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1989

EPA Superfund
Record of Decision:

DOUGLASSVILLE DISPOSAL
EPA ID: PAD002384865
OU 03
DOUGLASSVILLE, PA
06/30/1989

Text:

DOUGLASSVILLE DISPOSAL SITE, UNION TOWNSHIP,
BERKS COUNTY, PENNSYLVANIA

#DR
STATEMENT OF BASIS AND PURPOSE

THIS DECISION DOCUMENT PRESENTS THE SELECTED REMEDIAL ACTION FOR THE DOUGLASSVILLE DISPOSAL SITE DEVELOPED IN ACCORDANCE WITH THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (CERCLA), AS AMENDED BY THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA), AND, TO THE EXTENT PRACTICABLE, THE NATIONAL CONTINGENCY PLAN (NCP). THIS DECISION IS BASED ON THE ADMINISTRATIVE RECORD FOR THIS SITE. THE ATTACHED INDEX IDENTIFIES THE ITEMS THAT COMPOSE THE ADMINISTRATIVE RECORD UPON WHICH THE SELECTION OF THE REMEDIAL ACTION IS BASED.

THE COMMONWEALTH OF PENNSYLVANIA CONCURS ON THE SELECTED REMEDY.

A COPY OF THE COMMONWEALTH'S LETTER OF CONCURRENCE IS ATTACHED.

#DE
DECLARATION

THE SELECTED REMEDY IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, ATTAINS FEDERAL AND STATE REQUIREMENTS THAT ARE APPLICABLE OR RELEVANT AND APPROPRIATE TO THIS REMEDIAL ACTION AND IS COST EFFECTIVE. THIS REMEDY SATISFIES THE STATUTORY PREFERENCE FOR REMEDIES THAT EMPLOY TREATMENT THAT REDUCES TOXICITY, MOBILITY, OR VOLUME AS A PRINCIPAL ELEMENT AND UTILIZES PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

BECAUSE THIS REMEDY WILL RESULT IN HAZARDOUS SUBSTANCES REMAINING ON SITE ABOVE HEALTH-BASED LIMITS, A REVIEW WILL BE CONDUCTED WITHIN FIVE YEARS AFTER THE START OF REMEDIAL ACTION TO ENSURE THAT THE REMEDY CONTINUES TO PROVIDE ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT.

DATE	EDWIN B. ERICKSON
6/30/89	REGIONAL ADMINISTRATOR
	EPA REGION III

SITE DESCRIPTION AND SUMMARY OF REMEDIAL ALTERNATIVE SELECTION FOR THE DOUGLASSVILLE DISPOSAL SUPERFUND SITE BERKS COUNTY, PENNSYLVANIA

#INTRO
INTRODUCTION

THE SUPERFUND INVESTIGATION OF THE DOUGLASSVILLE DISPOSAL SITE ADDRESSES VARIOUS ENVIRONMENTAL MEDIA AND THEIR POTENTIAL CONTAMINATION WITH HEAVY METALS AND ORGANIC COMPOUNDS. THE SITE WAS STUDIED FOR ITS POTENTIAL DEGRADATION OF THE SCHUYLKILL RIVER WHICH FLOWS ADJACENT TO THE SITE; OF AREA GROUND WATER, PARTICULARLY AS IT MIGHT AFFECT NEIGHBORING RESIDENTS; AND OF SITE SOILS, THE GREATER PORTION OF WHICH LIE WITHIN THE 100-YEAR FLOODPLAIN. THE SITE WAS ALSO INVESTIGATED FOR ITS POTENTIAL TO PRODUCE ADVERSE HEALTH EFFECTS BECAUSE OF EXPOSURE TO SITE SOILS THROUGH INGESTION, INHALATION, AND DIRECT CONTACT.

THIS RECORD OF DECISION SUMMARIZES THE RESULTS OF A REMEDIAL INVESTIGATION/FEASIBILITY STUDY WHICH EXAMINES THE SITE AND THE SURROUNDING AREA, AND PRESENTS THE SELECTED REMEDIAL ALTERNATIVE.

#CRH
COMMUNITY RELATIONS HISTORY

PURSUANT TO SECTION 300.67(C) OF THE NATIONAL CONTINGENCY PLAN (NCP), A COMMUNITY RELATIONS PLAN WAS DEVELOPED FOR THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS). A PUBLIC MEETING REGARDING THE INITIATION OF THE PHASE II RI/FS ACTIVITIES WAS HELD AT THE UNION TOWNSHIP BUILDING ON SEPTEMBER 9, 1987. IN COMPLIANCE WITH SECTIONS 113(K)(2)(I-V) AND 117 OF SARA, THE ADMINISTRATIVE RECORD, INCLUDING THE PROPOSED REMEDIAL ACTION PLAN, WAS PLACED FOR PUBLIC CONSIDERATION AT THE UNION TOWNSHIP BUILDING, CENTER ROAD, UNION TOWNSHIP, PENNSYLVANIA. AN ANNOUNCEMENT OF THE AVAILABILITY OF THE ADMINISTRATIVE RECORD WAS PLACED IN THE POTTSTOWN MERCURY ON MAY 24, 1989. THE ADMINISTRATIVE RECORD INCLUDED THE PHASE II RI/FS REPORT WHICH LISTED THE ALTERNATIVES DEVELOPED AS PART OF THE FEASIBILITY STUDY. A PERIOD FOR PUBLIC REVIEW AND COMMENT ON THE PROPOSED REMEDIAL ACTION PLAN WAS HELD FROM MAY 25, 1989, TO JUNE 26, 1989. ALL DOCUMENTS RELEVANT TO THE DEVELOPMENT AND THE CONDUCT OF THE RI/FS AND THE SELECTION OF THE REMEDIAL ALTERNATIVE WERE SUBMITTED BY EPA TO THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES (PADER) FOR REVIEW AND COMMENT DURING THE RI/FS PROCESS.

#SLD
SITE NAME, LOCATION, AND DESCRIPTION

THE DOUGLASSVILLE DISPOSAL SITE OCCUPIES APPROXIMATELY 50 ACRES OF LAND IN UNION TOWNSHIP, SOUTHEASTERN BERKS COUNTY, PENNSYLVANIA, ALONG THE SOUTHERN BANK OF THE SCHUYLKILL RIVER (FIGURE 1). STATE ROUTE 724 BORDERS THE SOUTHERN EDGE OF THE SITE, AND A CONRAIL RAILROAD RIGHT-OF-WAY EXTENDS THROUGH THE SITE IN AN EAST-WEST DIRECTION. THE SITE IS LOCATED APPROXIMATELY 3 MILES NORTHWEST OF POTTSTOWN AND 11 MILES SOUTHEAST OF READING, PENNSYLVANIA. THE SITE IS LOCATED ALMOST ENTIRELY WITHIN THE 100-YEAR FLOODPLAIN OF THE SCHUYLKILL RIVER.

THE AREA AROUND THE SITE CAN BE DESCRIBED AS A RURAL SETTING CONSISTING OF CROPLAND, UNCULTIVATED FIELDS, AND LIGHT RESIDENTIAL AND INDUSTRIAL DEVELOPMENT. WITHIN A 1/4-MILE RADIUS OF THE SITE THERE ARE APPROXIMATELY 23 HOUSING UNITS SHELTERING AN ESTIMATED 58 RESIDENTS. A STATE ADULT CARE FACILITY, THE COLONIAL MANOR ADULT HOME, IS LOCATED ACROSS HIGHWAY 724 FROM THE SITE. THE BOROUGH OF POTTSTOWN, APPROXIMATELY 4 MILES DOWNSTREAM FROM THE SITE ON THE SCHUYLKILL RIVER, HAS AN ESTIMATED POPULATION OF 35,000 PEOPLE. THE TOWN OF DOUGLASSVILLE LIES ON THE NORTHERN BANK OF THE RIVER APPROXIMATELY 1/2-MILE NORTHEAST OF THE SITE AND HAS A POPULATION OF 2,500 PEOPLE.

THE SCHUYLKILL RIVER BORDERS THE SITE TO THE NORTH AND TO THE EAST. THIS STRETCH OF THE RIVER LIES WITHIN THE BOUNDARIES DESIGNATED BY THE PENNSYLVANIA SCENIC RIVERS ACT OF 1972 AS A COMPONENT OF THE PENNSYLVANIA SCENIC RIVERS SYSTEM. THE RIVER WAS SO DESIGNATED FOR THE PURPOSES OF "CONSERVING AND ENHANCING ITS SCENIC QUALITY AND OF PROMOTING PUBLIC RECREATIONAL ENJOYMENT IN CONJUNCTION WITH VARIOUS PRESENT AND FUTURE USES OF THE RIVER" (PADER, MARCH, 1979). THE SCHUYLKILL RIVER IS USED EXTENSIVELY FOR MUNICIPAL AND INDUSTRIAL WATER SUPPLY, RECREATION, AND WASTE ASSIMILATION. IN THE REACH EXTENDING DOWNSTREAM OF THE DOUGLASSVILLE DISPOSAL SITE TO THE CONFLUENCE WITH THE DELAWARE RIVER, SEVEN PUBLIC WATER SUPPLY USERS DRAW WATER DIRECTLY FROM THE SCHUYLKILL RIVER. THE DISTANCE TO THE NEAREST PUBLIC WATER SUPPLY INTAKE IS 4 MILES AT POTTSTOWN.

GEOLOGICALLY, THE DOUGLASSVILLE DISPOSAL SITE IS SITUATED IN THE TRIASSIC LOWLAND SECTION OF THE PIEDMONT PROVINCE. BEDROCK IN THE GENERAL AREA OF THE SITE IS MAPPED AS BELONGING TO THE BRUNSWICK FORMATION WHICH CONSISTS OF JURASSIC-TRIASSIC AGED, FINE-TO-COARSE GRAINED SEDIMENTARY ROCKS. THE PREDOMINANT MEMBER OF THE BRUNSWICK FORMATION CONSISTS OF RED AND MAROON MICACEOUS, SILTY MUDSTONES AND SHALES. STRUCTURAL DEFORMATION IS NOT SEVERE. BROAD OPEN DIPS OF 25 DEGREES OR LESS TO THE NORTH-NORTHWEST ARE PREVALENT. HOWEVER, NORMAL FAULTS ARE COMMON AND ARE LOCATED THROUGHOUT THE AREA. SEVERAL FRACTURE TRACES ARE LOCATED SOUTH OF THE SITE AND IT IS PROBABLE THAT THEY PROJECT THROUGH THE SITE IN A 06 DEGREES NW TO 38 DEGREES NE DIRECTION. GROUND WATER IN THIS FORMATION IS CONTROLLED BY SECONDARY PERMEABILITY, I.E., WATER FLOW TAKES PLACE ALONG JOINTS, FAULTS, AND BEDDING PLANES. THE BRUNSWICK FORMATION IS GENERALLY CAPABLE OF YIELDING ADEQUATE WATER FOR HOUSEHOLD USE. A NUMBER OF RESIDENTIAL WELLS ARE LOCATED WITHIN 1/2 MILE OF THE SITE. GROUND WATER FROM THE BRUNSWICK FORMATION IS OF THE CALCIUM CARBONATE TYPE, RANGING FROM MODERATELY HARD TO VERY HARD WITHIN THE GENERAL REGIONAL AREA. TOTAL DISSOLVED SOLIDS ARE USUALLY ABOUT 300 PARTS PER MILLION. THE WATER TABLE AT THE SITE VARIES FROM 10 TO 20 FEET.

THE DOUGLASSVILLE DISPOSAL SITE WAS THE PLACE OF OPERATIONS OF BERKS ASSOCIATES, INC., SINCE ITS INCEPTION IN 1941. THE NON-OPERATING FACILITY CURRENTLY CONSISTS OF A FORMER WASTE OIL PROCESSING AREA LOCATED IN THE SOUTHERN PORTION OF THE SITE AND VARIOUS AREAS THAT WERE USED FOR WASTE DISPOSAL. THE COMPLEXITY, SIZE, VARIOUS ACTIVITIES THAT TOOK PLACE AT THE SITE, AND THE NATURE AND EXTENT OF CONTAMINATION DICTATED THE NEED FOR A LOGICAL DIVISION OF THE SITE INTO 10 AREAS THAT COULD BE SOURCES OF CONTAMINANTS AND IDENTIFIED AS SOURCE AREAS. FIGURE 2 SHOWS THE APPROXIMATE BOUNDARIES OF THESE SOURCE AREAS AND THEIR DESIGNATIONS. DISPOSAL AREAS INCLUDED TWO LARGE LAGOON AREAS THAT WERE ONCE FILLED WITH WASTE OIL SLUDGE (SOURCE AREAS 4 AND 5), AN OILY FILTER CAKE DISPOSAL AREA (SOURCE AREA 2), AN OIL DRUM STORAGE AREA (SOURCE AREA 8), AN AREA WHERE WASTE OIL SLUDGE WAS LANDFARMED INTO THE SOIL (SOURCE AREAS 3 AND 6), THE FORMER PROCESSING FACILITY/TANK FARM AREA (SOURCE AREA 1), A SMALL BACKFILLED LAGOON (SOURCE AREA 9), AN OLD INCINERATOR (SOURCE AREA 7), AND AN AREA OF SCRAP METAL AND TANKS (SOURCE AREA 10).

THE FILTER CAKE DISPOSAL AREA (SOURCE AREA 2) IS LOCATED JUST NORTH OF THE FORMER PROCESSING FACILITY/TANK FARM AREA (SOURCE AREA 1). VARIOUS TRENCHES AND IMPOUNDMENTS HAVE BEEN NOTED ON SITE. THE LAGOONS FORMERLY USED FOR WASTE DISPOSAL HAVE BEEN BACKFILLED.

A SMALL DRAINAGE DITCH EXTENDS EASTWARD FROM THE CENTER OF THE SITE AND EVENTUALLY FLOWS INTO THE SCHUYLKILL RIVER. SURFACE WATER RUNOFF FROM THE SITE ALSO FEEDS INTO THIS DRAINAGE DITCH. A SIMILAR DRAINAGE SWALE RUNS PARALLEL TO THE DITCH AND EVENTUALLY MERGES WITH THE DRAINAGE DITCH FURTHER EAST. AN OLD LAGOON (SOURCE AREA 9), IDENTIFIED THROUGH HISTORICAL AERIAL PHOTOGRAPHS, LIES BETWEEN THE DITCH AND THE SWALE. THE FORMER DRUM STORAGE AREA (SOURCE AREA 8) IS LOCATED JUST NORTH OF THE CONFLUENCE OF THE DITCH AND THE SWALE.

AN INACTIVE RAILROAD LINE EXTENDS THROUGH THE SITE IN AN EAST-WEST

DIRECTION, AND THE ABANDONED SCHUYLKILL CANAL BORDERS THE SOUTHWESTERN PORTION OF THE SITE.

#SH&EH
SITE HISTORY AND ENFORCEMENT HISTORY

IN 1941, BERKS ASSOCIATES, INC., BEGAN LUBRICATION OIL RECYCLING OPERATIONS AT THE SITE. SITE OPERATIONS ALSO INCLUDED RECYCLING SOME WASTE SOLVENTS IN THE 1950'S AND 1960'S. WASTES GENERATED FROM THE OIL RECYCLING AND SOLVENT RECYCLING PROCESS WERE STORED IN SEVERAL LAGOONS LOCATED IN THE NORTHERN HALF OF THE SITE UNTIL L972. IN NOVEMBER OF 1970, TEN DAYS OF HEAVY RAIN CAUSED THE LAGOONS TO OVERFLOW AND TO BREACH SAFETY DIKES CAUSING A RELEASE OF 2 TO 3 MILLION GALLONS OF WASTES WHICH FLOWED DOWN THE SCHUYLKILL RIVER.

FEDERAL DECREES ISSUED AFTER THE NOVEMBER 1970 EVENT PROHIBITED THE STORAGE OF WASTE MATERIALS IN THE LAGOONS. THE DECREES ALSO REQUIRED THE RESTRUCTURING OF THE DIKES. FEDERAL AND STATE ACTIONS WERE INITIATED TO DISPOSE OF THE WASTE MATERIAL REMAINING IN THE LAGOONS. BEFORE THIS ACTION COULD BE CARRIED OUT, THE HEAVY RAINS OF HURRICANE AGNES CAUSED THE SCHUYLKILL RIVER TO OVERFLOW ITS BANKS AND INUNDATE THE ENTIRE SITE AREA IN JUNE OF 1972. AN ESTIMATED 6 TO 8 MILLION GALLONS OF WASTES WERE RELEASED AND CARRIED BY FLOODWATERS DOWNSTREAM FOR ABOUT 15 MILES. DURING CLEANUP AFTER THE STORM, THE LAGOONS WERE DRAINED AND BACKFILLED BY EPA.

BERKS ASSOCIATES, INC., CONTINUED LUBRICATION OIL RECYCLING OPERATIONS UNTIL 1979 WHEN THE OPERATOR DETERMINED THAT OPERATIONAL CORRECTIONS MANDATED BY THE PADER WERE COST-PROHIBITIVE. OPERATIONS THEN TURNED TO THE PRACTICE OF REFINING WASTE OILS FOR USE AS FUEL IN INDUSTRIAL BOILERS. BEGINNING IN 1979, OILY WASTE SLUDGE FROM THE NEW REFINING PROCESS WAS LANDFARMED IN THE AREA NEAR THE OLD WESTERN LAGOON. THIS PRACTICE WAS HALTED IN 1981 WHEN PADER MANDATED OPERATIONAL CORRECTIONS TO THE LANDFARMING PRACTICES.

RESULTS OF AN EPA REGION III SITE INVESTIGATION IN APRIL, 1982 SHOWED VOLATILE ORGANIC CONTAMINANTS IN THE DRINKING WATER WELL WHICH WAS UTILIZED BY WORKERS AT THE FACILITY. DURING THE SITE INVESTIGATION, THE SCHUYLKILL RIVER (UPSTREAM AND DOWNSTREAM OF THE SITE), THE FACILITY DISCHARGE, THE DRAINAGE SWALE SEDIMENT, AND A DOMESTIC WELL (UPGRADIENT FROM THE SITE) WERE ALSO SAMPLED.

BASED ON THE RESULTS OF THE SITE INVESTIGATION THE SITE RECEIVED A HAZARD RANKING SYSTEM (HRS) SCORE OF 55.18. THE DOUGLASSVILLE DISPOSAL SITE WAS PROPOSED FOR INCLUSION ON THE NATIONAL PRIORITIES LIST IN DECEMBER, 1982. THE SITE WAS PROMULGATED ON THE NATIONAL PRIORITIES LIST IN SEPTEMBER, 1983.

A PHASE I REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) WAS CONDUCTED BY EPA IN 1984-85. THAT RI/FS DID NOT INCLUDE THE PROCESSING FACILITY/TANK FARM AREA WHICH WAS STILL IN OPERATION AT THE TIME. A RECORD OF DECISION (ROD) WAS SIGNED IN SEPTEMBER, 1985 RECOMMENDING CONTAINMENT OF WASTES IN THE AREA ADDRESSED BY THE PHASE I RI/FS. THAT RECORD OF DECISION DEFERRED THE CONSIDERATION OF RESOLUTIONS FOR GROUND WATER CONTAMINATION TO THE FUTURE RODS. THE DESIGN WAS NOT IMPLEMENTED DUE TO CHANGES MANDATED BY THE REAUTHORIZATION OF SUPERFUND, AND NO CONSTRUCTION HAS BEEN SCHEDULED.

IN LATE 1985, ALL OIL RECYCLING OPERATIONS AT THE FACILITY WERE COMPLETELY DISCONTINUED. IN APRIL 1988, EPA COMPLETED A FOCUSED FEASIBILITY STUDY (FFS) TO SPECIFICALLY ADDRESS THE CONTAMINATION AT, AND THE REMEDIAL ALTERNATIVES FOR, THE FORMER PROCESSING FACILITY/TANK FARM PORTION OF THE SITE. A RECORD OF DECISION DELINEATING THE PREFERRED ALTERNATIVE WAS SIGNED IN JUNE, 1988. THE SELECTED REMEDIAL ACTION CONSISTS OF REMOVAL OF LIQUIDS AND SLUDGES FROM THE TANKS AT THE FORMER PROCESSING FACILITY WITH TREATMENT BY OFFSITE INCINERATION, AND

THE DISMANTLING, DECONTAMINATION, AND OFF-SITE DISPOSAL OF THE ENTIRE FORMER PROCESSING FACILITY AND TANKFARM. SURFACE DEBRIS AND REFUSE THAT ARE FOUND THROUGHOUT THE SITE WILL ALSO BE REMOVED. THE DESIGN OF THE SELECTED REMEDIAL ACTION IS CURRENTLY UNDERWAY AND IS SCHEDULED TO BE COMPLETED BY JULY, 1989.

A PHASE II REMEDIAL INVESTIGATION/FEASIBILITY STUDY WAS CONDUCTED BY EPA IN 1987-88. THIS COMPREHENSIVE RI/FS ADDRESSED ALL ASPECTS OF THE CONTAMINATION AT THE DOUGLASSVILLE DISPOSAL SITE. THE FINAL RI/FS REPORT WAS COMPLETED IN OCTOBER, 1988.

ALL INVESTIGATIONS AT THE SITE HAVE BEEN FEDERALLY FUNDED. OF THE APPROXIMATELY 125 POTENTIALLY RESPONSIBLE PARTIES IDENTIFIED AND OFFERED AN OPPORTUNITY TO CONDUCT THE STUDIES AND/OR REMEDIAL MEASURES AT THE SITE, NONE HAS EXPRESSED A WILLINGNESS AND/OR ABILITY TO DO SO. AN ADDITIONAL 25 PARTIES WERE IDENTIFIED AND NOTIFIED OF POTENTIAL RESPONSIBILITY FOR THE FIRST TIME CONCURRENTLY WITH THE RELEASE OF THE PROPOSED PLAN IN MAY, 1989.

#SROU
SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION WITHIN SITE STRATEGY

THIS RESPONSE ACTION IS THE SECOND OF TWO RESPONSE ACTIONS PLANNED TO ADDRESS CONTAMINATION AT THE SITE. THE FIRST RESPONSE ACTION ADDRESSED RISKS ASSOCIATED WITH THE FORMER PROCESSING FACILITY/TANK FARM AREA. THE BUILDINGS, TANKS, TANK WASTES, AND PROCESSING EQUIPMENT WERE IMPEDIMENTS TO ANY FUTURE SOIL AND GROUND WATER REMEDIATION. THE ROD FOR THAT ACTION WAS SIGNED IN JUNE, 1988.

THE RESPONSE ACTION DELINEATED IN THIS RECORD OF DECISION ADDRESSES SOIL AND GROUND WATER CONTAMINATION REMAINING AFTER THE FORMER PROCESSING FACILITY/TANK FARM AND ASSOCIATED WASTES HAVE BEEN REMOVED FROM THE SITE. THIS RESPONSE ACTION, THEREFORE, ADDRESSES THE PRINCIPAL ISSUES AT THE SITE, PURSUANT TO EPA'S PHASE II RI/FS (OCTOBER, 1988).

THIS RECORD OF DECISION, IN PART, AMENDS A RECORD OF DECISION DATED SEPTEMBER 27, 1985, WHICH OUTLINED REMEDIAL ACTIONS FOR THE PORTION OF THE SITE SITUATED NORTH OF THE PROCESSING FACILITY/TANK FARM AREA. THAT SEPTEMBER 1985 RECORD OF DECISION CALLED FOR THE COVERING OF THOSE AREAS NOW DESIGNATED AS SOURCE AREAS 2, 4, AND 5 WITH RCRA CAPS; DIKING OF THE FLOODPLAIN NORTH OF THE RAILROAD RIGHT-OF-WAY WHICH RUNS EAST-WEST ACROSS THE SITE; AND THE EXCAVATION OF CONTAMINATED SEDIMENTS FROM THE MAJOR DRAINAGEWAY ONSITE WITH THE INCLUSION OF THOSE SEDIMENTS UNDER THE RCRA CAPS. THAT RECORD OF DECISION DEFERRED ANY DECISION REGARDING GROUND WATER REMEDIATION. IT ALSO DID NOT ADDRESS ANY REMEDIATION OF THE PROCESSING FACILITY/TANK FARM AREA. THE PROCESSING FACILITY COMPLETELY DISCONTINUED OPERATIONS IN LATE 1985 OR EARLY 1986 AND IS CURRENTLY CONSIDERED TO BE AN ABANDONED FACILITY CONTAINING HAZARDOUS SUBSTANCES UNDER THE REGULATORY AUTHORITY OF CERCLA.

BECAUSE THE FORMER PROCESSING FACILITY/TANK AREA IS CONTAMINATED WITH HAZARDOUS SUBSTANCES AND IS A MAJOR CONTRIBUTOR TO THE GROUND WATER CONTAMINATION AT THE SITE, AND BECAUSE THE SEPTEMBER, 1985 ROD DEFERRED ANY DECISION REGARDING GROUND WATER REMEDIATION, IT IS NECESSARY THAT THESE ASPECTS OF THE SITE BE ADDRESSED FOR REMEDIATION UNDER CERCLA. SECTION 121(B) OF SARA MANDATES, IN PART, THAT, "ANY ROD SIGNED BEFORE ENACTMENT OF THIS ACT {SARA} AND REOPENED AFTER ENACTMENT OF THIS ACT TO MODIFY OR SUPPLEMENT THE SELECTION OF REMEDY SHALL BE SUBJECT TO THE REQUIREMENTS OF SECTION 121 OF CERCLA." SINCE THE ADDITION OF THE FORMER PROCESSING FACILITY/TANK FARM PORTION OF THE SITE AND THE INCLUSION OF A REMEDIAL ALTERNATIVE FOR GROUND WATER AT THE SITE CONSTITUTE MODIFICATIONS TO THE REMEDY SELECTED UNDER THE PRE-SARA SEPTEMBER, 1985 ROD, THIS AMENDED RECORD OF DECISION MUST COMPLY WITH THE PROVISIONS OF CERCLA AS AMENDED BY SARA, INCLUDING SECTION 121, CLEANUP STANDARDS.

#SC
SUMMARY OF SITE CHARACTERISTICS

THE PHASE II RI CONFIRMED THE FINDINGS OF PREVIOUS STUDIES REGARDING THE NATURE AND EXTENT OF CONTAMINANTS IN SOIL, GROUND WATER, SURFACE WATER, AND SEDIMENT AT THE DOUGLASSVILLE DISPOSAL SITE. CONTAMINANTS INCLUDED VOLATILE ORGANICS, (KETONES, MONOCYCLIC AROMATICS, AND CHLORINATED ALIPHATICS), PHENOLIC COMPOUNDS, PHTHALATE ESTERS, POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS), POLYCHLORINATED BIPHENYLS (PCBS) AND VARIOUS INORGANIC CONSTITUENTS, ESPECIALLY LEAD.

THE CONTAMINATED PORTIONS OF THE SITE CAN LARGELY BE DESCRIBED AS CONTAMINATED ENVIRONMENTAL MEDIA RATHER THAN AS WASTE MATERIALS. THE EXCEPTION TO THIS IS SOURCE AREA 2 WHICH CONTAINS A LARGE PILE OF OILY FILTER CAKE WASTES FROM THE FORMER OIL RE-REFINING PROCESS. THE WASTES IN SOURCE AREA 2 WERE DEPOSITED PRIOR TO NOVEMBER 1980, AND WERE, THEREFORE, NOT SUBJECT TO REGULATION UNDER RCRA. A MODIFIED TOXIC CONTAMINANT LEACHING PROCEDURE (TCLP) WAS PERFORMED DURING THE PHASE II RI ON THE VARIOUS CONTAMINATED MEDIA AT THE SITE. IT IS ESTIMATED FROM THE RESULTS OF THE TCLP ANALYSES THAT THE SOILS IN SOURCE AREAS 1, 3, AND 6 ARE EP TOXIC FOR LEAD (PB).

SOIL

TABLE 1 SUMMARIZES THE MAJOR SOIL CONTAMINANT GROUPS MOST FREQUENTLY DETECTED IN THE 10 SOURCE AREAS. INCLUDED IN THIS TABLE ARE WEIGHTED-AVERAGE CONCENTRATIONS FOR CLASSES OF ORGANIC COMPOUNDS AND AVERAGE LEAD CONCENTRATIONS. LEAD WAS INCLUDED BECAUSE IT IS THE ONLY METAL PRESENT AT CONCENTRATIONS SIGNIFICANTLY HIGHER THAN BACKGROUND VALUES. MORE THAN 50 SURFACE SOIL AND 180 SUBSURFACE SOIL SAMPLES WERE COLLECTED FROM THE VARIOUS SOURCE AREAS THAT COMPRISE THE SITE.

SOURCE AREA 1 IS THE FORMER PROCESSING FACILITY/TANK FARM AREA. THE PRINCIPAL SURFACE SOIL CONTAMINANTS WERE PAHS, PCBS, AND LEAD. SUBSURFACE SOIL CONTAMINATION WAS MORE EXTENSIVE AND WAS DETECTED AT DEPTHS UP TO 20 FEET. SUBSURFACE SOIL CONTAMINANTS INCLUDED VOLATILES, PHENOLICS, PHTHALATE ESTERS, PAHS, PCBS, AND LEAD.

SOURCE AREA 2 IS THE BACKFILLED LAGOON AND FILTER CAKE DISPOSAL AREA. PCBS AND LEAD WERE THE PRIMARY CONTAMINANTS DETECTED IN SURFACE SOIL. SUBSURFACE SOIL IS CONTAMINATED PRIMARILY WITH VOLATILES, PHTHALATE ESTERS, PAHS, PCBS, AND LEAD. CONTAMINATION WAS DETECTED AT DEPTHS UP TO 20 FEET.

SOURCE AREA 3 IS A FORMER LANDFARM AREA. ORGANIC CHEMICAL CONTAMINATION IS NOT EXTENSIVE IN THE FORMER LANDFARM. EXCEPT FOR ONE PHTHALATE ESTER, NO ORGANICS WERE DETECTED AT DEPTHS GREATER THAN 2 FEET. PCBS AND LEAD ARE THE PRIMARY SURFACE SOIL CONTAMINANTS. SUBSURFACE SOIL IN THIS AREA IS NOT CONSIDERED TO BE CONTAMINATED.

SOURCE AREAS 4 AND 5 ARE THE SLUDGE DISPOSAL AND BACKFILLED SLUDGE LAGOON AREAS LOCATED NEAR THE SCHUYLKILL RIVER. SURFACE SOIL IN THESE AREAS IS CONTAMINATED WITH PAHS, PCBS, AND LEAD. SUBSURFACE SOIL IS MORE HEAVILY CONTAMINATED AND WAS DETECTED AT DEPTHS UP TO 20 FEET. SUBSURFACE SOIL CONTAMINANTS INCLUDE VOLATILES, PHENOLICS, PHTHALATE ESTERS, PAHS, PCBS, AND LEAD.

SOURCE AREA 6 IS A POSSIBLE FORMER LANDFARM AREA. PCBS AND LEAD ARE THE PRIMARY CONSTITUENTS DETECTED IN SURFACE SOIL. SUBSURFACE SOIL CONTAMINANTS INCLUDE PAHS, PCBS, AND LEAD. SUBSURFACE SOIL CONTAMINATION WAS DETECTED ONLY ADJACENT TO SOURCE AREA 5. SUBSURFACE SOIL CONTAMINANTS ARE BELIEVED TO BE ASSOCIATED WITH THE LAGOON AT SOURCE AREA 5 AND NOT ASSOCIATED WITH LANDFARM ACTIVITIES, WHICH GENERALLY TEND TO AFFECT ONLY SURFACE SOIL.

NO WASTE DISPOSAL WAS KNOWN TO OCCUR AT SOURCE AREA 7, THE INCINERATOR AREA. SOURCE AREA 8 IS A FORMER DRUM AND TANK AREA. CONTAMINATION

APPEARS TO BE ONLY SLIGHTLY ABOVE BACKGROUND IN THIS AREA.

SOURCE AREA 9 IS A BACKFILLED LAGOON AREA. SURFACE SOIL SAMPLES FROM THIS AREA CONTAINED PHENOLICS, PHTHALATE ESTERS, PAHS, AND PCBS. SIMILAR COMPOUNDS AS WELL AS VARIOUS VOLATILE ORGANICS, WERE DETECTED IN SUBSURFACE SOIL SAMPLES. CONTAMINATION WAS DETECTED AT DEPTHS UP TO 10 FEET.

SOURCE AREA 10 CONTAINS EMPTY DRUMS, EMPTY TANKS AND GENERAL REFUSE (DRUM, TANK AND REFUSE AREA). RELATIVELY LOW LEVELS OF CONTAMINANTS WERE DETECTED IN THIS AREA. DETECTIONS WERE MORE PREVALENT IN SURFACE SOIL THAN IN SUBSURFACE SOIL.

TABLES 2A AND 2B SUMMARIZE THE DESCRIPTIONS OF THE 10 SOURCE AREAS.

GROUND WATER

VOLATILE ORGANIC COMPOUNDS CONSTITUTE THE PREDOMINANT GROUND WATER CONTAMINANTS DETECTED IN ONSITE MONITORING WELLS. TABLE 3 SUMMARIZES THE NATURE OF GROUND WATER CONTAMINATION AT THE DOUGLASSVILLE DISPOSAL SITE FROM BOTH THE UNCONSOLIDATED AND THE BEDROCK WATER-BEARING ZONES WHICH WERE PENETRATED BY THE MONITORING WELLS, AND FROM THE RESIDENTIAL WELLS LOCATED OFFSITE. BLANK SPACES WITHIN THE TABLE INDICATE THAT THERE ARE NO POSITIVE DETECTIONS FOR THE RESPECTIVE ANALYTES.

BENZENE, TOLUENE, AND VINYL CHLORIDE SHOWED THE HIGHEST CONCENTRATIONS OF THE CONTAMINANTS IN GROUND WATER COLLECTED AT THE SITE. CONCENTRATIONS FOR THESE SUBSTANCES REACHED AS HIGH AS 2,000 PPB (UG/L), 2,300 PPB, AND 1,200 PPB, RESPECTIVELY. A NUMBER OF OTHER VOLATILE ORGANIC COMPOUNDS WERE ALSO FREQUENTLY DETECTED IN GROUND WATER SAMPLES. THESE INCLUDED:

ETHYLBENZENE	CHLOROBENZENE
1, 2-DICHLOROBENZENE	1,4-DICHLOROBENZENE
1,1,1-TRICHLOROETHANE	1,1-DICHLOROETHANE
1,2-DICHLOROETHANE	TETRACHLORETHANE
TRICHLOROETHANE	1,2-DICHLOROETHANE

THESE CONTAMINANTS WERE DETECTED IN AT LEAST 20 OF THE 83 GROUND WATER SAMPLES COLLECTED DURING THE PHASE I AND PHASE II RIS. LEAD, THE PREDOMINANT INORGANIC SOIL CONTAMINANT, WAS DETECTED IN 20 OF 71 MONITORING WELL SAMPLES. DISSOLVED LEAD CONCENTRATIONS REACHED AS HIGH AS 227 PPB.

GROUND WATER CONTAMINATION IS PRESENT IN BOTH THE UNCONSOLIDATED DEPOSITS AND BEDROCK, A FACT WHICH REFLECTS THE INTERCONNECTION BETWEEN THESE GROUND WATER ZONES. GROUND WATER FLOWS TOWARD THE SCHUYLKILL RIVER AND DISCHARGES TO THE RIVER. THE GROUND WATER CONTAMINANT PLUME BEGINS BENEATH THE FORMER PROCESSING FACILITY/TANK FARM, WHICH IS A SIGNIFICANT SOURCE OF GROUND WATER CONTAMINATION, AND EXTENDS ACROSS THE SITE TO THE SCHUYLKILL RIVER. THE LATERAL EXTENT OF THE PLUME IS ESSENTIALLY WITHIN THE SITE BOUNDARY. OTHER MAJOR SOURCES OF GROUND WATER CONTAMINATION ARE THE BACKFILLED LAGOONS DESIGNATED IN THE PHASE II RI AS SOURCE AREAS 4 AND 5, WHICH ARE NEAR THE SCHUYLKILL RIVER.

TABLE 3 ALSO PRESENTS THE RESULTS FROM RESIDENTIAL WELL SAMPLING. BASED ON SITE HYDROGEOLOGIC CONDITIONS AND THE OBSERVED CONTAMINATION AT THE SITE, NO RESIDENTIAL WELLS IN THE AREA HAVE BEEN CONTAMINATED BY THE SITE. THE HYDROGEOLOGICAL CONDITIONS AT THE SITE DICTATE THAT GROUND WATER FLOWS TOWARD THE RIVER. THEREFORE, THE PLUME OF CONTAMINATED GROUND WATER IS NOT AFFECTING RESIDENTIAL WELLS WHICH ARE LOCATED HYDRAULICALLY UPGRADIENT FROM THE SITE.

SURFACE WATER AND SEDIMENT

TABLE 4 SUMMARIZES THE NATURE OF SURFACE WATER AND SEDIMENT CONTAMINATION AT THE SITE. THIS TABLE COMBINES THE RESULTS OF THE SAMPLING OF THE ONSITE DRAINAGE DITCH AND OF THE SCHUYLKILL RIVER AS

DISCUSSED IN SECTION 4.4 OF THE OCTOBER 1988 RI/FS.

SURFACE WATER SAMPLES CONTAINED NUMEROUS VOLATILE ORGANICS AS WELL AS PHTHALATE ESTERS, PCBS, AND INORGANIC CONSTITUENTS. SEDIMENT CONTAMINANTS INCLUDE VOLATILES, PCBS, PHTHALATE ESTERS, PAHS, AND INORGANICS. THE CONTAMINATION IS ESSENTIALLY CONFINED TO ONSITE DRAINAGE CHANNELS. BASED ON THE AVAILABLE DATA, SITE-RELATED CONTAMINATION CANNOT BE CONFIRMED IN EITHER SURFACE WATER OR SEDIMENTS AT OFFSITE LOCATIONS. THE DATA COLLECTED DURING THE 1987-1988 RI CONFIRMED PREVIOUS FINDINGS IN THIS RESPECT. WHILE RELATIVELY HIGH CONCENTRATIONS OF THE PCB AROCLOR 1260 (4,300 PPB) AND LEAD (2,610 PPM) WERE DETECTED IN THE RIVER SEDIMENTS, THESE CONCENTRATIONS WERE DETECTED ONLY AT THE UPSTREAM LOCATION. PCB AND LEAD CONTAMINATION IN THE SCHUYLKILL RIVER HAS BEEN PREVIOUSLY DOCUMENTED (STAMER, ET AL., 1985).

LOW LEVELS OF PAHS WERE DETECTED IN A SEDIMENT SAMPLE OBTAINED ADJACENT TO THE SITE. THIS CONTAMINATION MAY BE A RESULT OF PREVIOUS RELEASES DURING FLOODING. HOWEVER, THE POSSIBILITY OF ALTERNATE SOURCES OF THIS CONTAMINATION CANNOT BE DISCOUNTED BECAUSE PAHS WERE DETECTED UPSTREAM FROM THE SITE AND WERE NOT DETECTED IN THE DOWNSTREAM SEDIMENT SAMPLE.

THE DATA DO NOT INDICATE THAT DISCHARGE OF CONTAMINATED GROUND WATER IS AFFECTING THE RIVER.

POTENTIAL EXPOSURE PATHWAYS

BASED ON CURRENT USE AND FUTURE USE CONDITIONS, THE POTENTIAL HUMAN EXPOSURE PATHWAYS ASSOCIATED WITH THE SITE ARE AS FOLLOWS:

* DIRECT CONTACT WITH CONTAMINATED SOIL
* ACCIDENTAL INGESTION OF CONTAMINATED SOIL
* INHALATION OF CONTAMINATED FUGITIVE DUST
* HOUSEHOLD USE OF GROUND WATER
* INGESTION OF WATER FROM THE SCHUYLKILL RIVER

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SUMMARY OF SITE RISKS

UTILIZING DATA GENERATED DURING THE PHASE I AND PHASE II RIS, A RISK ASSESSMENT WAS CONDUCTED TO EVALUATE THE POTENTIAL IMPACTS TO HUMAN HEALTH AND THE ENVIRONMENT POSED BY CHEMICAL CONTAMINANTS AT, OR ORIGINATING FROM, THE DOUGLASSVILLE DISPOSAL SITE. THE RISK ASSESSMENT WAS PERFORMED USING THE GUIDELINES ESTABLISHED IN THE SUPERFUND PUBLIC HEALTH EVALUATION MANUAL (EPA, OCTOBER 1986). THE CONSTITUENTS THAT HAVE BEEN DETECTED IN SOIL AND GROUND WATER AT THE SITE AND SELECTED AS INDICATOR CHEMICALS (THOSE HAVING POTENTIAL ADVERSE HEALTH RISKS) ARE SHOWN IN TABLE 5. INCLUDED AMONG THE CONSTITUENTS LISTED IN THE TABLE ARE THOSE WHICH ARE MOST COMMONLY FOUND AS CONTAMINANTS AT THE SITE. CUMULATIVE HAZARD INDICES AND INCREMENTAL CANCER RISKS ASSOCIATED WITH REALISTIC SCENARIOS INVOLVING DIRECT DERMAL CONTACT, ACCIDENTAL INGESTION OF SOIL, AND INHALATION OF FUGITIVE DUST AT THE SITE ARE SHOWN IN TABLE 6. THE RATIONALE FOR THESE REALISTIC SCENARIOS IS PRESENTED IN SECTION 6 OF THE OCTOBER 1988 RI/FS. THE HIGHEST EXCESS CANCER RISK DUE TO DIRECT DERMAL CONTACT, ACCIDENTAL INGESTION OF SOIL AND INHALATION OF FUGITIVE DUST AS SHOWN IN TABLE 6 IS 5.9 X 10-5 WHILE THE HIGHEST HAZARD INDEX IS 1.9.

DIRECT CONTACT WITH CONTAMINATED SOIL

ESTIMATED HUMAN DOSES FROM SITE CONTAMINANTS WERE CALCULATED FOR EACH SOURCE AREA BASED ON THE ARITHMETIC AVERAGE INDICATOR CHEMICAL CONCENTRATIONS DETECTED IN SURFACE SOIL. TRESPASSING ADOLESCENTS AND

ADULT HUNTERS AND FISHERMEN ARE CONSIDERED TO BE THE MOST LIKELY RECEPTORS THROUGH DIRECT DERMAL CONTACT. HAZARD INDICES WERE DEVELOPED BASED ON THE ESTIMATED ADOLESCENT DOSES AND CHRONIC REFERENCE DOSES. INCREMENTAL CANCER RISKS WERE ESTIMATED BASED ON THE ASSUMPTION THAT AN ADOLESCENT RECEPTOR WILL BE EXPOSED FOR 10 YEARS AND THAT THE SAME RECEPTOR WILL BE EXPOSED FOR 40 YEARS AS AN ADULT. A 70-YEAR LIFETIME WAS USED.

ACCIDENTAL INGESTION OF SOIL

ESTIMATED HUMAN DOSES OF SITE CONTAMINANTS WERE CALCULATED FOR EACH SOURCE AREA BASED ON THE ARITHMETIC INDICATOR CHEMICAL CONCENTRATIONS DETECTED IN SURFACE SOIL. IT IS CONSIDERED POSSIBLE (ALTHOUGH UNLIKELY) THAT YOUNG CHILDREN MAY BE EXPOSED THROUGH ACCIDENTAL INGESTION OF CONTAMINATED SOIL. EXPOSURE MAY ALSO OCCUR AS A RESULT OF ADULTS AND TEENAGERS TRACKING MUD INTO THEIR HOMES ON THEIR SHOES, AND TO A MUCH LESSER EXTENT AS A RESULT OF THE DEPOSITION OF FUGITIVE DUST. HAZARD INDICES WERE DEVELOPED BASED ON CHRONIC REFERENCE DOSES. INCREMENTAL CANCER RISKS WERE ESTIMATED BASED ON THE ASSUMPTION THAT A CHILD RECEPTOR WILL BE EXPOSED FOR 6.5 YEARS. A 70-YEAR LIFETIME WAS USED.

INHALATION OF FUGITIVE DUST

ESTIMATED HUMAN DOSES OF SITE CONTAMINANTS WERE CALCULATED FOR EACH SOURCE AREA BASED ON A PARTICULATE EMISSION MODEL WHICH WAS USED TO GENERATE DOWNWIND CONTAMINANT CONCENTRATIONS. HUMAN RECEPTORS RESIDE DOWNWIND OF THE SITE, AND THE POTENTIAL FOR INHALATION OF FUGITIVE DUST EXISTS IN THE VICINITY OF THE SITE. NONCARCINOGENIC RISKS TO ADOLESCENTS AND ADULT CANCER RISKS WERE DETERMINED FOR THE EXPOSURE ROUTE. THE EXPOSURE DURATION FOR CARCINOGENIC RISK WAS SET AT 35 YEARS. A LIFETIME OF 70 YEARS WAS USED.

HOUSEHOLD USE OF GROUND WATER

FUTURE DOSE ESTIMATES OF GROUND WATER CONTAMINANTS THAT COULD AFFECT HUMANS WERE GENERATED BASED ON THE MAXIMUM OBSERVED MONITORING WELL CONCENTRATIONS. IT IS POSSIBLE, ALTHOUGH UNLIKELY, THAT THE AQUIFER BENEATH THE SITE WOULD BE DEVELOPED FOR POTABLE USE. NONCARCINOGENIC RISKS TO CHILDREN AND ADULT CANCER RISKS WERE ESTIMATED FOR THIS EXPOSURE ROUTE. IT WAS ASSUMED THAT EXPOSURE DURATION AND LIFETIME WERE EQUIVALENT. THE HAZARD INDEX FOR THIS SCENARIO WAS ESTIMATED TO BE 3.3 X 101 AND THE INCREMENTAL CANCER RISK WAS ESTIMATED TO BE 1.9 X 10-1. THERE IS CURRENTLY NO USAGE OF THIS CONTAMINATED GROUND WATER AS A POTABLE WATER SOURCE. (THE GROUND WATER BENEATH THE SITE IS A CLASS B-2 AQUIFER BASED ON EPA'S GROUND WATER CLASSIFICATION SYSTEM. THIS MEANS THAT IT HAS THE POTENTIAL FOR USE AS A POTABLE WATER SOURCE.)

EFFECTS ON THE SCHUYLKILL RIVER

INTENSIVE GROUND WATER MODELING WAS CONDUCTED AS PART OF THE PHASE II RI/FS. THE PRIMARY PURPOSES OF THE MODELING WERE TO DETERMINE IF GROUND WATER CONTAMINANT CONCENTRATIONS WOULD INCREASE IN THE FUTURE, AND TO ESTIMATE LONG-TERM CONCENTRATIONS OF CONTAMINANTS IN THE SCHUYLKILL RIVER BASED ON GROUND WATER DISCHARGES TO THE RIVER. THE MODEL RESULTS INDICATE THAT CONTAMINANT CONCENTRATIONS WOULD DECREASE IN THE FUTURE THROUGH NATURAL FLUSHING AND ATTENUATION. DISCHARGE OF CONTAMINATED GROUND WATER TO THE RIVER AND DILUTION IN THE RIVER WERE CONSIDERED IN EVALUATING THE EFFECT ON THE SCHUYLKILL RIVER. RESULTS OF THE MODELING SHOW THAT CONCENTRATIONS OF ORGANIC CONTAMINANTS IN THE RIVER DO NOT EXCEED 1 PART PER BILLION (PPB) CURRENTLY, AND WILL NOT EXCEED 1 PPB AT ANY TIME IN THE FUTURE. LEAD CONCENTRATIONS WERE ESTIMATED TO ATTAIN A MAXIMUM CONCENTRATION OF 3 PPB AFTER 200 YEARS. THIS INDICATES THAT THE EFFECT OF GROUND WATER DISCHARGE ON THE SCHUYLKILL RIVER IS INSIGNIFICANT AT THE PRESENT TIME AND IS EXPECTED TO REMAIN SO IN THE FUTURE.

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DESCRIPTION OF ALTERNATIVES

AS PART OF THE PHASE II FEASIBILITY STUDY, A VARIETY OF TECHNOLOGIES FOR REMEDIATION OF THE 10 SOURCE AREAS WERE SCREENED AND COMBINED INTO THE ALTERNATIVES PROPOSED FOR ADDRESSING SOIL CONTAMINATION AT THE SITE.

THE 10 SOURCE AREAS WERE GROUPED INTO THREE REMEDIAL RESPONSE UNITS DURING THE DEVELOPMENT OF THE PHASE II RI/FS TO STREAMLINE REPORT PREPARATION AND TO REDUCE REPETITIVE DISCUSSIONS. THESE THREE GROUPINGS WERE BASED ON THE RESULTS OF THE RISK ASSESSMENT, THE CHEMICAL CHARACTERISTICS OF THE INDIVIDUAL SOURCE AREAS, AND THE VERTICAL EXTENT(S) OF CONTAMINATION. A VARIETY OF REMEDIAL TECHNOLOGIES FOR REMEDIATING GROUND WATER CONTAMINATION WERE ALSO SCREENED TO YIELD SEVERAL VIABLE ALTERNATIVES.

OVERALL, 11 REMEDIAL ALTERNATIVES FOR THE SOURCE AREAS (SOIL) WERE EVALUATED IN THE PHASE II FS. EACH OF THE ALTERNATIVES ADDRESSED 10 SOURCE AREAS, EXCEPT SOURCE AREA 7, WHERE NO CONTAMINATION WAS DETECTED. THIS APPROACH ALLOWED EVALUATION AND ANALYSIS OF THE MOST SUITABLE REMEDY FOR EACH INDIVIDUAL SOURCE AREA, INDEPENDENT OF THE OTHER SOURCE AREAS, THAT WOULD BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, COST-EFFECTIVE, AND IN ACCORDANCE WITH STATUTORY REQUIREMENTS. IN ADDITION, FOUR REMEDIAL ALTERNATIVES FOR GROUND WATER WERE EVALUATED AND ANALYZED. ANOTHER SOURCE AREA ALTERNATIVE, DESIGNATED HEREIN AS SOURCE AREA ALTERNATIVE 12, WAS DEVELOPED, BASED ON THE PHASE II FS, DURING THE PREPARATION AND DEVELOPMENT OF THE PROPOSED REMEDIAL ACTION PLAN. THIS ALTERNATIVE COMBINES SELECTED ASPECTS OF THE ALTERNATIVES PRESENTED IN THE PHASE II FS.

THE TWELVE SOURCE AREA ALTERNATIVES AND FOUR GROUND WATER ALTERNATIVES ARE DESCRIBED BELOW. TABLE 7 PRESENTS APPROXIMATE COSTS FOR EACH OF THE SOURCE AREA ALTERNATIVES.

SOURCE AREA ALTERNATIVE 1: NO ACTION

THE NCP REQUIRES THAT THE NO ACTION ALTERNATIVE BE CONSIDERED. FOR THIS ALTERNATIVE, NO REMEDIAL MEASURES WOULD BE TAKEN TO MITIGATE RISKS TO HUMAN HEALTH AND THE ENVIRONMENT. THERE ARE NO CAPITAL OR OPERATION AND MAINTENANCE (O & M) COSTS ASSOCIATED WITH THIS ALTERNATIVE.

THIS ALTERNATIVE WOULD NOT ADDRESS THE PRESENT AND POTENTIAL ADVERSE IMPACTS TO HUMANS AND THE ENVIRONMENT POSED BY THE SITE.

MUCH OF THE SITE IS LOCATED IN THE 100-YEAR FLOOD PLAIN, AND A WETLAND AREA IS LOCATED AT SOURCE AREA 5. TAKING NO ACTION WOULD NOT ADVERSELY AFFECT THE FLOOD PLAIN OR THE WETLAND AREA. EXECUTIVE ORDER 11988, FLOOD PLAIN MANAGEMENT (40 CFR 6, APPENDIX A) REQUIRES FEDERAL AGENCIES CONDUCTING CERTAIN ACTIVITIES TO AVOID, TO THE EXTENT POSSIBLE, ADVERSE EFFECTS. EXECUTIVE ORDER 11990 PROTECTION OF WETLANDS (40 CFR 6, APPENDIX A) REQUIRES FEDERAL AGENCIES CONDUCTING CERTAIN ACTIVITIES TO AVOID, TO THE EXTENT POSSIBLE, THE ADVERSE IMPACTS ASSOCIATED WITH THE DESTRUCTION OR LOSS OF WETLANDS AND TO AVOID NEW CONSTRUCTION IN WETLANDS IF A PRACTICABLE ALTERNATIVE EXISTS. NO ARARS WOULD APPLY BECAUSE NO REMEDIAL ACTION WOULD BE TAKEN.

SOURCE AREA ALTERNATIVE 2: MINIMAL ACTION WITH FENCING

AS PART OF THIS ALTERNATIVE, A 6-FOOT HIGH CHAIN-LINK FENCE, WITH THREE-STRAND BARBED WIRE, WOULD BE INSTALLED AROUND THE PERIMETER OF A SOURCE AREA, OR ADJACENT SOURCE AREAS. THIS ACTION WOULD REDUCE UNRESTRICTED ACCESS TO THE SOURCE AREAS AND RISKS FROM DIRECT CONTACT AND INGESTION OF SURFACE SOIL. WARNING SIGNS WOULD BE POSTED AT 100-FOOT INTERVALS ALONG THE FENCE. FENCED AREAS WOULD BE COVERED WITH SOIL AND REVEGETATED. THIS ACTION WOULD FURTHER REDUCE RISKS FROM DIRECT CONTACT AND SOIL INGESTION AND WOULD ALSO REDUCE RISKS FROM INHALATION OF FUGITIVE DUST AND EROSION. IT MAY BE POSSIBLE TO ENHANCE

THE EXISTING SOIL WITH LIME AND NUTRIENTS TO ALLOW VEGETATION TO GROW, AND TOPSOIL WOULD NOT THEN BE NEEDED. BECAUSE CONTAMINATED SOIL WOULD BE LEFT ON SITE, LONG-TERM GROUND WATER MONITORING WOULD BE REQUIRED. LONG-TERM INSPECTION AND MAINTENANCE OF THE FENCE WOULD ALSO BE NEEDED. THIS ACTION COULD BE IMPLEMENTED IN 5 TO 6 MONTHS FOR ALL SOURCE AREAS. THE ESTIMATED CAPITAL AND ANNUAL O&M COSTS FOR THIS ALTERNATIVE ARE PRESENTED IN TABLE 7. EXECUTIVE ORDERS 11988 (FLOOD PLAIN MANAGEMENT) AND 11990 (PROTECTION OF WETLANDS) ARE APPLICABLE STANDARDS. FENCING WOULD NOT ADVERSELY AFFECT THE FLOOD PLAIN OR THE WETLAND AREAS AT THE SITE. TOPSOIL WOULD NOT BE SPREAD IN THE WETLANDS, WHICH ARE ALREADY VEGETATED WITH CATTAILS. THERE ARE NO ACTION-SPECIFIC ARARS ASSOCIATED WITH FENCING OR REVEGETATING THE SITE.

SOURCE AREA ALTERNATIVE 3: CAPPING

THIS ALTERNATIVE INVOLVES CONTAINMENT OF CONTAMINATED MATERIALS UNDER A LOW-PERMEABILITY CAP. APPROXIMATELY 600 CUBIC YARDS OF SEDIMENT FROM THE DRAINAGE DITCH THAT RUNS FROM THE SITE TO THE SCHUYLKILL RIVER WOULD BE EXCAVATED AND SPREAD IN AN AREA TO BE CAPPED. THE AREA WOULD BE GRADED, AND A SYNTHETIC-MEMBRANE CAP, DESIGNED ACCORDING TO PADER REQUIREMENTS, WOULD BE INSTALLED. THE SIZE (ACREAGE) OF EACH SOURCE AREA IS PRESENTED IN TABLE 2B. THE CAP INCLUDES THE FOLLOWING (FROM BOTTOM TO TOP): 1-FOOT SOIL BUFFER LAYER, 50-MIL SYNTHETIC MEMBRANE, 1-FOOT SAND DRAINAGE LAYER, FILTER FABRIC, 2-FOOT SOIL LAYER FOR VEGETATION, A GAS-VENTING SYSTEM, AND VEGETATION TO PREVENT EROSION. THE CAP SYSTEM WOULD REMOVE THE RISKS TO HUMANS POSED BY DIRECT CONTACT, INGESTION, AND INHALATION AND WOULD MITIGATE EROSION OF SURFACE SOIL CONTAMINANTS.

BECAUSE CONTAMINATED SOIL WOULD BE LEFT ONSITE, LONG-TERM GROUND WATER MONITORING WOULD BE REQUIRED. LONG-TERM INSPECTION AND MAINTENANCE OF THE CAP WOULD ALSO BE NEEDED. IT IS ESTIMATED THAT THE ENTIRE SITE COULD BE CAPPED WITHIN 10 TO 16 MONTHS. ESTIMATED CAPITAL AND ANNUAL O&M COSTS ARE PRESENTED IN TABLE 7. THIS ALTERNATIVE WOULD CAP SOILS THAT POSE RISKS RESULTING FROM DIRECT CONTACT, INGESTION, AND INHALATION.

MUCH OF THE SITE IS LOCATED WITHIN THE 100-YEAR FLOOD PLAIN. EXECUTIVE ORDER 11988 AND 40 CFR 6 APPENDIX A REQUIRE ACTION TO AVOID ADVERSE EFFECTS, MINIMIZE POTENTIAL HARM, AND RESTORE AND PRESERVE NATURAL AND BENEFICIAL VALUES OF FLOOD PLAINS. CONSTRUCTION OF THE CAP WOULD REDUCE THE POTENTIAL FOR "WASHOUT" OF CONTAMINANTS DURING A FLOOD; THIS WOULD BE AN IMPROVEMENT OVER PRESENT CONDITIONS. EXECUTIVE ORDER 11990 AND 40 CFR 6 APPENDIX A REQUIRE ACTION TO AVOID ADVERSE EFFECTS, MINIMIZE POTENTIAL HARM, AND PRESERVE AND ENHANCE WETLANDS. WETLANDS LOCATED AT SOURCE AREA 5 WOULD BE COVERED BY THE CAP AND THEREBY ELIMINATED.

THE CAP, AS DESCRIBED IN THIS ALTERNATIVE, WOULD MEET THE RCRA CLOSURE REQUIREMENTS AT 40 CFR, PARTS 264.228, 264.258, AND 264.310. THE CAP DESIGN WOULD ALSO MEET PADER REQUIREMENTS OF 25 PA CODE, CHAPTER 75, SUBCHAPTERS C AND D. RCRA CLOSURE REQUIREMENTS AND THE PENNSYLVANIA REQUIREMENTS ARE RELEVANT AND APPROPRIATE FOR SOURCE AREAS 1, 3 AND 6 WHICH CONTAIN SOIL CONTAMINANTS (LEAD) IN CONCENTRATIONS WHICH ARE PROBABLY EP TOXIC. THE OTHER SOURCE AREAS DO NOT CONTAIN EITHER "CHARACTERISTIC WASTES" NOR WASTES OTHERWISE DEFINED AS HAZARDOUS UNDER 40 CFR 261. THESE OTHER AREAS DO HOWEVER, POSE HEALTH AND ENVIRONMENTAL RISKS WHICH COULD BE ADDRESSED BY CAPPING. POST-CLOSURE USE OF THE PROPERTY MUST BE RESTRICTED AS NECESSARY TO PREVENT DAMAGE TO THE CAP.

OSHA STANDARDS, ESPECIALLY THOSE GOVERNING WORKER SAFETY DURING HAZARDOUS WASTE OPERATIONS AT 20 CFR 1910, WOULD HAVE TO BE FOLLOWED DURING ALL SITE WORK.

DURING SITE WORK, CLEAN AIR ACT (CAA) AND PENNSYLVANIA AIR REQUIREMENTS MUST BE CONSIDERED. IF THE TOTAL SUSPENDED PARTICULATES LIMIT IS EXCEEDED, DUST SUPPRESSANTS MUST BE APPLIED.

SOURCE AREA ALTERNATIVE 4: EXCAVATION, ONSITE THERMAL TREATMENT AND OFFSITE DISPOSAL

THIS ALTERNATIVE INVOLVES TREATMENT OF CONTAMINATED SOILS USING ONSITE THERMAL TREATMENT. ALL CONTAMINATED SOIL, ALONG WITH 600 CUBIC YARDS OF SEDIMENT FROM THE DRAINAGE DITCH THAT RUNS BETWEEN THE SITE AND THE SCHUYLKILL RIVER, WOULD BE EXCAVATED AND HAULED TO A MOBILE TREATMENT UNIT THAT WOULD BE SET UP AT THE SITE. THE TREATMENT UNIT SHOULD BE SET UP IN AN AREA THAT IS NOT WITHIN THE 100-YEAR FLOOD PLAIN, SUCH AS SOURCE AREAS 1 OR 2. EXCAVATED AREAS WOULD BE BACKFILLED WITH CLEAN SOIL AND REVEGETATED. THERMAL TREATMENT WOULD REMOVE AT LEAST 99.99 PERCENT OF THE ORGANICS IN THE SOIL; HOWEVER, METALS ARE NOT AFFECTED AND WOULD REMAIN IN THE TREATED MATERIAL. THE TREATED MATERIAL WOULD BE HAULED TO AN OFFSITE, EPA-APPROVED LANDFILL FOR DISPOSAL.

THERMAL TREATMENT WOULD REQUIRE TEST BURNS TO DETERMINE OPTIMUM OPERATING CONDITIONS. TEST BURNS COULD ALSO BE USED TO DETERMINE INORGANIC (METAL) CONTAMINANT LEVELS IN THE ASH. THE THERMAL TREATMENT UNIT WOULD INCLUDE A WET SCRUBBER TO TREAT THE EXHAUST GAS, AND THE WATER WOULD REQUIRE SUBSEQUENT TREATMENT/DISPOSAL. THE CONTAMINANT CONCENTRATIONS IN THE SCRUBBER WATER WOULD DETERMINE THE LEVEL OF TREATMENT REQUIRED AND COULD ALSO BE DETERMINED DURING THE TEST BURNS.

BECAUSE ALL CONTAMINATED MATERIALS WOULD BE REMOVED FROM THE SITE, NO LONG-TERM GROUND WATER MONITORING OR O&M WOULD BE REQUIRED. IT IS ESTIMATED THAT THE ENTIRE SITE COULD BE REMEDIATED IN 8.5 TO 17 YEARS. ESTIMATED CAPITAL COSTS ARE PRESENTED IN TABLE 7. NO ANNUAL O&M COSTS ARE ASSOCIATED WITH THIS ALTERNATIVE.

UNDER THIS ALTERNATIVE, SOILS THAT POSE HEALTH RISKS RESULTING FROM DIRECT CONTACT, INGESTION, AND INHALATION WOULD BE THERMALLY TREATED.

EXECUTIVE ORDERS 11988 AND 11990 (40 CFR 6 APPENDIX A), WHICH CONCERN FLOOD PLAINS AND WETLANDS, ARE APPLICABLE. REMOVAL OF CONTAMINANTS FROM THE FLOOD PLAIN WOULD REDUCE THE POTENTIAL FOR "WASH OUT" OF CONTAMINANTS DURING A FLOOD; THIS WOULD BE AN IMPROVEMENT OVER EXISTING CONDITIONS. HOWEVER, THE WETLANDS AT SOURCE AREA 5 WOULD BE DESTROYED DURING THIS ACTION.

RCRA INCINERATOR REGULATIONS AT 40 CFR 264, SUBPART O ARE ARARS FOR THIS ALTERNATIVE AND INCLUDE PERFORMANCE STANDARDS AND OPERATING, MONITORING, AND INSPECTION REQUIREMENTS. THE TREATMENT UNIT MUST BE A RCRA-PERMITTED OR APPROVED UNIT. THE STATE REGULATIONS FOR HAZARDOUS WASTE INCINERATION AT 25 PA CODE CHAPTER 75, PART 264 ARE ALSO ARARS. THERMAL TREATMENT OF PCB CONTAMINATED SOIL MEETS THE TOXIC SUBSTANCES CONTROL ACT (TSCA) REGULATIONS AT 40 CFR 761 FOR DISPOSAL AND STORAGE OF PCBS AND PCB ITEMS. LEAD EMISSIONS FROM THE ONSITE TREATMENT UNIT WOULD COMPLY WITH CAA NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) AND PADER AIR QUALITY STANDARDS, BOTH OF WHICH ARE 1.5 UG/M3 QUARTERLY AVERAGE. IN ADDITION TO THERMAL TREATMENT UNIT AIR-EMISSION REQUIREMENTS, CAA AND STATE STANDARDS LIMITING TOTAL SUSPENDED PARTICULATES WOULD APPLY DURING EXCAVATION. OSHA STANDARDS, SPECIALLY STANDARDS GOVERNING WORKER SAFETY DURING HAZARDOUS WASTE OPERATIONS AT 20 CFR 1910, WOULD HAVE TO BE FOLLOWED DURING ALL SITE WORK.

FEDERAL AND STATE DOT REGULATIONS FOR OFFSITE TRANSPORT OF HAZARDOUS MATERIALS WOULD HAVE TO BE CONSIDERED. THE LANDFILL USED FOR DISPOSAL OF THE TREATED MATERIAL MUST BE PERMITTED BY THE STATE AND/OR APPROVED BY THE EPA TO ACCEPT HAZARDOUS SUBSTANCES.

SOURCE AREA ALTERNATIVE 5: EXCAVATION, ONSITE THERMAL TREATMENT, AND ONSITE DISPOSAL

THIS ALTERNATIVE INVOLVES TREATMENT OF CONTAMINATED SOIL, ALONG WITH 600 CUBIC YARDS OF SEDIMENT FROM THE DRAINAGE DITCH THAT RUNS BETWEEN THE SITE AND THE SCHUYLKILL RIVER. THESE MATERIALS WOULD BE EXCAVATED AND HAULED TO A MOBILE THERMAL TREATMENT UNIT THAT WOULD BE SET UP AT THE

SITE. THE TREATMENT UNIT SHOULD BE SET UP IN AN AREA THAT IS NOT IN THE 100-YEAR FLOOD PLAIN, SUCH AS SOURCE AREAS 1 OR 2. EXCAVATED AREAS WOULD BE BACKFILLED USING TREATED MATERIAL, CAPPED, AND REVEGETATED. THE CAP IS THE SAME AS DISCUSSED FOR SOURCE AREA ALTERNATIVE 2. THERMAL TREATMENT WOULD REMOVE AT LEAST 99.99 PERCENT OF THE ORGANICS IN THE SOIL; HOWEVER, METALS ARE NOT AFFECTED AND WOULD REMAIN IN THE TREATED MATERIAL. IF THE TREATED MATERIAL IS DETERMINED TO BE EP TOXIC, THE MATERIAL WOULD BE FURTHER TREATED USING SOLIDIFICATION BEFORE IT IS USED TO BACKFILL THE EXCAVATIONS.

THERMAL TREATMENT WOULD REQUIRE TEST BURNS TO DETERMINE OPTIMUM OPERATING CONDITIONS. THE TEST BURNS COULD BE USED TO DETERMINE METAL CONTAMINANT LEVELS IN THE TREATED MATERIAL. THE THERMAL TREATMENT UNIT WOULD INCLUDE A WET SCRUBBER TO TREAT THE EXHAUST GAS, AND THE WATER WOULD REQUIRE SUBSEQUENT TREATMENT/DISPOSAL. CONTAMINANT CONCENTRATIONS IN THE SCRUBBER WATER WOULD DETERMINE THE LEVEL OF TREATMENT REQUIRED AND COULD ALSO BE DETERMINED DURING THE TEST BURNS.

IT IS ESTIMATED THAT THE ENTIRE SITE COULD BE REMEDIATED IN 8.5 TO 17 YEARS. ESTIMATED CAPITAL AND ANNUAL O&M COSTS ARE PRESENTED IN TABLE 7. THIS ALTERNATIVE WOULD TREAT SOILS THAT POSE RISKS VIA DIRECT CONTACT, INGESTION, AND INHALATION.

EXECUTIVE ORDERS 11988 AND 11990 (40 CFR 6 APPENDIX A), WHICH CONCERN FLOOD PLAINS AND WETLANDS, ARE APPLICABLE. CONSTRUCTION OF THE CAP, FOLLOWING BACKFILLING WITH TREATED MATERIAL, WOULD REDUCE THE POSSIBILITY FOR "WASH OUT" OF CONTAMINANTS DURING A FLOOD; THIS WOULD BE AN IMPROVEMENT OVER EXISTING CONDITIONS. THE WETLANDS AT SOURCE AREA 5 WOULD BE REMOVED DURING EXCAVATION.

RCRA INCINERATOR REGULATIONS AT 40 CFR 264, SUBPART O ARE ARARS AND INCLUDE PERFORMANCE STANDARDS AND OPERATION, MONITORING, AND INSPECTION REQUIREMENTS. THE THERMAL TREATMENT UNIT MUST BE RCRA-PERMITTED OR APPROVED. THE STATE REGULATIONS FOR HAZARDOUS WASTE INCINERATION AT 25 PA CODE CHAPTER 75 ARE ALSO ARARS. THERMAL TREATMENT OF PCB-CONTAMINATED SOIL MEETS THE TSCA REGULATIONS AT 40 CFR 761 FOR STORAGE AND DISPOSAL OF PCBS AND PCB ITEMS. LEAD EMISSIONS FROM THE ONSITE THERMAL TREATMENT UNIT WOULD COMPLY WITH THE NAAQS AND PADER AIR QUALITY STANDARDS (1.5 UG/M3 QUARTERLY AVERAGE). IN ADDITION TO THERMAL TREATMENT UNIT AIR EMISSION REQUIREMENTS, CAA AND STATE STANDARDS LIMITING TOTAL SUSPENDED PARTICULATES WOULD APPLY DURING EXCAVATION.

OSHA STANDARDS, ESPECIALLY STANDARDS AT 29 CFR 1910 GOVERNING WORKER SAFETY DURING HAZARDOUS WASTE OPERATIONS, WOULD HAVE TO BE FOLLOWED DURING ALL SITE WORK.

SOURCE AREA ALTERNATIVE 6: EXCAVATION AND OFFSITE THERMAL TREATMENT

THIS ALTERNATIVE INVOLVES TREATMENT OF CONTAMINATED SOILS AT AN OFFSITE THERMAL TREATMENT UNIT. ALL CONTAMINATED SOIL, ALONG WITH 600 CUBIC YARDS OF SEDIMENT FROM THE DRAINAGE DITCH THAT RUNS BETWEEN THE SITE AND THE SCHUYLKILL RIVER, WOULD BE EXCAVATED AND HAULED TO AN APPROVED OFFSITE THERMAL TREATMENT FACILITY. ALL EXCAVATIONS WOULD BE BACKFILLED USING CLEAN FILL MATERIAL AND REVEGETATED. THERE WOULD BE NO NEED FOR LONG-TERM MONITORING BECAUSE ALL CONTAMINATED MATERIALS WOULD BE REMOVED FROM THE SITE. IT IS ESTIMATED THAT THE ENTIRE SITE COULD BE REMEDIATED IN 4.5 TO 7 YEARS. ESTIMATED CAPITAL COSTS ARE PRESENTED IN TABLE 7. THERE ARE NO ANNUAL O&M COSTS ASSOCIATED WITH THIS ALTERNATIVE.

THIS ALTERNATIVE WOULD TREAT SOILS THAT POSE RISKS FROM DIRECT CONTACT, INGESTION, AND INHALATION. EXECUTIVE ORDERS 11988 AND 11990 (40 CFR 6 APPENDIX A), WHICH CONCERN FLOOD PLAINS AND WETLANDS, ARE APPLICABLE. REMOVING CONTAMINATED MATERIALS FROM THE FLOOD PLAIN WOULD PREVENT "WASH OUT" OF CONTAMINATED SOIL DURING A FLOOD; THIS WOULD BE AN IMPROVEMENT OVER EXISTING CONDITIONS. THE WETLANDS AT SOURCE AREA 5 WOULD BE REMOVED DURING EXCAVATION.

REMOVAL OF ALL CONTAMINATED MATERIALS AND ELIMINATING THE NEED FOR FURTHER MAINTENANCE AND CONTROL SATISFY RCRA CLEAN CLOSURE REQUIREMENTS AT 40 CFR 264.110.

TRANSPORTATION OF THE WASTE TO A COMMERCIAL HAZARDOUS WASTE THERMAL TREATMENT UNIT WOULD BE IN COMPLIANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE AT 40 CFR 262 AND 25 PA CODE CHAPTER 75 AND WITH FEDERAL AND STATE DOT REGULATIONS PERTAINING TO TRANSPORTATION OF HAZARDOUS MATERIALS.

OSHA STANDARDS, ESPECIALLY STANDARDS AT 20 CFR 1910 GOVERNING WORKER SAFETY DURING HAZARDOUS WASTE OPERATIONS, WOULD HAVE TO BE FOLLOWED DURING ALL SITE WORK. DURING EXCAVATION, CAA AND STATE AIR STANDARDS MUST BE CONSIDERED. IF ANY LIMITS ARE EXCEEDED, DUST AND/OR VAPOR SUPPRESSANTS WOULD BE APPLIED.

SOURCE AREA ALTERNATIVE 7: LANDFARMING

THIS ALTERNATIVE IS APPLICABLE ONLY TO SOURCE AREAS 3 AND 6. THE VERTICAL EXTENT OF CONTAMINATION AT THE OTHER SOURCE AREAS WOULD PRECLUDE IMPLEMENTATION IN A TIMELY MANNER. A FLOOD-PROTECTION DIKE WOULD BE INSTALLED AROUND SOURCE AREAS 3 AND 6 BECAUSE THEY ARE IN THE 100-YEAR FLOOD PLAIN. LANDFARMING WOULD INCLUDE THE APPLICATION OF NUTRIENTS, MOISTURE, AND AERATION TO STIMULATE NATURALLY-OCCURRING MICROORGANISMS. AEROBIC CONDITIONS ARE GENERALLY MAINTAINED BY PLOWING, DISKING, OR ROTOTILLING. THE EFFECTIVENESS AND DETAILED OPERATIONS WOULD NEED TO BE DETERMINED BY TREATABILITY STUDIES. THESE STUDIES ARE ALSO NEEDED TO DETERMINE THE TIME TO ACHIEVE CLEANUP. LONG-TERM MONITORING, OPERATION, AND MAINTENANCE WOULD BE REQUIRED UNTIL REMEDIATION IS COMPLETED. ESTIMATED CAPITAL AND ANNUAL O&M COSTS ARE PRESENTED IN TABLE 7. THIS ALTERNATIVE WOULD TREAT SOILS THAT POSE RISKS FROM DIRECT CONTACT, INGESTION, AND INHALATION.

EXECUTIVE ORDER 11988 (40 CFR 6 APPENDIX A), WHICH CONCERNS FLOOD PLAINS, IS APPLICABLE. THE FLOOD PLAIN MAY BE ADVERSELY AFFECTED BECAUSE A FLOOD DIKE WOULD BE INSTALLED; HOWEVER, THE AREA TO BE DIKED IS A SMALL PERCENTAGE OF THE FLOOD PLAIN AREA. THIS ALTERNATIVE WOULD NOT ADVERSELY AFFECT WETLANDS AT SOURCE AREA 5.

THE LANDFARM WOULD BE DESIGNED TO MEET THE SUBSTANTIVE REQUIREMENTS OF 40 CFR 267 (INTERIM STANDARDS FOR NEW HAZARDOUS WASTE LAND DISPOSAL FACILITIES) AND 40 CFR 264, SUBPART M (LAND TREATMENT). CLOSURE OF THE LANDFARM WOULD COMPLY WITH THE SUBSTANTIVE REQUIREMENTS OF 40 CFR 264.280.

OHSA STANDARDS, ESPECIALLY THOSE AT 29 CFR 1910 GOVERNING WORKER SAFETY DURING HAZARDOUS WASTE OPERATIONS, WOULD HAVE TO BE FOLLOWED DURING ALL SITE WORK. CLEAN AIR ACT AND STATE AIR STANDARDS WOULD APPLY DURING EXCAVATION AND SOIL AERATION ACTIVITIES.

SOURCE AREA ALTERNATIVE 8: EXCAVATION, ONSITE EXTRACTION, AND OFFSITE DISPOSAL

THIS ALTERNATIVE INVOLVES ONSITE EXTRACTION OF CONTAMINATED SOILS USING THE BEST PROCESS. THIS ALTERNATIVE IS NOT APPLICABLE TO SOURCE AREAS 3 AND 6 BECAUSE THESE AREAS CONTAIN ONLY SMALL AMOUNTS OF OIL. THE EXTRACTION PROCESS EVALUATED IS PARTICULARLY SUITED TO THE OILY WASTE FOUND AT THE OTHER SOURCE AREAS. ALL CONTAMINATED SOIL, ALONG WITH 600 CUBIC YARDS OF SEDIMENT FROM THE DRAINAGE DITCH THAT RUNS BETWEEN THE SITE AND THE SCHUYLKILL RIVER, WOULD BE EXCAVATED AND HAULED TO AN EXTRACTION PLANT THAT WOULD BE SET UP AT THE SITE. THE EXTRACTION PLANT SHOULD BE SET UP IN AN AREA THAT IS NOT WITHIN THE FLOOD PLAIN. EXCAVATED AREAS WOULD BE BACKFILLED WITH CLEAN MATERIAL AND REVEGETATED. REPORTEDLY, THE BEST PROCESS CAN REDUCE OIL AND GREASE TO LESS THAN 0.1 PERCENT AND PCBS TO 1 PPM. TREATABILITY TESTING IS REQUIRED TO DETERMINE THE EXTENT OF HEAVY METAL REMOVAL. TREATED MATERIAL WOULD BE HAULED TO AN EPA-APPROVED, OFFSITE SUBTITLE C LANDFILL FOR DISPOSAL IF THE RESIDUALS ARE CLASSIFIED AS HAZARDOUS FOLLOWING TREATMENT.

EXTRACTION WOULD REQUIRE TREATABILITY STUDIES TO DETERMINE OPTIMUM OPERATING CONDITIONS, THE RESIDUAL CONTAMINATION THAT CANNOT BE REMOVED BY THE EXTRACTION PROCESS, AND THE CHEMICAL CHARACTERISTICS OF THE SPENT EXTRACTION FLUID. THESE STUDIES WOULD HELP TO DETERMINE THE ULTIMATE TREATMENT/DISPOSAL REQUIREMENTS FOR WASTES GENERATED BY THE EXTRACTION PROCESS.

NO LONG-TERM GROUND WATER MONITORING WOULD BE REQUIRED FOR THESE AREAS BECAUSE ALL CONTAMINATED MATERIALS WOULD BE REMOVED FROM THE SITE. IT IS ESTIMATED THAT THE ENTIRE SITE COULD BE REMEDIATED IN 6.5 TO 13 YEARS. ESTIMATED CAPITAL COSTS ARE PRESENTED IN TABLE 7. NO ANNUAL O&M COSTS ARE ASSOCIATED WITH THIS ALTERNATIVE.

THIS ALTERNATIVE WOULD TREAT SOILS THAT POSE RISKS FROM DIRECT CONTACT, INGESTION, AND INHALATION. REMOVAL OF ALL CONTAMINATED MATERIALS AND ELIMINATING THE NEED FOR FURTHER MAINTENANCE AND CONTROL SATISFY RCRA CLEAN CLOSURE REQUIREMENTS AT 40 CFR 264.111.

EXECUTIVE ORDERS 11988 AND 11990 (40 CFR 6 APPENDIX A), WHICH CONCERN FLOOD PLAINS AND WETLANDS, ARE APPLICABLE. REMOVAL OF CONTAMINATED SOIL FROM THE FLOOD PLAIN WOULD REDUCE THE POTENTIAL FOR "WASH OUT" OF CONTAMINANTS DURING A FLOOD; THIS WOULD BE AN IMPROVEMENT OVER EXISTING CONDITIONS. HOWEVER, THE WETLANDS AT SOURCE AREA 5 WOULD BE DESTROYED DURING THIS ACTION.

THE SPENT EXTRACTION FLUID MAY BE A HAZARDOUS WASTE. FEDERAL AND STATE REGULATIONS FOR GENERATION AND TRANSPORTATION OF HAZARDOUS MATERIALS WOULD THEN HAVE TO BE COMPLIED WITH. THE OFFSITE FACILITIES THAT RECEIVE THE TREATED MATERIAL AND THE SPENT EXTRACTION FLUID MUST HAVE THE REQUIRED PERMITS AND BE IN COMPLIANCE WITH ALL APPLICABLE STATE AND FEDERAL REGULATIONS. OSHA STANDARDS, ESPECIALLY STANDARDS AT 29 CFR 1910 GOVERNING WORKER SAFETY DURING HAZARDOUS WASTE OPERATIONS, WOULD HAVE TO BE FOLLOWED. DURING SITE WORK, CAA AND STATE AIR STANDARDS WOULD BE CONSIDERED. IF ANY LIMITS ARE EXCEEDED DURING EXCAVATION OR EXTRACTION, DUST AND/OR VAPOR SUPPRESSANTS MUST BE APPLIED.

SOURCE AREA ALTERNATIVE 9: EXCAVATION, ONSITE EXTRACTION, AND ONSITE DISPOSAL

THIS ALTERNATIVE INVOLVES ONSITE EXTRACTION OF CONTAMINATED SOILS USING THE BEST PROCESS. THIS ALTERNATIVE IS NOT APPLICABLE TO SOURCE AREAS 3 AND 6 BECAUSE THESE AREAS CONTAIN ONLY SMALL AMOUNTS OF OIL. THE EXTRACTION PROCESS EVALUATED IS PARTICULARLY SUITED TO THE OILY MATERIALS FOUND AT THE OTHER SOURCE AREAS. ALL CONTAMINATED SOIL, ALONG WITH 600 CUBIC YARDS OF SEDIMENT FROM THE DRAINAGE DITCH THAT RUNS FROM THE SITE TO THE SCHUYLKILL RIVER, WOULD BE EXCAVATED AND HAULED TO AN EXTRACTION PLANT THAT WOULD BE SET UP AT THE SITE. THE EXTRACTION PLANT SHOULD BE SET UP IN AN AREA THAT IS NOT IN THE FLOOD PLAIN. EXCAVATED AREAS WOULD BE BACKFILLED USING TREATED MATERIAL, CAPPED, AND REVEGETATED.

REPORTEDLY, THE BEST PROCESS CAN REDUCE OIL AND GREASE TO LESS THAN 0.1 PERCENT AND PCBS TO 1 PPM. TREATABILITY TESTING IS REQUIRED TO DETERMINE THE EXTENT OF HEAVY METAL REMOVAL. TREATABILITY STUDIES WOULD BE REQUIRED TO DETERMINE OPTIMUM OPERATING CONDITIONS, THE RESIDUAL CONTAMINATION THAT CANNOT BE REMOVED BY THE EXTRACTION PROCESS, AND THE CHEMICAL CHARACTERISTICS OF THE SPENT EXTRACTION FLUID. THESE STUDIES WOULD HELP TO DETERMINE THE ULTIMATE TREATMENT/DISPOSAL REQUIREMENTS FOR RESIDUAL WASTES GENERATED BY THE EXTRACTION PROCESS.

THIS ALTERNATIVE WOULD TREAT SOILS THAT POSE RISKS THROUGH DIRECT CONTACT, INGESTION AND INHALATION. IT IS ESTIMATED THAT THE ENTIRE SITE COULD BE REMEDIATED IN 6.5 TO 13 YEARS. ESTIMATED CAPITAL AND ANNUAL O&M COSTS ARE PRESENTED IN TABLE 7.

EXECUTIVE ORDERS 11988 AND 11990 (40 CFR 6 APPENDIX A), WHICH CONCERN FLOOD PLAINS AND WETLANDS, ARE APPLICABLE. CONSTRUCTION OF THE CAP, FOLLOWING BACKFILLING WITH TREATED MATERIAL, WOULD REDUCE THE

POSSIBILITY OF "WASH OUT" OF CONTAMINANTS DURING A FLOOD; THIS WOULD BE AN IMPROVEMENT OVER EXISTING CONDITIONS. HOWEVER THE WETLANDS AT SOURCE AREA 5 WOULD BE DESTROYED DURING THIS ACTION. STATE SOLID WASTE DISPOSAL REQUIREMENTS AT 25 PA CODE, CHAPTER 75, PARTS 21 THROUGH 38 WOULD ALSO BE CONSIDERED.

THE SPENT EXTRACTION FLUID MAY BE A HAZARDOUS WASTE. FEDERAL AND STATE REGULATIONS FOR GENERATION AND OFFSITE TRANSPORT OF HAZARDOUS MATERIALS WOULD NEED TO BE COMPLIED WITH. ANY OFFSITE FACILITY RECEIVING THE SPENT EXTRACTION FLUID MUST HAVE THE REQUIRED PERMITS AND BE IN COMPLIANCE WITH ALL APPLICABLE STATE AND FEDERAL REGULATIONS.

OSHA STANDARDS, ESPECIALLY THOSE AT 29 CFR 1910 GOVERNING WORKER SAFETY DURING HAZARDOUS WASTE OPERATIONS, WOULD HAVE TO BE FOLLOWED. CAA AND STATE AIR REQUIREMENTS WOULD BE CONSIDERED DURING EXCAVATION AND TREATMENT. IF ANY STANDARDS ARE EXCEEDED, PREVENTIVE MEASURES MUST BE IMPLEMENTED.

SOURCE AREA ALTERNATIVE 10: EXCAVATION AND ONSITE LANDFILLING

THIS ALTERNATIVE INVOLVES EXCAVATION OF CONTAMINATED MATERIALS WITH CONTAINMENT WITHIN AN ONSITE RCRA LANDFILL. ALL CONTAMINATED SOIL, ALONG WITH 600 CUBIC YARDS OF SEDIMENT FROM THE DRAINAGE DITCH THAT RUNS FROM THE SITE TO THE SCHUYLKILL RIVER, WOULD BE EXCAVATED AND PLACED IN A DOUBLE-LINED RCRA LANDFILL THAT WOULD BE CONSTRUCTED AT THE SITE. CONTAMINATED SOIL FROM THE LANDFILL LOCATION WOULD BE EXCAVATED AND HAULED TO A TEMPORARY STORAGE AREA. THE STORAGE AREA WOULD HAVE A LINER AND RUNOFF CONTROLS AND MAY BE COVERED TO CONTROL THE RELEASE OF VOLATILE ORGANICS TO THE ATMOSPHERE, IF REQUIRED.

AFTER ALL THE CONTAMINATED SOIL FROM THE LANDFILL LOCATIONS IS EXCAVATED AND STOCKPILED, THE EXCAVATION WOULD BE BACKFILLED TO AN ELEVATION ABOVE THE 100-YEAR FLOOD ELEVATION. THE LANDFILL LINER WOULD THEN BE CONSTRUCTED OVER THE BACKFILLED AREA. THE LINER WOULD BE DESIGNED ACCORDING TO PADER REGULATIONS AND INCLUDES THE FOLLOWING FROM BOTTOM TO TOP: 20-MIL SYNTHETIC MEMBRANE (SECONDARY LINER), 1-FOOT SAND LAYER (LEAK DETECTION ZONE), 50-MIL SYNTHETIC MEMBRANE (PRIMARY LINER), 1-FOOT SAND LAYER (LEACHATE FLOW ZONE), AND FILTER FABRIC TO SEPARATE THE LEACHATE FLOW ZONE FROM THE WASTE.

AFTER THE LINER IS CONSTRUCTED, STOCKPILED WASTE WOULD BE BACKFILLED ABOVE THE LINER AND COMPACTED. ALL OTHER AREAS OF CONTAMINATED SOIL WOULD THEN BE EXCAVATED AND PLACED IN THE LANDFILL. AFTER ALL CONTAMINATED MATERIALS HAVE BEEN PLACED, A CAP WOULD BE CONSTRUCTED AND TIED IN TO THE LINER. THE CAP WOULD BE DESIGNED ACCORDING TO PADER REGULATIONS AND IS THE SAME AS PROPOSED FOR SOURCE AREA ALTERNATIVE 3.

THIS ALTERNATIVE WOULD CONTAIN SOILS THAT POSE RISKS, THROUGH DIRECT CONTACT, INGESTION, AND INHALATION, IN A DOUBLE-LINED RCRA LANDFILL. BECAUSE CONTAMINATED MATERIALS WOULD REMAIN ONSITE, LONG-TERM MONITORING AND MAINTENANCE WOULD BE REQUIRED. IT IS ESTIMATED THAT THIS ALTERNATIVE COULD BE IMPLEMENTED IN 4.5 TO 6 YEARS. ESTIMATED CAPITAL AND ANNUAL O&M COSTS ARE PRESENTED IN TABLE 7.

EXECUTIVE ORDERS 11988 AND 11990 (40 CFR 6 APPENDIX A), WHICH CONCERN FLOOD PLAINS AND WETLANDS, ARE APPLICABLE. THE AREA WHERE THE LANDFILL WOULD BE CONSTRUCTED WOULD BE FILLED TO THE 100-YEAR FLOOD ELEVATION PRIOR TO LANDFILL CONSTRUCTION. THIS ACTION COULD ADVERSELY AFFECT THE FLOOD PLAIN BY REDUCING THE FLOOD WATER STORAGE CAPACITY PROVIDED BY THE FLOOD PLAIN. THIS COULD CAUSE INCREASED WATER VELOCITIES AND HIGHER WATER LEVELS IN OFFSITE AREAS DURING A FLOOD.

DESIGN AND CONSTRUCTION OF THE ONSITE LANDFILL UNDER THIS ALTERNATIVE WOULD COMPLY WITH THE MINIMUM TECHNOLOGY REQUIREMENTS AT 40 CFR 264, SUBPART N FOR RCRA LANDFILLS. THE LANDFILL DESIGN WOULD ALSO COMPLY WITH STATE REGULATIONS FOR HAZARDOUS WASTE LANDFILLS AT 25 PA CODE 75.264. THE TEMPORARY WASTE STOCK PILE(S) MUST HAVE A LINER AND

LEACHATE COLLECTION SYSTEM AS SPECIFIED AT 40 CFR 264.251.

OSHA STANDARDS, ESPECIALLY THOSE AT 29 CFR 1910 GOVERNING WORKER SAFETY DURING HAZARDOUS WASTE OPERATIONS, WOULD HAVE TO BE FOLLOWED. DURING SITE WORK, CAA AND STATE AIR REQUIREMENTS MUST BE CONSIDERED. IF ANY LIMIT OR STANDARD IS EXCEEDED, ACTIONS MUST BE TAKEN TO CONTROL AIR EMISSIONS.

SOURCE AREA ALTERNATIVE 11: EXCAVATION AND OFFSITE LANDFILLING

THIS ALTERNATIVE INVOLVES EXCAVATION OF CONTAMINATED MATERIALS WITH DISPOSAL AT AN OFFSITE LANDFILL. ALL CONTAMINATED SOIL, ALONG WITH 600 CUBIC YARDS OF SEDIMENT FROM THE DRAINAGE DITCH THAT RUNS FROM THE SITE TO THE SCHUYLKILL RIVER, WOULD BE EXCAVATED AND HAULED TO A RCRA-APPROVED OFFSITE LANDFILL FACILITY. ALL EXCAVATIONS WOULD BE BACKFILLED WITH CLEAN FILL MATERIAL AND REVEGETATED. THERE WOULD BE NO NEED FOR LONG-TERM MONITORING BECAUSE ALL CONTAMINATED MATERIALS WOULD BE REMOVED FROM THE SITE. IT IS ESTIMATED THAT THE ENTIRE SITE COULD BE REMEDIATED IN 4.5 TO 6 YEARS. ESTIMATED CAPITAL COSTS ARE PRESENTED IN TABLE 7. THERE ARE NO ANNUAL O&M COSTS ASSOCIATED WITH THIS ALTERNATIVE. THIS ALTERNATIVE WOULD REMOVE SOILS THAT POSE RISKS FROM DIRECT CONTACT, INGESTION, AND INHALATION.

EXECUTIVE ORDERS 11988 AND 11990 (40 CFR 6 APPENDIX A), WHICH CONCERN FLOOD PLAINS AND WETLANDS, ARE APPLICABLE. REMOVING CONTAMINATED MATERIALS FROM THE FLOOD PLAIN WOULD PREVENT "WASH OUT" OF CONTAMINANTS DURING A FLOOD; THIS WOULD BE AN IMPROVEMENT OVER EXISTING CONDITIONS. HOWEVER, THE WETLANDS AT SOURCE AREA 5 WOULD BE REMOVED DURING EXCAVATION. REMOVAL OF ALL CONTAMINATED MATERIALS AND ELIMINATING THE NEED FOR FURTHER MAINTENANCE AND CONTROL, SATISFY RCRA CLEAN CLOSURE PERFORMANCE STANDARDS AT 40 CFR 264.110.

THE FACILITY RECEIVING THE CONTAMINATED MATERIALS MUST BE IN COMPLIANCE WITH APPLICABLE STATE AND FEDERAL PERMIT REQUIREMENTS RELEVANT TO HAZARDOUS WASTE DISPOSAL FACILITIES.

TRANSPORTATION OF THE CONTAMINATED SOIL TO A COMMERCIAL HAZARDOUS WASTE LANDFILL WOULD BE DONE IN COMPLIANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE PROMULGATED UNDER RCRA AT 40 CFR 262 AND STATE REGULATIONS AT 25 PA CODE CHAPTER 75, AND FEDERAL AND STATE DOT REGULATIONS PERTAINING TO THE TRANSPORT OF HAZARDOUS MATERIALS.

OSHA STANDARDS, ESPECIALLY THOSE AT 29 CFR 1910 GOVERNING WORKER SAFETY DURING HAZARDOUS WASTE OPERATIONS, WOULD HAVE TO BE FOLLOWED. DURING SITE WORK, CAA AND STATE AIR REQUIREMENTS MUST BE CONSIDERED. IF ANY LIMIT OR STANDARD IS EXCEEDED, ACTION WOULD BE TAKEN TO CONTROL AIR EMISSIONS.

SOURCE AREA ALTERNATIVE 12: ONSITE THERMAL TREATMENT AND MINIMAL ACTION

THIS ALTERNATIVE COMBINES SELECTED ASPECTS OF THE NO ACTION ALTERNATIVES, THE MINIMAL ACTION ALTERNATIVES, AND THE ONSITE THERMAL TREATMENT WITH ONSITE ASH DISPOSAL ALTERNATIVE. IT WAS FORMULATED FOR CONSIDERATION AS PART OF EPA'S PROPOSED REMEDIAL ACTION PLAN AND WAS DEVELOPED FROM THE VARIOUS ALTERNATIVES PRESENTED IN THE RI/FS. THIS ALTERNATIVE WAS DESIGNED TO MITIGATE RISKS TO HUMAN HEALTH AND THE ENVIRONMENT ASSOCIATED WITH EACH SOURCE AREA, AND INVOLVES TREATMENT OF THE HIGHEST RISK AREA OF THE SITE USING ONSITE THERMAL TREATMENT.

THE PILE OF OILY FILTER CAKE WASTE AT SOURCE AREA 2 (48,400 CUBIC YARDS) WOULD BE EXCAVATED AND HAULED TO A MOBILE INCINERATOR THAT WOULD BE SET UP AT THE SITE. APPROXIMATELY 600 CUBIC YARDS OF OILY SEDIMENT FROM THE DRAINAGE DITCH THAT RUNS FROM THE SITE TO THE SCHUYLKILL RIVER WOULD ALSO BE EXCAVATED AND HAULED TO THE ONSITE THERMAL TREATMENT UNIT. THE UNIT SHOULD BE SET UP IN AN AREA THAT IS NOT IN THE 100-YEAR FLOOD PLAIN.

SOURCE AREA 2 WOULD BE BACKFILLED WITH THE TREATED MATERIAL (ASH), COVERED WITH SOIL, AND REVEGETATED. THE ASH WOULD BE A "BUFFER ZONE" BETWEEN CONTAMINATED SUBSURFACE SOIL THAT WAS NOT REMOVED AND THE TOP

SOIL. THERMAL TREATMENT WOULD REMOVE AT LEAST 99.99 PERCENT OF THE ORGANICS; HOWEVER, METALS WOULD NOT BE AFFECTED AND WOULD REMAIN IN THE TREATED MATERIAL. EP TOXICITY LEACH TESTING WOULD BE CONDUCTED TO DETERMINE IF THE ASH IS A CHARACTERISTIC HAZARDOUS WASTE. IF THE ASH EXCEEDS EP TOXICITY LEVELS, SOLIDIFICATION WOULD BE REQUIRED TO RENDER THE MATERIAL NON-HAZARDOUS, AND, THEREFORE, SUITABLE FOR DISPOSAL BACK INTO SOURCE AREA 2.

SOURCE AREAS 1, 4 AND 5 WOULD BE CAPPED WITH ONE FOOT OF COMPACTED FLY ASH FOLLOWED BY TWO FEET OF SOIL AND REVEGETATED. SOURCE AREAS 3, 6, AND 9 WOULD BE REVEGETATED OR CAPPED WITH TOP SOIL FOLLOWED BY REVEGETATION. CLOSURE OF SOURCE AREAS 1,2,3,4,5,6 AND 9 WOULD BE IN ACCORDANCE WITH THE RELEVANT AND APPROPRIATE REQUIREMENTS OF 40 CFR 264.310. NO ACTION WOULD BE TAKEN AT SOURCE AREAS 7, 8, AND 10. BASED ON AVAILABLE DATA, SOIL CONTAMINATION, AND, THEREFORE, RISK, AT SOURCE AREAS 7 AND 8 ARE OR BELOW HEALTH-BASED LEVELS. SOURCE AREA 10 CONTAINS A WOODED WETLAND WHICH SHOULD NOT BE DISTURBED.

THERMAL TREATMENT WOULD REQUIRE TEST BURNS TO DETERMINE OPTIMUM OPERATING CONDITIONS. THE TEST BURNS COULD BE USED TO DETERMINE HEAVY METAL CONCENTRATIONS IN THE TREATED MATERIAL. THE THERMAL TREATMENT UNIT WOULD INCLUDE A WET SCRUBBER TO TREAT THE EXHAUST GAS, AND THE WATER WOULD REQUIRE SUBSEQUENT TREATMENT/DISPOSAL.

CONTAMINANT CONCENTRATIONS IN THE SCRUBBER WATER WOULD DETERMINE THE LEVEL OF TREATMENT REQUIRED AND COULD ALSO BE DETERMINED DURING TEST BURNS.

HAZARDOUS SUBSTANCES WOULD REMAIN ONSITE AT THE COMPLETION OF REMEDIAL ACTION; THEREFORE THE 5-YEAR REVIEW REQUIREMENT OF SECTION 121(C) OF SARA WOULD BE IMPLEMENTED. IT IS ESTIMATED THAT THIS ALTERNATIVE COULD BE COMPLETED IN 2 TO 3 YEARS. THE CAPITAL COST IS ESTIMATED TO BE $39,280,000. IF THE ASH FROM THE THERMAL TREATMENT OF SOURCE AREA 2 IS HAZARDOUS THEREBY REQUIRING SOLIDIFICATION, THE CAPITAL COST WOULD RISE TO APPROXIMATELY $53,619,000. NO ANNUAL O&M COSTS ARE ASSOCIATED WITH THIS ALTERNATIVE. HOWEVER, THE 5-YEAR REVIEW PROCEDURE WOULD COST APPROXIMATELY $25,000.

THIS ALTERNATIVE WOULD THERMALLY TREAT OILY WASTES FROM SOURCE AREA 2 THAT POSE EXCESS CANCER RISKS EXCEEDING 10-6 VIA DIRECT CONTACT, INGESTION, AND/OR INHALATION; AND COVER AND VEGETATE OTHER CONTAMINATED AREAS TO REDUCE RISKS TO HUMAN HEALTH AND TO THE ENVIRONMENT.

EXECUTIVE ORDERS 11988 AND 11990 (40 CFR 6 APPENDIX A), WHICH CONCERN FLOOD PLAINS AND WETLANDS, ARE APPLICABLE. COVERING CONTAMINATED SOIL IN THE FLOOD PLAIN WOULD REDUCE THE POSSIBILITY FOR "WASH OUT" OF CONTAMINANTS DURING A FLOOD; THIS WOULD BE AN IMPROVEMENT OVER EXISTING CONDITIONS. THE WETLANDS AT THE SITE WOULD BE LEFT UNDISTURBED TO THE EXTENT POSSIBLE.

RCRA INCINERATOR REGULATIONS AT 40 CFR 264, SUBPART O ARE RELEVANT AND APPROPRIATE REQUIREMENTS AND INCLUDE PERFORMANCE STANDARDS AND OPERATING, MONITORING, AND INSPECTION REQUIREMENTS. THE THERMAL TREATMENT UNIT MUST BE RCRA-PERMITTED OR APPROVED. THE STATE REGULATIONS FOR HAZARDOUS WASTE INCINERATION AT 25 PA CODE CHAPTER 75 ARE ALSO ARARS. THERMAL TREATMENT OF PCB CONTAMINATED WASTE WOULD MEET THE TSCA REGULATIONS AT 40 CFR 761 FOR STORAGE AND DISPOSAL OF PCBS AND PCB ITEMS. LEAD EMISSIONS FROM THE ONSITE THERMAL TREATMENT UNIT WOULD COMPLY WITH THE NAAQS AND PADER AIR QUALITY STANDARDS (1.5 UG/M3 QUARTERLY AVERAGE). IN ADDITION TO INCINERATOR AIR EMISSION REQUIREMENTS, CAA AND STATE STANDARDS LIMITING TOTAL SUSPENDED PARTICULATES WOULD APPLY DURING EXCAVATION AND THERMAL TREATMENT OPERATIONS. POSSIBLE SCENARIOS FOR STACK SCRUBBER WASTES GENERATED DURING THE ONSITE THERMAL TREATMENT PROCESS INCLUDE:

1 THE DISPOSAL OF THE SCRUBBER WASTES IN AN OFFSITE FACILITY;

2 THE DISPOSAL OF THOSE WASTES, IF NON-HAZARDOUS, INTO

SOURCE AREA 2 WITHOUT TREATMENT;

3 THE SOLIDIFICATION OF THE SCRUBBER WASTES, IF EP TOXIC, WITH DISPOSAL IN SOURCE AREA 2.

OSHA STANDARDS, ESPECIALLY STANDARDS AT 29 CFR 1910 GOVERNING WORKER SAFETY DURING HAZARDOUS WASTE OPERATIONS, WOULD HAVE TO BE FOLLOWED DURING ALL SITE WORK.

IF IT IS DETERMINED THAT THE TREATED MATERIAL WOULD NOT BE A HAZARDOUS WASTE, AS DEFINED BY RCRA AT 40 CFR 261, THE LAND DISPOSAL RESTRICTIONS AT 40 CFR 268 WOULD NOT BE AN ARAR. IF THE TREATED MATERIAL IS A CHARACTERISTIC HAZARDOUS WASTE AS DEFINED BY RCRA, LAND DISPOSAL RESTRICTIONS WOULD APPLY AND THE ASH WOULD BE SOLIDIFIED. THE STATUTORY DEADLINE FOR ESTABLISHING LAND DISPOSAL RESTRICTIONS FOR CHARACTERISTIC RCRA HAZARDOUS WASTE IS MAY, 1990.

GROUND WATER ALTERNATIVE 1: NO ACTION WITH MONITORING

THIS ALTERNATIVE WOULD NOT REQUIRE IMPLEMENTATION OF REMEDIAL ACTIONS TO ADDRESS GROUND WATER CONTAMINATION. A LONG-TERM MONITORING PROGRAM WOULD BE IMPLEMENTED. ADMINISTRATIVE CONTROLS, SUCH AS DEED AND LAND-USE RESTRICTIONS, WOULD BE REQUIRED TO LIMIT SITE GROUND WATER USE AND TO ALERT FUTURE PROPERTY OWNERS OF POTENTIAL SITE-RELATED RISKS.

THIS ALTERNATIVE WOULD NOT COMPLY WITH CONTAMINANT-SPECIFIC ARARS (E.G. MCLS, MCLGS, ETC.) BASED ON INGESTION OF GROUND WATER BENEATH THE SITE. HOWEVER, LONG-TERM MONITORING COULD BE USED TO DETERMINE WHETHER GROUND WATER DISCHARGES TO THE SCHUYLKILL RIVER ARE ADVERSELY AFFECTING RIVER-WATER QUALITY. TAKING NO ACTION WOULD NOT ADVERSELY AFFECT THE FLOOD PLAIN OR WETLAND AREAS AT THE SITE. NO ACTION-SPECIFIC ARARS APPLY BECAUSE NO REMEDIAL ACTION WOULD BE TAKEN.

THERE ARE NO CAPITAL COSTS ASSOCIATED WITH THIS ALTERNATIVE. ANNUAL MONITORING COSTS ARE ESTIMATED AT $27,000.

GROUND WATER ALTERNATIVE 2: MINIMAL ACTION WITH AN ALTERNATE CONCENTRATION LIMIT (ACL) DETERMINATION

THIS ALTERNATIVE WOULD NOT REQUIRE IMPLEMENTATION OF REMEDIAL ACTIONS TO REDUCE GROUND WATER CONTAMINATION. AN ALTERNATE CONCENTRATION LIMIT (ACL) DETERMINATION, PURSUANT TO SARA, SECTION 121 (D)(2)(B)(II), WOULD BE USED BECAUSE HAZARDOUS CONSTITUENTS DETECTED IN GROUND WATER DO NOT POSE RISKS TO HUMAN HEALTH OR THE ENVIRONMENT. ADMINISTRATIVE CONTROLS, SUCH AS DEED AND LAND-USE RESTRICTIONS, WOULD BE REQUIRED TO LIMIT SITE GROUND WATER USE. LONG-TERM GROUND WATER MONITORING WOULD BE PERFORMED. THE ACLS ESTABLISHED AS THE GROUND WATER PROTECTION STANDARD WOULD BE THE MAXIMUM CONCENTRATIONS LISTED IN TABLE 3 FOR THE MONITORING WELLS. IF THE ACL IS EXCEEDED, THEN SOME TYPE OF REMEDIATION MAY BE NECESSARY. SURFACE WATER MONITORING WOULD ALSO BE REQUIRED.

THIS ALTERNATIVE WOULD MEET CONTAMINANT-SPECIFIC ARARS; HOWEVER, THE GROUND WATER PROTECTION STANDARDS WOULD BE THE ACLS THAT WERE ESTABLISHED, RATHER THAN MCLS, MCLGS, OR BACKGROUND LEVELS. APPENDIX "A" TO THIS RECORD OF DECISION INCLUDES A LISTING OF MCLS AND MCLGS. CERCLA ALLOWS THE ESTABLISHMENT OF ACLS FOR HAZARDOUS CONSTITUENTS IN GROUND WATER THAT ASSUMES A POINT OF HUMAN EXPOSURE BEYOND THE SITE BOUNDARY ONLY WHEN THREE SPECIFIC CONDITIONS EXIST:

* THERE ARE KNOWN AND PROJECTED POINTS OF ENTRY OF GROUND WATER INTO SURFACE WATER;

* ON THE BASIS OF MEASUREMENTS OR PROJECTIONS, THERE IS OR WILL BE NO STATISTICALLY SIGNIFICANT INCREASE OF HAZARDOUS CONSTITUENTS, FROM GROUND WATER, IN SURFACE WATER AT THE POINT OF ENTRY OR AT ANY POINT DOWNSTREAM WHERE THERE IS REASON TO BELIEVE THAT HAZARDOUS

CONSTITUENTS MAY ACCUMULATE; AND

* THE REMEDIAL ACTION INCLUDES ENFORCEABLE MEASURES THAT WILL PRECLUDE HUMAN EXPOSURE TO CONTAMINATED GROUND WATER AT ANY POINT BETWEEN THE SITE BOUNDARY AND ALL KNOWN AND PROJECTED POINTS OF ENTRY OF GROUND WATER INTO SURFACE WATER.

THIS ALTERNATIVE WOULD NOT ADVERSELY AFFECT THE FLOOD PLAIN OR THE WETLAND AREAS AT THE SITE. NO CAPITAL COST IS ASSOCIATED WITH THIS ALTERNATIVE.

GROUND WATER ALTERNATIVE 3: GROUND WATER PUMPING AND TREATMENT (GAC OPTION)

THIS ALTERNATIVE INVOLVES INSTALLATION OF GROUND WATER RECOVERY WELLS EQUIPPED WITH PUMPS. GROUND WATER FROM BENEATH THE SITE WOULD BE PUMPED TO A TREATMENT PLANT AND, AFTER TREATMENT, WOULD BE DISCHARGED TO THE SCHUYLKILL RIVER. THE TWO MAIN AREAS OF GROUND WATER CONTAMINATION THAT WERE DETECTED DURING THE RI ARE NEAR THE FORMER PROCESSING FACILITY/SLUDGE DISPOSAL AREA (SOURCE AREAS 1 AND 2) AND THE FORMER SLUDGE LAGOON AREAS NEAR THE RIVER (SOURCE AREAS 4 AND 5). THE FLOW RATE FROM THE PUMPING WELLS IN THESE AREAS WAS ESTIMATED TO BE 300 GPM.

THE PROCESS UNITS FOR TREATMENT OF CONTAMINATED GROUND WATER INCLUDE THE FOLLOWING: EQUALIZATION; OIL/WATER SEPARATION; PRECIPITATION AND SEDIMENTATION TO REMOVE METALS; FILTRATION; AIR STRIPPING TO REMOVE VOLATILE ORGANICS; AND GRANULAR ACTIVATED CARBON (GAC) TO REMOVE OTHER ORGANICS THAT WOULD BE PRESENT. AIR STRIPPING COMBINED WITH GAC CAN REMOVE MOST ORGANIC COMPOUNDS TO BELOW DETECTABLE LIMITS.

RESIDUALS GENERATED INCLUDE RECOVERED OIL, SLUDGE FROM SEDIMENTATION, AND SPENT ACTIVATED CARBON. THE SLUDGE AND OIL WOULD REQUIRE OFFSITE DISPOSAL. A SLUDGE DEWATERING SYSTEM WOULD BE NEEDED TO REDUCE THE VOLUME OF SLUDGE FOR OFFSITE DISPOSAL. SPENT ACTIVATED CARBON WOULD BE NEEDED TO REDUCE THE VOLUME OF SLUDGE FOR OFFSITE DISPOSAL. SPENT ACTIVATED CARBON WOULD HAVE TO BE REGENERATED.

ESTIMATED CAPITAL COSTS FOR THIS ALTERNATIVE ARE $4,600,000. ANNUAL O&M COSTS ARE ESTIMATED AT $700,000. THE TOTAL PRESENT WORTH OF THIS ALTERNATIVE IS ESTIMATED TO BE $15,608,000. DETAILED MODELING DURING THE DESIGN PHASE WOULD BE NEEDED TO DETERMINE THE AMOUNT OF TIME NEEDED TO ACHIEVE CLEANUP AND TO REFINE THE DESIGN OF THE PUMPING AND TREATMENT SYSTEM. THE AMOUNT OF TIME REQUIRED AND THE EFFECTIVENESS OF THIS ALTERNATIVE WOULD DEPEND, TO A GREAT EXTENT, UPON THE DEGREE OF CONTAMINANT SOURCE (SOIL AND WASTE) REMEDIATION PERFORMED ONSITE.

THE TREATMENT SYSTEM WOULD MEET CONTAMINANT-SPECIFIC ARARS BY REMOVING CONTAMINANTS FROM GROUND WATER. CONTAMINANT-SPECIFIC ARARS ARE SHOWN IN TABLE 10-40 OF THE OCTOBER, 1988 RI/FS. DISCHARGE LIMITS WOULD BE DETERMINED BY THE STATE, BASED ON NPDES REQUIREMENTS AND CONSIDERATIONS. FEDERAL REGULATIONS AT 40 CFR 122 AND 40 CFR 136 ESTABLISH RULES FOR DETERMINING CONTROL TECHNOLOGY REQUIREMENTS, DISCHARGE LIMITATIONS, AND MONITORING REQUIREMENTS. ALL PADER REQUIREMENTS ARE ALSO APPLICABLE.

THIS ALTERNATIVE WOULD NOT ADVERSELY AFFECT THE FLOOD PLAIN OR THE WETLANDS LOCATED AT THE SITE.

GROUND WATER ALTERNATIVE 4: GROUND WATER PUMPING AND TREATMENT (OZONE/UV OPTION)

THIS ALTERNATIVE INVOLVES INSTALLATION OF GROUND WATER RECOVERY WELLS EQUIPPED WITH PUMPS. GROUND WATER FROM BENEATH THE SITE WOULD BE PUMPED TO A TREATMENT PLANT AND, AFTER TREATMENT, WOULD BE DISCHARGED TO THE SCHUYLKILL RIVER. THE TWO MAIN AREAS OF GROUND WATER CONTAMINATION THAT WERE DETECTED DURING THE RI ARE NEAR THE FORMER PROCESSING FACILITY/SLUDGE DISPOSAL AREA (SOURCE AREAS 1 AND 2) AND THE FORMER SLUDGE LAGOON AREAS NEAR THE RIVER (SOURCE AREAS 4 AND 5). THE FLOW

RATE FROM THE PUMPING WELLS IN THESE AREAS WAS ESTIMATED TO BE 300 GPM.

THE PROCESS UNITS FOR TREATMENT OF CONTAMINATED GROUND WATER INCLUDE THE FOLLOWING: EQUALIZATION; OIL/WATER SEPARATION; PRECIPITATION AND SEDIMENTATION TO REMOVE METALS; FILTRATION; AIR STRIPPING TO REMOVE VOLATILE ORGANICS; AND OZONE/ULTRAVIOLET LIGHT (UV) TO REMOVE OTHER ORGANICS THAT WOULD BE PRESENT. AIR STRIPPING COMBINED WITH OZONE/UV CAN REMOVE MOST ORGANIC COMPOUNDS TO BELOW DETECTABLE LIMITS. RESIDUALS GENERATED WOULD INCLUDE RECOVERED OIL AND SLUDGE FROM SEDIMENTATION. THE SLUDGE AND OIL WOULD REQUIRE OFFSITE DISPOSAL. A SLUDGE DEWATERING SYSTEM WOULD BE NEEDED TO REDUCE THE VOLUME OF SLUDGE FOR OFFSITE DISPOSAL.

ESTIMATED CAPITAL COSTS FOR THIS ALTERNATIVE ARE $5,200,000. ANNUAL O&M COSTS ARE ESTIMATED AT $900,000. THE TOTAL PRESENT WORTH OF THIS ALTERNATIVE IS ESTIMATED TO BE $19,525,000. DETAILED MODELING DURING THE DESIGN PHASE WOULD BE NEEDED TO DETERMINE THE AMOUNT OF TIME NEEDED TO ACHIEVE CLEANUP AND TO REFINE THE DESIGN OF THE PUMPING AND TREATMENT SYSTEM. THE TIME FRAME AND THE EFFECTIVENESS OF THIS ALTERNATIVE WOULD DEPEND, TO A GREAT EXTENT, UPON THE DEGREE OF CONTAMINANT SOURCE (SOIL AND WASTE) REMEDIATION PERFORMED ONSITE. THE TREATMENT SYSTEM WOULD MEET CONTAMINANT-SPECIFIC ARARS BY REMOVING CONTAMINANTS FROM GROUND WATER. CONTAMINANT-SPECIFIC ARARS ARE SHOWN IN TABLE 10-40 OF THE OCTOBER, 1988 RI/FS. DISCHARGE LIMITS WOULD BE DETERMINED BY THE STATE, BASED ON NPDES REQUIREMENTS AND CONSIDERATIONS. FEDERAL REGULATIONS AT 40 CFR 122 AND 40 CFR 136 ESTABLISH RULES FOR DETERMINING CONTROL TECHNOLOGY REQUIREMENTS, DISCHARGE LIMITATIONS, AND MONITORING REQUIREMENTS. ALL PADER NPDES REQUIREMENTS ARE ALSO APPLICABLE.

THIS ALTERNATIVE WOULD NOT ADVERSELY AFFECT THE FLOOD PLAIN OR THE WETLANDS LOCATED AT THE SITE.

#SCAA
SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

THIS SECTION PROVIDES A DESCRIPTION OF THE NINE CRITERIA EPA USES TO EVALUATE ALTERNATIVES AND AN ANALYSIS OF THE ALTERNATIVES UNDER CONSIDERATION AT THE DOUGLASSVILLE DISPOSAL SITE. THE NINE CRITERIA ARE DELINEATED IN DRAFT INTERIM GUIDANCE ON PREPARING SUPERFUND DECISION DOCUMENTS: THE PROPOSED PLAN AND RECORD OF DECISION, DECEMBER, 1988. THE EVALUATION CRITERIA ARE AS FOLLOWS:

* OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT ADDRESSES WHETHER OR NOT A REMEDY PROVIDES ADEQUATE PROTECTION AND DESCRIBES HOW RISKS ARE ELIMINATED, REDUCED, OR CONTROLLED.

* COMPLIANCE WITH ARARS - ADDRESSES WHETHER OR NOT A REMEDY WILL MEET ALL OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS OF ENVIRONMENTAL STATUTES.

* LONG-TERM EFFECTIVENESS AND PERMANENCE - REFERS TO THE ABILITY OF A REMEDY TO MAINTAIN RELIABLE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT OVER TIME ONCE CLEANUP GOALS ARE ACHIEVED.

* REDUCTION OF TOXICITY, MOBILITY, OR VOLUME - IS THE ANTICIPATED PERFORMANCE OF THE TREATMENT TECHNOLOGIES THAT A REMEDY MIGHT EMPLOY.

* SHORT-TERM EFFECTIVENESS - ADDRESSES THE PERIOD OF TIME NEEDED TO ACHIEVE PROTECTION AND ANY ADVERSE IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT THAT MAY BE POSED DURING THE CONSTRUCTION AND IMPLEMENTATION PERIOD UNTIL CLEANUP GOALS ARE ACHIEVED.

* IMPLEMENTABILITY - THE TECHNICAL AND ADMINISTRATIVE

FEASIBILITY OF A REMEDY, INCLUDING THE AVAILABILITY OF MATERIALS AND SERVICES NEEDED TO IMPLEMENT A PARTICULAR OPTION.

* COST - INCLUDES ESTIMATED CAPITAL AND OPERATION AND MAINTENANCE COSTS.

* STATE ACCEPTANCE - ADDRESSES STATE COMMENTS.

* COMMUNITY ACCEPTANCE - SUMMARIZES THE PUBLIC'S GENERAL RESPONSE TO THE ALTERNATIVES DESCRIBED IN THE PROPOSED PLAN AND THE RI/FS REPORT. THE SPECIFIC RESPONSES TO PUBLIC COMMENTS ARE ADDRESSED IN THE RESPONSIVENESS SUMMARY SECTION OF THE ROD.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

SOURCE AREA ALTERNATIVES 4, 6, 8, AND 11 WOULD PROVIDE THE MOST PROTECTION BECAUSE ALL CONTAMINATED MATERIALS AND TREATMENT RESIDUALS WOULD BE COMPLETELY REMOVED FROM THE SITE.

SOURCE AREA ALTERNATIVES 5 AND 9 USE TREATMENT TO REMOVE ORGANIC SOIL CONTAMINANTS, BUT METALS WOULD REMAIN IN THE RESIDUALS, WHICH WOULD BE BACKFILLED ON SITE AND COVERED BY A CAP. THE CAP WOULD REDUCE THE RISKS TO HUMAN HEALTH FROM DIRECT CONTACT, INGESTION, AND INHALATION AND WOULD REDUCE THE LEACHING OF RESIDUAL CONTAMINANTS TO GROUND WATER.

GROUND WATER ALTERNATIVES 3 AND 4 USE TREATMENT TO REMOVE ORGANIC AND INORGANIC GROUND WATER CONTAMINANTS. THIS WOULD REDUCE RISKS FROM INGESTION AND FROM THE DISCHARGE OF CONTAMINANTS TO THE SCHUYLKILL RIVER.

SOURCE AREA ALTERNATIVE 12 USES TREATMENT TO REMOVE ORGANIC SOIL CONTAMINANTS FROM THE SOURCE AREA AT THE SITE THAT POSES THE GREATEST RISK; HOWEVER, METALS WOULD REMAIN IN THE TREATMENT RESIDUALS, WHICH WOULD BE USED AS BACKFILL. THE BACKFILLED AREA AND SOURCE AREAS HAVING LESSER AMOUNTS OF CONTAMINATION WOULD BE CAPPED WITH SOIL OR WITH FLY ASH AND SOIL TO REDUCE RISKS TO HUMAN HEALTH FROM DIRECT CONTACT, INHALATION, AND INGESTION. SOURCE AREAS THAT POSE MINIMAL RISKS TO HUMAN HEALTH OR THE ENVIRONMENT WOULD RECEIVE NO ACTION. THE LEACHING OF CONTAMINANTS TO GROUND WATER WOULD NOT BE SIGNIFICANTLY REDUCED. RESTRICTIONS ON SOIL DISTURBANCE AND WELL DRILLING AT THE PROPERTY WOULD FURTHER REDUCE REMAINING RISKS TO HUMAN HEALTH AND THE ENVIRONMENT. WETLAND AREAS ONSITE WOULD REMAIN UNDISTURBED.

SOURCE AREA ALTERNATIVE 7 USES LANDFARMING TO BIODEGRADE ORGANIC COMPOUNDS; HOWEVER, TREATABILITY STUDIES WOULD BE NEEDED TO DETERMINE THE CONTAMINANT REDUCTION AND OVERALL PROTECTION PROVIDED.

SOURCE AREA ALTERNATIVE 10 PROVIDES PROTECTION BY CONTAINING CONTAMINATED MATERIALS WITHIN A DOUBLE-LINED LANDFILL EQUIPPED WITH A CAP. THIS CONTAINMENT ACTION WOULD REMOVE RISKS TO HUMAN HEALTH FROM DIRECT CONTACT, INGESTION, AND INHALATION AND WOULD REDUCE THE LEACHING OF SOIL CONTAMINANTS TO GROUND WATER.

SOURCE AREA ALTERNATIVE 3 PROVIDES PROTECTION BY COVERING CONTAMINATED MATERIALS BENEATH A SYNTHETIC MEMBRANE CAP. THIS CONTAINMENT ACTION WOULD REMOVE RISKS TO HUMAN HEALTH FROM DIRECT CONTACT, INGESTION, AND INHALATION AND WOULD REDUCE THE LEACHING OF SOIL CONTAMINANTS TO GROUND WATER.

SOURCE AREA ALTERNATIVE 2 PROVIDES PROTECTION BY REDUCING UNRESTRICTED ACCESS WITH A FENCE. THE AREA WITHIN THE FENCE WOULD BE COVERED WITH SOIL TO FURTHER REDUCE RISK TO HUMAN HEALTH FROM DIRECT CONTACT, INGESTION, AND INHALATION. THE LEACHING OF SOIL CONTAMINANTS TO GROUND WATER WOULD NOT BE REDUCED.

GROUND WATER ALTERNATIVES 1 AND 2 WOULD PROTECT HUMAN HEALTH BY PLACING RESTRICTIONS ON WELL-DRILLING ACTIVITIES AT THE SITE. THE ACL

DETERMINATION ASSOCIATED WITH ALTERNATIVE 2 WOULD BE USED BECAUSE EXISTING GROUND WATER CONTAMINANT LEVELS ARE NOT ADVERSELY AFFECTING THE SCHUYLKILL RIVER.

SOURCE AREA ALTERNATIVE 1, NO ACTION, WOULD NOT BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT.

COMPLIANCE WITH ARARS

ALL ALTERNATIVES FOR THE SOURCE AREAS AND GROUND WATER, EXCEPT NO ACTION, WOULD MEET ALL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) OF FEDERAL AND STATE ENVIRONMENTAL LAWS.

LONG-TERM EFFECTIVENESS AND PERMANENCE

SOURCE AREA ALTERNATIVES 4, 6, 8, AND 11 WOULD RESULT IN THE REMOVAL OF ALL CONTAMINANTS AND RISKS TO HUMAN HEALTH AND THE ENVIRONMENT ASSOCIATED WITH CONTAMINATED SOILS AND TREATMENT RESIDUALS. ALTERNATIVES 4 AND 8 UTILIZE TREATMENT PRIOR TO HAULING THE WASTES OFFSITE FOR DISPOSAL. NO LONG-TERM MONITORING OR O&M WOULD BE REQUIRED. THE SOURCE OF GROUND WATER CONTAMINATION WOULD BE REMOVED.

SOURCE AREA ALTERNATIVES 5 AND 9 WOULD REMOVE MOST OF THE ORGANIC CONTAMINANTS FROM THE SOIL. THE ASH (TREATED SOIL) GENERATED BY THE INCINERATOR, HOWEVER, WOULD BE CONTAMINATED WITH HEAVY METALS NOT DESTROYED BY INCINERATION. THERE MAY ALSO BE RESIDUAL CONTAMINATION IN THE SOIL FOLLOWING EXTRACTION. THE TREATED SOIL FOR THESE ALTERNATIVES WOULD BE USED AS BACKFILL AND WOULD BE COVERED WITH A CAP TO PROTECT AGAINST RISKS FROM DIRECT CONTACT, INGESTION, INHALATION AND LEACHING OF RESIDUAL SOIL CONTAMINANTS TO GROUND WATER. A POTENTIAL SOURCE OF GROUND WATER CONTAMINATION WOULD REMAIN AT THE SITE, BUT THE BULK OF THE ORGANIC CONTAMINATION WOULD BE REMOVED. LONG-TERM MONITORING WOULD BE USED TO EVALUATE THE EFFECTIVENESS OF THESE REMEDIES.

GROUND WATER ALTERNATIVES 3 AND 4 UTILIZE TREATMENT TO PERMANENTLY REDUCE THE CONCENTRATIONS OF ORGANIC AND INORGANIC GROUND WATER CONTAMINANTS.

SOURCE AREA ALTERNATIVE 12 WOULD TREAT THE HIGHEST RISK SOURCE AREA AT THE SITE USING ONSITE THERMAL TREATMENT. THE RISKS TO HUMAN HEALTH AT THE SITE (DIRECT CONTACT, INGESTION, AND INHALATION) ARE ASSOCIATED WITH SURFACE CONTAMINANTS. THE ONLY RISK ASSOCIATED WITH SUBSURFACE SOIL IS GROUND WATER CONTAMINATION. GROUND WATER BENEATH THE SITE IS NOT USED AS A SOURCE OF DRINKING WATER, AND THERE ARE NO KNOWN ADVERSE EFFECTS FROM GROUND WATER DISCHARGES TO THE SCHUYLKILL RIVER. COVERING LESSER-CONTAMINATED (LOWER RISK) AREAS AND THE AREAS WHERE INCINERATOR ASH IS USED AS BACKFILL WOULD REMOVE ANY REMAINING RISKS ASSOCIATED WITH SURFACE SOIL CONTAMINANTS AND METALS REMAINING IN THE INCINERATOR ASH. DEED RESTRICTIONS WOULD PREVENT FUTURE SOIL DISTURBANCE AND USE OF GROUND WATER AT THE SITE. LONG-TERM MONITORING WOULD BE USED TO MONITOR THE EFFECTIVENESS OF THE REMEDY, BECAUSE HAZARDOUS SUBSTANCES WOULD REMAIN AT THE SITE.

TREATABILITY STUDIES WOULD BE NEEDED TO DETERMINE THE EFFECTIVENESS OF SOURCE AREA ALTERNATIVE 7. SOURCE AREA ALTERNATIVE 10 WOULD REDUCE LONG-TERM RISKS FROM HUMAN EXPOSURE TO CONTAMINANTS BY SEALING CONTAMINATED SOILS IN A WELL-DESIGNED AND MAINTAINED RCRA LANDFILL THAT WOULD PREVENT MIGRATION OF CONTAMINANTS TO THE ENVIRONMENT. A SOURCE OF GROUND WATER CONTAMINATION WOULD REMAIN AT THE SITE; HOWEVER, IT WOULD BE CONTAINED WITHIN THE LANDFILL. LONG-TERM MONITORING WOULD BE USED TO MONITOR THE EFFECTIVENESS OF THE REMEDY. THE LANDFILL WOULD BE CONSTRUCTED ABOVE THE 100-YEAR FLOOD ELEVATION.

THE SOIL COVER AND CAP TO BE USED FOR SOURCE AREA ALTERNATIVES 2 AND 3, RESPECTIVELY, WOULD REMOVE RISKS TO HUMAN HEALTH AND THE ENVIRONMENT ASSOCIATED WITH SURFACE SOIL CONTAMINATION. FENCING WAS INCLUDED FOR ALTERNATIVE 2 TO RESTRICT ACCESS AND EXPOSURE TO THE SITE. THE SOURCE

OF GROUND WATER CONTAMINATION WOULD REMAIN AT THE SITE. LONG-TERM MONITORING WOULD BE USED TO MONITOR THE EFFECTIVENESS OF THESE REMEDIES. A 100-YEAR FLOOD COULD DAMAGE THE SOIL COVER OR CAP, EXPOSING THE COVERED WASTES.

GROUND WATER ALTERNATIVES 1 AND 2 WOULD NOT BE EFFECTIVE IN REDUCING GROUND WATER CONTAMINANT CONCENTRATIONS. ACLS UNDER GROUND WATER ALTERNATIVE 2 WOULD BE ESTABLISHED AT CURRENT CONTAMINANT LEVELS BECAUSE GROUND WATER DISCHARGES TO THE SCHUYLKILL RIVER DO NOT ADVERSELY AFFECT RIVER-WATER QUALITY.

SOURCE AREA ALTERNATIVE 1, NO ACTION, WOULD NOT REDUCE EXISTING OR FUTURE RISKS TO HUMAN HEALTH AND THE ENVIRONMENT ASSOCIATED WITH CONTAMINATED SOILS AND WASTE AT THE SITE.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

SOURCE AREA ALTERNATIVES 4, 5, AND 6 INVOLVE THERMAL TREATMENT THAT WOULD PERMANENTLY DESTROY ORGANIC CONTAMINANTS, BUT THE TREATED MATERIAL WOULD STILL BE CONTAMINATED WITH LESS MOBILE METALS. TREATED SOIL WOULD BE DISPOSED ONSITE AND COVERED WITH A CAP OR DISPOSED IN AN OFFSITE LANDFILL.

SOURCE AREA ALTERNATIVE 12 WOULD ALSO INVOLVE THERMAL TREATMENT, BUT ONLY THE HIGHEST RISK SOURCE AREA WOULD BE TREATED. THIS WOULD PERMANENTLY DESTROY ORGANIC CONTAMINANTS, BUT THE TREATED MATERIAL WOULD STILL BE CONTAMINATED WITH LESS MOBILE METALS. THERMALLY TREATED MATERIAL WOULD BE BACKFILLED AND COVERED WITH CLEAN SOIL. IF THERMALLY TREATED MATERIAL (ASH) IS SHOWN TO BE EP TOXIC, IT WOULD BE SOLIDIFIED TO REDUCE THE MOBILITY OF METALS THEREBY REDUCING TOXICITY.

GROUND WATER ALTERNATIVES 3 AND 4 WOULD INVOLVE TREATMENT OF GROUND WATER TO REDUCE TOXICITY BY REMOVING ORGANIC AND INORGANIC CONTAMINANTS. THE VOLUME OF CONTAMINATED GROUND WATER WOULD ALSO BE REDUCED.

SOURCE AREA ALTERNATIVE 7 MAY REDUCE TOXICITY. SOURCE AREA ALTERNATIVES 8 AND 9 WOULD REDUCE TOXICITY USING EXTRACTION. TREATABILITY STUDIES WOULD BE REQUIRED TO DETERMINE THE TOXICITY REDUCTIONS ACHIEVABLE BY THESE ALTERNATIVES.

SOURCE AREA ALTERNATIVES 1, 2, 3, 10, AND 11 AND GROUND WATER ALTERNATIVES 1 AND 2 DO NOT USE TREATMENT TO REDUCE THE TOXICITY, MOBILITY, OR VOLUME OF THE CONTAMINANTS.

SHORT-TERM EFFECTIVENESS

SOURCE AREA ALTERNATIVE 12 USES A COMBINATION OF THERMAL TREATMENT, SOIL COVER, AND VEGETATION THAT REDUCES THE POSSIBILITY OF DIRECT CONTACT, INGESTION, INHALATION, AND EROSION OF CONTAMINANTS MORE QUICKLY THAN ALL THE OTHER SOURCE AREA ALTERNATIVES, EXCEPT FOR SOURCE AREA ALTERNATIVES 2 AND 3.

IN SOURCE AREA ALTERNATIVES 4, 5, AND 12, AIR POLLUTION CONTROLS WOULD BE REQUIRED TO REMOVE RISKS TO THE COMMUNITY FROM THERMAL TREATMENT UNIT AIR EMISSIONS.

A TEMPORARY FLOOD DIKE MAY BE NEEDED FOR SOURCE AREA ALTERNATIVE 10 TO PROTECT THE TEMPORARY WASTE STOCKPILE FROM FLOOD WATERS DURING CONSTRUCTION OF THE ONSITE LANDFILL.

PROPER MEASURES WOULD BE REQUIRED TO PROTECT WORKERS AND THE PUBLIC FROM DUST AND VOLATILE EMISSIONS THAT MAY BE GENERATED DURING EXCAVATION OF WASTES AND CONTAMINATED SOILS. THESE MEASURES WOULD NOT BE REQUIRED FOR SOURCE AREA ALTERNATIVES 1 AND 2, WHICH DO NOT INVOLVE EXCAVATION OF CONTAMINATED MATERIALS.

GROUND WATER TREATMENT ALTERNATIVES 3 AND 4 COULD NOT BE IMPLEMENTED UNTIL SOURCE AREA REMEDIAL ACTIVITIES HAD BEEN COMPLETED. THERE WOULD

BE NO RISKS TO THE PUBLIC DURING IMPLEMENTATION OF ANY OF THE GROUND WATER ALTERNATIVES. IT MAY TAKE MANY YEARS TO ACHIEVE COMPLETE REMEDIATION OF GROUND WATER BENEATH THE SITE. THE TIME REQUIRED AND THE EFFECTIVENESS OF THESE ALTERNATIVES WOULD DEPEND, TO A GREAT EXTENT, UPON THE DEGREE OF CONTAMINANT SOURCE REMEDIATION PERFORMED ONSITE.

IMPLEMENTABILITY

ALL ALTERNATIVES FOR THE SOURCE AREAS AND GROUND WATER USE TECHNOLOGIES THAT ARE DEMONSTRATED AND COMMERCIALLY AVAILABLE. THE TECHNOLOGIES ARE ALSO RELIABLE AND IMPLEMENTABLE AT THE SITE. HOWEVER, THE CAPPING (SOURCE AREA ALTERNATIVE 3) OF SOURCE AREA 2 MAY CAUSE DESIGN PROBLEMS BECAUSE OF THE POSSIBILITY THAT THE WASTE, DUE TO ITS UNSTABLE PHYSICAL NATURE, MAY NOT ALLOW THE MOVEMENT OF HEAVY MACHINERY AND MAY NOT ADEQUATELY SUPPORT THE WEIGHT OF A CAP.

THERMAL TREATMENT UNIT TESTS ARE REQUIRED FOR SOURCE AREA ALTERNATIVES 4, 5, AND 12. TREATABILITY STUDIES ARE REQUIRED FOR SOURCE AREA ALTERNATIVES 7, 8, AND 9. LANDFARMING (ALTERNATIVE 7) IS DEMONSTRATED AND COMMERCIALLY AVAILABLE FOR PETROLEUM INDUSTRY WASTES; HOWEVER, APPLICATIONS FOR HETEROGENOUS WASTES SUCH AS CONTAMINATED SOIL, IS STILL IN THE FORMATIVE STAGES.

FOR ALTERNATIVES THAT INCLUDE ONSITE TREATMENT OF SOIL, WASTES OR GROUND WATER, A CLEAR AREA THAT IS NOT IN THE FLOOD PLAIN IS PREFERRED TO SET UP THE TREATMENT EQUIPMENT.

SOURCE AREA ALTERNATIVE 10 REQUIRES A LARGE AREA THAT IS PROTECTED FROM FLOODING FOR WASTE STOCKPILING WHILE THE LANDFILL IS BEING CONSTRUCTED. IF THE WASTE STOCKPILE IS IN THE FLOOD PLAIN, A TEMPORARY FLOOD DIKE AROUND THE STOCKPILE WOULD BE REQUIRED. THE LANDFILL WOULD NEED TO BE CONSTRUCTED WITHIN THE 100-YEAR FLOOD PLAIN. THE CONSTRUCTION OF THE LANDFILL AND THE LANDFILL ITSELF WOULD HAVE SIGNIFICANT IMPACTS ON THE 100-YEAR FLOODPLAIN.

GROUND WATER MONITORING COULD BE IMPLEMENTED USING PREVIOUSLY INSTALLED WELLS IF THEY ARE NOT DESTROYED DURING REMEDIATION OF THE SOURCE AREAS.

GROUND WATER TREATMENT ALTERNATIVES SHOULD NOT BE IMPLEMENTED UNTIL THE SOURCE AREAS ARE REMEDIATED. THE WELLS AND PIPING REQUIRED WOULD INTERFERE WITH SOURCE AREA REMEDIATION.

COSTS

ESTIMATED CAPITAL AND ANNUAL O&M COSTS FOR THE 12 SOURCE AREA ALTERNATIVES ARE PRESENTED IN TABLE 7.

APPROXIMATE PRESENT-WORTH COSTS FOR THE GROUND WATER ALTERNATIVES ARE AS FOLLOWS:

* ALTERNATIVE 1 (NO ACTION WITH MONITORING)	$417,000
* ALTERNATIVE 2 (ACL DETERMINATION)	$150,000
* ALTERNATIVE 3 (PUMPING AND TREATMENT-GAC)	$15,608,000
* ALTERNATIVE 4 (PUMPING AND TREATMENT - OZONE/UV)	$19,525,000

STATE ACCEPTANCE

THE COMMONWEALTH OF PENNSYLVANIA CONCURS ON THE SELECTED REMEDY.

COMMUNITY ACCEPTANCE

RESPONSES TO PUBLIC COMMENTS ARE ADDRESSED IN THE RESPONSIVENESS SUMMARY SECTION OF THE ROD.

#SR
THE SELECTED REMEDY

SECTION 121 OF SARA AND THE NATIONAL CONTINGENCY PLAN (NCP) ESTABLISH A VARIETY OF REQUIREMENTS RELATING TO THE SELECTION OF REMEDIAL ACTIONS UNDER CERCLA. HAVING APPLIED THE CURRENT EVALUATION CRITERIA TO THE REMEDIAL ALTERNATIVES, EPA RECOMMENDS THAT SOURCE AREA ALTERNATIVE 12 AND GROUND WATER ALTERNATIVE 2 BE IMPLEMENTED AT THE DOUGLASSVILLE DISPOSAL SITE. THE SELECTED REMEDY COMBINES SELECTED ASPECTS OF THE NO ACTION ALTERNATIVE, THE MINIMAL ACTION ALTERNATIVE, THE ACL DETERMINATION ALTERNATIVE, AND THE ONSITE THERMAL TREATMENT WITH ONSITE ASH DISPOSAL ALTERNATIVE. THE MAJOR COMPONENTS OF THE SELECTED REMEDY INCLUDE THE FOLLOWING:

TABLE 7

ESTIMATED CAPITAL AND ANNUAL O&M COST FOR THE
TWELVE SOURCE AREA ALTERNATIVES
(COSTS IN THOUSANDS OF DOLLARS)

ALTERNATIVE	CAPITAL	O&M	SOURCE AREAS
1. NO ACTION	0	0	ALL
2. MINIMAL ACTION W/FENCING	1,155	64	1,2,3,4,5,6 & 9
3. CAPPING	6,500	113	1,2,3,4,5,6 & 9
4. EXCAVATION, ONSITE INCINERATION, OFFSITE DISPOSAL	236,300 TO 331,200	0	1,2,3,4,5,6 & 9
5. EXCAVATION, ONSITE INCINERATION, ONSITE DISPOSAL	157,100 TO 246,100	89	1,2,3,4,5,6 & 9
6. EXCAVATION, OFFSITE INCINERATION	565,000	0	1,2,3,4,5,6 & 9
7. ONSITE LANDFARMING	5,700	117	3, 6
8. EXCAVATION, EXTRACTION, OFFSITE DISPOSAL	223,000 TO 339,000	0	1,2,4,5 & 9
9. EXCAVATION, EXTRACTION, ONSITE DISPOSAL	127,000 TO 213,000	77	1,2,4,5 & 9
10. EXCAVATION AND ONSITE LANDFILLING	36,900	290	1,2,3,4,5,6 & 9
11. EXCAVATION AND OFFSITE LANDFILLING	228,500	0	1,2,3,4,5,6 & 9
12. EXCAVATION, THERMAL TREATMENT, MINIMAL ACTION	39,280 TO 53,619	0 *	1,2,3,4,5,6 & 9

* NO ANNUAL O&M COSTS WOULD BE INCURRED. HOWEVER, THE 5-YEAR REVIEW WOULD COST APPROXIMATELY $25,000 FOR WATER SAMPLING AND ANALYSIS AND WOULD HAVE A PRESENT WORTH OF APPROXIMATELY $150,000 CONSIDERING A 30-YEAR REVIEW PERIOD.

* EXCAVATION AND TREATMENT, BY ONSITE THERMAL TREATMENT, OF APPROXIMATELY 48,400 CUBIC YARDS OF CONTAMINATED SOILS AND SLUDGES FROM SOURCE AREA 2, AND OILY SEDIMENTS FROM THE DRAINAGE DITCH THAT RUNS FROM THE SITE TO THE SCHUYLKILL RIVER. THE WETLAND AREA AT SOURCE AREA 5 WOULD BE LEFT UNDISTURBED TO THE EXTENT POSSIBLE.

* SOLIDIFICATION OF THE TREATED MATERIALS (ASH) IF IT IS EP TOXIC (HAZARDOUS).

* DISPOSAL OF TREATED MATERIALS BY BACKFILLING INTO SOURCE AREA 2.

* CAPPING THE BACKFILLED AREA WITH TOPSOIL FOLLOWED BY AND REVEGETATION.

* CAPPING SOURCE AREAS 3, 6, AND 9 WITH ONE FOOT OF TOPSOIL FOLLOWED BY REVEGETATION.

* CAPPING SOURCE AREAS 1, 4, AND 5 WITH ONE FOOT OF COMPACTED FLY ASH FOLLOWED BY TWO FEET OF SOIL WITH REVEGETATION.

* IMPOSING DEED RESTRICTIONS TO PREVENT SOIL DISTURBANCE AND WELL DRILLING ON THE PROPERTY.

* ESTABLISHING ACLS FOR GROUND WATER AT CONCENTRATIONS THAT WOULD NOT CAUSE ADVERSE EFFECTS ON THE SCHUYLKILL RIVER.

WHEN THE SOURCE AREA RESTORATION GOALS ARE ATTAINED, THE EXCESS CANCER RISK WOULD BE APPROXIMATELY 1 X 10-6 OR LESS FROM HUMAN EXPOSURE TO SURFACE SOIL FROM DIRECT CONTACT, INGESTION, AND INHALATION. THE ACLS ARE ESTABLISHED AT LEVELS THAT WOULD NOT ADVERSELY AFFECT HUMAN OR ENVIRONMENTAL RECEPTORS ASSOCIATED WITH THE SCHUYLKILL RIVER (AQUATIC LIFE, DOWNSTREAM USERS OF RIVER WATER, ETC.). THE ACLS ESTABLISHED ARE THE MAXIMUM CONCENTRATIONS LISTED IN TABLE 3 FOR THE MONITORING WELLS. BECAUSE HAZARDOUS SUBSTANCES WILL REMAIN ONSITE FOLLOWING COMPLETION OF THE REMEDIAL ACTIVITIES, A REVIEW WILL BE CONDUCTED WITHIN FIVE(5) YEARS OF THE INITIATION OF REMEDIAL ACTIVITIES IN COMPLIANCE WITH SECTION 121(C) OF SARA. FOR THE PURPOSES OF THE REVIEW, THE MONITORING WELLS LABELED AS MW-1, MW-2, MW-4, MW-5, MW-6, MW-7, MW-8, MW-12, MW-13, MW-14, MW-16, MW-18, MW-19, AND MW-20 ON FIGURE 2-3 OF THE OCTOBER, 1988 RI/FS DOCUMENT WILL BE SAMPLED AS THE POINTS OF COMPLIANCE. ADDITIONALLY, ALL OF THE HOME GROUND WATER WELLS WHICH WERE SAMPLED DURING THOSE INVESTIGATIONS AS WELL AS THE WATERS OF THE SCHUYLKILL RIVER WILL BE SAMPLED WHERE PRACTICAL, AND THOSE SAMPLES ANALYZED.

#SD
THE STATUTORY DETERMINATIONS

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THE SELECTED REMEDY WILL PROVIDE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT BY USING TREATMENT TO REMOVE ORGANIC CONTAMINANTS FROM THE HIGHEST RISK SOURCE AREA AT THE SITE. RESIDUAL METALS MAY REQUIRE ADDITIONAL TREATMENT TO REDUCE RISKS TO ACCEPTABLE LEVELS. THE BACKFILLED AREA, ALONG WITH SOURCE AREAS HAVING LESSER DEGREES OF RISK, WILL BE CAPPED WITH SOIL OR WITH FLY ASH FOLLOWED BY SOIL AND REVEGETATED TO REDUCE RISKS TO HUMAN HEALTH FROM DIRECT CONTACT, INGESTION, AND INHALATION. SOURCE AREAS THAT POSE MINIMAL OR NO RISKS TO HUMAN HEALTH AND THE ENVIRONMENT WILL RECEIVE NO ACTION. WETLAND AREAS ONSITE WILL REMAIN UNDISTURBED. ACLS FOR GROUND WATER ARE ESTABLISHED AT LEVELS THAT WOULD NOT CAUSE ADVERSE EFFECTS IN THE

SCHUYLKILL RIVER. RESTRICTIONS ON SOIL DISTURBANCE AND WELL DRILLING AT THE PROPERTY WILL FURTHER REDUCE ANY REMAINING RISKS TO HUMAN HEALTH AND THE ENVIRONMENT BY ELIMINATING EXPOSURE TO CONTAMINATED GROUND WATER. THE SELECTED REMEDY WILL NOT POSE ANY UNACCEPTABLE SHORT-TERM RISKS OR CROSS-MEDIA IMPACTS.

COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

THE SELECTED REMEDY WILL ATTAIN THE FOLLOWING ARARS OF FEDERAL, OR MORE STRINGENT, PROMULGATED STATE ENVIRONMENTAL AND PUBLIC HEALTH LAWS:

1. CLEAN AIR ACT REQUIREMENTS AT 40 CFR 50, WHICH DEFINE NATIONAL AMBIENT AIR QUALITY STANDARDS. (APPLICABLE)

2. PENNSYLVANIA AIR POLLUTION CONTROL REGULATIONS AT 25 PA CODE, CHAPTERS 121 THROUGH 143, WHICH ADOPT FEDERAL AIR QUALITY STANDARDS PLUS SET FORTH ADDITIONAL STATE STANDARDS. ALSO PROVIDES REQUIREMENTS FOR THE CONTROL AND PREVENTION OF AIR POLLUTANTS. (APPLICABLE)

3. RCRA CLOSURE AT 40 CFR 264.310 WHICH ADDRESSES THE REQUIREMENTS FOR CLOSING A HAZARDOUS WASTE LANDFILL. (RELEVANT AND APPROPRIATE)

4. RCRA INCINERATOR REQUIREMENTS AT 40 CFR 264.340 ET SEQ., WHICH ADDRESS REQUIREMENTS FOR HAZARDOUS WASTE INCINERATION. (RELEVANT AND APPROPRIATE)

5. TSCA PCB DISPOSAL REQUIREMENTS AT 40 CFR 761, WHICH ADDRESS REQUIREMENTS FOR DISPOSAL AND STORAGE OF PCBS AND PCB ITEMS. (RELEVANT & APPROPRIATE) THERMAL TREATMENT OF NON-LIQUID PCBS WILL COMPLY WITH THE SUBSTANTIVE REQUIREMENTS OF 40 CFR 761.70(B). (APPLICABLE)

6. RCRA LAND DISPOSAL RESTRICTIONS AT 40 CFR 268 WHICH ADDRESS DISPOSAL OF HAZARDOUS WASTE. (APPLICABLE ONLY IF THERMALLY TREATED RESIDUALS ARE FOUND TO BE EP TOXIC. THE STATUTORY DEADLINE FOR ESTABLISHING LAND DISPOSAL RESTRICTIONS FOR CHARACTERISTIC RCRA HAZARDOUS WASTE IS MAY, 1990.)

7. OSHA REQUIREMENTS AT 29 CFR, PARTS 1904, 1910, AND 1926, WHICH PROVIDE OCCUPATIONAL SAFETY AND HEALTH REQUIREMENTS FOR WORKERS ENGAGED IN ONSITE FIELD ACTIVITIES. (APPLICABLE)

8. THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (CERCLA) AS AMENDED BY THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA). (APPLICABLE)

9. THE NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN (NCP). (APPLICABLE)

10. IMPACTS ON THE FLOOD PLAIN AND THE ONSITE WETLANDS WILL BE MINIMIZED IN CONSIDERATION OF EXECUTIVE ORDERS 11988 AND 11990 AND 40 CFR PART 6, APPENDIX A. (APPLICABLE)

IN ADDITION, THE FOLLOWING WAS EVALUATED AS "TO BE CONSIDERED" (TBC):

1. CARCINOGENIC POTENCY FACTORS WERE USED TO DETERMINE INCREMENTAL CANCER RISKS FOR EXPOSURE TO CONTAMINATED SURFACE SOILS.

COST EFFECTIVENESS

THE SELECTED REMEDY IS MORE COST EFFECTIVE THAN THE OTHER ALTERNATIVES

EVALUATED. IT WOULD PROVIDE THE SAME LEVEL OF PROTECTION AS ALTERNATIVES THAT INVOLVE TREATMENT OF THE ENTIRE VOLUME OF CONTAMINATED SOIL AT THE SITE AT A SIGNIFICANTLY LOWER COST. TABLE 8 IS A TABULATION OF THE COSTS SPECIFIC TO THIS REMEDY.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

AS STATED PREVIOUSLY, THE SELECTED REMEDY IS A COMBINATION OF AN ACL DETERMINATION FOR GROUND WATER, NO ACTION, MINIMAL ACTION (SOIL COVER AND REVEGETATION), AND ONSITE THERMAL TREATMENT INCINERATION/ONSITE DISPOSAL. THE FOLLOWING DISCUSSION EXPLAINS WHY OTHER ALTERNATIVES WERE NOT SELECTED AND WHY PARTIAL TREATMENT IS PREFERRED TO TREATING THE ENTIRE DEPTH AND AREA OF SOIL CONTAMINATION.

TABLE 8

CAPITAL COST ESTIMATE
ONSITE THERMAL TREATMENT, ONSITE ASH DISPOSAL
SOURCE AREA #2
(ASH NON-HAZARDOUS)

1 - EXCAVATE CONTAMINATED MATERIALS	$112,700
2 - HAULING	92,904
3 - MOBILIZATION/DEMOBILIZATION	500,000
4 - TRIAL BURN	300,000
5 - CLOSURE TESTING	50,000
6 - THERMAL TREATMENT	19,845,000
7 - ASH HAULING	92,904
8 - BACKFILL ASH	129,948
9 - PLACE, SPREAD & COMPACT ASH	131,124
10 - TOPSOIL (24")	104,200
11 - PLACE & SPREAD TOPSOIL	7,752
12 - REVEGETATION	3,118
SUBTOTAL DIRECT COST (A)	$21,369,650

TABLE 8
(CONT'D)

CAPITAL COST ESTIMATE
12" COMPACTED FLY ASH; TWO FEET SOIL
SOURCE AREAS 1,4, AND 5

1 - FLY ASH HAULING	$ 40,200
2 - PLACE, SPREAD, AND COMPACT FLY ASH	59,496
3 - 24" SOIL	429,380
4 - PLACE AND SPREAD SOIL	31,944
5 - REVEGETATION	12,474
SUBTOTAL DIRECT COST(B)	$573,494

CAPITAL COST ESTIMATE
12" TOPSOIL AND REVEGETATION
SOURCE AREAS 3,6, AND 9

1 - 12" TOPSOIL	$247,273
2 - PLACE AND SPREAD SOIL	18,396
3 - REVEGETATION	14,380
SUBTOTAL DIRECT COST(C)	$280,049

TABLE 8
(CONT'D)

TOTAL CAPITAL COST ESTIMATE
EPA'S PREFERRED ALTERNATIVE
(ASH NON-HAZARDOUS *)

SUBTOTAL (A)	$21,369,650
SUBTOTAL (B)	573,494
SUBTOTAL (C)	280,049
USE OF LEVEL B PROTECTION	154,203
BURDEN @ 13% OF LABOR COSTS	59,421
LABOR @ 15% OF LABOR COSTS	68,563
SUBCONTRACTING @ 10% OF SUBCONTRACTING	2,073,520
TOTAL DIRECT COST	24,578,900
INDIRECTS @ 75% OF LABOR TDC	342,815
PROFIT @ 10% OF TDC	2,457,890
SUBTOTAL	30,459,605
HEALTH AND SAFETY @ 4%	1,218,385
TOTAL FIELD COST	31,677,990
CONTINGENCY @ 20% OF TFC	6,335,560
ENGINEERING @ 4% OF TFC	1,267,120
TOTAL CAPITAL COST	$39,280,670

* IF THE ASH IS HAZARDOUS, IT WILL BE SOLIDIFIED THEREBY ADDING APPROXIMATELY $14,339,000 TO THE TOTAL CAPITAL COST. THIS WOULD BRING THE TOTAL CAPITAL COST TO $53,619,000.

NO ACTION IS SELECTED FOR ONLY SOURCE AREAS 7, 8, AND 10. BASED ON AVAILABLE DATA, SOIL CONTAMINATION, AND THEREFORE, RISK, AT SOURCE AREAS 7 AND 8 IS BELOW HEALTH-BASED LEVELS. SOURCE AREA 10 CONTAINS A WOODED WETLAND WHICH WILL NOT BE DISTURBED. GROUND WATER BENEATH THE SITE IS POLLUTED WITH SITE-RELATED CONTAMINANTS; HOWEVER, AS STATED PREVIOUSLY, GROUND WATER CONTAMINANT DISCHARGE TO THE SCHUYLKILL RIVER IS INSIGNIFICANT AND IMMEASURABLE IN THE RIVER ITSELF. DEED RESTRICTIONS WOULD BE IMPOSED TO PREVENT FUTURE WELL DRILLING AT THE SITE.

SOIL COVER AND REVEGETATION IS SELECTED ONLY FOR THREE LESSER CONTAMINATED AREAS, SOURCE AREAS 3, 6, AND 9, WHICH DO NOT HAVE HIGH LEVELS OF OIL AND GREASE. THERE ARE CONCERNS ABOUT THE UPWARD MOVEMENT OF OILY MATERIAL INTO CLEAN COVER MATERIALS BY A PROCESS CALLED CAPILLARY ACTION. THIS PROCESS OCCURRED IN THE FORMER LAGOON AREAS, SOURCE AREAS 4 AND 5, WHICH WERE FLOODED OUT IN THE PAST AND BACKFILLED. THE BACKFILL MATERIAL SUBSEQUENTLY WAS CONTAMINATED BY THE UPWARD MOVEMENT OF OIL. UNDER THE PREFERRED REMEDY FOR SOURCE AREAS 1, 4 AND 5, THE UPWARD MOVEMENT OF OIL WILL BE RETARDED BY THE APPLICATION OF A ONE-FOOT LAYER OF COMPACTED FLY ASH FOLLOWED BY A TWO-FOOT LAYER OF SOIL. COVERING AND REVEGETATING THE CONTAMINATED AREAS WILL REDUCE RISKS TO HUMAN HEALTH AND THE ENVIRONMENT BY PREVENTING DIRECT CONTACT,

INHALATION, INGESTION, AND EROSION. THE REDUCTION OF INFILTRATION IS NOT AN IMPORTANT CONCERN, SINCE IT HAS BEEN SHOWN THAT LEACHING OF CONTAMINANTS TO GROUND WATER HAS AN INSIGNIFICANT EFFECT ON THE QUALITY OF RIVER WATER. DEED RESTRICTIONS THAT PREVENT SOIL DISTURBANCE ON THE SITE WILL BE IMPLEMENTED TO PREVENT DAMAGE TO THE SOIL COVER.

CAPPING, AS DESCRIBED FOR SOURCE AREA ALTERNATIVE 3, WOULD REDUCE THE SAME RISKS AS A SOIL COVER WITH VEGETATION (MINIMAL ACTION) AND WOULD REDUCE INFILTRATION AND LEACHING OF SOIL CONTAMINANTS TO GROUND WATER. AS STATED PREVIOUSLY, HOWEVER, REDUCTION OF INFILTRATION IS NOT AN IMPORTANT CONCERN. THEREFORE, CAPPING, AS DESCRIBED FOR SOURCE AREA ALTERNATIVE 3, IS NOT SELECTED BECAUSE IT HAS THE SAME EFFECTIVENESS AS A SOIL COVER WITH VEGETATION, BUT A HIGHER INITIAL COST AND MUCH HIGHER COSTS FOR O&M.

EXCAVATION, ONSITE INCINERATION, AND OFFSITE DISPOSAL WOULD BE EFFECTIVE IN MITIGATING RISKS AT THE SITE, BUT WOULD REQUIRE SHIPPING THE TREATED MATERIAL TO AN OFFSITE FACILITY FOR DISPOSAL. THIS ALTERNATIVE IS MORE COSTLY THAN ONSITE INCINERATION WITH ONSITE DISPOSAL BUT DOES NOT AFFORD A SIGNIFICANTLY HIGHER DEGREE OF PROTECTION TO HUMAN HEALTH AND THE ENVIRONMENT.

SIMILARLY, EXCAVATION AND OFFSITE INCINERATION WOULD BE EFFECTIVE, BUT EXTREMELY COSTLY, AND WOULD NOT OFFER A SIGNIFICANTLY HIGHER DEGREE OF PROTECTION.

EXCAVATION, ONSITE INCINERATION AND ONSITE DISPOSAL IS PREFERRED FOR THE AREA OF THE SITE THAT POSES THE HIGHEST RISKS, I.E., SOURCE AREA 2, WHICH HAS A RELATIVELY HIGH OIL CONTENT. THE BACKFILLED ASH WILL ACT AS A MEDIUM, OR BUFFER ZONE, TO RESTRICT THE UPWARD MIGRATION OF OIL INTO THE CLEAN SURFACE SOIL LAYER FROM THE CONTAMINATED SOIL BELOW THE ASH. EXCAVATION OF THE ENTIRE DEPTH OF CONTAMINATION WOULD NOT ACHIEVE A GREATER REDUCTION OF RISKS THAN WOULD THE PROPOSED PARTIAL EXCAVATION. THE PRIMARY CONCERNS (DIRECT CONTACT, INGESTION, INHALATION, AND EROSION) ARE ALL ASSOCIATED WITH SURFACE CONTAMINATION. THE DEEPER SOILS PROBABLY CONTRIBUTE TO GROUND WATER CONTAMINATION, BUT AS PREVIOUSLY STATED, IT HAS BEEN SHOWN THAT LEACHING OF CONTAMINANTS TO GROUND WATER HAS NO EFFECT ON THE RIVER WATER QUALITY. DEED RESTRICTIONS THAT PREVENT SOIL DISTURBANCE AT THE SITE WILL BE IMPLEMENTED TO PREVENT DAMAGE TO THE SOIL COVER OR BACKFILLED ASH.

ONSITE LANDFARMING IS APPLICABLE ONLY TO AREAS OF THE SITE THAT POSE LESSER RISKS TO HUMAN HEALTH AND THE ENVIRONMENT. IT COULD TAKE A VERY LONG TIME TO ACHIEVE THE DESIRED REDUCTION OF CONTAMINANTS. SOURCE AREAS 3 AND 6 CAN BE REMEDIATED USING A METHOD WITH PROVEN EFFECTIVENESS (SOIL COVER AND REVEGETATION) AT A LOWER COST.

EXCAVATION AND ONSITE EXTRACTION WITH ONSITE OR OFFSITE DISPOSAL IS NOT SELECTED BECAUSE ONSITE THERMAL TREATMENT WOULD BE EQUALLY OR MORE EFFECTIVE THAN EXTRACTION BUT AT A LOWER COST.

EXCAVATION AND ONSITE LANDFILL DISPOSAL WOULD BE EFFECTIVE IN MITIGATING SITE-RELATED RISKS. HOWEVER, MOST OF THE SITE IS WITHIN THE 100-YEAR FLOOD PLAIN OF THE SCHUYLKILL RIVER; THEREFORE, THE LANDFILL WOULD HAVE TO BE CONSTRUCTED WITHIN THE FLOOD PLAIN. THIS ACTION COULD ADVERSELY AFFECT THE FLOOD PLAIN BY REDUCING THE FLOOD WATER STORAGE CAPACITY PROVIDED BY THE FLOOD PLAIN. THIS COULD CAUSE INCREASED WATER VELOCITIES AND HIGHER WATER LEVELS IN OFFSITE AREAS DURING A FLOOD. ALSO, LANDFILLING ALONE DOES NOT MEET THE SARA MANDATED PREFERENCE FOR PERMANENT SOLUTIONS.

EXCAVATION AND OFFSITE LANDFILL DISPOSAL WOULD BE EFFECTIVE, BUT COSTLY. THIS ALTERNATIVE DOES NOT MEET EPA'S PREFERENCE OF USING TREATMENT TO REDUCE WASTE TOXICITY, MOBILITY, OR VOLUME.

DEED RESTRICTIONS ON DRILLING NEW WELLS AT THE SITE WOULD PREVENT EXPOSURE TO CONTAMINATED GROUND WATER BENEATH THE PROPERTY. NO HOME

WELLS IN THE VICINITY ARE BEING CONTAMINATED BY THE SITE. ALSO, IT HAS BEEN SHOWN THAT THE DISCHARGE OF CONTAMINATED GROUND WATER INTO THE SCHUYLKILL RIVER IS NOT AFFECTING RIVER-WATER QUALITY AT THE PRESENT TIME AND WILL NOT IN THE FUTURE.

PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

THE SELECTED REMEDY INVOLVES THE THERMAL TREATMENT OF THE AREA OF THE SITE THAT POSES THE GREATEST RISKS TO HUMAN HEALTH AND THE ENVIRONMENT. THE STATUTORY PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT IS THEREFORE MET.

RESPONSIVENESS SUMMARY
DOUGLASSVILLE DISPOSAL SITE

IN COMPLIANCE WITH SECTIONS 113 (K) (2) (I-V) AND 117 OF SARA, THE ADMINISTRATIVE RECORD, INCLUDING THE PROPOSED REMEDIAL ACTION PLAN, WAS PLACED FOR PUBLIC VIEWING AT THE UNION TOWNSHIP BUILDING, CENTER ROAD, UNION TOWNSHIP, PENNSYLVANIA. AN ANNOUNCEMENT OF THE AVAILABILITY OF THE ADMINISTRATIVE RECORD, WAS PLACED IN THE POTTSTOWN MERCURY ON MAY 24, 1989. THE ADMINISTRATIVE RECORD INCLUDED PHASE II RI/FS REPORT WHICH LISTED THE ALTERNATIVES DEVELOPED AS PART OF THE FEASIBILITY STUDY.

A PERIOD FOR PUBLIC REVIEW AND COMMENT ON THE PROPOSED REMEDIAL ACTION PLAN WAS HELD FROM MAY 25, 1989, TO JUNE 26, 1989. DURING THAT COMMENT PERIOD, THE BERKS ASSOCIATES STEERING COMMITTEE REQUESTED A ONE-MONTH EXTENSION OF THE PUBLIC COMMENT PERIOD. THAT REQUEST WAS DENIED AND THE STEERING COMMITTEE WAS NOTIFIED OF THE DENIAL BOTH BY TELEPHONE THROUGH EPA'S CASE ATTORNEY, AND BY LETTER FROM THE CHIEF OF THE EPA REGION III SUPERFUND BRANCH.

ON JUNE 26, 1989, EPA REGION III RECEIVED COMMENTS ON BEHALF OF THE BERKS ASSOCIATES/ADMINISTRATIVE FUND PARTICIPANTS. THE COMMENTS ADDRESSED EPA'S PROPOSED REMEDIAL ACTION PLAN AND WERE PREPARED FOR THE STEERING COMMITTEE BY BCM ENGINEERS OF PLYMOUTH MEETING, PENNSYLVANIA. IN THOSE COMMENTS, BCM EXPRESSED IT'S AGREEMENT WITH EPA'S REMEDIATION SCENARIOS PRESENTED IN THE PROPOSED PLAN FOR SOURCE AREAS 1,3,4,5,6,7,8,9,AND 10 AND FOR ONSITE GROUND WATER. BCM DOES NOT AGREE THAT THERE IS SUFFICIENT DIFFERENCE BETWEEN SOURCE AREA 2 AND THE OTHER SOURCE AREAS IN CONCENTRATION OF THE CONTAMINANTS, EXPOSURE PATHWAYS OR RISK TO HUMAN HEALTH TO JUSTIFY A SEPARATE REMEDIAL APPROACH FOR SOURCE AREA 2. BCM EXPRESSED IT'S OPINION THAT CAPPING OF SOURCE AREA 2 WOULD PROVIDE THE NECESSARY PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT, AND PRESENTED A "CRITIQUE OF DETAILED ANALYSIS OF ALTERNATIVES" IN WHICH IT (BCM) COMPARED THE CAPPING ALTERNATIVE DESCRIBED AS REMEDIAL ALTERNATIVE 1-3 IN SECTION 10 OF THE OCTOBER, 1988 RI/FS WITH THE EXCAVATION, ONSITE THERMAL TREATMENT, AND ONSITE DISPOSAL ALTERNATIVE DESCRIBED AS REMEDIAL ALTERNATIVE 1-5 IN SECTION 10 OF THE OCTOBER, 1988 RI/FS. FOR THE PURPOSES OF ITS CRITIQUE, BCM USED THE NINE EVALUATION CRITERIA WHICH WERE USED IN THE PHASE II RI/FS DOCUMENT TO COMPARE ALTERNATIVES. A SUMMARY OF THIS CRITIQUE AND EPA'S RESPONSES FOLLOWS:

COMMENT: IN ITS DISCUSSION OF THE "SHORT-TERM EFFECTIVENESS" EVALUATION CRITERION, BCM AGREES THAT THE CAPPING SCENARIO PRESENTED IN REMEDIAL ALTERNATIVE 1-3 WOULD ADEQUATELY ADDRESS POSSIBLE SHORT-TERM EFFECTS. BCM CLAIMS, HOWEVER, THAT PROTECTION OF THE COMMUNITY AND SITE WORKERS DURING REMEDIAL ACTIVITIES UNDER REMEDIAL ALTERNATIVE 1-5 HAS NOT BEEN ADEQUATELY ADDRESSED IN THE RI/FS DOCUMENT.

RESPONSE: EXCAVATION, ON-SITE THERMAL TREATMENT, AND ONSITE DISPOSAL ACTIVITIES AS PROPOSED BY EPA ARE COMMONLY USED METHODOLOGIES IN HAZARDOUS WASTE REMEDIATION AND CAN BE CONDUCTED WITHOUT ENDANGERMENT TO THE COMMUNITY. THE VARIOUS CONTROLS REQUIRED SUCH AS DUST CONTROL, RUNOFF CONTROL AND STACK EMISSIONS CONTROL WOULD BE ADEQUATELY IMPLEMENTED USING CURRENTLY AVAILABLE AND PROVED TECHNOLOGIES. ONSITE WORKER SAFETY WOULD CONFORM TO OSHA STANDARDS FOR HAZARDOUS WASTE WORKERS. THE TYPES AND DEGREES OF POLLUTANT CONTROLS, AND THE EXACT REQUIREMENTS FOR WORKER SAFETY WOULD BE FULLY ADDRESSED DURING THE DESIGN PHASE OF THE PROJECT PRIOR TO IMPLEMENTATION OF ANY REMEDIAL ACTION. IT IS IMPORTANT TO EMPHASIZE THE RI/FS DOCUMENT PRESENTS REMEDIAL CONCEPTS AND IS NOT INTENDED TO BE USED AS A REMEDIAL DESIGN DOCUMENT.

COMMENT: IN ITS DISCUSSION OF "LONG-TERM EFFECTIVENESS," BCM AGREES THAT THERMAL TREATMENT WILL IRREVERSIBLY ELIMINATE A

SOURCE OF RISK BUT NOTES THAT SOLIDIFICATION OF THE THERMALLY-TREATED MATERIALS MIGHT BE NECESSARY TO REDUCE THE TOXICITY OF HEAVY METALS. BCM EXPRESSES THE OPINION THAT THE CAPPING ALTERNATIVE WILL PROVIDE EFFECTIVE LONG-TERM PROTECTION IF PROPER MAINTENANCE IS TO ENSURE THAT THE CAP REMAINS INTACT.

RESPONSE: ONE OF EPA'S PRIMARY GOALS IS THE SELECTION OF REMEDIAL ALTERNATIVES IS TO SUBSTANTIALLY REDUCE, OR TO ELIMINATE TOTALLY, THE UNCERTAINTIES INHERENT TO ANY REMEDIAL WHICH MIGHT INVOLVE PERPETUAL OPERATION AND MAINTENANCE (O&M) COSTS AND ACTIVITIES. EPA'S PROPOSED ALTERNATIVE FOR SOURCE AREA 2 WOULD ELIMINATE THE O&M ENTIRELY AND WOULD, ALONG WITH THE REMEDIES PROPOSED FOR THE OTHER SOURCE AREAS, LEAVE THE SITE IN A CONDITION WHICH WOULD REQUIRE ONLY THE 5-YEAR REVIEW MONITORING AS MANDATED BY SECTION 121 (C) OF SARA.

SARA MANDATES THAT REMEDIAL ACTIONS UTILIZE PERMANENT SOLUTIONS AND ALTERNATE SOLUTIONS AND ALTERNATE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE. EPA BELIEVES THAT THE THERMAL TREATMENT OF SOURCE AREA 2 IS PRACTICABLE AND THAT CAPPING DOES NOT FULFILL THE STATUTORY PREFERENCE EXPRESSED IN SECTION 121 (B) (1) OF SARA.

COMMENT: IN ITS DISCUSSION REGARDING "REDUCTION IN TOXICITY, MOBILITY, OR VOLUME, "BCM INDICATES THAT THE REDUCTION OF ORGANICS IN SOURCE AREA 2 BY THERMAL TREATMENT WOULD INCREASE THE CONCENTRATION OF HEAVY METALS IN THE TREATED MATERIAL.

RESPONSE: IF THE CONCENTRATIONS OF HEAVY METALS IS IN THE TREATED MATERIAL SHOULD RESULT IN THAT MATERIAL BEING CATEGORIZED AS EP TOXIC, AND THEREFORE, A CHARACTERISTIC HAZARDOUS WASTE UNDER RCRA, THE TREATED MATERIAL WOULD BE SOLIDIFIED PRIOR TO DISPOSAL INTO SOURCE AREA 2. SOLIDIFICATION HAS BEEN DEMONSTRATED TO BE EFFECTIVE TO PREVENT THE LEACHING OF METALS.

COMMENT: IN ITS DISCUSSION REGARDING "IMPLEMENTABILITY", BCM AGREES THAT BOTH CAPPING AND THERMAL TREATMENT TECHNOLOGIES ARE DEMONSTRATED AND COMMERCIALLY AVAILABLE TECHNOLOGIES.

RESPONSE: THE FILTER CAKE MATERIAL OF WHICH SOURCE AREA 2 IS COMPRISED IS A HIGHLY PLASTIC, HIGHLY ERODIBLE, CONCENTRATED SOURCE OF CONTAMINATION THAT PRESENTS THE HIGHEST RISK OF THE TEN SOURCE AREAS IDENTIFIED FOR THE PURPOSES OF THE PHASE II RI/FS. THE EXISTING MATERIALS AND BERMS MIGHT NOT SUPPORT THE HEAVY EQUIPMENT REQUIRED FOR THE CONSTRUCTION OF A CAP.

COMMENT: IN ITS DISCUSSION OF "COST-EFFECTIVENESS," BCM CONTENDS THAT THE LEVELS OF HUMAN HEALTH AND ENVIRONMENTAL PROTECTION ACHIEVED THROUGH CAPPING AND THROUGH THERMAL TREATMENT ARE SIMILAR, THEREFORE THE COST DIFFERENTIAL INVOLVED IS NOT JUSTIFIED.

RESPONSE: EPA DOES NOT AGREE THAT A SIMILAR LEVEL OF PROTECTIVENESS WILL BE ACHIEVED BY CAPPING SOURCE AREA 2. THIS SOURCE AREA PRESENTS THE GREATEST ENDANGERMENT OF ALL THE SOURCE AREAS AND THIS ENDANGERMENT WOULD BE ESSENTIALLY ELIMINATED THROUGH THE THERMAL TREATMENT PROCESS. IN CONTRAST, THE WASTES WHICH COMPRISE THIS AREA WOULD REMAIN ONSITE SHOULD THE CAPPING ALTERNATIVE BE IMPLEMENTED. THE CAPPING, AS DISCUSSED IN EPA'S RESPONSES ABOVE, WOULD REQUIRE PRESENTLY UNKNOWN DESIGN CONSIDERATIONS AND WOULD,

IF IMPLEMENTED, RESULT IN PERPETUAL O&M EXPENDITURES AND A POTENTIAL FOR RELEASE OF CONTAMINANTS FROM FAILURE OF THE CAP.

WHEN EVALUATING ALTERNATIVES FOR THE REMEDIATION OF THE REMAINDER OF THE SITE, IT WAS EVIDENT THAT GREAT COSTS WOULD BE INCURRED IF TREATMENT OF THE OTHER SOURCE AREAS WERE IMPLEMENTED. THE FILTER CAKE SLUDGE MATERIAL (SOURCE AREA 2) IS WELL-SUITED TO THERMAL TREATMENT.

COMMENT: IN IT'S DISCUSSION REGARDING "COMPLIANCE WITH ARAR'S," BCM EXPRESSES IT'S CONCERN THAT STANDARDS THAT WOULD APPLY TO HEAVY METAL AND ORGANIC CHEMICAL EMISSIONS ARE NOT CLEARLY STATED FOR THE THERMAL TREATMENT ALTERNATIVE IN THE RI/FS DOCUMENT.

RESPONSE: THERMAL TREATMENT ONSITE WOULD COMPLY WITH CLEAN AIR ACT REQUIREMENTS AT 40 CFR 50 WHICH DEFINE NATIONAL AMBIENT AIR QUALITY STANDARDS: AND WITH PENNSYLVANIA AIR POLLUTION CONTROL REGULATIONS AT 25 PA CODE, CHAPTERS 121 THROUGH 143 WHICH ADOPT FEDERAL AIR QUALITY STANDARDS AND SET FORTH ADDITIONAL STATE AIR QUALITY STANDARDS. THE THERMAL TREATMENT UNIT AND THE THERMAL TREATMENT PROCESS WOULD COMPLY WITH RCRA INCINERATOR REQUIREMENTS AT 40 CFR 264.340 WHICH ADDRESS HAZARDOUS WASTE INCINERATION; AND WITH THE TOSCA REQUIREMENTS REGARDING THE THERMAL TREATMENT OF NON-LIQUID PCB MATERIALS AT 40 CFR 761.70 (B). IN ADDITION, ONSITE WORKERS WOULD BE SAFEGUARDED PER THE REQUIREMENTS OF OSHA AS FOUND AT 29 CFR PARTS 1904, 1910, AND 1926 WHICH PROVIDE OCCUPATIONAL SAFETY AND HEALTH REQUIREMENTS FOR WORKERS ENGAGED IN HAZARDOUS WASTE FIELD ACTIVITIES. THESE REQUIREMENTS WOULD BE INCORPORATED INTO THE DESIGN OF THE THERMAL TREATMENT PROCESS AND WOULD ASSURE THAT THE PROCESS DOES NOT POSE AN ENDANGERMENT TO HUMAN HEALTH OR THE ENVIRONMENT.

COMMENT: IN IT'S DISCUSSION REGARDING "OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT" BCM CONTENDS THAT THE DISCUSSION IN THE OCTOBER 1988 RI/FS DOCUMENT REGARDING THE THERMAL TREATMENT OF SOURCE AREA 2 DOES NOT ADEQUATELY ADDRESS THE POTENTIAL SHORT AND LONG-TERM RISKS ASSOCIATED WITH THE POSSIBLE AND RELEASE OF AIRBORNE CONTAMINANTS DURING THE THERMAL TREATMENT PROCESS OR POSSIBLE INCREASES IN TOXICITY OF THE THERMALLY-TREATED MATERIAL.

RESPONSE: AS HAS BEEN EXPRESSED IN EPA'S RESPONSE TO BCM'S COMMENT REGARDING "COMPLIANCE WITH ARAR'S" ABOVE, ALL REQUIRED AND NECESSARY STANDARDS AND PRECAUTIONS WOULD BE IMPLEMENTED TO ASSURE THAT THE THERMAL TREATMENT PROCESS WOULD NOT POSE AN ENDANGERMENT TO HUMAN HEALTH OR TO THE ENVIRONMENT BECAUSE OF THE POTENTIAL RELEASE OF AIRBORNE CONTAMINANTS. ALSO, IN THE EVENT THAT THE TREATED MATERIAL WOULD BE EP TOXIC FOR HEAVY METALS, IT WOULD BE SOLIDIFIED PRIOR TO DISPOSAL IN SOURCE AREA 2.

COMMENT: IN ITS DISCUSSION REGARDING "STATE AND COMMUNITY ACCEPTANCE," BCM EXPRESSES ITS OPINION THAT IT IS POSSIBLE THAT THE AREA RESIDENTS AND THE COMMUNITY WOULD HAVE A STRONGER ADVERSE REACTION TO THERMAL TREATMENT THAN TO THE CAPPING OF SOURCE AREA 2.

RESPONSE: THE COMMONWEALTH OF PENNSYLVANIA HAS EXPRESSED IT'S AGREEMENT WITH THE PROPOSED REMEDIAL ACTION. NO RESPONSE TO EPA'S PROPOSED REMEDIAL ACTION PLAN HAS BEEN OFFERED BY THE AREA RESIDENTS NOR BY THE LOCAL GOVERNMENTS. IN ADDITION, AFTER REVIEW OF THE BCM COMMENTS, DER RESTATED ITS CONCURRENCE WITH EPA REGARDING THERMAL TREATMENT OF THE WASTE.

COMMENTS: IN ITS "SUMMARY" REGARDING THE ABOVE COMMENTS, BCM RESTATES ITS CONTENTION THAT SOURCE AREA 2 CAN BE ADEQUATELY REMEDIATED WITH A SYNTHETIC CAP AND VEGETATIVE COVER.

RESPONSE: EPA BELIEVES THAT THE THERMAL TREATMENT OF SOURCE AREA 2 IS THE ALTERNATIVE THAT OFFERS THE HIGHEST DEGREE OF PROTECTIVENESS TO HUMAN HEALTH AND TO THE ENVIRONMENT AND THAT IT IS A COST-EFFECTIVE MEANS TO ACHIEVE THAT PROTECTIVENESS. THE IMPLEMENTATION OF THERMAL TREATMENT, AS PROPOSED, WOULD ESSENTIALLY ELIMINATE THE NECESSITY FOR PERPETUAL OPERATION AND MAINTENANCE EXPENDITURES. THE TECHNOLOGIES REQUIRED TO SAFELY IMPLEMENT THE THERMAL TREATMENT ARE DEMONSTRATED AND COMMERCIALLY AVAILABLE. ALSO, THE IMPLEMENTATION OF THERMAL TREATMENT WOULD SATISFY THE STATUTORY PREFERENCE EXPRESSED IN SARA FOR REMEDIAL ACTIONS THAT USE ALTERNATIVE TECHNOLOGIES OR RESOURCE RECOVERY TO THE MAXIMUM EXTENT PRACTICABLE, AND FOR PERMANENT SOLUTIONS FOR CLEANUPS OF HAZARDOUS SUBSTANCES.

ON THURSDAY JUNE 29, 1989, REPRESENTATIVES OF EPA REGION III MET WITH MEMBERS OF THE BERKS ASSOCIATES STEERING COMMITTEE AND DISCUSSED THE COMMENTS PRESENTED BY BCM ENGINEERS ON BEHALF OF THE STEERING COMMITTEE

NO OTHER COMMENTS WERE RECEIVED BY EPA REGION III REGARDING EPA'S PROPOSED REMEDIAL ACTION PLAN.