauthorized site access. This fencing would provide an upgrade to the fence system currently existing at the site. The capital cost for this alternative is $289,000 with an annual O&M cost of $108,000. The present worth of this alternative is calculated to be $2,860,000 and would require three months to implement.

Alternative 3A - Closure - Option A

Alternative 3A includes a fence around the entire perimeter of the site and deed restrictions on the property. The landfill and the area extending from the lower landfill dike downslope to the existing interceptor trench will be capped utilizing a multilayer cap system. The sanitary sewer running along the northeast border of the landfill will be relocated to allow future access without disturbing the new cap system, and grading and infiltration controls would be employed to minimize infiltration and reduce leachate production. The lower landfill dike would also be upgraded.

The existing oil/water separator for treating leachate would be replaced with an upgraded enclosed system to prevent uncontrolled air releases. Separated aqueous phase would continue to be discharged to the West Elizabeth Waste Treatment Plant, and the oil could be reclaimed as fuel in an offsite industrial boiler. Capital costs for this alternative are $937,000 with annual O&M costs of $92,000. The present worth is calculated at $3,127,000, and it is estimated that six to twelve months would be required to implement the alternative.

Alternative 3B - Closure - Option B

Alternative 3B includes a fence around the entire perimeter of the site and deed restrictions on the property. The landfill and the area extending from the lower landfill dike downslope to the existing interceptor trench will be capped utilizing a multilayer cap system. The sanitary sewer running along the northeast border of the landfill will be relocated to allow future access without disturbing the new cap system, and grading and infiltration controls would be employed to minimize infiltration and reduce leachate production. The lower landfill dike would also be upgraded.

The existing oil/water separator for treating leachate would be replaced with an upgraded enclosed system to prevent uncontrolled air releases. Separated aqueous phase would continue to be discharged to the West Elizabeth Waste Treatment Plant, and the oil could be reclaimed as fuel in an offsite industrial boiler. This alternative also includes the installation of a skimmer well system for non-aqueous product recovery in the Pittsburgh Coal mine voids. The skimmer well system shall be installed as follows:

Approximately twenty test borings shall be installed into the Pittsburgh Coal water table at 30 feet intervals along the western perimeter of the landfill. If free product is encountered at these locations, the borings shall be converted to skimmer wells. Floating product in the wells shall be collected intermittently by using a sensor device to detect the presence of oil, and skimmer pumps for collection.

Monitoring wells shall be installed downgradient to insure that the skimmer well network is working properly. The oil collected by this system could possibly be reclaimed as fuel in a an offsite industrial boiler. Capital costs for this alternative are $1,206,000 with annual O&M costs of $132,000. The present worth is estimated at $4,348,000 and would require approximately nine to twelve months to implement.

Alternative 4 - Excavation/Offsite Disposal

Alternative 4 includes a fence around the entire perimeter of the site and deed restrictions on the property. The existing oil/water separator for treating leachate would be replaced with an upgraded enclosed system to prevent uncontrolled air releases. The ground and surface water monitoring program shall be scaled down to a five-year program because this alternative involves removal rather than containment. Site access roads shall be improved to allow for additional heavy truck traffic. A skimmer well network shall be installed to allow collection of the non-aqueous phase product recovery from the mine voids.

In addition, approximately 137,000 tons of landfill waste materials, including soils underlying the waste and downslope of the landfill with detectable levels of contaimination, shall be excavated and disposed offsite. The excavation of the soil/waste materials shall involve the following:

(1) Excavation of soil cover, waste material, and targeted soils.

(2) Dewatering of material as required.

(3) Perched ground water encountered during excavation will be removed and placed in the existing leachate collection/treatment system for disposal, or disposed of offsite.

(4) Staged excavation of the landfill under a flexible containment structure for air emission controls.

(5) Site restoration involving backfill, grading, and seeding.

(6) Disposal offsite of contaminated soils, and waste.

(7) Any required pretreatment of the removed materials will be arranged and handled by the appropriate permitted disposal facility.

Capital costs for this alternative range between $23,824,000 and $298,525,000 with annual O&M at $72,000. Present worth ranges between $25,538,000 and $300,239,000, and approximately 24 months will be required for implementation. The reason for the tremendous range in cost is that the waste may require pretreatment prior to its being transported offsite.

Alternative 5 - Excavation/Thermal Treatment

Alternative 5 includes a fence around the entire perimeter of the site and deed restrictions on the property. The existing oil/water separator for treating leachate would be replaced with an upgraded enclosed system to prevent uncontrolled air releases This alternative also includes the installation of a skimmer well system for non-aqueous product recovery in the Pittsburgh Coal mine voids.

This alternative also involves the excavation of landfill materials (including the soil cover, waste, and targeted soils). All excavated materials would be thermally treated via rotary kiln incineration to achieve remedial action objectives. An estimated 137,000 tons of material would have to be treated in this manner. Excavation and thermal treatment of materials will include the following:

(1) Landfill materials shall be excavated, dewatered as required, and transported to an offsite incinerator. Steep terrain prevents incineration onsite.

(2) Thermal treatment via rotary kiln incineration.

(3) Testing of treated material for its suitability as a backfill source.

(4) Site restoration including backfill, soil cover, grading, and seeding will be performed onsite.

Capital costs for this alternative will be $90,883,000 to 173,083,000 with annual O&M costs of $72,000. Present worth of this alternative is estimated at $92,597,000 to $174,797,000 and approximately 24 to 36 months will be required for implementation.

Alternative 6 - In Situ Biodegradation

Alternative 6 includes a fence around the entire perimeter of the site and deed restrictions on the property. The existing oil/water separator for treating leachate would be replaced with an upgraded enclosed system to prevent uncontrolled air releases. This alternative also includes the installation of a skimmer well system for non-aqueous product recovery in the Pittsburgh Coal mine voids.

Alternative 6 also includes in situ biodegradation of the landfill waste materials. This method incorporates an aqueous mixture of microbes, nutrients, and an oxygen source that would be injected into the landfill area to biodegrade an estimated 137,000 tons of waste material and contaminated soils. In situ biodegradation involves the following:

(1) Installation of a network of injection points into the landfill and targeted soils into which the aqueous mixture would be injected.

(2) Ground water recovery may be used to utilize existing ground water as a liquid medium for supplying the aqueous mixture to the soils.

(3) Partial degradation or transformation may be achieved with some residual organics remaining in the waste which, in most cases, the residuals have significantly lower toxicity than the original contaminant.

The level of treatment achievable under this method is unknown at this time, and therefore, treatability testing would have to be conducted to accurately define achievable treatment levels. Capital costs for in situ biodegradation would range between $8,861,000 and $17,081,000 with annual O&M costs of $122,000. Present worth for this alternative ranges between $11,765,000 and $19,985,000, and approximately 36 to 60 months would be required for implementation.

IV. COMPARATIVE ANALYSIS OF ALTERNATIVES

The EPA evaluated each of the remedial alternatives developed for the site with respect to the nine criteria set forth in the NCP. The following sections present a brief discussion of each of the evaluation criteria and a comparative analysis of each of the remedial alternatives based on the nine evaluation criteria.

1) Overall Protection of Human Health and the Environment

This criterion addresses whether a remedial alternative will adequately protect human health and the environment. The evaluation criteria should consider: the reduction of risk; any unacceptable impacts; control of hazards (i.e., toxicity, mobility); and minimization of short-term impacts.

The primary human health risk associated with the site is to a future resident from ingestion of contaminated ground water. Under CERCLA, a cancer risk higher than 1.0E-4 is considered unacceptable. The risk at the Resin Disposal site is estimated to be 7E-4. Therefore, the primary goal of the remedial alternatives is to prevent contaminated ground water from migrating from the site.

Alternative 3B provides a high degree of overall protection both to human health and the environment by addressing the potential contaminant pathways and the containment and/or recovery of those contaminants. Alternative 4 would simply move the entire waste pile to another location where it could still threaten human health or the environment. Alternative 5 offers a high degree of protection because no waste will remain onsite. However, short-term effectiveness is compromised due to the large amount of intrusive activities on the landfill (e.g., traffic impacts, Volatile Organic Compounds (VOC) emissions, safety). Alternative 6 also offers a high degree of protection provided the technology required in this alternative would be effective on the substantial quantity of waste at this site. Alternative 3A presents a lower degree of protection than Alternative 3B because it does not address the non-aqueous product present in the mine voids. Alternatives 1 and 2 offer the lowest degree of protection because remediation via containment and/or treatment is not proposed.

2) Compliance with ARARs

This criterion addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements (ARARs) set forth by State and Federal environmental laws and/or provide grounds for invoking a waiver.

All of the alternatives with the exception of Alternatives 1 and 2 meet ARARs, and no waivers will be required. Three categories of ARARs are considered: chemical specific, action specific and location specific. Alternatives 1 and 2 do not meet ARARs because no provisions are provided under either alternative for continued compliance with chemical specific requirements of the Safe Drinking Water Act, chemical and action specific requirements of the PA Clean Streams Law, and neither alternative meets RCRA Closure and Post-Closure ARARs. Alternatives 3A and 3B would meet RCRA and PADER Closure and Post-Closure ARARs for hazardous waste landfills provided the cap is constructed in the appropriate fashion. Additionally, preventive measures for continued compliance are provided for the chemical-specific ARARs and recycling/reclamation and container management standards and pretreatment requirements for action-specific ARARs are met.

Alternative 4 would have to meet regulations regarding transportation and disposal of hazardous waste (40 CFR Part 263 & 264). Alternative 5 would have to meet regulations concerning incineration of hazardous waste (40 CFR Part 264 Subpart O). Alternatives 1 and 2 are no longer considered because they do not meet the threshold criteria of meeting ARARs.

3) Long-Term Effectiveness and Permanence

This criterion refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once the cleanup goals have been met.

Alternatives 5, and 6 have the best long-term effectiveness because they result in minimal waste remaining onsite, which in turn minimizes monitoring, maintenance, and institutional control requirements. Alternatives 3A and 3B also have good long-term effectiveness as long as the engineering controls such as the multi-layer cap, infiltration controls, and the dike remain functional.

4) Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion addresses the statutory preference for selecting a remedial alternative that permanently reduces the toxicity, mobility, or volume of the hazardous waste through treatment.

Alternatives 5 and 6 have the highest degree of achieving these reductions through thermal destruction, and in-situ biodegradation of all waste materials and contaminated soils. The ability to reduce toxicity, mobility, and volume for in-situ biodegradation is uncertain due to limitations of the technology. Alternative 4 would simply move the waste to another location, it would not involve any treatment. Alternative 3B would achieve gradual reductions in toxicity, mobility, and volume through the use of the skimmer well network and the oil/water separator. Alternative 3A would do so to a lesser degree because of the absence of the skimmer wells.

5) Short-Term Effectiveness

This criterion refers to the length of time required to achieve protection of human health and the environment, and to any adverse impacts posed during the implementation of the remedial alternative.

Alternatives 3A and 3B have the best short-term effectiveness due primarily to the fact that they can be implemented in less than 12 months and the alternatives do not entail any intrusive impacts to the landfill itself. Alternatives 4, 5, and 6 provide less short-term effectiveness due primarily to the intrusive landfill activities and the required time for implementation, particularly for Alternative 6, which requires several years for implementation.

6. Implementability

This criterion describes the technical and administrative feasibility of a remedial alternative, including the availability of materials and services needed to implement the selected solution.

Alternatives 3A and 3B can be easily implemented because they use limited remedial actions and existing technology. Alternatives 4, 5, are more difficult to implement because they involve excavation and transportation activities. Alternative 6 would be the most difficult alternative to implement and it is not certain if this technology could work on such a large quantity and depth of waste.

7) Cost

This criterion addresses the capital cost for materials, equipment, etc. and the operation and maintenance (O&M) costs. Assuming a net present worth (NPW) including 30 years of O&M costs, Alternative 3B, would be the most cost-effective remedy to implement, with a NPW of $4,348,000, because it eliminates the primary exposure pathway at a relatively low cost. Alternatives 4, 5, and 6 are significantly more expensive with NPW of $25,538,000 to $300,239,000, $92,597,000 to 174,797,000, and $11,765,000 to $19,985,000, respectively.

Alternative 3A is comparable to Alternative 3B with capital costs of $937,000, and NPW of $3,127,000. Both alternatives also have the similar annual O&M costs, however, the higher NPW for

Alternative 3B is justified because this alternative presents a more effective solution to the contamination problem because the addition of the skimmer well network provides better protection of human health and the environment.

8) State Acceptance

This criterion indicates whether, based on its review of the Remedial Investigation (RI), Feasibility Study (FS), and the Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.

PADER has concurred with the selected remedial action.

9) Community Acceptance

This criterion assesses the public comments received on the RI, FS, and the Proposed Plan.

Community interest is moderate at this site. A public meeting was held on May 6, 1991, at the Jefferson Borough Municipal Building. This meeting lasted approximately two hours, and public involvement was good. The Responsiveness Summary addresses specific comments received during the public comment period.

V. DESCRIPTION OF THE SELECTED REMEDY

Based upon the requirements of CERCLA and on the detailed evaluation of the alternatives, the EPA has determined that Alternative 3B - Closure with Skimmer Well Network, is the most appropriate remedy for the Resin Disposal Site in Allegheny County, Pennsylvania.

This alternative shall include capping the existing landfill utilizing a multilayer cap system, lower landfill dike upgrade, relocation of the sanitary sewer, infiltration controls to reduce leachate generation, upgrading of the downslope oil/water separator, installation of a skimmer well network to intercept non-aqueous phase product in the Pittsburgh Coal mine voids, and the implementation of a 30-year monitoring program.

The construction of the multilayer cap shall meet relevant and appropriate requirements in 40 C.F.R Section 264.310 which are the RCRA Closure and Post-Closure regulations. This construction must also meet the equivalent state regulations in 25 PA Code Section 264.310. Erosion and sedimentation control must be done in accordance with 25 PA Code Chapter 102. Dust control must also be done during grading and cover placement in compliance with 25 PA Code Section 123.1. Institutional controls shall focus on access restrictions, which shall help reduce potential exposure. The restrictions employed shall consist of deed restrictions for potential future land use which would include any development, excavation, or drilling onsite that could disturb covered or reconstructed areas; and upgrading of the existing security system including the construction of a fence around the perimeter of the site containing a locked gate system which would restrict access to the site. (Additional applicable or relevant and appropriate requirements are set forth in Section VI, Compliance with Applicable or Relevant and Appropriate Requirements).

The landfill and soils between the lower landfill dike and the leachate interception trench shall be capped utilizing a multilayer system. The existing oil/water separator located downslope of the leachate collection trench shall be replaced with an upgraded system that allows for the collection of uncontrolled air releases by utilizing an enclosed system. After separation, aqueous phase product is discharged to the West Elizabeth Sanitary Authority, and the non-aqueous product, if possible, is reclaimed as fuel. A series of approximately twenty test borings shall be installed into the Pittsburgh Coal along the western perimeter of the landfill. These borings shall reach a depth of approximately 30 feet and shall be converted into skimmer wells as a free product layer is encountered. This network of skimmer wells shall collect non-aqueous phase product in the Pittsburgh Coal mine voids, and thus, shall slowly reduce the toxicity, mobility, and volume of waste. Non-aqueous product shall be collected from the wells intermittently through the use of pumps, and, if possible, reclaimed as fuel. Monitoring wells shall be installed downgradient to insure that the skimmer well network is working properly.

<u>Cost Estimate for Alternative 3B</u> <u>Alternative 3B</u>

Cost Estimate for Alternative 3B	Alternative 3B
Capital Costs	
Access Controls	93,000
Site Preparation	105,000
Site Capping and Infiltration Controls	300,000
Field Evaluation Program/Skimmer Well System	160,000
New Oil/Water Separator	30,000
Deep Bedrock Boreholes	25,000
Abandonement of TW-5 & TW-6	4,000
SUBTOTAL	717,000
Engineering/Construction Management (15%)	108,000
Mobilization/Demobilization/Site Services (10%)	72,000
Overhead & Profit (15%)	108,000
Contingency (20%)	201,000
TOTAL ESTIMATED CAPITAL COST	1,206,000
Operation and Maintenance	
Leachate Collection/Treatment for Interception Trench	50,000
Leachate Collection/Treatment for Potential Skimmer Well System	40,000
Site Monitoring	27,200
Fence Maintenance	4,500
Cap/Infiltration Controls Maintenance	10,000
TOTAL ESTIMATED ANNUAL O&M COST	132,000
PRESENT WORTH OF ANNUAL O&M COST (30 years at 5% interest)	3,142,000
TOTAL ESTIMATED PROJECT COST	4,348,000

VI. STATUTORY DETERMINATIONS

The EPA's primary responsibility at Superfund sites is to implement remedial actions that are protective of human health and the environment. Section 121 of CERCLA, 42 U.S.C. § 9621, also establishes several other statutory requirements and preferences. The selected remedy must be cost effective and utilize a permanent solution to the maximum extent practicable. The selected remedial action must comply with all applicable or relevant and appropriate requirements set forth by State and Federal environmental statutes and regulations, unless a waiver is justified. Finally, CERCLA sets forth a statutory preference for remedial actions that permanently reduce the toxicity, mobility, and volume of the site-related wastes. The following sections discuss how the selected remedy meets the statutory requirements and preferences set forth in Section 121 of CERCLA.

Protection of Human Health and the Environment

The risk assessment identified future exposure to contaminated ground water as the most significant exposure pathway in terms of its potential impact on human health. The risk assessment also showed that the site has a relatively high volume (85,000 tons) of low toxicity waste. The remedial measures included in the preferred remedy shall impede further migration of waste or contaminated soils from the landfill. The selected remedy would also protect human health by eliminating direct contact with the site soils through access restrictions and placement of a multilayer cap system. The selected remedy also protects the environment by reducing contaminant migration into the unnamed stream. Additionally, implementation of this alternative is not expected to result in any adverse short-term risks or cross-media impacts.

Compliance With Applicable or Relevant and Appropriate Requirements

The selected remedial action will comply with all ARARs. The ARARs specific to the selected remedy are presented below. Except where specifically noted, the site-specific limitation to the following ARARs will be identified in the remedial design phase.

- Chemical-specific ARARs:

Safe Drinking Water Act - National Primary Drinking Water Standards (40 CFR Part 141). Federal Standards for several chemicals including the MCLs, adopted to protect public drinking water systems. Standards will be considered and used in characterizing human health risks associated with possible contaminated ground water for public consumption.

PA Safe Drinking Water Act (35 PS 722.1-721.17 & 25 PA Code Chapter 109) - State act which established drinking water standards at least as stringent as Federal Standards. Standards will be considered and used in characterizing human health risks associated with possible contaminated ground water for public consumption.

RCRA - Toxicity Characteristic Rule (40 CFR § 261.3 (a)(2)) The non-aqueous leachate collected in the oil/water separator may contain benzene at levels above 0.50 mg/liter which would make it a RCRA characteristic waste. Further testing of the non-aqueous leachate would have to be done to determine whether this regulation is applicable to the selected remedy. If the non-aqueous leachate is determined to be a RCRA waste, then it will have to be manifested as a hazardous waste.

PA Solid Waste Management Act - Identification and Listing of Hazardous Waste (25 PA Code Chapter 75.261) - This regulation is consistent with corresponding federal standards and defines those solid wastes which are subject to state regulation as a hazardous waste. This regulation may be applicable to the non-aqueous leachate collected from the oil/water separator. Further testing of the level of benzene in the non-aqueous leachate is required to determine whether the regulation is applicable. If the non-aqueous leachate is determined to be a RCRA waste, then it will have to be manifested as a hazardous waste.

- Location-specific ARARs:

Executive Order on Protection of Wetlands - (Executive Order No. 11,990 40 CFR 6.302(a) and Appendix A) If there are any wetlands onsite, these regulations are potentially applicable if the selected remedy would require the filling of any of the wetlands.

Dredge or Fill Requirements - (40 CFR Parts 230-231). Requires permits for discharge of dredge or fill material into surface waters, including filling of wetlands.

- Action-specific ARARs:

RCRA - Standards Applicable to Generators of Hazardous Waste (40 CFR Part 262) - This regulation establishes standards for generators of hazardous waste. If the oil from the oil/water separator is determined, upon further testing, to be a RCRA characteristic waste, the oil will have to manifested as a hazardous waste.

Standard Applicable to Transporters of Hazardous Waste (40 CFR Part 263) - Establishes standards which apply to transporters of hazardous waste within the United States. Potentially applicable to remedial actions involving removal of waste which qualifies as hazardous under RCRA. If the oil from the oil/water separator is determined, upon further testing, to be a RCRA waste, it will have to transported as a hazardous waste.

Standards for the Management of Specific Hazardous Waste and Specific Types of Hazardous Waste Management Facilities (40 CFR Part 266) - Establishes requirements which apply to recyclable hazardous waste materials that are reclaimed. May apply to the reclamation of the non-aqueous product from the oil/water separator.

Burning of Hazardous Wastes in Boilers and Industrial Furnaces (56 FR 7134, February 21, 1991) - Establishes standards for the burning of hazardous wastes in boilers and industrial furnaces. May apply to the burning of the non-aqueous product collected from the oil/water separator, and presently burned in the Hercules Jefferson plant.

Surface Impoundments (40 CFR Part 264.221, 264.226, 264.227, 264.228) - These regulations are relevant and appropriate to the stabilization of the lower landfill dike. Specific standards must be met with regard to construction and maintenance of the dike.

Use and Management of Containers (40 CFR Part 264 -Subpart I) Establishes regulations for owners and operators of hazardous waste facilities that store or treat waste in containers. The selected remedy will meet recycling/reclamation and container management standards as the leachate is collected, and then reclaimed as fuel.

Cap Construction (25 PA Code Sections 264.111, 264.117, and 264.310(b), (i), (iv) and (v)) contain relevant and appropriate requirements with respect to maintenance and construction of the cap. These regulations also will require proper repair of the landfill cap after it is constructed.

Closure and Post-Closure (40 CFR Part 264.310) - This federal regulation describes the proper closure and post-closure activities necessary at a hazardous waste landfill. This regulation would be relevant and appropriate for this site, because the waste was placed prior to the enactment of RCRA, so RCRA is not applicable.

Dust Control Measures (25 PA Code Sections 123.1 and 123.2) are applicable to the selected remedy and require that dusts generated by earthmoving activities be controlled with water or other appropriate dust suppressants when building the cap.

Erosion Control Measures - (25 PA Code Sections 102.1 through 102.24) contain relevant and appropriate standards requiring the development, implementation, and maintenance of erosion and sedimentation control measures and facilities which effectively minimize accelerated erosion and sedimentation.

Clean Water Act - National Pretreatment Standard (40 CFR Part 401) - Indirect discharge to a Publicly Owned Treatment Works (POTW) is governed by pretreatment regulations. This regulation is applicable to the discharge of the aqueous fraction of the treated leachate to the West Elizabeth Treatment Plant.

West Elizabeth Sanitary Authority Pretreatment Effluent Standards - (West Elizabeth Sanitary Authority & Hercules Effluent Limitations Agreement) Establishes acceptable levels on discharge to the West Elizabeth Treatment Plant. The aqueous portion of the leachate is currently being discharged in accordance with the effluent limitations agreement.

Occupational Safety and Health Act (29 U.S.C. §§ 651-678 & 29 CFR 1910.120). Regulates workers health and safety. Applicable to activities at hazardous waste sites.

Hazardous Materials Transportation Act (49 U.S.C. §§ 1801-1813, Parts 107, 171-177). Regulates transportation of DOT-defined hazardous materials. This regulation will be applicable to the selected remedy if the collected oil is a RCRA characteristic waste.

Cost Effectiveness

The selected remedy is cost effective because it has been determined to be the best balance between cost and protection of human health, welfare and the environment. The selected remedy has excellent short-term effectiveness proportional to its cost. The estimated capital cost for this alternative is $1,206,000, with a net present worth cost including 30 years of operation and maintenance of $4,348,000. The selected remedy provides a level of protection of human health comparable to that provided by the other remedies, but at a significantly reduced cost. Although other remedies may be more effective in the long-term, the site-related risks do not justify the additional capital expenditure.

Utilization of Permanent Solutions to the Maximum Extent Practicable

The EPA has determined that the selected remedy represents the maximum extent to which permanent treatment technologies can be utilized in a cost effective manner for the site. Of those alternatives that are protective of human health and the environment and comply with ARARs, the EPA has determined that the selected remedy provides the best balance in terms of short-term effectiveness; implementability; cost; reduction in toxicity, mobility, and volume; and long-term effectiveness.

The selected remedy does not offer as high a degree of long-term effectiveness as the off-site disposal, thermal treatment, or in-situ biodegradation alternatives, however; it will significantly reduce the risks to human health posed by the site soils. The excess human cancer risk at the site has been estimated to be approximately 7 in 10,000 (based on maximum plausible exposure concentrations) for a future resident, and the risk to a trespasser is 2 in 1,000,000 (based on maximum plausible exposure concentration). Current residents are not at risk of exposure to carcinogenic substances. The site has a relatively high volume (85,000 tons) of low toxicity waste. Due to the relatively low risk associated with the site, EPA has determined that the use of more costly treatment technologies at the site are not justifiable. Because all the remedial alternatives, with the exception of Alternatives 1 and 2, offer a comparable level of protection of human health and the environment, the EPA has selected Alternative 3B, which can be implemented quickly; will have little or no adverse effects on the surrounding community; and will cost considerably less than the other alternatives.

Preference for Treatment as a Principal Element

The statutory preference for remedial alternatives that employ treatment as the principal element has been met by the treatment of waste from both the oil/water separator and the skimmer wells employed in the selected remedy. Treatment of the waste is via incineration as a fuel. Although several of the other remedies, such as Alternative 5, employ even more treatment of waste, due to the relatively low risk to human health, the unproductive nature of the aquifers, and the nature and extent of contamination, the EPA has determined that Alternative 3B, including monitoring, access restrictions, institutional controls, and installation of a skimmer well system for non-aqueous product recovery in the Pittsburgh coal mine voids, can be implemented more quickly and cost effectively than the other alternatives while still providing an adequate level of protection to human health and the environment.

Documentation of Significant Changes

The preferred alternative originally identified in the Proposed Plan is also the preferred alternative selected in the ROD. There have been no significant changes made to the selected remedy in the time period between the issuance of the Proposed Plan on April 19, 1991 and the signing of the ROD approximately ten weeks later.

RESPONSIVENESS SUMMARY
RESIN DISPOSAL SITE
JEFFERSON BOROUGH
ALLEGHENY COUNTY, PENNSYLVANIA
June, 1990

The EPA established a public comment period from April 19, 1991 to May 18, 1991 on the Remedial Investigation and Feasibility Study (RI/FS), the Proposed Plan which described EPA's preferred Remedial Alternative and other site-related information for the Resin Disposal Site in Jefferson Borough, Pennsylvania. The RI/FS and other site related documents utilized by the EPA to select a preferred Remedial Alternative are included in the site's administrative record file and have been available to the public since the beginning of the public comment period. A public meeting was held on May 6, 1991 and approximately 30 people were in attendance. A total of two written comments were also received during the public comment period.

The purpose of this Responsiveness Summary is to summarize significant comments, criticisms and new data received during the public meeting or in writing, and to provide EPA's responses to the comments.

This community relations responsiveness summary is divided into the following sections:

Section I — Overview: A discussion of the public's response to the preferred Remedial Alternative.

Section II — Background of Community Involvement and Concerns: A discussion of the history of community interest and concerns raised during remedial planning activities at the Resin Disposal Site.

Section III — Summary of Significant Comments Received during the Public Comment Period and Agency Responses. A summary of comments and responses categorized by topic.

I. Overview:

Comments received from the public suggest that area residents do not object to the preferred alternative. In general, the residents were concerned that having a Superfund site in their neighborhood may have a negative impact on their property values. In addition, there is concern that hazardous substances are being left in place, and may pose a health threat at some time in the future. EPA has included monitoring of residential wells in the preferred alternative to address this concern.

II. Background of Community Involvement and Concerns:

A public meeting to discuss the draft RI/FS Work Plan was held on August 5, 1987 in the Jefferson Borough Municipal Building. The Pennsylvania Department of Environmental Resources (PADER) and EPA were both present at the meeting but public interest was moderate. The citizens did express some concerns about the possible human health impacts of the site. The RI/FS began in November, 1987 after Hercules signed a Consent Order with PADER to do the work.

III Summary of Major Comments received during the Public Comment Period and Agency Responses.

1. Responsible Party Involvement

Several questions were asked about Hercules, and its role in the RI/FS and the future remediation of the site.

EPA RESPONSE: Hercules performed the RI/FS under the direction and supervision of the EPA and PADER. Future remediation, if performed by the responsible party, would also be performed under the same supervision.

2. Residential Well Sampling

A question was asked about the human health threat present at the site, and whether any contamination had been detected in residential wells.

EPA RESPONSE: No site-related contaminants were detected in any residential well. However, there were contaminants, such as benzene, detected in monitoring wells located onsite. As indicated in the Risk Assessment, there is some risk in the future to residents consuming contaminated ground water if the onsite waste material contaminated a nearby residential well.

3. The Oil/Water Separator

There were several questions about the oil/water separator, and what happens to the oil and water after their separation and treatment.

EPA RESPONSE: The oil/water separator is used to collect leachate from the landfill. The oil, after its separation from the water, is currently transported to the Hercules plant in Jefferson and burned as fuel in one of its boilers. The water, which is slightly contaminated with organic compounds after the separation, goes to the West Elizabeth

Sanitary Authority where it is treated. The oil/water separator will be replaced with an upgraded system as part of the selected remedy.

4. Length of Remediation

A question was asked about the length of the various stages of remediation, and the length of time before the site is completely remediated.

EPA RESPONSE: The Record of Decision (ROD) is expected to be signed in late June, 1991. Following that, a period of negotiation will occur between EPA, PADER and the potentially responsible party (PRP) to determine if the PRP is willing to perform the remedy described in the ROD. If the negotiations are not successful, Superfund monies may be expended to complete the remedy. After the negotiations are completed, a remedial design, which involves designing the specifics of the remedy, will take 6-12 months. After the design is completed, the remedial action itself will take an additional 9-12 months. Thus, completing the entire process will take between 2 and 3 years.

5. The Second Operable Unit

A question was asked about the second operable unit regarding groundwater remediation, and whether the operable unit was necessary.

EPA RESPONSE: Additional information needs to be collected about the groundwater (both on and offsite) before a remedy can be selected for that unit. The extent of the ground water contamination is not accurately known at this time. More wells need to be installed, and sampled before a remedy for the groundwater can be selected. The remedy for operable unit one addresses the waste material and the adjacent contaminated soils, and the second operable unit will address any groundwater remediation that may be necessary.

6. PADER Groundwater Remediation ARAR

A question was asked about whether the PADER regulation concerning remediation of ground water to background quality (25 Pa. Code §§264.90 - 264.100) was an ARAR for this operable unit.

EPA RESPONSE: The first operable unit addresses source control remediation and the PADER's ground water regulation would not be an ARAR for that operable unit. The second operable unit addresses any ground water remediation that may be necessary, and the PADER groundwater regulation may be an ARAR for that unit.

7. Sources of Onsite Ground Water

A comment was received concerning the sources of the ground water which may contact the waste material onsite. The concern was that the preferred remedial alternative would only address water from surface infiltration and not water flowing towards the waste from offsite mine voids.

EPA RESPONSE:

It is true that ground water can come from infiltration and via the mine voids. However, an estimate in the Feasibility Study on page 1-23 indicates that the vast majority, approximately 99%, of the water in this area would be from surface infiltration. Thus, the capping and infiltration controls, which are part of the preferred remedy would significantly reduce the quantity of ground water coming in contact with the waste material.

8. The Unnamed Stream

There were several questions about the unnamed stream and whether it contained high levels of site-related contaminants.

EPA RESPONSE:

There are levels of site-related contaminants present in the unnamed stream, but the levels approach non-detection at the point where the stream reaches the site gate downgradient of the oil/water separator. The unnamed stream flows down to the Monongahela River approximately 5/8th of a mile from the site boundary. The unnamed stream and other streams in the site area generally appear to be discolored, probably due to runoff from the areas coal mines.

9. The Mine Voids

A question was asked about the onsite mine voids, and whether the Bureau of Mines could be of some assistance in determining the exact location of all the mine voids.

EPA RESPONSE:

There are no maps available indicating exactly where the onsite mining was done. However, the EPA will consider using the Bureau of Mines for technical assistance in the future regarding this matter.

PENNSYLVANIA DER

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
SOUTHWEST REGION - FIELD OPERATIONS
Highland Building
121 South Highland Avenue
Pittsburgh, Pennsylvania 15206-3988
(412) 645-7100 (answers 24 hours)

Office of the
Regional Director

June 28, 1991

Mr. Edwin B. Erickson
Regional Administrator
U. S. Environmental Protection Agency
841 Chestnut Building
Philadelphia, PA 19107

RE: Resin Disposal Site
Allegheny County
Record of Decision

Dear Mr. Erickson:

The Department has reviewed the Record of Decision received June 25, 1991 and amended June 27 and June 28, 1991 for the Resin Disposal Site located in Jefferson Borough, Allegheny County.

The selected remedy in this ROD addresses the containment of the waste materials and is referred to as Operable Unit 1 (OU-1). Additionally, EPA will be addressing the groundwater in a second Record of Decision. The groundwater is referred to as Operable Unit 2 (OU-2).

OU-1 includes:

1. Installation of a multi-layer cap and infiltration controls.
2. Installation of a skimmer well system to collect floating product.
3. Installation of monitoring wells to measure the effectiveness of the skimmer well system.
4. Upgrading of the lower landfill dike to increase its stability.
5. Relocation of the sanitary sewer system.
6. Replacement of the existing oil/water separator with an upgraded enclosed system.
7. Installation of fence around the site perimeter.
8. Instituting deed restrictions.
9. Monitoring ground and surface water and implementing an Operation and Maintenance Program.

EPA states in the ROD that it is EPA's intention to do the following:

1. Complete the OU-2 groundwater study prior to construction of the OU-1 multi-layer cap and

2. Upon completion of the OU-2 groundwater study, evaluate the effectiveness of the OU-1 remedy to determine whether it is inconsistent with the results of the groundwater study and whether it will preclude implementation of the final remedy and whether it will preclude implementation of the final remedy for OU-2. Based on this criteria, EPA will determine, as appropriate, whether the ROD for OU-1 requires modification.

I concur with the EPA's proposed Record of Decision for Operable Unit 1 (OU-1) with the following conditions:

1. Tables 1, 3, 4, 5, 6 and 7 and narrative be corrected to reflect revision to the Risk Assessment.

2. The Department will be given the opportunity to concur with decisions related to the design and implementation of OU-1, to insure compliance with State ARARs.

3. This concurrence with the selected remedial action is not intended to provide any assurance pursuant to SARA Section 104(c)(3).

4. The Department will be given the opportunity to concur with decisions related to subsequent operable units.

The Department, as always, reserves its right and responsibility to take independent enforcement actions pursuant to state law.

Additionally, the Department continues to assert that our ARAR for groundwater for hazardous substances is that all groundwater must be remediated to "background" quality as specified by 25 Pa. Code §264.90-264.100.

If you have any question regarding this matter, please do not hesitate to contact me.

Sincerely,

Charles A. Duritsa
Regional Environmental Protection
Director - Field Operations
Southwest Region

CAD:JRS:ld

cc: Region
Central
Chron
Garth Connors/U.S. EPA