DECISION DECLARATION

RECORD OF DECISION

ROEBLING STEEL SITE

SITE NAME AND LOCATION

Roebling Steel

Florence Township, Burlington County, New Jersey

STATEMENT OF BASIS AND PURPOSE

This Record of Decision presents the selected remedial action for the Roebling Steel Site, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision document explains the factual and legal basis for selecting the remedy.

The New Jersey Department of Environmental Protection concurs with the selected remedy. A copy of their concurrence letter can be found in Attachment 4. The information supporting this remedial action is contained in the Administrative Record for this Site, the index of which is Attachment 2 to this document.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Roebling Steel Site, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial threat to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy represents the third of four Records of Decision planned for the Roebling Steel Site. This Record of Decision focuses on the remediation of 70 abandoned buildings which contain contaminated process dust on the walls and floors, contaminated residue and materials in or on process equipment, underground and aboveground tanks, pits and sumps, underground piping systems, and damaged friable asbestos. The Record of Decision does not constitute the final action for the Site.

The major components of the selected remedy include the following:

- Primary (gross) decontamination, demolition, and on-site management of selected demolition debris for contaminated buildings that are structurally unsound (Group A Buildings), and decontamination of contaminated buildings that are structurally sound (Group B Buildings);
- Removal and off-site disposal of contaminated process dust, and liquid and solid wastes from the equipment, aboveground tanks, pits, and sumps. Removal and decontamination of equipment, tanks, and scrap metal prior to recycling;
- Abatement of friable asbestos in all buildings;
- Closure of contaminated underground storage tanks and drainage of underground piping systems;
- Historic preservation mitigation measures for the buildings, machinery, and curation of archives;
- Implementation of institutional controls to ensure the effectiveness of the remedy, such as deed restrictions to limit future uses of the buildings that remain.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. The remedy utilizes permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable, and it satisfies the statutory preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

Because this remedy will not result in hazardous substances above health-based levels on the main plant portion of the Site, a five-year review pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, is not required. However, a review will be conducted within five years after commencement of the remedial action for the slag disposal area (second Record of Decision) to ensure that the remedy continues to provide adequate protection of human health and the environment. Selected nonhazardous demolition debris from Group A buildings will be used as fill in the slag disposal area prior to placement of the final cover.

Jeanne M. Fox
Regional Administrator

9/30/91
Date

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DECISION SUMMARY

RECORD OF DECISION

ROEBLING STEEL SUPERFUND SITE

SITE NAME, LOCATION, AND DESCRIPTION

The Roebling Steel Site (Site) is a 200-acre property bordered by Second Street and Hornberger Avenue in the Village of Roebling, Florence Township, Burlington County, New Jersey. Geographically, the Site is located at latitude 40° 07' 25" N and longitude 74° 46' 30" W (Bristol 7-1/2 minute USGS quadrangle map). The Site is bordered on the north and east by the Delaware River and Crafts Creek, respectively. A fence identifies the southern boundary of the Site. A Penn Central (Conrail) railroad track runs adjacent to the southeastern boundary of the Site. U.S. Route 130 is approximately one-half mile south of the site property, as shown in Figure 1.

Residential properties in the Village of Roebling are located to the west and southwest of the Site at a zoning density of approximately eight dwellings per acre. Most residential development adjacent to the Site was constructed by the steel plan operators and used to house plant employees. The nearest residences are approximately 100 feet away from the site property boundaries, 250 feet from the slag disposal area at the northwestern edge of the Site, and 1,200 feet from the wastewater treatment plant and sludge lagoons at the northeastern edge of the Site. Two public playgrounds, the Roebling Park and southeast playground, are adjacent to the Site. The residential area of Florence Township is one to two miles west of the Site. The remainder of the Township consists of farmlands, wetlands and forested areas, except for a few residential areas abutting roadways. The population of Florence Township is 9,562 (1989 census).

The Site is an inactive facility that was used from 1906 until 1982, primarily for the production of steel products. Steel production resulted in the generation of significant quantities of waste materials in both liquid and solid forms. The majority of liquid wastes were discharged to Crafts Creek and the Delaware River. Large quantities of solid wastes, including slag, mill scale, spent refractory materials, and other production residues, were disposed at the Site. Slag material was used to fill in a large portion of the bordering Delaware River shoreline. There are approximately 70 buildings, some quite large, on the main plant area of the Site; they are connected by a series of paved and unpaved access roads. The buildings contain contaminated process dust on the walls and floors, contaminated process equipment, tanks, pits and sumps, underground piping systems, and damaged friable asbestos.

The site topography is essentially flat, except for a hill on the southern boundary of the slag disposal area that rises to Riverside Avenue, a steep slope down to the banks of the Delaware River, and that portion of the slag area where crucible-shaped slag piles are present. The Site is situated between 15 and 35 feet above mean sea level (MSL), in the Delaware River drainage basin, and is mostly above the 100-year flood plain except for two portions of the slag disposal area.

Two groundwater aquifers are located in the area of the Site. The Magothy Formation outcrops over most of the Site with the underlying Raritan Formation outcropping in a thin belt immediately adjacent to the Delaware River. Groundwater in the area flows toward, and a portion of it recharges, the Delaware River. Florence Township obtains its potable water supply from wells located about two miles west of the Site. The city of Burlington, approximately six miles downstream from the Site, obtains water from both the Delaware River and shallow groundwater wells. The river also supplies water to the city of Philadelphia approximately 10 miles farther downstream. These locations are cross-gradient to the direction of groundwater flow at the Site and would not be affected by the Site. The possible flow of ground water from the Site toward nearby Mansfield Township properties directly south of the Site, while not likely, is undergoing further study.

The Delaware River, in the vicinity of the Site, is part of the freshwater portion of the estuary located in the Delaware River Basin Commission (DRBC) Water Quality Zone 2, between the head of tide at Trenton, New Jersey and Northeast Philadelphia, Pennsylvania. The Delaware River is used for contact (e.g., swimming) and non-contact (e.g., boating) recreational activities in the vicinity of the Site. The area adjacent to the Site is classified as "fishable not supported" since advisories have been issued on the consumption of certain fish. Crafts Creek, a tributary to the Delaware River and with headwaters in north-central Burlington County, comprises the eastern boundary of the Site and forms a 40-acre pond south of the Site. Crafts Creek is used by nearby residents, particularly children, for contact recreational activities such as fishing and playing.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Historical Site Use

About the turn of the century, the John A. Roebling's Sons Company in Trenton, New Jersey, was expanding its operations. The Roebling family selected Kinkora, later known as Roebling, as the location of the new steel plant. The land was purchased, and riparian rights to fill in the river were obtained, so that as the plant required additional structures, there would be enough room for expansion. In 1904, construction of the steel plant began, with a Melt Shop, Blooming Mill, Rod Mills, Wire Mills, Cleaning Houses, Annealing and Tempering Shops, and a Woven Wire Fabrics Factory. In addition to the steel plant, a complete town for the workers, with a hospital, schools, shops, banks and theaters was built to house a population of approximately 4,000. Over time, buildings were constructed as needed, many on the slag fill. The sequence of structures at the Site was logically ordered to suit the various different process steps involved in the manufacturing of steel products.

The John A. Roebling's Sons Company owned and operated the steel wire manufacturing plant until its sale to Colorado Fuel & Iron Company, later known as CF&I Steel Corporation, (CF&I) in 1952. The Roebling name is synonymous in the United States with the manufacture of quality wire cable and rope used in the construction of major suspension bridges, manufacture of elevators, electric and telegraph transmission lines, and in the marine and airline industries. The surrounding Village of Roebling and the Main Gate Building at the original entrance to the plant have been listed on the National Register of Historic Places (NRHP) since 1978.

CF&I operated the Site from 1952 until 1974. Equipment in the Roebling facility was updated in the 1960s (e.g., CF&I replaced the open hearth furnaces with electric arc furnaces in 1968). During this period, the Roebling facility concentrated in the high carbon wire segment of the wire industry and withdrew from the suspension bridge construction market and from nonferrous wire production. Crane Co. became the major stockholder in CF&I, in the late 1960s and subsequently began a shutdown of CF&I's unprofitable production facilities. By the early 1970s, the Roebling facility's financial strength had declined, and Crane Co. decided to close the Roebling facility in 1974.

In June 1974, the plant ceased operations under CF&I. The Alpert Brothers Leasing Company (ABLC) purchased the machinery and equipment at the Site from CF&I in September 1974. ABLC formed the Roebling Steel and Wire Corporation (RSWC), which purchased the Site and certain other equipment from CF&I in October 1974. ABLC leased the machinery and equipment it bought to RSWC. RSWC filed for Chapter 11 bankruptcy in May 1975. ABLC/RSWC operated the facility until May 1979, when a new company (with new owners), the John A. Roebling Steel Corporation (JARSCO), was formed and through private funds and financial assistance (in the form of guaranteeing the initial loan) from the Economic Development Administration (EDA) of the U.S. Department of Commerce and the New Jersey Economic Development Authority, JARSCO purchased and operated the Roebling facility. JARSCO ceased operations in November 1981 and leased portions of the Site to other businesses. JARSCO began liquidating in September 1982 and granted peaceful possession of the property to EDA in April 1983.

The Roebling Wire Company (RWC) purchased the wire mill equipment from JARSCO and leased the wire mill premises. RWC began wire production in January 1982, closed in the summer of 1983, filed a Chapter XI petition for bankruptcy, but continued to occupy the site premises until October 1985.

From 1978 through 1988, the Site supported a variety of other industrial activities in addition to the RWC, and included a polymer-reclamation facility, a storage facility for vinyl products, a warehouse facility, a facility for repairing and refurbishing refrigerated trailers and shipping containers, a storage facility for insulation, and an equipment storage facility for a construction company.

The EDA provided financial assistance to JARSCO starting in 1979 to promote companies and businesses on the Site; all of these companies have since ceased operating on the Site. EDA remains a creditor in possession of the real property and equipment at the Site.

Manufacturing and Waste Disposal Activities

Liquid Wastes

During process operations at the Roebling Steel Site, large volumes of contaminated wastewaters were generated, treated to various degrees, and discharged to the Delaware River and Crafts Creek. Wire was cleaned with acids to remove scale, using hydrochloric or sulfuric acids. The principal acid contamination was caused by dumping tubs of spent acid used in the cleaning departments into the sewer system without neutralization.

Large volumes of surface water and groundwater were used for plant operations. As a result of the different mill processes used at various times in each building, process water would be contaminated with iron, lead, zinc, oil, chloride, phosphate, sulfate, soap, and spent pickle acid.

Solid Wastes

Slag material was generated as a means to separate the metal impurities from the moltened steel and was disposed of in the slag area along the Delaware River. The slag area was used primarily for the disposal of slag. Materials disposed in the landfill included: spent refractory brick, baghouse dust, well scale, furnace scale, and decommissioned process equipment were disposed of in the landfill on-site.

Records were kept of the annual quantities of lead used at the Site. For example, in 1965 the following processes used lead in these amounts:

Galvanizing Shop (Building 8):	250,359 pounds
Patenting Shop (Building 10):	946,675 pounds
Wire Mill #2 (Building 13):	525,920 pounds

Waste lead was removed as dross, accumulated in drones and sold to off-site smelters. In addition, lead was released into the atmosphere as volatilized gases and found in residues on process equipment.

Air Pollutants

No dust control system was used during the operation of the open hearth furnaces at the Site. Dust would be released within the buildings, and, of course, directly out of the stacks. When the electric arc furnaces replaced the open hearth furnaces in 1968, dust control facilities were used.

Compliance History

The lack of properly operated environmental control facilities at the Site over the last 25 years resulted in several regulatory agencies issuing notices of noncompliance to site owners and operators. On May 19, 1964, the New Jersey Department of Health (NJDOH) recommended that CF&I install a wastewater treatment plant. A NJDOH status report described operations conducted at the Site by CF&I, which was then discharging 15-million gallons per day (mgd) of untreated acidic industrial wastes and plant cooling water into the Delaware River. The effluent was acidic and contained high levels of iron and other metals, suspended solids, and oil. On May 31, 1968, NJDOH ordered CF&I to cease polluting the Delaware River and required the construction of a wastewater treatment plant. In 1972, the wastewater treatment plant was completed and placed into operation.

On November 15, 1974, the New Jersey Department of Environmental Protection (NJDEP) met with the facility owners to discuss various aspects of the operations at the Site, including the absence of liners under the sludge lagoons, groundwater contamination, landfill operations, oil unloading, and transmission and storage operations.

In October 1979, NJDEP issued JARSCO a permit to upgrade and operate an industrial wastewater treatment plant (the CF&I wastewater treatment plant with improvements). The permit required the installation of monitoring wells and the performance of bioassay monitoring. The DRBC granted approval to JARSCO to withdraw surface water from the Delaware River and to discharge wastewater to the Delaware River in compliance with DRBC water quality standards.

On June 13, 1979, the JARSCO operation was inspected by NJDEP and the Burlington County Health Department. Six hundred 55-gallon drums containing waste oil were discovered on-site. NJDEP requested that these drums be removed. In November 1979, NJDEP issued a notification of violation to JARSCO, as a result of the inspection of the Site on June 13, 1979. JARSCO was later cited for committing a health and safety violation as it attempted to remove the drums from the Site without completing the required waste manifests.

On January 29, 1980, NJDEP named JARSCO as one of 38 hazardous waste sites most urgently needing cleanup in the State of New Jersey. The following potential pollution sources were identified: 100 oil drums, PCB transformers, a tire pile, abandoned oil and chemical storage tanks, and bag house dust storage piles.

In 1981, JARSCO was cited by NJDEP for noncompliance with conditions in the permit for operation of its wastewater treatment plant (conditions such as installation of monitoring wells, bioassay monitoring, flow measurement, and discharge monitoring). On May 11, 1981, NJDEP issued a Notice of Prosecution to JARSCO seeking the removal of oil drums and other hazardous wastes stored on site. The U.S. Environmental Protection Agency (EPA) performed a Resource Conservation and Recovery Act (RCRA) inspection of the facility, and JARSCO was cited for storage of baghouse dust without a permit. NJDEP inspected and sampled the sludge lagoons and found the sludge to contain volatile organics and heavy metals.

On July 22, 1981, JARSCO removed 20,000 gallons of waste oil and 60 cubic yards of contaminated soil from the Site.

On February 1, 1982, NJDEP issued JARSCO a deadline for the submittal of a compliance plan, which would address a violation of monitoring requirements for the wastewater treatment plant. Since the JARSCO plant had closed in November 1981, it was not required to meet the deadline.

In June 1982, NJDEP required the installation of two groundwater monitoring wells downgradient from the lagoons and one well upgradient from the lagoons. On June 28, 1982, EPA issued a Complaint and Compliance Order that directed JARSCO to stop storing hazardous wastes without a permit, to remove spilled dust and contaminated soil, and to address contaminant migration.

In December 1982, an acid cloud at the RWC operations on-site was reported. No violations could be detected when the facility was inspected by NJDEP.

In February 1983, JARSCO officially abandoned the Site without sufficiently addressing the permit compliance violations first cited in 1981.

Later in 1983, NJDEP inspected the Site and found that permits and certificates were missing from some of the RWC equipment. A Compliance Evaluation Inspection performed by NJDEP found unacceptable conditions at the RWC portion of the Site.

Removal and Remedial Actions to Date

The Site was proposed for inclusion on EPA's National Priorities List of Superfund sites in December 1982, and added to the list in September 1983. In May 1985, EPA began a remedial investigation and feasibility study (RI/FS) to characterize the nature and extent of the contamination present at the Site. Due to the numerous contamination sources and various pathways for exposure associated with the Roebling Steel Site, EPA is addressing the study and remediation in a phased approach. EPA's response actions at the Site are shown in Table 1.

Three removal actions have been conducted at the Site. In December 1985, the State of New Jersey removed picric acid and other explosive chemicals from one of the on-site laboratories. EPA conducted a major removal action between October 1987 and November 1988; this action included the removal of lab pack containers and drums containing corrosive and toxic materials, acid tanks, and compressed gas cylinders. EPA conducted another removal action in October 1990, that included fencing a portion of the slag area and excavating contaminated soil in an area of the Roebling Park, which both border the southeast edge of the Site.

The first Record of Decision (ROD) for the Site was signed in March 1990, resulting in the completion of a remedial action in September 1991. That remedial action, the first of several anticipated remedial actions, known as operable units (OUs), continued the removal or remediation of contaminated source areas. It included the removal and off-site treatment and disposal of remaining drums, transformers containing oil contaminated with polychlorinated biphenyls (PCBs), the contents of exterior abandoned tanks, a baghouse dust pile, chemical piles, and tire piles.

A second ROD was signed in September 1991, to address the southeast playground (OU-2), and a 34-acre slag disposal area (OU-3). The Corps of Engineers (COE) was given the responsibility to design and implement the remedies selected in the ROD. The remedy selected for the southeast playground included excavating contaminated soil hotspots, off-site treatment, and disposal at an appropriate facility. To expedite this portion of the remedial work, the Region II Removal Action Branch conducted the cleanup of the playground in the Fall of 1994, after the COE submitted a final design to EPA. The remedy selected for the slag area includes treating hotspots, defined as highly contaminated slag material that fails a RCRA Toxic Compound Leaching Procedure (TCLP) test, and then covering the entire 34-acre slag area with a soil cover and vegetation. The COE completed the draft plans and specifications for the 65% remedial design in August 1996. A final remedial design of the slag area is expected by the Winter of 1997.

Concurrent with ongoing remedial investigation and design activities, a focused feasibility study (FFS) was completed in July 1996, which deals with the imminent threat posed by 70 abandoned buildings and the remaining contamination sources inside and outside of those buildings. The FFS report and Proposed Plan forms the basis for this third ROD at the Roebling Steel Site. A fourth ROD will be prepared after all remaining contamination problems are identified and characterized in an RI/FS which is currently underway. This RI/FS for the Roebling Steel Site will incorporate an extensive data investigation and discussion of potential cleanup alternatives for remaining areas of the Site, which include: the on-site landfill, the sludge lagoons, potential buried drums, area-wide contaminated site soils throughout the main plant complex, river and creek sediments, and ground water.

Enforcement Activities

In 1985 and 1987, General Notice Letters, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, (CERCLA) were sent to potentially responsible parties (PRPs), including past and present owners, operators, and tenants, informing them of their potential liability and affording them the opportunity to participate in the respective response actions. The PRPs declined to participate in these actions.

In December 1987, a PRP search was completed and Request for Information Letters were sent to PRPs identified as potentially viable.

EPA prepared a litigation referral which recommended the filing of a proof of claim in a Chapter 11 bankruptcy proceeding by CF&I, a former owner and operator of the Site. During CF&I's ownership and operation of the plant and real property, the company's handling, storage and disposal practices resulted in the release or threatened release of hazardous substances at the Site. On March 14, 1991, the United States Department of Justice (DOJ) filed a proof of claim and EPA attained the status of an unsecured creditor of CF&I.

In June 1991, a supplemental PRP search was initiated to fill data gaps in the initial PRP search and incorporate new information.

In July 1991, General Notice Letters pursuant to CERCLA were sent to PRPs, reiterating notification of potential liability, affording them the opportunity to participate in the response actions for the Site, and informing them of the public comment period and public meeting regarding the selection of a remedy for the slag area and southeast playground.

In January 1992, DOJ submitted a Statement of Debtor's Liability which provided an estimation of the debtor's liability and preserved EPA's status as an unsecured creditor in the CF&I bankruptcy proceeding. Since EPA and CF&I were unable to agree on a mutually acceptable dollar amount representing CF&I's liability for EPA's environmental claims at the Site, the Court ordered an estimation proceeding to value EPA's claim. The Court scheduled various pre-trial activities from February through June 1992.

In June and July 1992, DOJ and EPA took part in an estimation proceeding as part of the CF&I Chapter 11 bankruptcy proceeding. Closing arguments were held in August 1992. Shortly thereafter EPA and CF&I entered into a settlement and stipulated as to the value of EPA's allowed claim.

In September 1993, the supplemental PRP search was completed.

In June 1995, a settlement agreement between EPA and Reorganized CF&I providing for a lump sum payment of $2.2 million was signed. Reorganized CF&I paid EPA the $2.2 million in August 1995.

Additional Request for Information letters were sent to PRPs in June 1996.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The FFS report and the Proposed Plan for the Site were released to the public for comment on July 17, 1996. These documents were made available to the public in the following information repositories: the EPA Region 2 Office, 290 Broadway, New York, NY; the Florence Township Public Library, Roebling, NJ; and the Florence Township Municipal Building, Florence, NJ.

The notice of availability for the above-referenced documents was published in the *Burlington County Times* on July 17, 1996, and the *Bordentown Register News* on July 18, 1996. A Superfund Update was mailed to approximately two hundred individuals on a mailing list maintained by EPA for the Site on July 15, 1996. The public comment period on these documents was scheduled to be held from July 17, 1996 through August 15, 1996. However, at the request of a PRP, the public comment period was extended through August 25, 1996. A notice extending the comment period was published in the *Burlington County Times* on August 15, 1996, and a Superfund Update containing the notice was mailed to individuals on the mailing list on August 13, 1996.

On July 25, 1996, EPA conducted a public meeting at the Florence Township Municipal Building. At this meeting, EPA representatives informed local officials and interested citizens about the Superfund process, discussed the findings of the FFS and Proposed Plan, and responded to any questions regarding the remedial alternatives under consideration. Responses to the comments received at the public meeting, and in writing during the public comment period, are included in the Responsiveness Summary section of this ROD.

SCOPE AND ROLE OF RESPONSE ACTION

The overall strategy for the Roebling Steel Site addresses contamination in a manner that would allow most of the Site to be returned to productive use for industrial, commercial, or recreational purposes. Two RODs have already been completed to deal with site contamination. Further site cleanup work has been divided into two additional RODs. This ROD addresses the imminent threat posed by 70 abandoned buildings, and remaining contamination sources inside and outside of those buildings. The contamination sources are contaminated process dust, contaminated residue and materials in or on process equipment, tanks, pits and sumps, underground piping systems, and damaged friable asbestos. These are areas that must be dealt with prior to undertaking any large scale soil or ground water remediation. A fourth ROD will address all remaining contamination problems, including: the on-site landfill, the sludge lagoons, potential buried drums, area-wide contaminated site soils throughout the main plant complex, river and creek sediments, and ground water.

SUMMARY OF SITE CHARACTERISTICS

EPA, through its contractor, the Foster Wheeler Environmental Corporation (FW), previously known as Ebasco Services, conducted field investigations intermittently from October 1988 to May 1995. The purpose of these investigations was to determine the type and extent of contamination of the entire Site. The initial results from an ongoing Comprehensive Remedial Investigation required the preparation of an extensive supplemental remedial investigation (RI) for selected areas of the Site. The field work necessary to fully characterize those areas to be included in this ROD was completed in May 1995, and included the following activities: a geophysical and underground pipe lines survey to investigate abandoned underground storage tanks (USTs) and underground piping systems, an asbestos survey to estimate the quantity and condition of facility-wide asbestos and presumed asbestos-containing material (PACM), building sampling to assist in remediation of building structures and closure of pits and sumps, tank sampling to fill remaining data gaps regarding the volumes and chemical characteristics of wastes present in the tanks, and treatability studies to evaluate building decontamination procedures.

The detailed results of the supplemental RI can be found in the FFS report, which was completed in July 1996. The results of the investigation, which are summarized in the following sections, identify the principal threats (areas of significant contamination) posed by the Site, which are addressed in this ROD.

Underground Piping Systems

A network of underground oil lines are connected to four large oil storage tanks that were drained and cleaned as part of the first remedial action. The contents of these tanks and underground oil lines exhibited moderate levels of metal contaminants. The oil lines were also going to be fully drained and cleaned during that action, but work was discontinued when it became evident that the volume of oil stored in the lines was considerable; this required further investigation before a complete oil line cleanup could be undertaken. The configuration of the underground oil line system was checked by conducting a geophysical (metal detection) survey since material in these lines could result in environmental hazards, if released.

Tank Contents

Over 100 tanks, both within the buildings and exterior underground storage tanks (USTs), were inventoried and sampled. The tank content samples were categorized as either solvents or waste oils; inorganic results of oil samples from both aboveground and underground tanks showed at least one exceedance of a characteristic hazardous waste threshold in each sample, in parts per million (ppm), for barium (122-1220 ppm), lead (6.4-259 ppm), or cadmium (6.4 ppm), defining these as hazardous wastes which would require appropriate disposal. Table 2 summarizes the oil sample results exceeding characteristic hazardous waste thresholds.

Underground Storage Tanks - The solvent samples collected from USTs consisted predominantly of volatile organics. These samples showed significant concentrations of toluene, ethyl benzene and xylene, as well as acetone, 1,2-dichloroethane and benzene. Approximately 74% of a sample collected from a xylol tank consisted of xylenes, with lesser constituent percentages of toluene and ethyl benzene. PCBs were detected in an oil sample from one UST. Aroclor 1248 was detected at 25.8 ppm.

Interior Tanks - The noncarcinogenic polycyclic aromatic hydrocarbons (PAH), 2-methylnaphthalene, was present in almost all of the oil samples from interior tanks, with detected concentrations ranging from 25 mg/kg to 195 mg/kg. The only carcinogenic PAH detected in the oil samples was chrysene. Oil samples exhibited low concentrations of a small number of volatile organics; PCBs were not detected in the tank oil samples.

Buildings

Chip, dust, and pit and sump (liquid and solid) samples were collected from buildings to evaluate alternatives for building decontamination and demolition, and the remediation of building pits and sumps.

Chips - Samples of building surfaces were chiseled from selected buildings based on a knowledge of historical processing operations, previous sampling results, and visual evidence of staining; the samples were characterized for potential disposal. Eight out of forty-seven (17%) chip samples failed the RCRA TCLP testing, used to determine hazardous waste thresholds. Seven of the exceedances were for lead, while one was for chromium. Table 3 summarizes the chip sample results exceeding RCRA TCLP thresholds.

Building Dust - Sampling results indicate that several inorganics, carcinogenic PAHs, and PCBs are the primary contaminants of concern for floor dusts. Tables 4 - 7 summarize the floor dust results. Inorganic analytes of concern in floor dusts include lead, arsenic, and zinc. The average and maximum lead concentrations detected in floor dust samples were 5,908 ppm and 169,000 ppm, respectively. The average and maximum arsenic concentrations detected in floor dust samples were 31 ppm and 231 ppm, respectively.

Elevated zinc concentrations correlated fairly well with lead concentrations in floor dust samples. The average and maximum zinc concentrations detected in floor dust samples were 8,351 ppm and 395,000 ppm, respectively. Elevated concentrations of barium, chromium and copper were also detected in floor dust samples. Concentration ranges detected in the floor dust, in parts per billion (ppb), of non-carcinogenic and carcinogenic PAHs are 8,772-248,400 ppb and 466-198,900 ppb, respectively. PCB maximum concentrations found in the floor dusts were 11,000 ppb and 68,000 ppb for Aroclor-1248 and Aroclor-1260, respectively. Pesticide maximum concentrations found in the floor dusts were 220 ppb and 120 ppb for Endrin and 4,4'-DDT, respectively.

Soil floors in Buildings 2, 3, 4, 5, and 18 were sampled at 0.5 to 1.0 feet intervals, and were analyzed for inorganic compounds, semi-volatile organic compounds, PCBs and pesticides. The primary contaminants of concern in the soil are lead, zinc and PAHs. Other contaminants were found at low levels. The highest concentrations of lead, zinc, and PAHs were generally found in surficial samples (0-0.5 feet). Soil floor sampling in Buildings 2 and 3 indicated that lead and zinc concentrations decrease with depth. Nearly all significantly elevated concentrations of lead and zinc detected in soil floor samples occur within one-half foot (0.5) of surface grade. The concentration range of lead detected in the soil floors of Buildings 2, 3, 4, 5, and 18 is 25.1-4,370 ppm.

Pits and Sumps - The pit and sump sludge/solids exhibited significantly elevated concentrations of copper, lead, and zinc, as high as 185,000 ppm, 6,380 ppm, and 41,200 ppm, respectively. Pit sludge/solids revealed low or non-detectable levels of PAHs, and non-detectable levels of PCBs. Low levels of volatile and semi-volatile organic contaminants were detected in the liquids from several pits.

Asbestos

An asbestos survey was conducted by certified asbestos personnel for individual buildings. The investigators inspected only those areas which were accessible (not flooded), and only buildings which were structurally sound. Each building was examined with regard to location, type of material, quantity, friable/non-friable, and damaged/not damaged. Insulation on several miles of exterior piping, and on vessels covered with thermal insulation, was also included in the survey. Approximately 244,000 square feet and 44,000 linear feet of friable asbestos material was identified throughout the facility. Insulation materials around pipes in buildings were sampled and analyzed for asbestos. Friable asbestos was found in every building sampled, with maximum concentrations reported at 90% asbestos. Table 8 summarizes the results of the asbestos survey for each building.

Building Decontamination Treatability Studies

On-site treatability studies were performed to evaluate building decontamination methods. A series of pilot-scale tests were done to evaluate viable decontamination procedures for contaminated building materials. Tests were performed on several types of contaminated building surfaces, such as brick, wood, concrete, and equipment/metal surfaces, that were contaminated by both organic (carcinogenic PAHs and PCBs) and inorganic (antimony, arsenic, cadmium, lead and mercury) contaminants. The decontamination procedures which were evaluated included vacuuming, vacuum/pressure washing, vacuum/acid washing, scarification, wipe/solvent washing, and wipe/steam washing. The treatability study results for inorganic decontamination showed that vacuuming and pressure washing, together, were the most effective cleanup method for inorganic analytes on all four surface types. The treatability study results for organic decontamination showed that solvent washing was most effective in the removal of PCB and carcinogenic PAHs.

Historic Preservation Analysis

The Roebling Steel Site is eligible for inclusion in the National Register of Historic Places (NRHP) as an historic district. The surrounding Village of Roebling has been listed on the NRHP since 1978. As a district, the Village of Roebling and the facility contain numerous elements which contribute to the significance of the whole. EPA, the federal Advisory Council on Historic Preservation, and the New Jersey State Historic Preservation Officer would consider the demolition of buildings to be an adverse effect on the historic property as a whole.

An analysis was performed to develop historic preservation alternatives to best integrate the needs of the preservation process with those of the cleanup process. The alternatives were developed by considering various combinations of existing structures which would be targeted for decontamination or demolition as part of the cleanup. Information from previous cultural resources studies was used for this analysis. Criteria used in the selection process include chronology, structural soundness, presence of extensive contamination, presence or absence of machinery, association of the structure with Roebling's steel wire manufacturing, structural materials conducive to adaptive reuse, and the presence of distinguishing architectural features. The recommended preservation alternative retains all structures which are structurally sound, built within the critical time period of historic significance (1903-1953), and maintain the historic character of the Site. The recommended preservation alternative retains most of the Site intact.

SUMMARY OF SITE RISKS

A focused Baseline Risk Assessment was developed as part of the FFS to evaluate the potential current and future impacts of building dust on human health and the environment, assuming there is no remediation.

Quanitative Human Health Risk Assessment For Lead

A selective assessment was performed for lead detected in building dust. Lead was not quantitatively addressed in an risk assessment with other contaminants because there is no EPA established toxicity value for lead. Instead, a biomarker (blood lead) exists for lead which relates exposure to toxic effect. EPA has utilized this information and developed models that predict blood lead levels based on multimedia exposure.

A risk-based commercial remediation goal for lead in soil/dust was calculated using the Adult Biokinetic Slope Factor Model under development by EPA. The Adult Lead Model builds upon the methodology for establishing risk-based soil remediation goals for commercial areas of the California Gulch NPL Site. The model is designed to assess exposure to adult workers; however the model is protective of the most vulnerable potential receptor under this scenario, the fetus of a pregnant worker. The Roebling Steel site-specific remediation goal for lead was calculated to be 1,100 ppm. The equations and parameters used in this calculation are presented in Table 9.

The average and maximum lead concentrations detected in floor dust samples are 5,908 ppm and 169,000 ppm, respectively, which are significantly higher than EPA's risk-based level. Lead was detected in 97 of 98 samples collected. Of these samples, the lead concentration exceeds the site-specific calculated remediation goal of 1,100 ppm in 42 locations. In addition, lead was detected in the soil floors at concentrations up to 4,370 ppm, exceeding the remediation goal of 1,100 in 4 out of 5 locations. Under a commercial setting, the level of lead in building dust would pose an unacceptable risk as defined by potentially elevated blood lead levels in an impacted population. In addition, wipe samples of building interior walls, which measure the amount of lead within a specific area, indicate wide-spread lead contamination.

Quantitative Human Health Risk Assessment for Other Contaminants

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: *Hazard Identification* - identifies the contaminants of concern at the Site based on several factors such as toxicity, frequency of occurrence, and concentration. *Exposure Assessment* - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways, by which humans are potentially exposed. *Toxicity Assessment* - determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). *Risk Characterization* - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. Both average case and reasonable maximum case exposure scenarios were evaluated.

Hazard Identification - The baseline risk assessment identifies contaminants of potential concern, evaluates exposures pathways, and quantifies the degree of risk. Based on the sampling results, contaminants from all four compound classes (volatile organics, semi-volatile organics, pesticides/PCBs and inorganics) were found in the building dust. The dominant classes of contaminants were PCBs, carcinogenic PAHs, and inorganics. The analytical results for the building dust are summarized in Tables 10 - 13.

The contaminants that are likely to pose the most significant risks to human health and the environment were identified and evaluated in detail. A summary of contaminants of concern (COCs) detected in the building dust is listed in Table 14. The COCs include volatiles, semi-volatiles (carcinogenic and non-carcinogenic PAHs), pesticides, PCBs, and metals (antimony, arsenic, barium, cadmium, manganese, thallium, vanadium, and zinc).

Exposure Assessment - The baseline risk assessment evaluated the health effects which could result from exposure to contamination as a result of ingestion, dermal, and inhalation exposure routes. The risk assessment evaluated the exposure pathways believed to be associated with the greatest potential exposures. The potential exposure routes identified with present use of the buildings by site workers include inadvertent ingestion and dermal contact with building dust and inhalation of suspended building dust. In the future use scenario, both residential and commercial land uses are considered for the buildings. The potential exposure routes identified during future use of the buildings include inadvertent ingestion, dermal contact, and inhalation of building dust. Exposure assumptions were made for both average case and reasonable maximum case exposure scenarios. The potential exposure pathways considered for this risk assessment are presented in Table 15, and parameters and assumptions used in the calculations are in Table 16.

Toxicity Assessment - Under current EPA guidelines, the likelihood of carcinogenic (cancer-causing) and noncarcinogenic effects due to exposure to site chemicals are considered separately. Toxicity data for carcinogenic and noncarcinogenic effects are presented in Table 17.

Noncarcinogenic risks were assessed using a hazard index (HI), based on a comparison of expected contaminant intakes and safe levels of intake (Reference Doses). Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects. RfDs, which are expressed in units of milligrams per kilogram per day (mg/kg-day), are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). Estimated intakes of chemicals from environmental media are compared to the RfD to derive the Hazard Quotient for the contaminant in the particular medium. The HI is obtained by adding the Hazard Quotients for all compounds across all media that impact a particular receptor population. An HI greater than 1.0 indicates that the potential exists for noncarcinogenic adverse health effects to occur as a result of site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium. The HI is the ratio of the chronic daily ingestion of contaminant(s) divided by acceptable exposure level(s).

Potential carcinogenic risks were evaluated using the cancer slope factors (SFs) developed by EPA for the contaminants of concern. SFs, which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} to 10^{-6}, representing a probability of one-in-ten thousand to one-in-one million that an individual could develop cancer as a result of chronic site-related exposure to a carcinogen over one's lifetime.

Risk Characterization - The results of the baseline risk assessment indicate that the building dusts on the Site pose risks that are on the high end of EPA's acceptable risk range. However, as indicated above in the qualitative assessment, the extremely high concentrations of lead detected in the building dusts pose an unacceptable risk. Cancer risk levels and hazard index values are summarized in Table 18.

Under hypothetical present use conditions, the risk assessment shows that people on the Site who might be regularly exposed to contamination from the building dusts are at a potential total excess lifetime cancer risk of 1.5×10^{-4}, and a non-carcinogenic HI of 1.5, for the reasonable maximum exposure scenario. This suggests that an individual has a two-in-ten thousand increased chance of developing cancer as a result of exposure to building dusts. For the average case scenario, the cancer risk falls within the acceptable risk range of 10^{-4}-10^{-6}. Based on the calculated HI of 1.5, there is a modest potential for non-carcinogenic effects under the reasonable maximum exposure scenario. No potential non-carcinogenic effects were exhibited for the average case scenario.

Under future use conditions, such as commercial and residential, potential total excess lifetime cancer risk and non-carcinogenic HI values for the reasonable maximum exposure scenarios are listed below:

	Cancer Risks	HIs
Commercial Workers	3.1×10^{-4}	0.92
Residential (Adults)	6.5×10^{-4}	2.0
Residential (Children)	3.0×10^{-4}	7.1

For the average case scenario, the cancer risk falls within the acceptable risk range of 10^{-4}-10^{-6}. The risk calculations indicate that the ingestion and dermal contact pathways are the major contributors to the reasonable maximum exposure risk values. Over 90% of the total carcinogenic risk is attributed to arsenic, PCBs and carcinogenic PAHs. The calculated non-cancer risk values that exceed an HI of 1 are the following: adults under reasonable maximum scenario (HI of 2.0), children under average case (HI of 1.3), and children under reasonable maximum scenario (HI of 7.1).

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this ROD, may present a current or potential threat to public health, welfare, or the environment. Since this ROD does not address any environmental-media, other than contaminated soil inside the buildings and adjacent to underground storage tanks, the impact of site-related contaminants in soils, groundwater, surface water and river sediments in the vicinity of the entire Site will be evaluated in the risk assessment portion of the comprehensive RI report which will be part of the fourth ROD.

Qualitative Human Health Risk Assessment

The presence of hazardous substances found in the tanks, pits and sumps, and underground piping is a concern. Trespassers or people working on the Site may be exposed to these hazardous materials if they approach or tamper with any of these vessels. The tanks, pits and sumps, and piping are deteriorated and may leak at any time, releasing hazardous substances into the environment, including the surface water and ground water. The dilapidated condition of on-site buildings and other structures is also a major concern because of the presence of friable asbestos. Portions of several buildings have either already collapsed or are threatening to collapse. Due to the presence of friable asbestos, and in some cases other contaminants, asbestos abatement and demolition of certain buildings are warranted in order to protect the health and safety of personnel involved in on-site activities during remediation and to prevent releases of hazardous contaminants into the environment.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include: environmental chemistry sampling and analysis, environmental parameter measurement, fate and transport modeling, exposure parameter estimation, and toxicological data.

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Environmental chemistry-analysis error can stem from several sources, including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern (especially relating to interior dust ingestion secondary to mouthing activity), the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper-bound estimates of the risks to populations near the Site and is highly unlikely to underestimate actual risks related to the Site.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs) and calculated risk-based levels, which are detailed in Section 3.2 of the FFS and in Table 22. Remedial action objectives for the buildings/equipment/tanks/piping at the Site, considering all identified site concerns and contaminant pathways, include:

- Prevention of human exposure (through ingestion, inhalation, and/or dermal contact) to contaminants in dusts and on building surfaces, where chemical concentrations exceed risk-based remediation goals.

- Removal of contamination sources to prevent further migration of contaminants to other media including soil and/or sediments, surface water and/or ground water via precipitation run-off and/or percolation. This includes contaminated buildings (and contents from the tanks, pits, sumps, and underground piping) that are in danger of deterioration and collapse, thereby posing a threat of migration of contaminants into the environment.

An additional objective at the Roebling Steel Site is to ensure that remedial actions are undertaken with due regard for the historic and cultural resource protections that apply under federal and State historic preservation laws and regulations.

DESCRIPTION OF REMEDIAL ALTERNATIVES

CERCLA requires that each selected site remedy be protective of human health and the environment, be cost effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

The FFS report evaluated, in detail, six remedial alternatives to address the contamination associated with the buildings. With reference to the specific building groups (A, B, and C) defined below, remedial alternatives range from no further action with institutional controls; to decontamination for reuse of the buildings; to minimal decontamination followed by demolition with on-site and off-site management of debris. Asbestos abatement, closure of contaminated underground tanks, and drainage of underground piping are included in all of the proposed alternatives except no further action, because they are needed to protect cleanup workers in the buildings and to protect the environment from asbestos release and failure of the tanks or piping releasing their contents into the environment.

A brief description of each of the six remedial alternatives developed for the buildings, as well as an estimate of their cost and implementation time frames, are listed below. Note that the time frames represent actual construction periods once design activities have been completed. The design work can take up to two years to perform, depending on the particular alternative. These alternatives have been prepared from the technologies and process options remaining after the initial screening, taking into account contamination levels and future reuse potential for the three building groups (A, B, and C).

Remedial Approach

EPA has developed site-specific remediation goals for the Roebling Steel Site based on criteria set forth in EPA guidance documents and site-specific risk calculations corresponding to a carcinogenic risk of $1x10^{-6}$. Historically published cleanup criteria were compiled for comparison with calculated values, as shown in Table 23. In general, over 90% of the total carcinogenic risk from the building dust is contributed by arsenic, PCBs, and carcinogenic PAHs. However, a remediation goal for PCBs will not be used because PCB contamination was not detected in any of the buildings with soil floors which would require excavation. Those buildings that PCBs were detected in building dust samples are either slated for demolition or the decontamination is driven by significant lead contamination. Wide-spread lead contamination drives the remediation for the majority of buildings in Groups A and B, as described below. Lead contributes the majority of the noncarcinogenic risk, as evidenced from extremely high concentrations detected in the building dust.

The remediation goals are based on the assumption that future land use will be commercial. The use of the remediation goals for the contaminated buildings are two-fold: (1) to facilitate the segregation of buildings into three groups based on the extent of contamination, as discussed below, and (2) to achieve the remedial action objectives. As further discussed in Section 3.2 of the FFS, the remediation goals for the Site are as follows:

CONTAMINANT	*REMEDIATION GOALS (ppm)*	*RATIONALE*
Lead	1,100	Site-specific calculated value using the Adult Lead Model.
Arsenic	20	State-wide and site-specific background for soil.
Carcinogenic PAHs		
benzo(a)pyrene	0.78	Calculated values based on the EPA guidance corresponding to a carcinogenic risk of $1X10^{-6}$.
dibenzo(a,h)anthracene	0.78	
benzo(a)anthracene	7.8	
benzo(b)fluoranthene	7.8	
indeno(1,2,3-cd)pyrene	7.8	

The remedial approach involves separating the abandoned building into three groups based on the extent of contamination and the structural stability of the buildings. The groups are defined as follows:

Building Group A: Contaminated buildings that are structurally unsound.

Building Group B: Contaminated buildings that are structurally sound.

Building Group C: Buildings with no significant chemical contamination, except asbestos.

The reuse potentials for individual buildings have also been assessed based on current structural conditions, building sizes and configurations, specific locations of buildings on the Site, and other considerations. As noted above, buildings that are contaminated have been segregated into two groups (A and B) to facilitate the development of a variety of decontamination/demolition alternatives. Group A buildings would have limited or no reuse potential due to lack of structural soundness and high levels of contamination that would be infeasible to decontaminate. The most logical method to address the risks posed by contamination in these buildings is to perform decontamination to minimum levels required for demolition, followed by demolition. For Group B buildings, it would be feasible to address the contamination risks by decontamination to specific risk-based remediation goals. It should be noted that some building designations may change based on architectural and historical evaluations during remedial design. For buildings with no significant chemical contamination except asbestos (Group C), remediation options, except for friable asbestos removal, are not considered. Figure 1 graphically depicts the building group designations. Table 19 shows the group designations on a building-by-building basis. Table 20 presents the estimated amount of equipment and building surface areas requiring decontamination as well as the volume of debris generated by demolition of the buildings.

During the FFS, a treatability study was conducted to determine if decontamination methods would achieve remediation goals. This study concluded that vacuuming followed by pressure washing with water was the most effective decontamination method. The treatability study results were compared to the State proposed standards for building interiors as guidelines in assessing the effectiveness of the decontamination processes at the Site. The State proposed standards were met for antimony, arsenic, cadmium and mercury on four different surface types (brick, concrete, wood and metal). Lead was not successfully decontaminated from building surfaces below the State proposed standard, however, a 95% reduction from the initial baseline was demonstrated on four different surface types. Failure to achieve these standards is attributed to the extremely high concentrations of lead found in the buildings selected for the treatability study. Buildings that have a similar type of lead contamination have been slated for demolition (Group A buildings), since treatability study results indicate that it may be difficult or infeasible to decontaminate to risk-based levels.

In contaminated buildings with material floors, remediation goals for equipment and interior building surfaces will be achieved by removing all building dust through decontamination. Remediation goals for contaminated buildings with earthened floors and for interior building surfaces within these buildings will be achieved by removing the building dust through decontamination and excavating the contaminated soil floors. Prior to backfilling with clean soil, post-excavation sampling will be conducted to confirm remediation goals have been met. EPA, in consultation with appropriate health agencies will conduct a qualitative evaluation to assure the effectiveness of the decontamination process, which may be based on, but not limited to, visual inspection, wipe sampling (to show a percent reduction), and best professional judgement, as appropriate.

Alternative 1: No Further Action with Institutional Controls

Estimated Capital Cost:	$ 39,900
Estimated Annual O&M Cost:	$566,300
Estimated Present Worth:	$606,200
Estimated Construction Time:	one year

CERCLA and the NCP require the evaluation of No Further Action as a baseline to which other alternatives are compared. No active remediation or containment of any contamination associated with the buildings would be performed. Institutional controls such as fence repair and deed restrictions would be implemented to restrict access and limit future land uses for the Site. Periodic site inspections would be implemented to assess the potential migration of contaminants and the structural condition of the buildings and other structures. Since this alternative would result in hazardous substances remaining on-site, a review would be conducted after five years to determine the effectiveness of this alternative. If necessary, appropriate action would be considered at that time.

This alternative would not comply with ARARs. RCRA regulations for proper disposal of characteristic hazardous waste, asbestos-related regulations, State UST closure regulations, and historic preservation ARARs would not be met.

Alternative 2: Contaminated Underground Tanks Closure / Underground Piping Drainage / Asbestos Abatement for All Buildings / Institutional Controls

Estimated Capital Cost:	$ 9,875,084
Estimated Annual O&M Cost:	$ 566,300
Estimated Present Worth:	$10,441,384
Estimated Construction Time:	18 months

This alternative involves final closure of contaminated underground storage tanks, drainage of underground piping systems and abatement of friable asbestos within each building. This alternative does not address the chemical contamination associated with the on-site buildings, including aboveground tanks inside the buildings. This alternative involves the removal of eleven contaminated underground storage tanks, along with all tank contents and any surrounding soil which has been impacted. Each excavated area will be backfilled with fill material similar in composition and character to natural soils of the area. The tanks will be properly disposed of off-site or recycled as scrap metal. All drained oil and excavated soil will also be transported off-site for disposal. While most of the underground tanks to be removed are situated outdoors and easily accessible, two of the contaminated underground tanks would require special efforts. Portions of the floor and roof of Buildings 96 and 72 would be removed to access these tanks. In addition, remaining waste oil in underground piping at the Site would be drained and disposed of off-site. Removal of the piping itself is not included in this operable unit.

This alternative involves friable asbestos abatement in accordance with Federal, state, and local regulations, which stipulate strict standards and abatement requirements for indoor air quality and friable asbestos. All buildings remaining at the Site may potentially be reused after asbestos abatement is complete, assuming remaining building contamination is appropriately addressed. All friable asbestos would be removed and disposed of at an off-site landfill. Each building would be prepared for asbestos removal prior to initiation of work. This would include containing the immediate work area using polyethylene sheeting and a negative air filtration device. Wet-wiping, vacuuming, and spraying would follow the bulk removal of friable asbestos from surfaces.

An historic preservation mitigation plan addressing the effects of EPA's proposed actions would be developed during the remedial design and implemented following consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Office. The mitigation activities would focus on the Main Gate House, which would be renovated for historic preservation related uses. Conservation and curation of archives would involve assessment of the collection, selection of items for permanent curation, and preparation for permanent curation within a qualified repository.

As discussed in Alternative 1, institutional controls would be placed on the Site following asbestos abatement and tank removal.

This alternative would comply with asbestos-related ARARs and State UST closure regulations. In addition, off-site transportation and disposal would comply with RCRA and State regulations. RCRA standards for characteristic hazardous wastes in the buildings would not be met under this alternative. All activities would comply with OSHA standards.

Alternative 3: Contaminated Underground Tanks Closure / Underground Piping Drainage / Asbestos Abatement for All Buildings, and:

Building Group A: Gross Decontamination, Demolition, and On-site Management of Selected Demolition Debris
Building Group B: Decontamination
Building Group C: No Further Action

Estimated Capital Cost:	$38,800,442
Estimated Annual O&M Cost:	$0
Estimated Present Worth:	$38,800,442
Estimated Construction Time:	2 years

Alternative 3 incorporates the basic components of Alternative 2, in terms of contaminated underground tank closure, underground pipe drainage, and friable asbestos abatement from all buildings; however, this alternative also addresses the primary (gross) decontamination and demolition of buildings in Group A, and both primary and secondary decontamination of the buildings in Group B. Alternative 3 includes the on-site disposal of nonhazardous building demolition debris only. Contaminated equipment, process dusts, and contents from aboveground tanks, and pits/sumps would be disposed off-site. Asbestos abatement activities would also be completed to varying extents under this alternative for those buildings that would be demolished. Buildings in Group A would require the additional removal of asbestos-containing material that could become friable when crumbled, pulverized, or reduced to powder during demolition. Asbestos-containing material, which either is friable or will become friable during demolition, such as pipe insulation tar paper, ceiling and floor tiles, transite wallboard, and firebricks, would also be disposed of at an off-site landfill.

Equipment Removal and Decontamination - Equipment and loose debris from buildings in Groups A and B would be removed from the buildings to facilitate subsequent decontamination of the buildings. Large, heavy machinery would be cut down to manageable pieces. Piping and ductwork would be dismantled. All accumulated liquid wastes and sludges from the tanks, pits, and sumps would be properly characterized prior to off-site disposal. A significant quantity of equipment is salvageable due to metal content, and recycling would reduce the cost of this alternative. Equipment, tanks, and other items would be decontaminated prior to recycling. Decontamination wastewaters and sludges would be properly characterized prior to off-site disposal.

Building Decontamination - Primary (gross) decontamination of the buildings (needed to ensure safe demolition and disposal) in Groups A and B would involve collecting and containing the dust for off-site disposal. Contaminated soil from buildings with earthen floors would be excavated and backfilled with clean soil fill. Following primary decontamination to demolition standards, Group A buildings would be demolished. These structures are unstable and cannot be reoccupied safely. Group B buildings would require a more thorough decontamination process so that the structures can be reused. This "secondary" stage decontamination would consist of deep cleaning the interior walls and floors with a vacuum, followed by pressure washing. Temporary berms, culverts, and pumps would be used to direct and collect wastewater generated during decontamination of the buildings. Hazardous wastewater would be containerized for off-site treatment and disposal, and nonhazardous wastewater would be discharged to the local sewer system following any pretreatment which is required by the receiving facility. Liquid waste and sludge from pits and sumps, and other process areas would be containerized and characterized for off-site transport and disposal.

Building Demolition - Group A buildings would be demolished following asbestos removal and primary (gross) decontamination. Standard demolition equipment (e.g., backhoes, wrecking balls, winches) would be used. Control measures would be implemented as necessary during demolition activities to minimize generation of fugitive dusts. Building debris would be separated according to waste type (e.g., masonry, metal, wood, glass).

Management of Debris - Nonhazardous masonry, wood, and glass debris generated during building demolition would be processed and stockpiled prior to use as on-site fill. The debris would be reduced in size using standard large-scale crushing and grinding equipment. Once sufficiently processed, and RCRA TCLP testing showed the crushed debris did not exceed any toxicity characteristic leaching levels, the crushed materials would be used as miscellaneous nonhazardous fill for portions of the Site. The fill would be placed, as needed, in the slag area prior to placement of the final cover. Stability of the fill material would be determined during remedial design. Demolition debris that exceeds RCRA regulatory levels would be sent off-site for disposal. Based on sampling results, it is estimated that 20% of the demolition debris can be considered hazardous. Scrap metal debris generated during demolition of Group A buildings would be salvaged to the maximum extent practicable concurrent with recycling of metal equipment removed from the Site.

Historic Preservation - In addition to the items discussed in Alternative 2, other historic preservation mitigation measures would include recording historic aspects of building structures and machinery. Specific mitigation measures for the structures would include taking large format photographs and producing measured detailed drawings of specified buildings. Mitigation activities related to the machinery include: inventory of machinery, appraisal of the historic value of machinery, and selection of specific pieces of machinery to remain on-site or be relocated to qualified conservation repositories. Recording information of Group A building details would be a priority since they are being demolished under this alternative.

This alternative would meet all ARARs. Off-site disposal would comply with RCRA regulations, and on-site management of demolition debris would comply with relevant and appropriate portions of RCRA Subtitle D and State solid and hazardous waste management regulations. All activities would comply with OSHA standards. Disposal of decontamination wastewater to the local Publicly-owned Treatment Works (POTW) would comply with federal and local POTW regulations. Additionally, this alternative would comply with State UST closure regulations and the requirements of the National Historic Preservation Act, 16 U.S.C. 470.

Alternative 4: Contaminated Underground Tanks Closure / Underground Piping Drainage / Asbestos Abatement for All Buildings, and:

Building Group A: Gross Decontamination, Demolition, and Off-site Management of Selected Demolition Debris
Building Group B: Decontamination
Building Group C: No Further Action

Estimated Capital Cost:	$40,743,154
Estimated Annual O&M Cost:	$0
Estimated Present Worth:	$40,743,154
Estimated Construction Time:	2 years

Alternative 4 incorporates the basic components of Alternative 2, in terms of contaminated underground tank closure, underground pipe drainage, and asbestos abatement. Alternative 4 is identical to Alternative 3 except in the management of demolition debris from Group A buildings following primary (gross) decontamination.

Under Alternative 4, metal debris would still be salvaged to the maximum extent practicable. The remaining debris (e.g., masonry, glass, wood) would be containerized for shipment to an off-site landfill. Each shipment would be sampled for hazardous waste standards. Any small amounts of RCRA listed or characteristic hazardous waste would be segregated and properly off-site disposed. It is assumed that disposal at a nonhazardous solid waste disposal facility would be appropriate for most of the demolition debris; the facility would be one in compliance with RCRA Subtitle D. It is estiamted that approximately 20% of the demolition debris may exceed RCRA regulatory levels based on sampling results.

Alternative 5: Contaminated Underground Tanks Closure / Underground Piping Drainage / Asbestos Abatement for All Buildings, and:

Building Groups A and B: Gross Decontamination, Demolition, and On-site Management of Selected Demolition Debris

Building Group C: No Further Action

Estimated Capital Cost:	$40,935,836
Estimated Annual O&M Cost:	$0
Estimated Present Worth:	$40,935,836
Estimated Construction Time:	3 years

Alternative 5 parallels Alternative 3 in the abatement of asbestos, closure of contaminated underground tanks, underground pipe drainage, primary (gross) decontamination and demolition of buildings in Group A, and management of debris generated during demolition. This alternative expands Alternative 3 with respect to the way Group B buildings would be addressed. Under Alternative 5, Group B buildings would be decontaminated to demolition standards only; no secondary vacuuming or pressure washing would be performed. All equipment and materials in each Group B building would be removed for separate decontamination and possible salvage. Using standard equipment, Group A and B buildings would then be demolished. Based on RCRA TCLP testing, nonhazardous masonry, wood, and glass debris from these buildings would be crushed for use on-site as nonhazardous fill. Metal debris would be recycled off-site. Historic building recording activities would be expanded due to the larger number of buildings to be demolished.

On-site management of demolition debris from buildings in Groups A and B would comply with relevant and appropriate portions of RCRA Subtitle D and State solid and hazardous waste regulations. All response activities would comply with OSHA standards. It would be more difficult to comply with the National Historic Preservation Act under this alternative because the amount of building demolition is greater.

Alternative 6: **Contaminated Underground Tanks Closure / Underground Piping Drainage / Asbestos Abatement for All Buildings, and:**

Building Groups A and B: Gross Decontamination, Demolition, and Off-site Management of Selected Demolition Debris

Building Group C: No Further Action

Estimated Capital Cost:	$44,925,665
Estimated Annual O&M Cost:	$0
Estimated Present Worth:	$44,925,665
Estimated Construction Time:	3 years

Alternative 6 parallels Alternative 4 in the abatement of asbestos, closure of contaminated underground tanks, underground pipe drainage, primary (gross) decontamination and demolition of buildings in Group A, and management of debris generated during demolition. This alternative expands Alternative 4 with respect to the way Group B buildings would be addressed. Buildings in both Groups A and B would be demolished following gross decontamination to demolition standards as described under Alternative 5, but all debris would be transported off-site for disposal and/or recycling. Secondary decontamination of Group B buildings would not be performed under Alternative 6.

Off-site disposal of demolition debris would be at a facility in compliance with RCRA Subtitle D.

EVALUATION OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, including, overall protection of human health and the environment; compliance with applicable or relevant and appropriate requirements; long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability; cost; and state and community acceptance.

The evaluation criteria are described below:

- o Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- o Compliance with applicable or relevant and appropriate requirements (ARARs) addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- o <u>Long-term effectiveness and permanence</u> refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

- o <u>Reduction of toxicity, mobility, or volume</u> is the anticipated performance of the treatment technologies a remedy may employ.

- o <u>Short-term effectiveness</u> 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.

- o <u>Implementability</u> is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- o <u>Cost</u> includes estimated capital and operation and maintenance costs, and net present worth costs.

- o <u>State acceptance</u> indicates whether, based on its review of the RI/FS reports and Proposed Plan, the state concurs, opposes, or has no comment on the preferred alternative.

- o <u>Community acceptance</u> will be assessed in the Record of Decision following a review of the public comments received on the Proposed Plan.

The following section provides a comparative analysis which evaluates the relative performance of all alternatives in relation to each evaluation criterion noted above. This comparative analysis identifies advantages and disadvantages of each alternative so that tradeoffs between the alternatives can be determined.

Overall Protection of Human Health and the Environment

Alternatives 3 through 6 provide overall protection by reducing the risk of public exposure to building contaminants. Alternatives 5 and 6 achieve protection by demolishing both Group A and B buildings. Alternatives 3 and 4 offer protection by grossly decontaminating (needed to ensure safe demolition and disposal) and demolishing only Group A buildings, thereby eliminating the risk of exposure; and by decontaminating Group B buildings to risk-based remediation goals to allow for potential reuse of these structures. Some residual contamination may remain, but the level of risk would be acceptable for industrial or commercial use. Alternatives 3 through 6, also eliminate the risks associated with friable asbestos and contaminated underground tanks and piping.

Alternatives 3 and 5 include on-site management of nonhazardous demolition debris while Alternatives 4 and 6 dispose of this material off-site. Since the level of decontamination for buildings that are to be demolished is lower than for decontaminated buildings that remain, there may be a potential for contaminants to escape from the demolition debris to the surrounding environment, particularly in Alternative 5. However, the potential for this to happen is low since any debris that exceeds regulatory levels, analyzed with the RCRA TCLP test, would be sent off-site for disposal. Both Alternatives 4 and 6 would eliminate this potential risk by disposing of the demolition debris off-site.

Alternative 2 would only eliminate the risks associated with friable asbestos and contaminated underground tanks and piping. Removal and off-site disposal of friable asbestos, proper closure of the contaminated underground tanks, and drainage of piping would eliminate public exposure risks and prevent potential migration of tank and piping contents to other media. Alternative 1 would provide no additional protection of human health and the environment. Alternative 1 relies on institutional controls, most of which are already in place. Deed restrictions would prevent future use of contaminated buildings and related machinery and materials.

Compliance with ARARs

Alternatives 3 through 6 would be implemented in compliance with chemical-specific, action-specific, and location-specific ARARs related to the disposal of RCRA hazardous wastes from the buildings, closure of contaminated underground tanks, drainage of piping, and emission standards for asbestos abatement. The primary ARARs of concern are RCRA regulations dealing with the identification, handling, transport, treatment and disposal of hazardous wastes. RCRA hazardous wastes found in tanks, pits/sumps, and underground piping liquids and sludges, impacted soils from leaking USTs, wastewaters generated from equipment and building decontamination, and process dust would be disposed of in compliance with ARARs. Alternatives 3 and 5 would be implemented in compliance with ARARs related to on-site disposal of RCRA TCLP-tested crushed demolition debris, which would be used as nonhazardous fill for portions of the Site. Should this debris prove hazardous, it would require treatment prior to disposal at an off-site facility in accordance with the RCRA land disposal restrictions. Under Alternatives 5 and 6, it may be more difficult to achieve compliance with the National Historic Preservation Act, a location-specific ARAR. Demolition of Group A and B buildings would adversely effect the buildings and process equipment which are considered eligible for the NRHP. Alternative 2 would only meet the ARARs related to UST closure, drainage of piping, and asbestos abatement. Alternative 1 would not achieve chemical-specific, action-specific, and location-specific ARARs related to the disposal of RCRA hazardous wastes from the buildings, closure of contaminated underground tanks, drainage of piping, and asbestos abatement. A complete list of ARARs may be found in Section 3 of the FFS report and Table 24.

Long-Term Effectiveness and Permanence

Alternatives 3 through 6 would all effectively minimize the public exposure and contaminant migration associated with the buildings, including friable asbestos and contaminated underground tanks and piping. Long-term permanence is maximized by removing contaminants from building interiors to acceptable levels through a combination of both decontamination and demolition. Levels of decontamination can be attained which would allow for demolition of the building and disposal of the debris or to levels which would allow future reuse of the buildings. Considerable sampling of building surfaces and equipment would be required to ensure contamination was reduced to acceptable levels.

Long-term effectiveness and permanence would be somewhat more enhanced under Alternatives 4 and 6 than Alternatives 3 and 5, because demolition debris would be disposed of off-site. On-site disposal raises some long-term uncertainties regarding potential residual contaminants migrating to the surrounding environment. However, decontamination of buildings would be performed to nonhazardous levels prior to demolition to allow for safe on-site disposal. Following demolition, debris would be sampled, and should this debris prove hazardous, it would require treatment prior to off-site disposal in accordance with the RCRA land disposal restrictions.

Under Alternative 2, asbestos abatement and removal of contaminated underground tanks and the contents of piping should effectively and reliably eliminate risk associated which these materials. The magnitude of residual risk is highest for Alternative 1, reduced slightly for Alternative 2 and reduced significantly for the remaining alternatives. Alternative 1 and in part Alternative 2 (for the building component) relies on institutional controls, which are not always reliable. Trespassing, vandalism, and unauthorized removal of scrap metals continue despite the 24-hour security and perimeter fencing.

Reduction of Toxicity, Mobility or Volume

The greatest reduction of toxicity, mobility, and volume of contaminants would be achieved by Alternatives 3 and 4, where decontamination of building interiors would be implemented as the principal remedial technology. In Alternatives 5 and 6, both Group A and B buildings would undergo primary (gross) decontamination to remove surficial dust for demolition purposes. In Alternatives 3 and 4, Group B buildings would undergo both primary (gross) and secondary decontamination, which would remove a greater volume of contaminants from the building interiors, and transfer them to residues and wastewaters. Appropriate off-site treatment and disposal of these decontamination residuals and wastewaters would reduce the toxicity, mobility, and volume of contaminants remaining at the Site. Also, less demolition debris tainted with residual contaminants would be generated in Alternatives 3 and 4, since only Group A buildings would be demolished. This would reduce the volume of building materials that would have to be managed on-site or off-site, thereby reducing the mobility of remaining contaminants. Under Alternatives 3 through 6, appropriate off-site treatment and disposal of contaminated residues from aboveground tanks, pits and sumps, contaminated equipment, underground tanks and piping, and friable asbestos would sufficiently reduce mobility of contaminants. Alternative 2 reduces the volume of contaminants at the Site associated only with friable asbestos and contaminated underground tanks and piping, but does not address the building contamination. Alternative 1 provides no reduction in the toxicity, mobility or volume of contaminants at the Site.

Short-Term Effectiveness

Potential risks to workers associated with the decontamination of equipment and building interiors would be mitigated through the use of established safe-work practices and appropriate personal protective equipment. Potential risks to workers would be negligible for Alternative 1, and increased for Alternative 2, as a result of tank closure, pipe drainage, and asbestos abatement activities. Potential threats to workers and nearby residents associated with demolition activities are greater in Alternatives 5 and 6 than Alternatives 3 and 4; risks include dust emissions generated from both building demolition and processing of debris. These risks would be minimized by using appropriate dust suppression measures. Monitoring would be used to ensure that no airborne contamination migrates from the Site. Off-site impacts to the neighboring community would include possible dust emissions and truck traffic associated with heavy construction activities and the transport of materials off-site for disposal. Truck traffic and noise in the community would be most significant in Alternative 6, followed by Alternatives 5 and 4. Alternative 3 would involve transporting the least amount of material off-site, which would further limit the potential adverse impacts on the community.

Alternatives 3 or 4 would achieve remedial action objectives, and could be implemented in an estimated two years. Under Alternatives 5 and 6, it may be more difficult to achieve remedial action objectives related to historic preservation. Alternatives 5 and 6 could be implemented in an estimated three years. Alternative 2 could be implemented in 1 1/2 years, but would only partially achieve remedial action objectives. Alternative 1 could be implemented within one year but would not achieve remedial action objectives.

Implementability

Alternatives 1 through 6 are technically and administratively feasible. In general, no major construction concerns are associated with any of the alternatives. Services and materials for all alternatives are readily available, as are appropriate off-site disposal facilities. However, Alternatives 4 and 6 would utilize more off-site disposal space than the other alternatives, and this may make these alternatives less implementable at the time of disposal, based on landfill space capacity. Dismantling equipment, building demolition, and building decontamination use common construction equipment and can be implemented reliably. Processing (crushing, screening) of nonhazardous demolition debris will result in a material suitable for use as fill at the Site. The on-site management of nonhazardous debris under Alternatives 3 and 5 could be implemented using standard construction techniques. The use of the slag area for disposal of nonhazardous demolition debris would be coordinated with the ongoing design for OU-3. In Alternatives 3 and 4, several buildings currently slated for decontamination may require demolition, since treatability study results indicate that it may be difficult or infeasible to achieve remediation goals for lead in these buildings. Alternatives 2 through 6 have additional requirements for the transportation of wastes off-site. Compliance with the regulations of the POTW would be necessary for the discharge of decontamination wastewaters in Alternatives 3 through 6. Alternatives 1 and 2 would be difficult to implement with respect to enforcing institutional controls, such as preventing unauthorized access.

Cost

The estimated present worth costs range from $606,200 for Alternative 1 to $44,925,665 for Alternative 6. In evaluating cost effectiveness between Alternatives 3 through 6, Alternative 3 ($38,800,442) satisfies the remedial action objectives at the least cost, and removes the risks associated with the potential reuse of buildings. The cost differences between Alternatives 3 or 4 and 5 or 6 are not significant. Alternative 1 is the lowest cost but provides no additional protection of human health and the environment. Alternative 2 is significantly more costly than Alternative 1, but only partially meets the remedial action objectives. Table 21 summarizes the costs for each alternative on a building-by-building basis.

State Acceptance

The State of New Jersey concurs with the selected remedy presented in this Record of Decision.

Community Acceptance

Community acceptance of the preferred remedy was evaluated after the public comment period. Both the local officials and residents expressed support for the preferred remedy. A more detailed discussion of community concerns is presented in the Responsiveness Summary.

SELECTED REMEDY

After a thorough review and evaluation of the alternatives and public comments, EPA and NJDEP have determined that Alternative 3 achieves the best balance of tradeoffs with respect to the nine criteria. The major components of Alternative 3 include the closure of USTs, removal of the contents from underground piping for off-site disposal, asbestos abatement in all buildings (Groups A, B, and C), gross decontamination and demolition of buildings in Group A, further decontamination of the buildings in Group B, and decontamination of equipment and tanks. Nonhazardous building demolition debris would be managed on-site. Scrap metal from building debris and contaminated equipment would be decontaminated and sent off-site for metal recycling or landfill disposal. All asbestos, process dust and the contents of aboveground tanks, pits/sumps, and underground tanks and piping would be disposed of off-site. Demolition debris that exceeds regulatory levels would be sent off-site for disposal.

STATUTORY DETERMINATIONS

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, the selected remedy for the Roebling Steel Site must comply with applicable or relevant and appropriate environmental standards established under federal and state environmental laws unless a statutory waiver is justified. The selected remedy also must be cost effective and utilize permanent solutions and alternative treatment technologies or resource-recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes. The following sections discuss how the selected remedy meets these statutory requirements.

Protection of Human Health and the Environment

The selected remedy addresses the remedial action objectives by preventing human exposure to building contaminants and preventing the migration of contamination sources to the environment. Building dust and contaminated residues from aboveground tanks, pits and sumps, contaminated equipment, underground tanks and piping, and friable asbestos will be disposed of off-site at an appropriate facility. Removing contaminants from building interiors to acceptable risk-based remediation goals are accomplished by decontaminating and demolishing Group A buildings and further decontaminating Group B buildings. Decontamination of building interiors will remove contaminants through pressure washing (treatment) and transfer them to residues and wastewaters. Threats to public exposure will be eliminated by preventing inadvertent ingestion or dermal contact with building contaminants; therefore, future commercial reuse of the buildings is possible. Short-term impacts to the neighboring community, such as dust emissions from demolition activities and truck traffic associated with transport of materials off-site for disposal, will be minimal because the amount of demolition is limited and nonhazardous demolition debris will be managed on-site.

Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy will comply with all Federal and State requirements that are applicable or relevant and appropriate (ARARs) to its implementation. A comprehensive ARAR discussion is included in Chapter 3 of the FFS and a complete listing of ARARs is included in Table 22 of this ROD.

Chemical-Specific ARARs

All actions involving building dust and contaminated residues from aboveground tanks, pits and sumps, contaminated equipment, underground tanks and piping, and decontamination wastewaters that are hazardous will be disposed in accordance with RCRA requirements at RCRA-permitted facilities. RCRA TCLP of provides concentration levels for certain compounds to determine if the material is a RCRA characteristic waste, which is deemed hazardous. PCB-contaminated materials will be disposed of in accordance with TSCA requirements at TSCA-permitted facilities. TSCA requirements do not apply to PCBs at concentration less than 50 ppm; however PCBs cannot be diluted to escape TSCA requirements. The asbestos removal and other remedial activities will be in compliance with the federal Clean Air Act (CAA), including the National Ambient Air Quality Standards (NAAQS), 40 CFR Part 50, and the National Emission Standards for Hazardous Air Pollutants (NESHAPs), 40 CFR Part 61. Air emissions from remedial activities will also be in compliance with the CAA Amendments of 1990 and New Jersey Ambient Air Quality Standards.

There are no ARARs for the cleanup of building interiors and soils (for earthened floors). However, the remediation goals identified for the building interiors remedy will reduce exposure risks posed by building dust to the acceptable range of 10^{-4} to 10^{-6} for carcinogens, and to an HI less than 1.0 for noncarcinogens.

Action-Specific ARARs

Action-specific ARARs will be achieved by conducting remedial action activities in accordance with OSHA, RCRA, and New Jersey hazardous waste regulations. Hazardous wastes will be managed in accordance with RCRA Generator Requirements for Manifesting and Off-Site Waste Transport, Transporter Requirements, DOT Rules for Hazardous Materials Transport, Land Disposal Restrictions, and OSHA standards for Hazardous Responses and General Construction Activities.

RCRA and/or the New Jersey UST Closure Regulations will regulate the closure of eleven underground tanks at the Roebling Steel Site used for storage of petroleum contaminated with hazardous substances which is not inherent in the petroleum product.

Decontaminated demolition debris not meeting the definition of "hazardous wastes", will be managed in accordance with RCRA Subtitle D and the New Jersey Solid and

Hazardous Waste Management Regulations. Any decontaminated, nonhazardous demolition debris disposed of in the slag area must meet the substantive portions of these regulations. The RCRA hybrid-landfill closure requirements that pertain to a soil cover selected for the slag area remedy, will also be protective for diposal of demolition debris.

The CAA governs potential emissions that may occur during implementation of construction activities, such as decontamination and demolition of buildings. The NESHAPs, 40 CFR Part 61, under the CAA include standards for building demolition requiring the removal of all friable asbestos prior to demolition. NESHAPs, 40 CRF Part 50, include requirements applicable to emissions of particulate matter and lead. Dust control measures and air monitoring will be included in the design specifications and health and safety plans to ensure compliance with RCRA, CAA, and State regulations.

Location-Specific ARARs

The National Historic Preservation Act (Section 106) requires a Federal agency with jurisdiction to take into account the effects of the agency's undertaking on historic properties, including properties eligible for the NRHP. EPA, the federal Advisory Council on Historic Preservation, and the New Jersey State Historic Preservation Officer consider the Roebling Steel Site to be eligible for inclusion on the NRHP, and the Section 106 process will be followed as an ARAR for the remedial actions at the Site which involve demolition/removal of historic buildings, process equipment, and archives. A mitigation plan will be developed during remedial design to reduce the impact to these resources as much as possible.

RCRA Location Requirements for 100-year Floodplains indicate that hazardous waste treatment, storage, or disposal facilities must be designed, constructed, operated, and maintained to prevent wash-out by a 100-year flood. The Executive Order 11988, Floodplain Management for CERCLA Actions will be met. These standards will be met as CERCLA ARARs for any hazardous waste management activities conducted along the Delaware River or in the slag area (i.e., portions of the Site which are designated as 100-year floodplains). The New Jersey Flood Hazard Area Control Act sets standards on the allowable activities for floodways to protect the environment and human health. These standards will be met for any remediation conducted in a floodway or any activity involving alteration or encroachment upon a waterway.

Advisories, Guidance, and Criteria To Be Considered

A risk-based, commercial remediation goal for lead in soil/dust can be calculated using an Adult Lead Model, which is under development by EPA (Review of a Methodology for Establishing Risk-Based Soil Remediation Goals for Commercial Areas of the California Gulch Site, dated October 1995). Using this model, the site-specific calculated remediation goal for lead is 1,100 ppm. Use of the Adult Lead Model is appropriate for calculating a remediation goal for lead at the Site because future reuse of the Site is considered to be commercial/industrial.

Portions of the "New Jersey Lead Hazard Evaluation and Abatement Code", include acceptable sampling methods and frequency for evaluation of lead hazards, and provides lead dust levels adopted from the US Department of Housing and Urban Development (HUD) Guidelines, for which abatement is recommended. The action level for floors is 100 ug/sq.ft. and may be used in assessing the effectiveness of the decontamination processes at the Site.

Selected, processed building demolition debris will be managed according to the "New Jersey Guidance on Management of Excavated Soils", which discusses testing methods and management options for soil mixed with solid debris (concrete and brick) to be used as miscellaneous fill in the slag area.

The shipment of hazardous wastes off-site to a treatment/disposal facility will be conducted in accordance with EPA's Office of Solid Waste and Emergency Response Directive No. 9834.11, "Revised Procedures for Planning and Implementing Off-site Response Actions." The intent of this directive is to ensure that facilities authorized to accept CERCLA-generated waste are in compliance with RCRA operating standards.

EPA's 1985 Policy on Wetlands and Floodplains Assessment for CERCLA actions requires that remedial actions meet the substantive requirements the Floodplain Management Executive Order (E.O. 11988), and Appendix A of 40 CFR Part 6, entitled Statement of Procedures on Floodplain Management and Wetland Protection. This policy requires consideration of the 500-year floodplain when planning remedial actions and evaluating their impacts.

Cost-Effectiveness

The cost effectiveness of a remedy is determined by weighing the cost against the ability to achieve ARARs and remedial action objectives. The selected remedy is cost effective, as it has been determined to provide overall effectiveness at the least cost. The estimated present worth cost of the selected remedy is $38,800,442 (Table 21).

Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable by providing the best balance among the nine evaluation criteria for all the alternatives examined. The selected remedy will eliminate the risk of exposure to building contaminants by decontaminating and demolishing Group A buildings and further decontaminating Group B buildings to risk-based remediation goals and removing friable asbestos from Group C buildings.

Decontamination of building interiors will remove contaminants through pressure washing (treatment) and transfer them to residues and wastewaters. Hazardous wastewater would be containerized for off-site treatment and disposal, and nonhazardous wastewater would be discharged to the local sewer system following any pretreatment which is required by the receiving facility. Scrap metal from building debris and contaminated equipment will be decontaminated prior to metal recycling or off-site disposal. Process dust, the contents of contaminated equipment, aboveground and underground tanks, pits/sumps, underground piping systems, and friable asbestos will be disposed off-site. The selected remedy will generate less demolition debris than other alternatives; therefore, the debris can be effectively managed on-site and impose the least amount of impact to the neighboring community.

Preference for Treatment as a Principal Element

The selected remedy relies on the use of treatment technologies as a principal component of the remedy. The selected remedy reduces levels of contamination on building interiors, including contaminated residues on equipment and metal debris, through treatment using decontamination; thereby reducing the risk to human health. Process dust, accumulated liquid wastes and sludges from equipment, aboveground and underground tanks, pits/sumps, and underground piping systems will be transported off-site for appropriate treatment and final disposal at a permitted facility. Therefore, the statutory preference for remedies that employ treatment as a principle element is satisfied.

DOCUMENTATION OF SIGNIFICANT CHANGES

There are no significant changes from the preferred alternative presented in the Proposed Plan.

ATTACHMENT 1

FIGURES AND TABLES

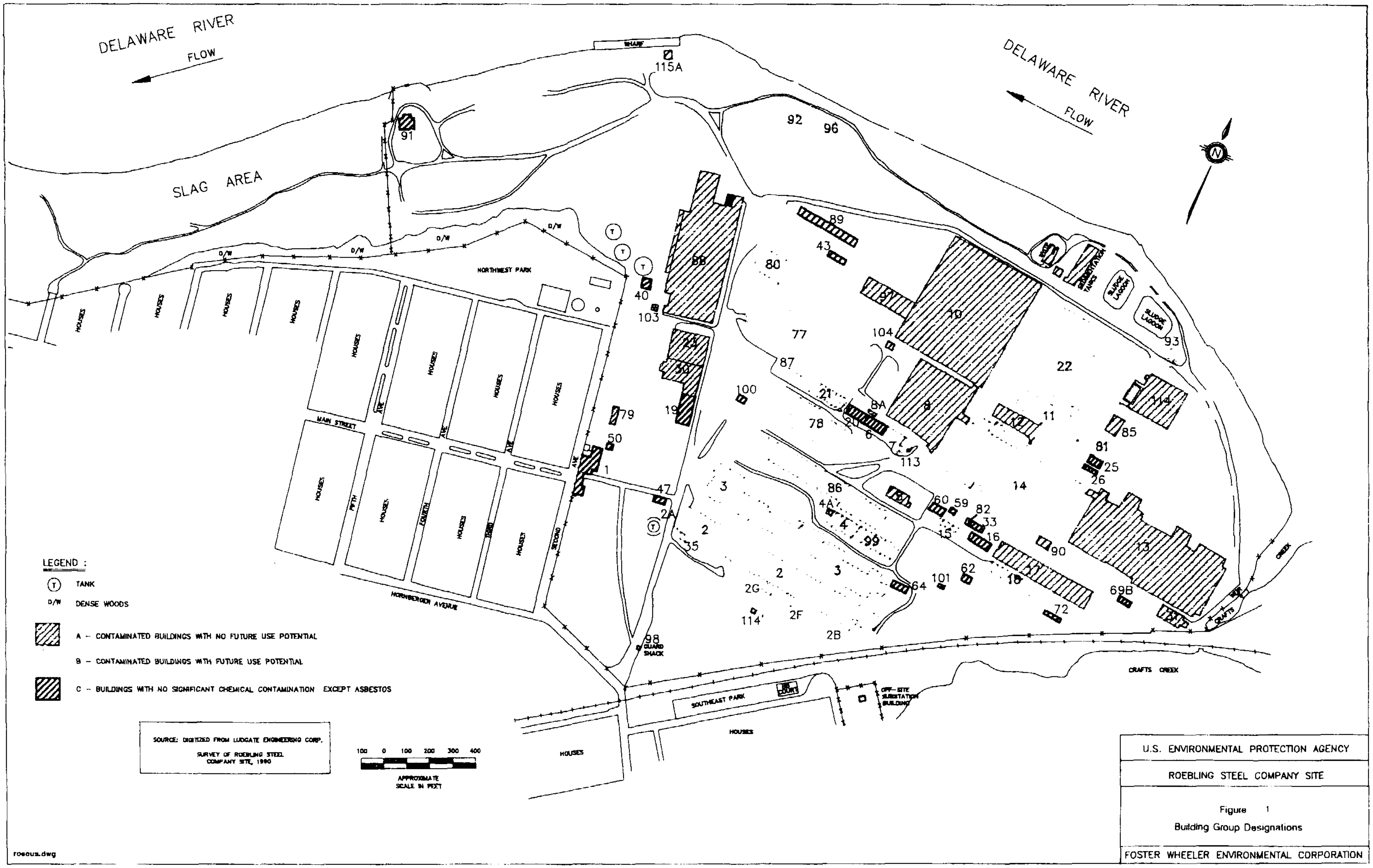

Figure 1
Building Group Designations

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TABLE 1

DESCRIPTION AND STATUS OF EPA'S RESPONSE ACTIONS

RESPONSE ACTIONS	DESCRIPTION AND STATUS
Removal Actions	
• Removal Action 1	- Removal of drums, lab pack containers, acid tanks, and compressed gas cylinders. Action completed in 1988.
• Removal Action 2	- Removal of contaminated surface soils from the Roebling Park, and installation of a perimeter fence around the slag area. Action completed in 1991.
ROD 1 (March 1990)	
• OU-1	- Removal of drums, transformers with PCBs, tanks, a baghouse dust pile, chemical piles, tires. Action completed in 1991.
ROD 2 (September 1991)	
• OU-2	- Removal of contaminated surface soils from the Southeast Park. Action completed in 1994.
• OU-3	- Design of the remedy for a 34-acre slag area, including treating hotspots, and covering entire area with a soil cover and vegetation. Design underway.
ROD 3 (Planned for September 1996)	- The upcoming ROD (the subject of this Proposed Plan) would address remediation of 70 abandoned buildings which contain contaminated process dust, contaminated equipment, tanks, pits and sumps, underground piping, and friable asbestos.
ROD 4 (Planned for 1997)	- This ROD would address all remaining contamination problems at the site, including an on-site landfill, sludge lagoons, potential buried drums, soils, river and creek sediments, and ground water. An RI/FS is planned for completion in Spring of 1997.

TABLE 2

TANK OIL SAMPLES EXCEEDING HAZARDOUS WASTE THRESHOLDS

Sample I.D.	Barium *	Lead **	Cadmium ***
RCS-TK03-01	Not exceeded	47 mg/kg	Not exceeded
RCS-TK03-02	122 mg/kg	259 mg/kg	Not exceeded
RCS-TK10-02/RCD-TK10-02	Not exceeded	6.4 mg/kg	Not exceeded
RCS-PA13-01	Not exceeded	64 mg/kg	6.4 mg/kg
RCS-TK31-01	Not exceeded	6.7 mg/kg	Not exceeded
RCS-PA86-02	1220 mg/kg	29 mg/kg	Not exceeded

* Regulatory Threshold is 100 mg/L

** Regulatory Threshold is 5 mg/L

*** Regulatory Threshold is 1 mg/L

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TABLE 3

Chip Samples Exceeding TCLP Thresholds

Sample ID	Material Sampled	Chromium Concentration (mg/L)	Lead Concentration (mg/L)
RCS-BC02-02	Building 2-Solids in furnace trough	33.6	ND
RCS-BC08-01	Building 8-Brick from lead bath	ND	82.8
RCS-BC11-01	Building 11-Painted brick wall	ND	70.4
RCS-BC13-01	Building 13-Painted brick wall	ND	5.6
RCS-BC17-03	Building 17-Red brick wall	ND	60.0
RCS-BC18-01	Building 18-Stained brick wall	ND	20.0
RCS-BC36-01	Building 36-Black ash	ND	40.0
RCS-BC78-02	Building 78-Stained brick wall	ND	401.0

TABLE 4

Maximum Concentrations of PAHs Detected in Floor Dust Samples (ug/kg)

Sample ID (Building #)	Non-Carcinogenic PAHs	Carcinogenic PAHs
RCS-DS03-01 (3)	11,125	16,820
RCS-DS03-02 (3)	17,828	466
RCS-DS04-01 (4)	9,608	3,895
RCS-DS04-03 (4)	12,222	11,410
RCS-DS04-04 (4)	8,772	5,530
RCS-DS05-02 (5)	248,400	29,800
RCS-DS18-04 (18)	204,690	198,900
RCS-DS30-01 (30)	155,230	96,690
RCS-DS43-01 (43)	32,140	25,200
RCS-DS78-03 (78)	8,950	8,800
RCS-DS78-04 (78)	92,500	109,800

TABLE 5

Pesticides Detected in Floor Dust Samples (ug/kg)

Compound	DS05-04	DS30-01	DS31-02	DS78-02	DS78-03	DS92-01	DS96-01
Endrin	ND	110	220	ND	ND	ND	ND
Endosulfan I	ND	ND	220	ND	ND	ND	ND
4,4'-DDD	13	77	ND	ND	82	25	ND
4,4'-DDT	9.6	120	ND	0.66	71	28	46
alpha-Chlordane	ND	ND	ND	ND	ND	16	ND
gamma-Chlordane	1.0	24	ND	ND	ND	11	ND

ND = Not Detected

TABLE 6

PCBs Detected in Floor Dust Samples (ug/kg)

Sample ID	Aroclor-1248	Aroclor-1260
RCS-DS05-04	ND	50
RCS-DS30-01	570	ND
RCS-DS31-01	3,100	60,000
RCS-DS31-02	ND	3,500
RCS-DS31-03	11,000	68,000
RCS-DS78-01	47	74
RCS-DS78-02	6.2	28
RCS-DS78-03	54	1,300
RCS-DS78-04	ND	2,100
RCS-DS92-01	ND	740
RCS-DS96-01	ND	1,200

ND = Not Detected

TABLE 7

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU4 FFS
SUMMARY OF INORGANIC ANALYTES DETECTED IN FLOOR DUST SAMPLES
(mg/kg)

Analyte	Total Number of Samples	Number of Detections	Maximum Concentration Detected	Average Concentration Detected
Aluminum	65	65	14800	3327
Antimony	65	8	712	122
Arsenic	65	65	231	31
Barium	65	49	5680	727
Beryllium	65	2	3	2
Cadmium	65	49	127	20
Calcium	65	55	55000	13397
Chromium	65	56	833	121
Cobalt	65	34	147	31
Copper	65	65	36400	1310
Iron	65	56	409000	112944
Lead	65	64	39600	3329
Magnesium	65	42	27400	4882
Manganese	65	65	8180	1406
Mercury	65	26	18	2
Nickel	65	58	1350	121
Potassium	65	20	4120	1860
Selenium	65	45	14	6
Silver	65	1	8	8
Sodium	65	25	42600	6018
Thallium	65	32	17	8
Vanadium	65	43	140	35
Zinc	65	65	395000	8351

TABLE 8

SUMMARY OF PRESUMED ASBESTOS CONTAINING MATERIALS (PACM)

BUILDING NUMBER	MATERIAL	QUANTITY	FRIABLE OR NON-FRIABLE	DAMAGED
2	Tank Insulation	54 sq. ft.	Friable	Yes
2	Tar Pipe Wrap Insulation	10,560 LF	Non-friable	Yes
2	Firebrick	100 Pallets	Non-friable	Yes
2	Transite	2,000 sq. ft.	Non-friable	Yes
2	Insulation Tiles	24 sq. ft	Friable	Yes
2	Wallboard Insulation	8,800 sq. ft.	Friable	Yes
2	Wall/Roof Tar Paper & Mastic	158,400 sq. ft.	Non-friable	Yes
3	Wall/Roof Tar Paper & Mastic	192,945 sq. ft.	Non-friable	Yes
3	Pipe Insulation	2,605 LF	Friable	Yes
3	Pipe Insulation Tar Wrap	265 LF	Non-friable	Yes
3	Soft Wallboard	30 sq. ft	Friable	Yes
3	Tank Insulation	12 sq. ft.	Friable	Yes
3	Small Bldg. behind 3; Tar Wrap	300 sq. ft.	Non-friable	Yes
4	9x9 Green Floor Tile/Mastic	400 sq. ft.	Non-friable	Yes
4	2x4 Ceiling Tile	400 sq. ft.	Friable	Yes
4	Pipe Insulation	200 LF	Friable	Yes
4	Interior/Exterior Tar Wrap	4,080 sq. ft.	Non-friable	Yes
5	Pipe Insulation	5 LF	Friable	Yes
6	Pipe Insulation	200 LF	Friable	Yes
7	Insulation around water heater	120 LF	Non-friable	Yes
7	Insulation around water heater	280 sq. ft.	Friable	Yes
7	Pipe Insulation	160 LF	Friable	Yes
8	Pipe Insulation	3,410 LF	Friable	Yes
8	Pipe Insulation Tar Wrap	2,080 LF	Non-friable	Yes
8	Boiler Gasket	8 LF	Non-friable	No
8	Transite Board (corrugated & flat)	1,970 sq. ft.	Non-friable	Yes
8	9x9 Black Floor Tile	600 sq. ft.	Non-friable	Yes
8	Watson Spools; Interior 1/4" Transite	804 sq. ft.	Non-friable	No
8	Acid Baths	200 sq. ft.	Non-friable	Yes
8	Roof Tar Paper & Mastic	50,625 sq. ft.	Non-friable	Yes
10	Firebrick	Unknown	Non-friable	Yes
10	Pipe Insulation	3,900 LF	Friable	Yes
10	Roof Tar Paper & Mastic	270,000 sq. ft.	Non-friable	Yes
10	Pipe Insulation Tar Wrap	270,000 sq. ft.	Non-friable	Yes
10	Transite Board	1,376 sq. ft.	Non-friable	No
10	12x12 Green Floor Tile/Mastic	600 sq. ft.	Non-friable	Yes
10	Tank Insulation	40 sq. ft.	Friable	Yes
11	Pipe Insulation	5,085 LF	Friable	Yes
11	Pipe Insulation Tar Wrap	585 LF	Non-friable	Yes
11	Roof Tar Paper & Mastic	40 sq. ft.	Non-friable	Yes

TABLE 8

SUMMARY OF PRESUMED ASBESTOS CONTAINING MATERIALS (PACM)
(Page 2 of 5)

BUILDING NUMBER	MATERIAL	QUANTITY	FRIABLE OR NON-FRIABLE	DAMAGED
12	9x9 Green Floor Tile/Mastic	200 sq. ft.	Non-friable	Yes
12	Pipe Insulation	250 LF	Friable	Yes
12	Roof Tar Paper & Mastic	7,500 sq. ft.	Non-friable	Yes
12	Collins Asbestos Sheets (Style 919)	5 sq. ft.	Non-friable	Yes
13	Pipe Insulation	6,000 LF	Friable	Yes
13	Pipe Insulation Tar Wrap	200 LF	Non-friable	Yes
13	Firebrick	2,880 sq. ft.	Non-friable	Yes
13	Roof Tar Paper & Mastic	292,500 sq. ft.	Non-friable	Yes
13	Tank Insulation	40 sq. ft.	Friable	Yes
14	Roof Tar Paper & Mastic	225,000 sq. ft.	Non-friable	Yes
14	Pipe Insulation	6,850 LF	Friable	Yes
14	Pipe Insulation Tar Wrap	3,590 LF	Non-friable	Yes
14	9x9 Gray Floor Tile/Mastic	5,000 sq. ft.	Non-friable	Yes
14	Tank Insulation	35 sq. ft.	Friable	Yes
14	Transite Board	440 sq. ft.	Non-friable	No
14	Ceiling Tile (2x4)	Unknown	Friable	Yes
14	Mastic (9x9 tiles previously removed)	600 sq. ft.	Non-friable	No
14	Cloth Wrap around fiberglass	500 LF	Non-friable	Yes
15	Pipe Insulation	50 LF	Friable	Yes
16	Pipe Insulation	120 LF	Friable	Yes
16	Roof Tar Paper & Mastic	12,000 sq. ft.	Non-friable	No
17	Pipe Insulation - Assessment unknown due to integrity of building			
18	Pipe Insulation Tar Wrap	160 LF	Non-friable	Yes
18	Transite Board	250 sq. ft.	Non-friable	Yes
18	Roof Tar Paper & Mastic	11,250 sq. ft.	Non-friable	Yes
18	Pipe Insulation	320 LF	Friable	Yes
19	Roof Tar Paper & Mastic	9,600 sq. ft.	Non-friable	Yes
19	Pipe Insulation	655 LF	Friable	Yes
19	9x9 Green Floor Tile/Mastic	750 sq. ft.	Non-friable	Yes
19	9x9 Black/Brown Floor Tile/Mastic	7,550 sq. ft.	Non-friable	Yes
19	Transite Board	7,800 sq. ft.	Non-friable	Yes
19	9x9 Ceiling Tile Mastic Only	Assessment unknown due to collapsed ceiling		
19	Collins /asbestos Sheet (Style 919)	30 sq. ft.	Non-friable	No
19	Rolled Wrap Insulation	1,600 sq. ft.	Friable	Yes
20	Pipe Insulation	70 LF	Friable	Yes
21	Cloth Pipe Wrap	1,545 LF	Non-friable	No
21	Pipe Insulation	230 sq. ft.	Friable	Yes
21	Pipe Insulation Tar Wrap	160 LF	Non-friable	Yes
21	Electrical panel (Black)	118 sq. ft.	Non-friable	No

TABLE 8

SUMMARY OF PRESUMED ASBESTOS CONTAINING MATERIALS (PACM)

(Page 3 of 5)

BUILDING NUMBER	MATERIAL	QUANTITY	FRIABLE OR NON-FRIABLE	DAMAGED
22	Pipe Insulation	3,910 LF	Friable	Yes
22	Pipe Insulation Tar Wrap	1,250 LF	Non-friable	Yes
22	Transite Ceiling Panels	20,600 sq. ft.	Non-friable	Yes
22	Roof Tar Paper & Mastic	135,000 sq. ft.	Non-friable	Yes
23	Roof Tar Paper & Mastic	28,000 sq. ft.	Non-friable	Yes
23	Firebrick	Unknown	Non-friable	Yes
23	Tank Insulation	80 sq. ft.	Friable	Yes
23	Pipe Insulation	900 LF	Friable	Yes
25	12x12 Brown Floor Tiles/Mastic	1,200 sq. ft.	Non-friable	Yes
25	Pipe Insulation	50 LF	Friable	Yes
26	Transite Board	144 sq. ft.	Non-friable	No
30	Roof Tar Paper & Mastic	19,200 sq. ft.	Non-friable	Yes
30	Pipe Insulation	400 LF	Friable	Yes
30	Pipe Insulation Tar Wrap	240 LF	Non-friable	Yes
30	Celetex Asbestos Mill Board	16 sq. ft.	Non-friable	No
31	Transite Wall & Ceiling	480 sq. ft.	Non-friable	No
31	Air Cell Pipe Insulation	60 LF	Friable	Yes
33	Pipe Insulation	25 LF	Friable	Yes
35	Roof Tar Paper & mastic	2,000 sq. ft.	Non-friable	No
35	Pipe Insulation Tar Wrap	100 LF	Non-friable	Yes
35	Pipe Insulation	100 LF	Friable	Yes
40	Pipe Insulation	50 LF	Friable	Yes
43	Transite Board	144 sq. ft.	Non-friable	No
50/Main Gate	9x9 Green Floor Tile/Mastic	130 sq. ft.	Non-friable	Yes
50/Main Gate	9x9 White Floor Tile Mastic	6,320 sq. ft.	Non-friable	Yes
50/Main Gate	Ceiling Tile (2x2)	2,564 sq. ft.	Friable	Yes
50/Main Gate	Ceiling Tile	840 sq. ft.	Friable	Yes
50/Main Gate	12x12 Black Floor Tile/Mastic	482 sq. ft.	Non-friable	Yes
50/Main Gate	9x9 Ceiling Tile Mastic	100 sq. ft.	Non-friable	Yes
50/Main Gate	12x12 White Floor Tile/Mastic	880 sq. ft.	Non-friable	Yes
50/Main Gate	Ceiling Tiles (2x4)	3,600 sq. ft.	Friable	Yes
50/Main Gate	9x9 Red Floor Tile/Mastic	2,100 sq. ft.	Non-friable	Yes
50/Main Gate	9x9 Black Floor Tile/Mastic	1,260 sq. ft.	Non-friable	Yes
50/Main Gate	Safe Insulation	94 sq. ft.	Friable	Yes
50/Main Gate	Roof Tar Paper & Mastic	250 sq. ft.	Non-friable	Yes
50/Main Gate	Pipe Insulation	65 LF	Friable	No

SUMMARY OF PRESUMED ASBESTOS CONTAINING MATERIALS (PACM)

BUILDING NUMBER	MATERIAL	QUANTITY	FRIABLE OR NON-FRIABLE	DAMAGED
60	12x12 Green Floor Tile/Mastic	1,800 sq. ft.	Non-friable	Yes
60	Ceiling Tile	1,800 sq. ft.	Friable	Yes
60	Transite Ceiling Board	1,800 sq. ft.	Non-friable	No
60	Wall Mastic	7,200 sq. ft.	Non-friable	Yes
64	Pipe Insulation	50 LF	Friable	Yes
64	Transite Board	800 sq. ft.	Non-friable	Yes
77	Roof Tar Paper & Mastic	75,000 sq. ft.	Non-friable	Yes
77	Pipe Insulation	1,500 LF	Friable	Yes
77	Pipe Insulation Tar Wrap	550 LF	Non-friable	Yes
77	9x9 Gray Floor Tile/Mastic	75 sq. ft.	Non-friable	No
77	2x4 White Ceiling Tile	200 sq. ft.	Non-friable	Yes
77	Gasket Insulation	2 LF	Friable	No
78	2x4 White Ceiling Tile	720 sq. ft.	Friable	Yes
78	9x9 White Floor tile/Mastic	720 sq. ft.	Non-friable	Yes
78	Black Desk Top Material	36 sq. ft.	Non-friable	No
78	Pipe Insulation	193 LF	Friable	Yes
78	Roof Tar Paper & Mastic	60,000 sq. ft.	Non-friable	Yes
78/Shed	Pipe Insulation	1 LF	Friable	Yes
78/Shed	Roof Tar Paper & Mastic	3,000 sq. ft.	Non-friable	Yes
79	Cloth Wrap	Unknown	Non-friable	No
79	Roof Tar Paper & Mastic	1,400 sq. ft.	Non-friable	Yes
80	12x12 Red Floor Tile/Mastic	144 sq. ft.	Non-friable	No
80	Black Electrical Panel	24 sq. ft.	Non-friable	No
80	Roof Tar Paper & Mastic	5,850 sq. ft.	Non-friable	No
81	Roof/Walls Tar Paper & Mastic	135,000 sq. ft.	Non-friable	Yes
83	Firedoor	180 sq. ft.	Non-friable	No
85	Roof Tar Paper & Mastic	24,000 sq. ft.	Non-friable	No
86	Roof Tar Paper & Mastic	24,000 sq. ft.	Non-friable	Yes
86	Pipe Insulation Tar Wrap	500 LF	Non-friable	Yes
86	Firebrick	Unknown	Non-friable	Yes
87	Roof Tar Paper & Mastic	2,000 sq. ft.	Non-friable	Yes
87	Transite Board	1,190 sq. ft.	Non-friable	Yes
88	Ceiling Tile	14,400 sq. ft.	Friable	Yes
88	9x9 Black Floor Tiles	14,400 sq. ft.	Non-friable	Yes
88	Pipe Insulation	2,000 LF	Friable	Yes
88	Roofing Material	150,000 sq. ft.	Friable	Yes
88	Tar Wrap Pipe Insulation	2,500 LF	Non-friable	Yes
88	Roof Tar Paper & Mastic	150,000 sq. ft.	Non-friable	Yes

TABLE 8

SUMMARY OF PRESUMED ASBESTOS CONTAINING MATERIALS (PACM)

BUILDING NUMBER	MATERIAL	QUANTITY	FRIABLE OR NON-FRIABLE	DAMAGED
[illegible]	Transite Board	150,000 sq. ft.	Non-friable	Yes
[illegible]	Transite Board	5,250 sq. ft.	Non-friable	Yes
[illegible]	Transite Board	800 sq. ft.	Non-friable	Yes
[illegible]	Roof/Wall Tar Paper & Mastic	15,000 sq. ft.	Non-friable	Yes
[illegible]	Pipe Insulation	100 LF	Friable	Yes
[illegible]	Boiler Gasket Material	20 LF	Friable	No
[illegible]	Transite Acoustic Panels	1,100 sq. ft.	Non-friable	No
[illegible]	Pipe Insulation (elbows & Tees)	2,780 LF	Friable	Yes
[illegible]	Corrugated Transite Wall Panels	29,070 sq. ft.	Non-friable	Yes
[illegible]	Boiler Fan Insulation	480 sq. ft.	Friable	Yes
[illegible]	Pipe Insulation (outside)	2 LF	Friable	No
[illegible]	Built-up Roof Tar & Insulation	7,440 sq. ft.	Friable	Yes
[illegible]	Transite Pipes	60 LF	Non-friable	Yes
[illegible]	Tank Insulation	600 sq. ft.	Friable	Yes
[illegible]	Coal Hopper Insulation	850 sq. ft.	Friable	Yes
[illegible]	Boiler Duct Insulation & Associated Hoppers	10,400 sq. ft.	Friable	Yes
[illegible]	Boiler Insulation	34,800 sq. ft.	Friable	Yes
[illegible]	9x9 Light Brown Floor Tile	Unknown	Non-friable	Yes
[illegible]	Wall Plaster	Unknown	Non-friable	Yes
[illegible]	[illegible] Transite Board	891 sq. ft.	Non-friable	Yes
[illegible]	Pipe Insulation	35 LF	Friable	Yes
[illegible]	Roof Tar Paper & Mastic	400 sq. ft.	Non-friable	Yes
[illegible]	12x12 Floor Tile	3,200 sq. ft.	Non-friable	Yes
[illegible]	12x12 Ceiling Tile	2,200 sq. ft.	Non-friable	Yes
[illegible]	Pipe Insulation	1,200 LF	Friable	Yes
[illegible]	Transite Board	102 sq. ft.	Non-friable	Yes
[illegible]	Pipe Insulation	50 LF	Friable	Yes
[illegible]	Plaster Walls & Ceiling	1,325 sq. ft.	Non-friable	Yes
Water Tank	Pipe Insulation	6 LF	Friable	Yes
[illegible]	Roof Tar Paper & Mastic	4,500 sq. ft.	Non-friable	No
[illegible]	Misc. Debris in Landfill	Unknown	Mixed	Yes
[illegible]	Pipe Insulation	4,157 LF	Friable	Yes
[illegible]	Lagging Material on Vessels (located [illegible] of Bldg. 7[illegible])	105 sq. ft.	Friable	Yes

TABLE 9

PARAMETER VALUES FOR THE ADULT LEAD MODEL

Target blood lead concentration	PbB_{GM} target	3.55 ug/dL
Baseline blood lead concentration	$PbB_{adult,0}$	2.0 ug/dL
Biokinetic slope factor	BKSF	0.4
Ingestion Rate for soil and dust	IR_{SD}	0.05 g/day
Absorption Fraction for soil and dust	AF_{SD}	10% (0.1)
95th percentile blood lead of a fetus	$PbB_{0.95}$ fetal	10 ug/dL
Mean ratio of fetal to maternal blood lead	$R_{fetal/maternal}$	0.9
Individual geometric standard deviation of blood lead	GSD_i	2.0
Averaging Time	AT	365 days/year
Exposure Frequency	EF	250 days/year
Soil lead concentration	PbS	calculated

Equation 1 - RBRG algorithm:

$$PbB_{0.95}fetal = R_{fetal/maternal} * GSD_i^{1.645} * \left(\frac{PbB_{adult,0} + PbS * BKSF * IR_{SD} * AF_{SD} * EF_{SD}}{AT} \right)$$

Equation 2 - RBRG algorithm rearranged to calculate lead concentration in soil:

$$PbS = \left(\frac{PbB_{0.95}\,fetal}{R_{fetal/maternal} * GSD_i^{1.645}} - PbB_{adult,0} \right) * \frac{AT}{BKSF * IR_{SD} * AF_{SD} * EF_{SD}}$$

TABLE 10

SUMMARY STATISTICS FOR VOLATILE ORGANICS

Compound	Valid	Occur	Undetect	Reject	Frequency Detected	Minimum Conc. (ug/kg)	Location for Minimum Concentration	Maximum Conc. (ug/kg)	Location for Maximum Concentration	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	Lower Quartile	Upper Quartile	Upper 95
Methylene chloride	12	10	2	0	0.833	120	RS-FD-0204	1600	RS-FD-0303	390.00	323.41	587.42	560.61	138.43	755.56	2591.4
1,2-Dichloroethane	12	1	11	0	0.083	3	RS-FD-0301	3	RS-FD-0301	7.50	5.97	7.75	5.16	3.49	10.19	15.09
2-Butanone	2	2	0	10	1.000	11	RS-FD-0302	14	RS-FD-0203	12.50	12.41	12.50	2.12	11.06	13.92	27.95
Trichloroethene	12	1	11	0	0.083	9	RS-FD-0302	9	RS-FD-0302	9.75	6.54	8.25	4.94	3.89	11.00	15.81
Toluene	12	5	7	0	0.417	5	RS-FD-0302	27	RS-FD-0201	11.00	9.00	10.67	6.48	5.87	13.78	17.09

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NOTE: The "[illegible]" in the last column denotes that the upper 95 percentile concentration is higher than the maximum concentration

TABLE 11

SUMMARY STATISTICS FOR SEMI-VOLATILE ORGANICS

Compound	Valid	Occur	Undetect	Reject	Frequency Detected	Minimum Conc. (ug/kg)	Location for Minimum Concentration	Maximum Conc. (ug/kg)	Location for Maximum Concentration	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	Lower Quartile	Upper Quartile	Up[illegible] 9[illegible]
Phenol	87	19	68	3	0.218	74	RS-FD-0201	6800	RS-FD-0303	500.00	816.24	11572.05	58177.14	239.90	2777.19	80[illegible]
Benzyl alcohol	88	2	86	2	0.023	450	RS-FD-2201	460	RS-FD-1401	500.00	911.96	11532.19	57808.68	279.66	2973.92	77[illegible]
2-Methylphenol	84	3	81	6	0.036	270	RS-FD-2201	4700	RS-FD-11401	500.00	952.44	12152.43	59266.64	282.92	3206.35	97[illegible]
4-Methylphenol	84	6	78	6	0.071	91	RS-FD-1302	970	RCS-DS92-01	500.00	898.27	12094.88	59276.15	262.74	3071.13	91[illegible]
N-Nitrosodi-n-propylamine	88	1	87	2	0.011	410	RS-FD-1401	410	RS-FD-1401	500.00	917.22	11535.94	57807.96	281.49	2988.79	77[illegible]
Isophorone	88	1	87	2	0.011	430	RS-FD-1301	430	RS-FD-1301	525.00	923.81	11539.25	57807.32	284.06	3004.38	77[illegible]
2,4-Dimethylphenol	84	2	82	6	0.024	72	RCS-DS05-04	170	RS-FD-2201	500.00	916.03	12102.92	59274.55	269.68	3111.48	91[illegible]
Benzoic acid	57	17	40	4	0.298	81	RS-FD-8803	13000	RS-FD-0801	1700.00	3246.40	72722.30	341587.26	836.92	12592.81	626[illegible]
Naphthalene	85	42	43	0	0.494	41	RS-FD-1801	15000	RS-FD-0201	500.00	736.82	11914.81	58897.65	202.97	2674.74	911[illegible]
Acenaphthene	88	17	71	0	0.193	16	RCD-DS03-10	21000	RS-FD-1501	500.00	690.75	11408.79	57810.58	183.55	2599.43	979[illegible]
4-Nitrophenol	82	5	77	8	0.061	120	RS-FD-8002	650	RS-FD-7701	2275.00	3449.93	59854.39	300478.12	917.08	12978.19	511[illegible]
Dibenzofuran	86	40	46	0	0.465	45	RS-FD-1803	14000	RS-FD-1501	372.50	565.81	11219.45	58554.46	157.36	2034.43	67[illegible]
Diethylphthalate	88	2	86	2	0.023	18	RCS-DS78-01	560	RCS-DS30-01	525.00	895.65	11476.56	57816.67	277.22	2893.76	73[illegible]
Fluorene	88	18	70	0	0.205	33	RS-FD-0304	18000	RS-FD-1501	500.00	705.60	11369.09	57805.58	192.50	2586.34	90[illegible]
4-Nitroaniline	87	2	85	2	0.023	830	RCS-DS77-01	5900	RCS-DS18-04	2500.00	3507.45	56085.00	291046.32	1024.04	12013.41	151[illegible]
N-Nitrosodiphenylamine	88	2	86	2	0.023	260	RS-FD-8601	340	RS-FD-8801	500.00	890.01	11514.56	57811.95	271.99	2912.30	76[illegible]
Pentachlorophenol	84	2	82	6	0.024	980	RS-FD-8001	4500	RS-FD-11401	2475.00	3757.11	58315.72	296591.62	1097.34	12863.78	385[illegible]
Phenanthrene	84	72	12	0	0.857	43	RS-FD-7701	330000	RS-FD-1501	1300.00	1365.94	16903.22	68745.25	363.21	5136.93	193[illegible]
Anthracene	86	29	57	0	0.337	52	RCS-DS15-01	24000	RS-FD-1501	525.00	767.52	11618.64	58507.10	219.82	2679.89	821[illegible]
Di-n-butylphthalate	87	31	56	2	0.356	150	RS-FD-0206	18000	RS-FD-3103	570.00	988.42	11995.25	58140.98	294.23	3320.45	929[illegible]
Fluoranthene	85	72	13	0	0.847	50	RS-FD-7701	230000	RS-FD-1501	1400.00	1497.75	15892.60	63735.29	421.28	5324.95	171[illegible]
Pyrene	85	65	20	0	0.765	60	RS-FD-8804	170000	RS-FD-1501	1100.00	1223.31	13378.34	60058.92	339.61	4406.44	146[illegible]
Butylbenzylphthalate	85	16	69	2	0.188	76	RS-FD-7801	3000	RS-FD-3103	700.00	911.10	12052.42	58879.68	269.66	3214.95	966[illegible]
Benzo(a)anthracene	84	42	42	0	0.500	52	RS-FD-7801	75000	RS-FD-1501	850.00	1078.15	13958.83	59678.90	280.91	4137.97	1650[illegible]
bis(2-Ethylhexyl)phthalate	87	45	42	1	0.517	88	RS-FD-0304	55000	RS-FD-11402	1850.00	1962.19	14681.30	58009.25	533.47	7217.25	256[illegible]
2-Methylnaphthalene	84	39	45	1	0.464	31	RS-FD-1002	5600	RS-FD-1501	390.00	697.01	12081.50	59279.10	184.31	2635.90	101[illegible]
Dimethylphthalate	88	2	86	2	0.023	76	RS-FD-1301	200	RS-FD-8002	500.00	892.65	11530.45	57809.05	269.45	2957.26	799[illegible]
Acenaphthylene	89	20	69	0	0.225	30	RCS-DS03-10	6300	RCS-DS18-04	500.00	709.67	11280.35	57477.65	196.72	2560.13	85[illegible]
Chrysene	84	63	21	0	0.750	39	RS-FD-7701	76000	RS-FD-1501	1015.00	1262.40	13956.68	59707.14	356.07	4475.61	14[illegible]
Di-n-octylphthalate	83	13	70	6	0.157	230	RS-FD-0301	4600	RS-FD-11402	650.00	962.06	11909.93	59247.46	290.10	3190.47	87[illegible]
Benzo(b)fluoranthene	80	47	33	4	0.588	57	RS-FD-8804	57000	RS-FD-8801	875.00	1286.31	14459.40	61149.35	357.56	4627.41	15[illegible]
Benzo(k)fluoranthene	71	37	34	3	0.521	41	RS-FD-0304	30000	RCS-DS18-04	690.00	962.78	14178.35	64918.18	260.71	3555.47	118[illegible]
Benzo(a)pyrene	81	35	46	4	0.432	71	RCS-DS77-01	54000	RS-FD-1501	810.00	1048.15	13286.45	60176.70	289.41	3796.01	110[illegible]
Indeno(1,2,3-cd)pyrene	81	28	53	4	0.346	44	RCD-DS03-10	24000	RCS-DS18-04	650.00	862.76	12357.11	60005.08	236.36	3149.24	110[illegible]
Dibenzo(a,h)anthracene	85	17	68	4	0.200	32	RCS-DS15-01	6900	RCS-DS18-04	510.00	836.70	11192.87	58521.09	249.80	2802.51	78[illegible]
Benzo(g,h,i)perylene	81	24	57	4	0.296	96	RCS-DS15-01	18000	RCS-DS18-04	715.00	917.13	12261.36	59992.19	262.12	3705.21	99[illegible]

NOTE   The "x" on the last column denotes that the upper 95 percentile concentration is higher than the maximum concentration

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TABLE 12

SUMMARY STATISTICS FOR PESTICIDES AND POLYCHLORINATED BIPHENYLS

Compound	Valid	Occur	Undetect	Reject	Frequency Detected	Minimum Conc. (ug/kg)	Location for Minimum Concentration	Maximum Conc. (ug/kg)	Location for Maximum Concentration	Median	Geometric Mean	Arithmetric Mean	Standard Deviation	Lower Quartile	Upper Quartile	Upper 95	
beta-BHC	70	3	67	4	0.043	8.8	RS-FD-0301	22	RS-FD-0301	9.50	21.96	259.64	881.63	5.57	86.66	405.15	
Aldrin	70	3	67	4	0.043	130	RS-FD-8102	4300	RS-FD-0305	9.25	23.54	323.04	1006.77	5.46	101.42	630.30	
Endosulfan I	70	5	65	4	0.071	11	RS-FD-0303	220	RCS-DS31-02	16.25	23.74	263.17	883.98	5.99	94.08	1116.06	√
Dieldrin	70	5	65	4	0.071	29	RS-FD-0301	720	RS-FD-7702	32.50	47.41	527.80	1765.75	11.90	188.83	909.51	√
4,4'-DDE	71	3	68	3	0.042	61	RS-FD-8803	200	RS-FD-8801	19.50	44.82	514.14	1754.20	11.25	178.50	853.22	√
Endrin	69	6	63	5	0.087	20	RS-FD-0304	220	RCS-DS31-02	22.00	47.87	528.37	1777.75	12.17	188.22	877.65	√
4,4'-DDD	69	5	64	5	0.072	13	RCS-DS05-04	170	RS-FD-8801	25.00	48.20	527.75	1777.85	12.40	187.27	841.75	√
4,4'-DDT	71	18	53	3	0.254	9.6	RCS-DS05-04	210	RS-FD-8802	55.00	63.76	525.39	1751.23	17.85	227.79	789.35	√
Methoxychlor	70	1	69	4	0.014	90	RS-FD-0304	90	RS-FD-0304	92.50	214.15	2593.78	8847.00	53.89	851.02	4069.61	√
Endrin ketone	70	2	68	4	0.029	27	RS-FD-1803	37	RS-FD-0303	23.25	43.69	517.14	1766.81	11.05	172.75	813.12	√
Heptachlor epoxide	70	2	68	4	0.029	39	RS-FD-8501	300	RS-FD-9902	9.50	22.16	262.92	884.34	5.50	89.31	446.38	√
alpha-Chlordane	69	3	66	5	0.043	16	RCS-DS92-01	3200	RS-FD-7702	80.00	154.67	2542.11	8909.38	31.17	767.44	7971.79	√
gamma-Chlordane	70	5	65	4	0.071	1	RCS-DS05-04	3500	RS-FD-7702	80.00	149.72	2510.18	8850.18	30.16	743.31	7660.10	√
Chlordane (total)	70	5	65	4	0.071	1	RCS-DS05-04	6700	RS-FD-7702	80.00	154.74	2557.55	8863.16	31.15	768.73	8314.42	√
Aroclor-1248	12	6	6	2	0.500	28	RCS-DS78-01	11000	RCS-DS31-03	90.00	178.67	1317.21	3168.60	47.00	679.18	23823.37	√
Aroclor-1249	70	2	68	2	0.029	32000	RS-FD-3103	49000	RS-FD-3101	175.00	248.66	3579.77	10996.89	64.71	955.60	4065.21	
Aroclor-1255	58	3	55	2	0.052	300	RS-FD-1402	590	RS-FD-1401	360.00	548.54	5931.72	19297.28	146.23	2057.70	9125.04	√
Aroclor-1260	11	10	1	2	0.909	50	RCS-DS05-04	68000	RCS-DS31-03	1200.00	959.25	12464.64	25564.27	167.53	5492.48	5604636.09	√
Aroclor-1261	58	11	47	2	0.190	570	RS-FD-1302	68000	RS-FD-3101	800.00	736.15	8264.31	21436.50	166.57	3251.41	24939.98	
Total PCBs	72	25	47	2	0.347	50	RCS-DS05-04	117000	RS-FD-3101	800.00	843.10	9931.51	25492.95	193.57	1672.23	21280.08	

NOTE: The √ in the last column denotes that the upper 95 percentile concentration is higher than the maximum concentration.

TABLE 13

SUMMARY STATISTICS FOR METALS

Compound	Valid	Occur	Undetect	Reject	Frequency Detected	Minimum Conc. (mg/kg)	Location for Minimum Concentration	Maximum Conc (mg/kg)	Location for Maximum Concentration	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	Lower Quartile	Upper Quartile	Uppe… 95
Aluminum	81	81	0	0	1.000	300	RCS-DS13-01	55100	RS-FD-0101	3700.00	3911.18	6785.72	8800.66	1972.61	7886.29	8660
Antimony	81	66	39	0	0.815	0.46	RCS-DS20-01	712	RCS-DS114-01	5.05	5.85	19.08	79.49	2.36	14.50	21.3
Arsenic	81	78	4	0	0.963	1.8	RS-FD-1501	231	RCS-DS114-01	28.20	24.90	35.78	33.92	13.51	45.91	46.6
Barium	81	81	0	0	1.000	29.5	RCS-DS05-03	5680	RCS-DS88-02	186.00	238.58	635.21	1113.41	96.93	587.26	851.
Beryllium	81	69	37	0	0.852	0.01	RCS-DS05-01	2.7	RCS-DS99-02	0.30	0.42	0.89	0.91	0.17	1.05	1.5
Cadmium	81	0	15	0	0.000	0.49	RCS-DS03-08	127	RCS-DS30-02	8.80	9.25	17.37	22.18	4.15	20.64	25.8
Calcium	81	0	0	0	0.000	768	RCS-DS05-03	342000	RS-FD-1002	12900.00	11136.33	25045.25	44686.01	4613.91	26879.12	37877
Chromium	51	51	0	30	1.000	12.6	RCS-DS30-02	3610	RS-FD-0201	155.00	130.56	259.65	509.75	60.03	281.92	378.7
Cobalt	81	80	13	0	0.988	3.6	RCS-DS93-01	147	RCS-DS18-04	14.80	14.51	21.17	21.62	8.05	26.17	26.1
Copper	81	81	0	0	1.000	41	RCS-DS93-01	36100	RCS-DS13-01	518.00	483.16	1272.52	4131.45	215.41	1083.73	1169.
Iron	71	71	0	10	1.000	6350	RS-FD-1501	420000	RS-FD-0301	75100.00	73989.69	120083.80	111821.02	35995.41	152088.13	175937
Lead	81	80	1	0	0.988	58.9	RCS-DS05-04	169000	RS-FD-0801	1410.00	1412.31	5907.56	19583.72	479.24	4162.05	8528.
Magnesium	67	67	1	14	1.000	23.8	RCS-DS05-04	108000	RS-FD-0205	2590.00	2405.95	7183.52	14965.94	831.90	6958.25	14547
Manganese	70	70	0	11	1.000	51.7	RS-FD-1501	8180	RCS-DS99-02	927.00	774.02	1273.78	1347.44	377.47	1587.19	1815
Mercury	64	58	13	17	0.906	0.11	RCS-DS8A-01	17.9	RCS-DS99-02	0.40	0.46	1.54	3.17	0.16	1.29	2.56
Nickel	56	56	0	25	1.000	3	RCS-DS77-02	1350	RCD-DS18-01	68.65	64.21	129.37	196.32	27.39	150.55	221.0
Potassium	55	55	0	1	1.000	52.5	RCS-DS05-04	27600	RS-FD-1303	820.00	916.11	1720.34	3747.73	465.62	1802.47	2073.
Selenium	81	63	39	0	0.778	1.1	RCS-DS13-01	14.2	RCS-DS78-01	6.50	3.92	5.88	3.71	1.82	8.43	10.0
Silver	13	8	11	68	0.615	1	RCS-DS02-01	7.6	RCS-DS02-06	0.85	0.65	1.20	1.95	0.31	1.37	3.17
Sodium	75	66	14	6	0.880	213	RCS-DS03-01	42600	RCS-DS13-01	1750.00	1813.82	3526.89	5843.55	876.22	3754.69	4339.
Thallium	81	68	44	0	0.840	0.91	RCS-DS04-03	17.3	RCD-DS18-01	7.50	5.74	13.83	13.58	1.91	17.23	16.7
Vanadium	81	71	16	0	0.877	1.3	RCS-DS13-01	140	RCS-DS86-01	26.20	11.60	30.39	26.44	2.51	53.53	386.
Zinc	81	81	0	0	1.000	30.4	RS-FD-0302	395000	RCS-DS13-01	1660.00	1617.60	8031.77	13812.56	651.36	4117.14	6205.

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[illegible] The '[illegible]' in the last column denotes that the upper 95 percentile concentration is higher than the maximum concentration

TABLE 13

SUMMARY STATISTICS FOR METALS

Compound	Valid	Occur	Undetect	Reject	Frequency Detected	Minimum Conc. (mg/kg)	Location for Minimum Concentration	Maximum Conc. (mg/kg)	Location for Maximum Concentration	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	Lower Quartile	Upper Quartile	Upper 95
Aluminum	81	81	0	0	1.000	300	RCS-DS13-01	55100	RS-TD-0404	5700.00	3911.18	6785.72	8800.66	1972.61	7886.29	8660.95
Antimony	81	66	39	0	0.815	0.46	RCS-DS20-01	712	RCS-DS111-01	5.05	5.85	19.08	79.49	2.36	14.50	21.36
Arsenic	81	78	4	0	0.963	1.8	RS-TD-1501	231	RCS-DS114-01	28.20	24.90	35.78	33.92	13.51	45.91	36.69
Barium	81	81	0	0	1.000	29.5	RCS-DS05-03	5680	RCS-DS88-02	186.00	238.58	635.21	1113.11	96.93	587.26	851.21
Beryllium	81	69	37	0	0.852	0.01	RCS-DS05-01	2.7	RCS-DS99-02	0.30	0.32	0.89	0.91	0.17	1.05	1.53
Cadmium	81	0	15	0	0.000	0.49	RCS-DS03-08	127	RCS-DS30-02	8.80	9.25	17.37	22.18	4.15	20.64	25.89
Calcium	81	0	0	0	0.000	768	RCS-DS05-01	142000	RS-TD-1002	12900.00	11136.33	25045.25	14686.01	4613.91	26879.12	37877.57
Chromium	51	51	0	30	1.000	12.6	RCS-DS30-02	3640	RS-TD-0201	155.00	130.56	259.65	509.75	60.03	283.92	178.72
Cobalt	81	80	13	0	0.988	3.6	RCS-DS93-01	147	RCS-DS18-04	14.80	14.51	21.17	21.62	8.05	26.17	26.15
Copper	81	81	0	0	1.000	41	RCS-DS93-01	36100	RCS-DS13-01	518.00	483.16	1272.52	4131.45	215.41	1083.73	1369.47
Iron	71	71	0	10	1.000	6350	RS-TD-1501	420000	RS-TD-0301	75100.00	73989.69	120083.80	111821.02	35995.41	152088.13	175937.95
Lead	81	80	1	0	0.988	58.9	RCS-DS05-04	169000	RS-TD-0801	1410.00	1412.31	5907.56	19583.72	479.24	4162.05	8528.66
Magnesium	67	67	1	14	1.000	23.8	RCS-DS05-04	108000	RS-TD-0205	2590.00	2405.95	7183.52	14965.94	831.90	6958.25	14547.69
Manganese	70	70	0	11	1.000	51.7	RS-TD-1501	8180	RCS-DS99-02	927.00	774.02	1273.78	1347.44	377.47	1587.19	1835.35
Mercury	64	58	13	17	0.906	0.11	RCS-DS8A-01	17.9	RCS-DS99-02	0.40	0.46	1.54	3.17	0.16	1.29	2.56
Nickel	56	56	0	25	1.000	3	RCS-DS77-02	1350	RCD-DS18-01	68.65	64.21	129.37	196.32	27.39	150.55	221.09
Potassium	55	55	0	1	1.000	52.5	RCS-DS05-04	27600	RS-TD-1303	820.00	916.11	1720.34	3747.73	465.62	1802.47	2073.62
Selenium	81	63	39	0	0.778	1.1	RCS-DS13-01	14.2	RCS-DS78-01	6.50	3.92	5.88	3.71	1.82	8.43	10.09
Silver	13	8	11	68	0.615	1	RCS-DS02-01	7.6	RCS-DS02-06	0.85	0.65	1.20	1.95	0.31	1.37	3.17
Sodium	75	66	14	6	0.880	213	RCS-DS03-01	12600	RCS-DS13-04	1750.00	1813.82	3526.89	5843.55	876.22	3754.69	4319.14
Thallium	81	68	44	0	0.840	0.91	RCS-DS04-03	17.3	RCD-DS18-01	7.50	5.74	13.83	13.58	1.91	17.23	36.73
Vanadium	81	71	16	0	0.877	13	RCS-DS13-01	140	RCS-DS86-01	26.20	11.60	30.39	26.41	2.51	53.53	386.61
Zinc	81	81	0	0	1.000	30.4	RS-TD-0302	195000	RCS-DS13-01	1660.00	1637.60	8033.77	13812.56	651.36	4117.14	6205.30

NOTE: The "X" in the last column denotes that the upper 95 percentile concentration is higher than the maximum concentration.

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TABLE 14

CONTAMINANTS OF CONCERN FOR DUST/SOIL WITHIN BUILDINGS

VOLATILES

2-Butanone	Toluene
1,2-Dichloroethane	Trichloroethene
Methylene Chloride	

SEMI-VOLATILES

Benzoic Acid	*Carcinogenic PAHs:*
Benzyl Alcohol	Benzo(a)pyrene
Bis(2-ethylhexyl)phthalate	Benzo(a)anthracene
Butyl benzyl phthalate	Benzo(b)fluoranthene
Di-n-butyl phthalate	Benzo(k)fluoranthene
Di-n-octyl phthalate	Chrysene
Dibenzofuran	Dibenz(a,h)anthracene
Diethylphthalate	Indeno(1,2,3-cd)pyrene
Dimethylphthalate	
2,4-Dimethylphenol	*Non-Carcinogenic PAHs:*
Isophorone	2-Methylnaphthalene
2-Methylphenol	Acenaphthene
4-Nitroaniline	Anthracene
4-Methylphenol	Fluoranthrene
4-Nitrophenol	Fluorene
N-Nitrosodiphenylamine	Naphthalene
N-Nitrosodipropylamine	Pyrene
Pentachlorophenol	
Phenol	

PESTICIDES/PCBs

Aldrin	4,4'-DDE
Total PCBs	4,4'-DDT
Beta-BHC	Endosulfan
Chlordane	Endrin
Dieldrin	Heptachlor Epoxide
4,4'-DDD	Methoxychlor

INORGANICS

Aluminum	Manganese
Antimony	Mercury
Arsenic	Nickel
Barium	Selenium
Beryllium	Silver
Cadmium	Thallium
Chromium (III)	Vanadium
Chromium (IV)	Zinc
Cobalt	

TABLE 15

EXPOSURE PATHWAYS

Matrix	Receptor Population(s)	Exposure Routes
Present-Use	On-site Workers (Adults only)	Ingestion Dermal Contact Inhalation
Future-Use	On-site Commercial Workers (Adults only)	Ingestion Dermal Contact Inhalation
Future Use	Residents (Adults and children)	Ingestion Dermal Contact Inhalation

TABLE 16

PARAMETERS AND ASSUMPTIONS USED TO CALCULATE POTENTIAL RISK FROM BUILDING DUST/SOIL EXPOSURE PATHWAYS

	Present Site Workers		*Future On-site Commercial Workers*		*Future On-site Residents-Adults*		*Future On-Site Residents - Children: 0-17 Years*	
	Average Case	Reasonable Maximum Case	Average Case	Reasonable Maximum Case	Average Case	Reasonable Maximum Case	Average Case	Reasonable Maximum Case
Frequency of Exposure (days/year)	240	250	211	253	273	353	273	353
Duration of Exposure (years/lifetime) Lifetime = 70 years	8	10	9	25	9	30	6	6
Skin Dust/Soil Deposition (mg/cm^2)	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5
Skin Surface Area Exposed (cm^2)	8600	8600	8600	8600	8600	8600	4000	4000
Dermal Contact Bioavailability Factor	0.6%	1.2%	0.6%	1.2%	0.6%	1.2%	0.6%	1.2%
Ingestion Bioavailability Factor	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0
Dust/Soil Ingestion (mg/day)	50	100	50	50	100	100	100	200
Body Weight (kg)	70	70	70	70	70	70	35	35
Hours Per Day Exposed to Suspended Dust/Soil	8	10	8	10	12	24	12	24
Respiratory Volume (m^3/hr)	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9
Inhalation Bioavailability Factor	0.25	1.0	0.25	1.0	0.25	1.0	0.25	1.0
Suspended Site Dust/Soil Concentrations (ug/m^3) *	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44

NOTE:

- * The suspended dust/soil concentration was calculated from hi-vol sample data obtained at the site.

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TABLE 17

TOXICITY DATA FOR NONCARCINOGENIC AND POTENTIALLY CARCINOGENIC EFFECTS
DOSE RESPONSE EVALUATION
(Page 1 of 3)

Chemical Name	*NON-CARCINOGENS : Reference Doses*		*CARCINOGENS : Slope Factors*	
	Oral RfD (mg/kg-day)	Inhalation RfD (mg/kg-day)	Oral SF (mg/kg-day) - 1	Inhalation SF (mg/kg-day) - 1
VOLATILES:				
2-Butanone	6.00E-01	2.86E-01	NA	NA
1,2-Dichloroethane	NA	NA	9.10E-02	9.10E-02
Methylene Chloride	6.00E-02	8.57E-01	7.50E-03	1.64E-03
Toluene	2.00E-01	1.14E-01	NA	NA
Trichloroethene	NA	NA	1.10E-02	6.00E-03
SEMI-VOLATILES:				
Benzoic Acid	4.00E+00	NA	NA	NA
Benzyl Alcohol	3.00E-01	NA	NA	NA
Bis(2-ethylhexyl)phthalate	2.00E-02	NA	1.40E-02	NA
Butyl benzyl phthalate	2.00E-01	NA	NA	NA
Di-n-butyl phthalate	1.00E-01	NA	NA	NA
Di-n-octyl phthalate	2.00E-02	NA	NA	NA
Dibenzofuran	4.00E-03	NA	NA	NA
Diethylphthalate	8.00E-01	NA	NA	NA
Dimethylphthalate	1.00E+01	NA	NA	NA
2,4-Dimethylphenol	2.00E-02	NA	NA	NA
Isophorone	2.00E-01	NA	9.50E-04	NA
2-Methylphenol	5.00E-02	NA	NA	NA
4-Nitroaniline	3.00E-03	NA	NA	NA
4-Methylphenol	5.00E-03	NA	NA	NA
4-Nitrophenol	6.20E-02	NA	NA	NA
N-Nitrosodiphenylamine	NA	NA	4.90E-03	NA
N-Nitrosodipropylamine	NA	NA	7.00E+00	NA
Pentachlorophenol	3.00E-02	NA	1.20E-01	NA
Phenol	6.00E-01	NA	NA	NA
Carcinogenic PAHs:				
Benzo(a)pyrene	NA	NA	7.30E+00	6.10E+00
Benzo(a)anthracene	NA	NA	7.30E-01	6.10E-01
Benzo(b)fluoranthene	NA	NA	7.30E-01	6.10E-01
Benzo(k)fluoranthene	NA	NA	7.30E-02	6.10E-02
Chrysene	NA	NA	7.30E-03	6.10E-03
Dibenz(a,h)anthracene	NA	NA	7.30E+00	6.10E+00
Indeno(1,2,3-cd)pyrene	NA	NA	7.30E-01	6.10E-01

TABLE 17

TOXICITY DATA FOR NONCARCINOGENIC AND POTENTIALLY CARCINOGENIC EFFECTS
DOSE RESPONSE EVALUATION

Chemical Name	*NON-CARCINOGENS : Reference Doses*		*CARCINOGENS : Slope Factors*	
	Oral RfD (mg/kg-day)	Inhalation RfD (mg/kg-day)	Oral SF (mg/kg-day) - 1	Inhalation SF (mg/kg-day) - 1
SEMI-VOLATILES (Cont'd) *Non-Carcinogenic PAHs*				
Acenaphthene	6.00E-02	NA	NA	NA
Anthracene	3.00E-01	NA	NA	NA
Fluoranthrene	4.00E-02	NA	NA	NA
Fluorene	4.00E-02	NA	NA	NA
Naphthalene	4.00E-02	NA	NA	NA
Pyrene	3.00E-02	NA	NA	NA
PESTICIDES/PCBs:				
Aldrin	3.00E-05	NA	1.70E+01	1.70E+01
Total PCBs	NA	NA	7.70E+00	NA
Beta-BHC	NA	NA	1.80E+00	1.80E+00
Chlordane	6.00E-05	NA	1.30E+00	1.29E+00
Dieldrin	5.00E-05	NA	1.60E+01	1.60E+01
4,4'-DDD	NA	NA	2.40E-01	NA
4,4'-DDE	NA	NA	3.40E-01	NA
4,4'-DDT	5.00E-04	NA	3.40E-01	3.40E-01
Endosulfan	6.00E-03	NA	NA	NA
Endrin	3.00E-04	NA	NA	NA
Heptachlor epoxide	1.30E-05	NA	9.10E+00	9.10E+00
Methoxychlor	5.00E-03	NA	NA	NA
INORGANICS:				
Aluminum	1.00E+00	NA	NA	NA
Antimony	4.00E-04	NA	NA	NA
Arsenic	3.00E-04	NA	1.75E+00	1.51E+01
Barium	7.00E-02	1.43E-04	NA	NA
Beryllium	5.00E-03	NA	4.30E+00	8.40E+00
Cadmium	5.00E-04	NA	NA	6.30E+00
Chromium (III)	1.00E+00	5.71E-07	NA	NA
Chromium (IV)	5.00E-03	NA	NA	4.20E+01
Cobalt	6.00E-02	NA	NA	NA
Manganese	5.00E-03	1.43E-05	NA	NA
Mercury	3.00E-04	8.57E-05	NA	NA
Nickel	2.00E-02	NA	NA	8.40E-01

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TABLE 17

TOXICITY DATA FOR NONCARCINOGENIC AND POTENTIALLY CARCINOGENIC EFFECTS
DOSE RESPONSE EVALUATION
(Page 3 of 3)

Chemical Name	*NON-CARCINOGENS : Reference Doses*		*CARCINOGENS : Slope Factors*	
	Oral RfD (mg/kg-day)	Inhalation RfD (mg/kg-day)	Oral SF (mg/kg-day) -1	Inhalation SF (mg/kg-day) -1
INORGANICS (Cont'd)				
Selenium	5.00E-03	NA	NA	NA
Silver	3.00E-03	NA	NA	NA
Thallium	8.00E-05	NA	NA	NA
Vanadium	7.00E-03	NA	NA	NA
Zinc	3.00E-01	NA	NA	NA

TABLE 18

RISK LEVELS AND HAZARD INDEX VALUES SUMMARY ACROSS BUILDING DUST/SOIL EXPOSURE PATHWAYS

	Carcinogenic Risk Levels		Hazard Index Values	
	Average Exposure	Reasonable Maximum Exposure	Average Exposure	Reasonable Maximum Exposure
Present Site Workers				
Ingestion	2.6E-05	6.8E-05	5.2E-01	1.1E+00
Dermal Contact	1.1E-05	8.6E-05	4.3E-02	2.7E-01
Inhalation	6.4E-09	3.7E-08	1.2E-02	9.7E-02
Total Risk	**3.7E-05**	**1.5E-04**	**5.8E-01**	**1.5E+00**
Future On-Site Commercial Workers				
Ingestion	1.3E-05	8.5E-05	2.3E-01	5.5E-01
Dermal Contact	1.1E-05	2.2E-04	3.8E-02	2.7E-01
Inhalation	6.3E-09	9.4E-08	1.1E-02	9.8E-02
Total Risk	**2.4E-05**	**3.1E-04**	**2.8E-01**	**9.2E-01**
Future On-Site Residents-Adults				
Ingestion	3.3E-05	2.9E-04	5.9E-01	1.5E+00
Dermal Contact	1.4E-05	3.6E-04	4.9E-02	3.8E-01
Inhalation	1.2E-08	3.8E-07	1.4E-02	1.4E-01
Total Risk	**4.7E-05**	**6.5E-04**	**6.5E-01**	**2.0E+00**
Future On-Site Residents-Children				
Ingestion	4.4E-05	2.3E-04	1.2E+00	6.1E+00
Dermal Contact	8.7E-06	6.7E-05	4.6E-02	3.6E-01
Inhalation	1.6E-08	1.5E-07	4.2E-02	6.6E-01
Total Risk	**5.3E-05**	**3.0E-04**	**1.3E+00**	**7.1E+00**

500066

TABLE 19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
GROUPING OF BUILDINGS FOR REMEDIAL ALTERNATIVE EVALUATION

BUILDING NO.	BUILDING NAME	BUILDING GROUP (1)	CONTAMINANTS EXCEEDING GOALS IN FLOOR DUST (2)	RATIONALE FOR GROUPING
1	Main Gate	C	-	Historical uses do not include processing or other operations of concern
2	Melt Shop	B	Arsenic, Lead	Building contains significant amount of contaminated dust but appears structurally sound. Extensive decontamination and renovation may be required for industrial reuse. Roof would require special methods to demolish because of its height
2A	Melt Shop West Toilet	B	-	The building has the same designation as Building 2
2B	Melt Shop East Toilet	B	-	The building has the same designation as Building 2
2F	Melt Shop Producer House	B	-	The building has the same designation as Building 2
2G	Melt Shop Producer House	B	-	The building has the same designation as Building 2
3	Blooming Mill	B	Arsenic, Carcinogenic PAHs	Building contains significant amount of contaminated dust, but appears structurally sound. Extensive decontamination and some renovation would be required before any industrial reuse. Removal of equipment would be both time-consuming and costly.

1. Group A - Buildings contaminated above goals with no future reuse potential.
   Group B - Buildings contaminated above goals with future reuse potential.
   Group C - Buildings with no significant chemical contamination, except asbestos.

2. Remediation goals for floor dust have been assumed to be: 0.78 mg/kg for benzo(a)pyrene and dibenzo(a,h)anthracene, 7.8 mg/kg for benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 20 mg/kg for arsenic, and 1,100 mg/kg for lead.

3. No data available. Assumed to exceed goals based on historic building uses.

TABLE 19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
GROUPING OF BUILDINGS FOR REMEDIAL ALTERNATIVE EVALUATION

BUILDING NO.	BUILDING NAME	BUILDING GROUP (1)	CONTAMINANTS EXCEEDING GOALS IN FLOOR DUST (2)	RATIONALE FOR GROUPING
4	Old Boiler House	B	Carcinogenic PAHs, Arsenic, Lead	Building 4 can possibly be decontaminated and used for storage in conjunction with Building 99. The structure appears sound.
4A	Hot Mill Office	C	-	Historical uses do not include processing or other operations of concern
5	Billet Grinding Store	A	Carcinogenic PAHs, Arsenic, Lead	Contaminated dirt floor would require extensive soil remediation. Structural steel appears intact, although the roof and walls need some repair
6	Electrical Component Repair	C	-	Historical uses do not include processing or other operations of concern, but there is floor and roof damage. No apparent potential reuse for building structure.
7	Well Pump House	B	Arsenic	Potential apparent reuse for light manufacturing. There is some floor and roof damage, but the structure appears basically intact.
8	Galvanizing Shop	A	- (3)	Extremely high lead levels. Integrity of structure and support columns has been compromised. Significant roof deterioration and water damage. The building is in danger of imminent collapse. High cost prohibits renovation and decontamination of this structure for subsequent reuse.
8A	Skimming and Dross Storage	A	Arsenic, Lead	Potential apparent reuse for storage. There are no obvious visual structural hazards. Decontamination is infeasible due to historic lead processes.

1. Group A - Buildings contaminated above goals with no future reuse potential.
   Group B - Buildings contaminated above goals with future reuse potential.
   Group C - Buildings with no significant chemical contamination, except asbestos.

2. Remediation goals for floor dust have been assumed to be: 0.78 mg/kg for benzo(a)pyrene and dibenzo(a,h)anthracene, 7.8 mg/kg for benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 20 mg/kg for arsenic, and 1,100 mg/kg for lead.

3. No data available. Assumed to exceed goals based on historic building uses.

500068

TABLE 19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
GROUPING OF BUILDINGS FOR REMEDIAL ALTERNATIVE EVALUATION

BUILDING NO.	BUILDING NAME	BUILDING GROUP (1)	CONTAMINANTS EXCEEDING GOALS IN FLOOR DUST (2)	RATIONALE FOR GROUPING
10	Patenting Shop, Tempering House	A	Arsenic, Lead	Extremely high lead levels. Decontamination is infeasible due to historic lead processes. Steel structure and wood roof appears to be in good condition except for minor water damage.
11	Annealing House	B	Arsenic, Lead	No apparent structural hazards. Potential apparent reuse for light manufacturing. Historic lead processes may have been performed in this building. If decontamination proves to be infeasible, reclassification to "A" may be necessary.
12	Tractor Garage	A	- (3)	No apparent potential reuse. Part of the building roof has collapsed.
13	Wire Mill No. 2	A	Arsenic, Lead	Potential apparent reuse for warehousing; however, decontamination is infeasible due to historic lead processes.
14	Wire Mill No. 1	B	Arsenic, Lead	This building has potential apparent reuse for warehousing/manufacturing after remediation of floor dust. Costs of renovation may be prohibitively high. Steel columns appear to be in good condition, but the roof would likely need to be replaced due to structural failure.
15	Oil Storage Building	B	Carcinogenic PAHs	Potential apparent reuse for light manufacturing or storage following removal of debris, decontamination, and cleanup of oil-soaked basement floors.
16	Pipe Shop, Store House	C	-	Historical uses do not include processing or other operations of concern. Potential apparent reuse for light manufacturing or storage. Building contains useable equipment.

1. Group A - Buildings contaminated above goals with no future reuse potential.
   Group B - Buildings contaminated above goals with future reuse potential.
   Group C - Buildings with no significant chemical contamination, except asbestos.

2. Remediation goals for floor dust have been assumed to be: 0.78 mg/kg for benzo(a)pyrene and dibenzo(a,h)anthracene, 7.8 mg/kg for benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 20 mg/kg for arsenic, and 1,100 mg/kg for lead.

3. No data available. Assumed to exceed goals based on historic building uses.

TABLE 19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
GROUPING OF BUILDINGS FOR REMEDIAL ALTERNATIVE EVALUATION

BUILDING NO.	BUILDING NAME	BUILDING GROUP (1)	CONTAMINANTS EXCEEDING GOALS IN FLOOR DUST (2)	RATIONALE FOR GROUPING
17	Machine Shop	A	(3)	Most of building burned to ground. Demolition and debris removal work required.
18	Blacksmith Shop	B	Carcinogenic PAHs, Arsenic, Lead	Potential apparent reuse for storage, office, light manufacturing. Roof in disrepair, east wall would probably need to be replaced.
19	Store and Office Building	C	-	Historical uses do not include processing or other operations of concern. Partial roof collapse. The southern portion of the building is not structurally sound and should not be entered.
20	Fire Pump House	C	-	Original floor and equipment have been removed. Building exhibits structural problems.
21	Main Substation (low) Power House	B	- (3)	Potential apparent reuse for industrial office or light house-keeping following decontamination for floor dust. Building appears to be in good structural condition.
22	Wire Mill No. 3 Spring Factory	B	Carcinogenic PAHs, Arsenic, Lead	Potential apparent reuse for industrial warehousing or manufacturing. Steel support structure and brick walls appear to be in good structural condition. This building may have been impacted by historic lead processes. If decontamination proves to be infeasible, reclassification to "A" may be necessary.
23	Mason's Stock Storage N-Warehouse	A	-	Historical uses do not include processing or other operations of concern. Building appears structurally sound. Demolition of Building 30 necessitates demolition of this building because they are connected.

1. Group A - Buildings contaminated above goals with no future reuse potential.
   Group B - Buildings contaminated above goals with future reuse potential.
   Group C - Buildings with no significant chemical contamination, except asbestos.

2. Remediation goals for floor dust have been assumed to be: 0.78 mg/kg for benzo(a)pyrene and dibenzo(a,h)anthracene, 7.8 mg/kg for benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 20 mg/kg for arsenic, and 1,100 mg/kg for lead.

3. No data available. Assumed to exceed goals based on historic building uses.

TABLE 19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
GROUPING OF BUILDINGS FOR REMEDIAL ALTERNATIVE EVALUATION

BUILDING NO.	BUILDING NAME	BUILDING GROUP (1)	CONTAMINANTS EXCEEDING GOALS IN FLOOR DUST (2)	RATIONALE FOR GROUPING
25	Wire Mills Metallurgical Office	C	-	Historical uses do not include processing or other operations of concern
26	Wire Mill Laboratory	C	-	Historical uses do not include processing or other operations of concern
30	Auto Truck Garage M-Galvanizing	A	Carcinogenic PAHs, Arsenic, Lead	Potential apparent reuse for storage and light housekeeping. Appears to be structurally sound except for portion of roof. Decontamination is infeasible due to historic lead processes. Demolition of this building would negatively impact structural stability of Building 23.
31	Locomotive Repair Shop	A	Arsenic, Lead	Building will require extensive renovation and decontamination for any reuse. Visually obvious structural cracking and leaning
33	Pipe Storage	C	-	Historical uses do not include processing or other operations of concern. Appears to be structurally stable.
35	Melt Shop House Pump	B	- (3)	Historical uses do not include processing or other operations of concern. The building can potentially be reused for toilet facilities or storage
40	Fuel Oil Pump House	C	-	Historical uses do not include processing or other operations of concern
43	Paint Shop	C	Carcinogenic PAHs, Arsenic, Lead	Contamination has not been detected within the building. No apparent potential for reuse due to visual structural damage.

1. Group A - Buildings contaminated above goals with no future reuse potential.
   Group B - Buildings contaminated above goals with future reuse potential.
   Group C - Buildings with no significant chemical contamination, except asbestos.

2. Remediation goals for floor dust have been assumed to be: 0.78 mg/kg for benzo(a)pyrene and dibenzo(a,h)anthracene, 7.8 mg/kg for benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 20 mg/kg for arsenic, and 1,100 mg/kg for lead.

3. No data available. Assumed to exceed goals based on historic building uses.

500071

TABLE 19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
GROUPING OF BUILDINGS FOR REMEDIAL ALTERNATIVE EVALUATION

BUILDING NO.	BUILDING NAME	BUILDING GROUP (1)	CONTAMINANTS EXCEEDING GOALS IN FLOOR DUST (2)	RATIONALE FOR GROUPING
47	Payroll Preparation and Shoe Store	C	-	Historical uses do not include processing or other operations of concern
50	Sewage Pump House	C	-	Historical uses do not include processing or other operations of concern. Structural stability is questionable.
59	Sewage Pump House	C	-	Historical uses do not include processing or other operations of concern
60	First Aid Station	C	-	Historical uses do not include processing or other operations of concern. Potential for reuse as an office
62	Scale House 4: Billet Yard	C	-	Historical uses do not include processing or other operations of concern
64	Instrument Repair Shop	C	-	Historical uses do not include processing or other operations of concern. Potential reuse for light manufacturing. Structure appears to be in good condition
69B	Sand Dryer	C	-	Historical uses do not include processing or other operations of concern
72	Diesel Oil Tank Enclosure	C	-	Historical uses do not include processing or other operations of concern

1. Group A - Buildings contaminated above goals with no future reuse potential.
   Group B - Buildings contaminated above goals with future reuse potential.
   Group C - Buildings with no significant chemical contamination, except asbestos.

2. Remediation goals for floor dust have been assumed to be: 0.78 mg/kg for benzo(a)pyrene and dibenzo(a,h)anthracene, 7.8 mg/kg for benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 20 mg/kg for arsenic, and 1,100 mg/kg for lead.

3. No data available. Assumed to exceed goals based on historic building uses.

TABLE 19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
GROUPING OF BUILDINGS FOR REMEDIAL ALTERNATIVE EVALUATION

BUILDING NO.	BUILDING NAME	BUILDING GROUP (1)	CONTAMINANTS EXCEEDING GOALS IN FLOOR DUST (2)	RATIONALE FOR GROUPING
77	Wire Mill No. 4, Bridge Shop	B	Arsenic, Lead	Potential reuse for warehousing or industrial manufacturing. Steel structure visually intact. Relatively low levels of contamination. This building may have been impacted by historic lead processes. If decontamination proves to be infeasible, reclassification to "A" may be necessary
78	Rod Mill No. 2	B	Carcinogenic PAHs, Arsenic, Lead	Steel structure is visually intact. Potential reuse for warehousing or industrial manufacturing after removal of debris and decontamination. Repairs would be required for roof and some flooring
79	Substation No. 1 Gate, Transformer House	A	- (3)	No apparent potential for reuse. Roof is damaged
80	Carpenter Shop	B	Carcinogenic PAHs, Lead	Potential reuse for storage or light manufacturing. Building appears structurally sound
81	Wire Mill Scrap Building	B	Lead	No apparent structural concerns
82	Ambulance Garage	C	-	Historical uses do not include processing or other operations of concern. Appears to be structurally stable
85	Wire Mill Storage Building	A	Lead	Minimal apparent potential for building reuse. It would likely be difficult to decontaminate the building to reuse cleanup levels. Existing visually apparent structural damage cannot be repaired without significant cost

1. Group A - Buildings contaminated above goals with no future reuse potential.
   Group B - Buildings contaminated above goals with future reuse potential.
   Group C - Buildings with no significant chemical contamination, except asbestos.

2. Remediation goals for floor dust have been assumed to be: 0.78 mg/kg for benzo(a)pyrene and dibenzo(a,h)anthracene, 7.8 mg/kg for benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 20 mg/kg for arsenic, and 1,100 mg/kg for lead.

3. No data available. Assumed to exceed goals based on historic building uses.

TABLE 19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
GROUPING OF BUILDINGS FOR REMEDIAL ALTERNATIVE EVALUATION

BUILDING NO.	BUILDING NAME	BUILDING GROUP (1)	CONTAMINANTS EXCEEDING GOALS IN FLOOR DUST (2)	RATIONALE FOR GROUPING
86	Rod Mill No. 1	B	Arsenic, Lead	The basic structure appears to be in good condition. There is potential for reuse of this building after repair, equipment removal, and decontamination.
87	Main Substation	B	- (3)	Potential reuse for light manufacturing. Structure and walls are visually in good condition.
88	Copper Mill	A	Carcinogenic PAHs, Arsenic, Lead	Minimal potential for building reuse due to roof collapse, water damage, and other extensive apparent structural problems. It would likely be difficult to decontaminate the building to reuse cleanup levels.
89	Storage Building, Locker and Storage Crafts	C	-	Historical uses do not include processing or other operations of concern. Structural damage limits the potential for reuse of this building.
90	Wire Mill Substation	A	(3)	No apparent potential for reuse.
91	River Water Works, River Pump House	C	-	Historical uses do not include processing or other operations of concern.
92	Rope Measuring, West	B	Arsenic, Lead	Building 92 may supplement the reuse of adjacent Building 96. Minor repairs needed for roof and siding.
93	Rope Measuring, East	B	(3)	No apparent potential for reuse.

1. Group A - Buildings contaminated above goals with no future reuse potential.
   Group B - Buildings contaminated above goals with future reuse potential.
   Group C - Buildings with no significant chemical contamination, except asbestos.

2. Remediation goals for floor dust have been assumed to be: 0.78 mg/kg for benzo(a)pyrene and dibenzo(a,h)anthracene, 7.8 mg/kg for benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 20 mg/kg for arsenic, and 1,100 mg/kg for lead.

3. No data available. Assumed to exceed goals based on historic building uses.

500074

TABLE 19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
GROUPING OF BUILDINGS FOR REMEDIAL ALTERNATIVE EVALUATION
(Page 9 of 10)

BUILDING NO.	BUILDING NAME	BUILDING GROUP (1)	CONTAMINANTS EXCEEDING GOALS IN FLOOR DUST (2)	RATIONALE FOR GROUPING
96	Storehouse Bridge	B	Arsenic, Lead	Potential reuse for industrial warehousing
97	Wire Mill Rod Storage Shed	A	Lead	Potential reuse for storage. Decontamination is infeasible due to historic lead processes. Appears structurally intact
98	No. 2 Gatehouse	C	-	Historical uses do not include processing or other operations of concern
99	Boiler House No. 1	B	Arsenic	Potential reuse for power generation. Building appears structurally intact but contains a significant volume of asbestos insulation
100	Office Building	C	-	Historical uses do not include processing or other operations of concern
101	Billet Yard Locker Room	C	-	Historical uses do not include processing or other operations of concern
103	Sewer Pump House	C	-	Historical uses do not include processing or other operations of concern
104	Fuel Oil Pump House	A	- (3)	No apparent potential for reuse. Widespread visual contamination
113	Well Pump House	B	- (3)	No apparent potential for reuse. Pit will need to be filled
114	Spring Factory Wire Mill No. 3	A	Arsenic, Lead	Potential reuse for industrial warehousing or light manufacturing. Decontamination is infeasible due to historic lead processes

1. Group A - Buildings contaminated above goals with no future reuse potential.
   Group B - Buildings contaminated above goals with future reuse potential.
   Group C - Buildings with no significant chemical contamination, except asbestos.

2. Remediation goals for floor dust have been assumed to be: 0.78 mg/kg for benzo(a)pyrene and dibenzo(a,h)anthracene, 7.8 mg/kg for benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 20 mg/kg for arsenic, and 1,100 mg/kg for lead.

3. No data available. Assumed to exceed goals based on historic building uses.

500075

TABLE 19
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
GROUPING OF BUILDINGS FOR REMEDIAL ALTERNATIVE EVALUATION

BUILDING NO.	BUILDING NAME	BUILDING GROUP (1)	CONTAMINANTS EXCEEDING GOALS IN FLOOR DUST (2)	RATIONALE FOR GROUPING
114[1]	Control House for Dust Collector	A	-	No apparent potential for reuse. Adjacent to transformer pad
115A	Wharf Pump House, Oil Pump House	A	- (3)	No apparent potential for reuse. Widespread visual oil contamination
WWTP	Wastewater Treatment Plant	A	- (3)	Steel structure is intact, but roof collapse would require repair. Decontamination is assumed to be infeasible due to the historic treatment of a variety of contaminated liquid waste streams.
Off-site Substation	Switch Room	C	-	Historical uses do not include processing or other operations of concern

1. Group A - Buildings contaminated above goals with no future reuse potential.
Group B - Buildings contaminated above goals with future reuse potential.
Group C - Buildings with no significant chemical contamination, except asbestos.

2. Remediation goals for floor dust have been assumed to be: 0.78 mg/kg for benzo(a)pyrene and dibenzo(a,h)anthracene, 7.8 mg/kg for benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, 20 mg/kg for arsenic, and 1,100 mg/kg for lead.

3. No data available. Assumed to exceed goals based on historic building uses.

TABLE 20

Area/Volume Estimates for Building Decontamination/Demolition

Building Number	Building Group	Number of Pieces of Equipment: Large	Number of Pieces of Equipment: Small	Above Ground Storage Tanks #/Total Liquids (gal)	Sumps - Amount of Liquid/Sludge for Removal (gal)	Area Requiring Pre-Demolition Decontamination (ft²)	Area for Complete Decontamination (ft²)	Volume of Demolition Debris (yd³)
2	B	176	643	5/24,500	340,000	0	192,145	784
3	B	368	295	15/2,250	314,600	0	95,062	1,729
4	B	3	20	1,600	None	0	27,588	40
5	A	13	187	None	None	0	N/A	122
7	B	20	100	None	20,884	0	11,456	138
8	A	163	215	None	6,000	14,797	N/A	1,342
8A	A	0	0	None	None	702	N/A	78
10	A	559	543	23/6,000	4,800	42,437	N/A	3,565
11	B	0	110	None	480	0	43,154	760
12	A	0	28	4/2,000	None	0	N/A	458
13	A	351	538	7/2,700	2,000	52,460	N/A	1,722
14	B	54	358	None	1,920	40,430	202,147	3,229
15	B	0	22	12/1,200	960	0	5,540	201
17	A	50	250	None	None	7,149	N/A	1,476
18	B	5	10	None	None	0	10,812	310
21	B	36	24	None	3,000	0	24,750	465
22	B	14	37	None	1,350	40,000	200,000	1,852
30/23	A	19	30	None	None	0	N/A	531
31	A	21	10	None	None	4,536	N/A	40
35	B	0	0	None	600	0	4,640	150
77	B	21	17	None	100	0	123,400	300
78	B	44	41	3/0	2,400	0	63,790	1,187
79	A	0	0	None	None	0	N/A	251
80	B	0	5	None	None	0	23,580	141
81	B	2	231	None	None	0	21,195	1
85	A	0	1	None	None	0	N/A	191
86	B	579	266	2/200	7,680	0	86,551	1,904
87	B	0	0	None	None	1,828	9,140	424
88	A	198	279	1/500	4,588	0	N/A	2,520
90	A	0	0	None	None	3,066	N/A	77
92	B	24	45	None	1,440	0	20,587	8
93	A	4	0	None	None	0	N/A	0
96	B	6	48	None	None	0	17,617	0
97	A	6	10	None	None	7,412	N/A	0
99	B	246	96	15/15 yd³ ash	1,000	0	50,428	1,062
104	A	3	0	None	None	126	N/A	14
113	A	0	0	None	2,302	0	N/A	13
114	A	4	32	None	None	6,125	N/A	330
114'	A	6	0	None	None	144	N/A	12
115A	A	0	6	None	None	200	N/A	3
WWTP	A	11	27	5/1,130	15,800	0	N/A	437
		3,006	1,131		731,904	221,412	1,233,582	28,917

Note: Pieces of equipment were divided into two groups, small (1/4 ton or <) and large (1 ton), for costing purposes.

TABLE 21

Remedial Alternatives Cost Summary

(Page 1 of 3)

Components			Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
I. General Costs(1)			$606,200	$2,370,900	$4,284,400	$4,284,400	$5,124,900	$5,124,900
II. Asbestos Abatement				$8,070,484	$8,070,484	$8,070,484	$8,070,484	$8,070,484
III. Building Decontamination/Demolition(2)								
Number	Building Name	Group						
					Capital Costs			
2	Melt Shop (includes 2A, 2B, 2F, & 2G)	B			$2,656,400	$2,656,400	$2,509,000	$2,658,800
3	Blooming Mill	B			$2,245,300	$2,245,300	$1,954,400	$2,266,200
4	Old Boiler House	B			$136,800	$136,800	$238,900	$247,300
5	Billet Grinding Store	A			$181,100	$204,900	$181,100	$204,900
7	Well Pump House	B			$252,000	$252,000	$223,000	$220,500
8	Galvanizing Shop	A			$2,140,000	$2,397,100	$2,140,000	$2,397,100
8A	Skimming and Dross Storage	A			$23,800	$39,000	$23,800	$39,000
10	Patenting Shop/Tempering House	A			$5,144,200	$5,534,300	$5,144,200	$5,534,300
11	Annealing House	B			$267,500	$267,500	$368,800	$495,300
12	Tractor Garage	A			$144,100	$177,900	$144,100	$177,900
13	Wire Mill No. 2	A			$3,142,700	$3,475,400	$3,142,700	$3,475,400
14	Wire Mill No. 1	B			$1,377,200	$1,377,200	$2,009,800	$2,108,200
15	Oil Storage Building	B			$185,700	$185,700	$163,300	$197,500
17	Machine Shop	A			$435,700	$691,600	$435,700	$691,600
18	Blacksmith Shop	B			$100,800	$100,800	$113,200	$173,400
21	Main Substation (Low) Powerhouse	B			$317,200	$317,200	$294,600	$380,600
22	Wire Mill No. 3 - Spring Factory	B			$957,700	$957,700	$1,848,300	$2,209,500
30/23	Truck Garage/Mason's Storage	A			$569,300	$869,700	$569,300	$869,700
31	Locomotive Repair Shop	A			$175,300	$182,800	$175,300	$182,800

TABLE 21

Remedial Alternatives Cost Summary

(Page 2 of 3)

Number	Building Name	Group	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
					Capital Costs			
35	Melt Shop Pump House	B			$48,200	$48,200	$35,200	$64,800
77	Wire Mill No. 4 - Bridge Shop	B			$628,300	$628,300	$947,600	$1,107,300
78	Rod Mill No. 2	B			$535,500	$535,500	$465,000	$615,900
79	Substation No. 1 - Gate Transformer House	A			$28,800	$77,700	$28,800	$77,700
80	Carpenter Shop	B			$102,400	$102,400	$136,000	$163,100
81	Wire Mill Scrap Building	B			$148,100	$148,100	$189,000	$189,200
85	Wire Mill Storage Building	A			$35,300	$72,100	$35,300	$72,100
86	Rod Mill No. 1	B			$2,206,300	$2,206,300	$1,861,700	$2,161,600
87	Main Substation	B			$53,100	$53,100	$70,700	$153,200
88	Copper Mill	A			$1,798,600	$2,042,000	$1,798,600	$2,042,000
90	Wire Mill Substation	A			$25,100	$40,500	$25,100	$40,500
92	Rope Measuring West	B			$198,800	$198,800	$169,300	$170,100
93	Rope Measuring East	B			$36,600	$36,600	$36,300	$36,300
96	Store House Bridge	B			$114,500	$114,500	$159,200	$159,200
97	Wire Mill Rod Storage Shed	A			$331,600	$331,600	$331,600	$331,600
99	Boiler House No. 1	B			$981,800	$981,800	$1,153,800	$1,368,800
104	Fuel Oil Pump House	A			$23,600	$26,100	$23,600	$26,100
113	Well Pump House	B			$27,200	$27,200	$23,100	$25,300
114	Spring Factory - Wire Mill No. 3	A			$269,700	$312,700	$269,700	$312,700
114'	Control House for Dust Collector and Silos	A			$34,700	$36,800	$34,700	$36,800
115A	Wharf Pump House	A			$18,200	$18,400	$18,200	$18,400
WWTP	Wastewater Treatment Plant	A			$345,900	$426,700	$345,900	$426,700
Building Decontamination/Demolition Capital Subtotal(3):			$0	$0	$28,445,100	$30,534,700	$29,837,900	$34,129,400
Building Decontamination/Demolition Present Worth Subtotal(4):					$26,445,558	$28,388,270	$27,740,451	$31,730,281
[illegible]			[illegible]	[illegible]	[illegible]			
TOTAL:			$406,200	$10,441,384	$38,800,442	$40,743,154	$40,935,836	$44,925,665

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TABLE 21

Remedial Alternatives Cost Summary

(Page 3 of 3)

Notes:

(1) General costs include:

Institutional Controls (deed restrictions, install/mend security fencing, gates and signs).
Removal and Disposal of Underground Storage Tanks.
Fixed Costs for Building Decontamination/Demolition for Alternatives 3 through 6.
Historic Preservation Costs for Alternatives 2 through 6 including: Renovation of Building 1, Recordation, and Conservation of Roebling Archives.
Recordation costs are greater for Alternatives 5 and 6 than for Alternatives 3 and 4. Recordation costs are not included for Alternative 2.
For Alternatives 3 through 6, $1,000,000 has been added for equipment preservation.
Alternatives 1 and 2 include present worth Operations and Maintenance Costs for a thirty year period.

(2) Group A Buildings

Alternatives 1 & 2 - No Actions Taken.
Alternatives 3 & 5 - Building Demolition with On-Site Disposal of Building Debris.
Alternatives 4 & 6 - Building Demolition with Off-Site Disposal of Building Debris.

Group B Buildings

Alternatives 1 & 2 - No Actions Taken.
Alternatives 3 & 4 - Building Decontamination for Re-Use.
Alternative 5 - Building Demolition with On-Site Disposal of Building Debris.
Alternative 6 - Building Demolition with Off-Site Disposal of Building Debris.

(3) The building decontamination/demolition capital cost for Alternatives 3 & 4 is estimated to be incurred over a two year period and the cost for Alternatives 5 & 6 is estimated be incurred over a three year period.

(4) The present worth cost for building decontamination/demolition is based on the 5% discount factor, with equal payments at the end of each year.

TABLE 22

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

REGULATORY LEVEL	ARAR IDENTIFICATION	REGULATORY SYNOPSIS	FFS CONSIDERATION
Chemical-Specific ARARS			
Federal	Resource Conservation and Recovery Act (RCRA) - Subtitle C	Provides regulations concerning the management of hazardous waste from "cradle to grave".	Shall be used to determine if RCRA listed and/or characteristic wastes are present at the site.
Federal	Toxic Substances Control Act - PCB regulations, Subpart D	Provides regulations governing the treatment, storage and disposal of PCBs based on their form and concentration.	Shall be used to determine interim storage, disposal and treatment alternatives for PCB contaminated material.
Federal	Clean Air Act	Provides regulations governing air emissions resulting from remedial actions.	Shall be used to establish air emission standards during remedial action(s).
State	New Jersey Ambient Air Quality Standards	Provides regulations governing air emissions resulting from remedial actions.	Shall be used to establish ambient air standards during remedial action(s).

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TABLE 22

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

REGULATORY LEVEL	ARAR IDENTIFICATION	REGULATORY SYNOPSIS	FFS CONSIDERATION
Location-Specific ARARS			
Federal	National Historic Preservation Act	Provides regulations requiring a Federal agency with jurisdiction over an undertaking to take into account the effects of the undertaking to qualifying historic properties.	Shall be used in development of remedial actions at the site which involve demolition/removal of historic buildings, process equipment and archives.
Federal	RCRA - Location Requirements for 100-year Floodplains	Provides regulations governing the construction and operation of hazardous waste TSD facilities to prevent wash-out by a 100-year flood.	Shall be used in the evaluation of any hazardous waste activities which would be conducted in the 100-year floodplain.
Federal	Executive Order 11988 - Floodplain Management	Provides standards for management activities conducted in a floodplain.	Shall be used in the evaluation of activities involving use of demolition debris as fill material on-site.
State	New Jersey Flood Hazard Area Control Act	Provides regulations governing allowable activities for flood ways to protect the environment and human health.	Shall be used to establish standards for any remedial activities conducted in a floodplain or any activity involving alteration or encroachment upon a waterway.

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TABLE 22

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

REGULATORY LEVEL	ARAR IDENTIFICATION	REGULATORY SYNOPSIS	FFS CONSIDERATION
Action-Specific ARARS			
Federal	RCRA- Subtitle C	Provides regulations concerning the management of hazardous waste from "cradle to grave".	Shall be used to determine generator requirements for manifesting and off-site waste transport; transporter requirements; hazardous waste facility design and operating standards; groundwater monitoring and protection standards; closure and post-closure standards; land disposal restrictions; and activities governing applicable underground storage tanks actions.
Federal	RCRA - Subtitle D	Provides regulations concerning the management of materials not meeting the definition of "hazardous wastes".	Shall be used to ensure that the disposal of any solid wastes meet the substantive portions of these requirements.
Federal	DOT Rules for Hazardous Materials Transport	Provides regulations governing the transport of hazardous materials.	Shall be used to determine shipping requirements for wastes shipped off-site for treatment and/or disposal.
Federal	Clean Air Act	Provides regulations governing air emissions resulting from remedial actions.	Shall be used to determine air emission standards for building demolition and renovation. These would be applicable to building demolition at the site and require the removal of all friable asbestos prior to demolition.
Federal	Discharge to Publicly-Owned Treatment Works (POTW) Regulations	Provides regulations governing the discharge of any pollutant that pass through the POTW.	Shall be used to establish POTW discharge requirements including POTW-specific pollutants, spill prevention program requirements and reporting and monitoring requirements.

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TABLE 22

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

REGULATORY LEVEL	ARAR IDENTIFICATION	REGULATORY SYNOPSIS	FFS CONSIDERATION
Federal	Occupational Safety and Health Standards for Hazardous Responses and General Construction Activities	Provides regulations intended to protect workers form harm related to occupational exposure to chemical contaminants, physical hazards, heat or cold stress, etc.	Remedial activities conducted at the site will be in compliance with the OSHA standards and requirements, including the asbestos standard.
State	New Jersey UST Closure Regulations	Provides regulations governing the closure of USTs.	Shall be used to determine requirements for closure of the USTs at the site. Will be used to establish abandonment or removal requirements and site assessment requirements.
State	New Jersey Solid and Hazardous Waste Management Regulations	Provides regulations governing the waste management and the design, operation, and closure of solid waste disposal facilities.	Remedial activities conducted at the site will be in compliance with all hazardous waste management requirements including: waste transport; unit closure and post-closure care; groundwater monitoring; and facility siting, design and operation.
State	New Jersey Site Remediation Technical Rules	Provides regulations defining standards for the investigation and remediation of contaminated sites.	Remedial design and actions conducted at the site, including the development, screening, selection and implementation of remedial alternatives, will be in compliance with this ARAR.

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TABLE 22

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
TO BE CONSIDERED CRITERIA

REGULATORY LEVEL	TBC IDENTIFICATION	REGULATORY SYNOPSIS	FFS CONSIDERATION
Federal	Adult Lead Biokinetic Slope Factor Model	Provides a site-specific remediation goal for lead in soil/dust using an Adult Biokinetic Slope Factor Model.	Shall create a remediatory goal in terms of allowable levels for soil or dust lead concentrations
Federal	PCB Spill Cleanup Policy	Provides guidance concerning the level of cleanup for PCB spills occurring after May 4, 1987.	Shall be referred to for clean-up procedures of recent PCB spills of various magnitudes
Federal	Draft Guidelines for Permit Applications and Demonstrations--Test Plans for PCB Disposal by Non-Thermal Alternate Methods	Provides discussion of "equivalency" of performance between incineration of PCB-contaminated material versus other technologies.	Shall be used to a compare performance between incineration and alternate methods of treatment of PCB-contaminated material
Federal	Verification of PCB Spill Cleanup by Sampling and Analysis	Provides description of methods to sample and analyze PCB in various media.	Shall be used to develop PCB sampling plans in identifying appropriate methods for complicated sampling.
Federal	Guidance on Remedial Actions for Superfund Sites with PCB Contamination	Provides a description of the recommended approach for evaluating and remediating Superfund sites with PCB contamination.	Shall be used to provide preliminary remediation goals for various media that may be contaminated and identifies other considerations important to ensuring the protection of human health and the environment.
Federal	USEPA Soil Screening Guidance	Provides an overall approach and standardized equations for developing soil screening levels for specific contaminants and exposure pathways at the site under a residential land use scenario.	Shall be used as guidance for the development of remediation goals for soil/dust within buildings.

TABLE 22

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ROEBLING STEEL COMPANY SITE - OU-4 FFS
TO BE CONSIDERED CRITERIA

REGULATORY LEVEL	TBC IDENTIFICATION	REGULATORY SYNOPSIS	FFS CONSIDERATION
Federal	U.S. Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing	Provides guidelines involving the evaluation and control of lead based paint hazards in housing	The State of New Jersey has adopted portions of the federal guidelines as part of its regulations.
Federal	Revised Procedures for Planning and Implementing Off-site Response Actions	Provides guidance to ensure that facilities authorized to accept CERCLA-generated waste are in compliance with RCRA operating standards.	Shall be referred to for the shipment of hazardous waste to off-site treatment and disposal facilities
Federal	USEPA Region III-Risk Based Concentration (RBC) Table	Provides reference doses and carcinogenic potency slopes for nearly 600 chemicals	Shall be used to screen sites, respond rapidly to citizen inquiries, and spot-check formal baseline risk assessments.
Federal	EPA's 1985 Policy on Wetlands and Floodplains Assessment for CERCLA Actions	Requires consideration of the 500-year floodplain when planning remedial actions and evaluating their impacts.	Shall be used in the evaluation of activities involving use of demolition debris as fill material on-site.
State	New Jersey Guidance on Management of Excavated Soils	Provides discussion of the use of soil mixed with inert solid debris as fill material.	Shall be used in any remedial action involving the use of selected, processed building demolition debris as miscellaneous fill for a site to supplement clean soil.
State	New Jersey Field Sampling Manual	Provides technical guidance regarding environmental sampling and compliance monitoring activities.	Shall be used for any remedial action involving confirmation sampling, periodic multi-media monitoring, and/or other field sampling tasks
State	New Jersey Lead Hazard Evaluation and Abatement Code	Provides controls for the abatement of lead-based paint hazards and the certification of lead-based paint hazard evaluation or abatement contractors.	Shall give recommended lead testing methods, limits on lead dust levels and sampling guidelines to determine acceptable clearance levels.

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Table 23

Comparison of the Remediation Goals with Site Data for Building Dust

	FWENC CALCULATED VALUES BASED ON USEPA RAGS PART B GUIDANCE CALCULATION			HISTORICALLY PUBLISHED TBC VALUES				SITE VALUES
Chemical Name	Commercial PRGs 1x10E-6 Carcinogenic	Commercial PRGs HI = 1 Noncarcinogenic	Commercial PRGs 1x10E-4 Carcinogenic	USEPA 1996 Soil Screening Guidance Ingestion	USEPA 1996 Soil Screening Guidance Inhalation	Calculated Commercial RBCs USEPA Region III Carcinogenic	Calculated Commercial RBCs USEPA Region III NonCarcinogenic	Site Data Range
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Methylene chloride	22	2800	2200	85	13	760	-	0.12 - 1.6
1,2-Dichloroethane	0.88	83	88	7	0.4	63	-	0.003 - 0.003
2-Butanone	-	11,000	-	-	-	-	1,000,000	0.011 - 0.011
Toluene	-	440	-	16,000	650	-	410,000	0.005 - 0.027
Trichloroethene	9.3	620	930	58	5	520	-	0.009 - 0.009
Benzo(a)pyrene	0.78	-	78	0.09	-	0.78	-	0.022-54
Benzo (a) anthracene	7.8	-	780	0.9	-	7.8	-	0.05 -75
Chrysene	780	-	78,000	88	-	780	-	0.04 - 76
Benzo (b) fluoranthene	7.8	-	780	0.9	-	7.8	-	0.06 -57
Benzo (k) fluoranthene	78	-	7800	9	-	78	-	0.04 - 30
Indeno (1,2,3-cd) pyrene	7.8	-	780	0.9	-	7.8	-	0.08 -24
Dibenzo (a,h) anthracene	0.78	-	78	0.09	-	0.78	-	0.08 - 6.9
Aldrin	0.34	61	34	0.04	3	0.34	-	0.13 - 4.3
Heptachlor epoxide	0.63	27	63	0.07	5	0.63	-	0.04 - 0.3
Dieldrin	0.36	102	36	0.04	1	0.36	-	0.03 - 0.72
4,4-DDT	17	1000	1700	2	-	17	-	0.03 - 0.21
Alpha Chlordane	4.4	120	440	0.5	20	4.4	-	0.10 - 3.2
Gamma Chlordane	4.4	120	440	0.5	20	4.4	-	0.09 - 3.5
Arsenic	3.8	610	380	0.4	750	3.8	610	2 - 231
Barium	-	137,000	-	5500	690,000	-	140,000	31 - 5,680
Beryllium	1.3	10,000	130	0.1	1,300	1.3	-	0.7 - 2.7
Cadmium	11,000	1000	1,000,000	78	1,800	-	1,000	1.1 - 91
Chromium (VI)	1600	10,000	160,000	390	270	-	10,000	28 - 3,600
Manganese	-	9900	-	-	-	-	10,000	52 - 8,180
Mercury	-	610	-	23	10	-	610	0.14 - 17.9
Di-n-octylphthalate	-	41,000	-	1600	10,000	-	41,000	0.23 - 4.6
Naphthalene	-	82,000	-	3100	-	-	82,000	0.04 - 27
Lead	-	-	-	400	-	-	-	120 -169,000
PCBs	0.74	41	74	1.0	-	0.74	-	0.03 - 117
Zinc	-	613,000	-	23,000	-	-	610,000	30 - 395,000

Note: No remediation goal was calculated due to unavailability of toxicological data.

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ATTACHMENT 2

ADMINISTRATIVE RECORD INDEX

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ROEBLING STEEL SITE
OPERABLE UNIT FOUR
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

3.0 REMEDIAL INVESTIGATION

3.4 Remedial Investigation Reports

P. 300001-300002 Report: Transportable System for Treating Scrap Metal and Other Solid Debris Contaminated with Hazardous Chemicals, prepared by International Technology Corporation, undated.

P. 300003-300010 Pamphlet entitled "Historic American Engineering Record" prepared by U.S. Dept. Of the Interior, National Park Service, undated.

P. 300011-300015 36 CFR Ch. 1, Dept. of Interior, National Parks Service, Part 79 - Curation of Federally-Owned and Administered Archaeological Collections, July 1, 1992 Edition.

P. 300016-300101 Report: Review of a Methodology for Establishing Risk-Based Soil Remediation Goals for Commercial Areas of The California Gulch Site, prepared by U.S. EPA, Technical Review Workshop for Lead, October 26, 1995.

P. 300102-300112 Paper entitled "Results of Field Demonstrations of a Newly Developed Pilot-Scale Debris Washing System", written by M.A. Dosani, M.L. Taylor, J.A. Wentz, and A.N. Patkar, IT Corporation, and N.P. Barkley, U.S. EPA, printed in "Environmental Progress" (Vol. 11, No.4), November 1992.

P. 300113-300115 Report: Roebling/Kinkora Childhood Lead Screening Followup Survey, prepared for distribution list, prepared by Mr. Walter Trommelen, Health Officer, Public Health Coordinator, Board of Chosen Freeholders of the County of Burlington, October 31, 1995. (Attachment: Roebling Superfund Site Screening Survey, Spring 1995 (from April 24 through May 11), June 14, 1995.)

P. 300116- 300345 Report: Final Project Plans, Volume 1 of 2, Final Work Plan, Supplemental Remedial Investigation, Roebling Steel Company Site, Florence Township, New Jersey, prepared for U.S. EPA, Region II, prepared by Ebasco, December 1995.

P. 300346- 300678 Report: Final Project Plans, Volume 2 of 2, Final Work Plan, Supplemental Remedial Investigation, Roebling Steel Company Site, Florence Township, New Jersey, prepared for U.S. EPA, Region II, prepared by Ebasco, December 1995.

P. 300679- 300752 Report: Final Cultural Resources Report, Remedial Investigations/Feasibility Study, Roebling Steel Company Site, Roebling, New Jersey, prepared for U.S. EPA, Region II, prepared by Foster Wheeler Environmental Corporation, June 1996.

P. 300753- 300831 Report: Final Stage I Archeology Study, Roebling Steel Company Site, Roebling, New Jersey, prepared for U.S. EPA, Region II, prepared by Foster Wheeler Environmental Corporation, June 1996.

P. 300832- 301330 Report: Final Stage II Architectural Resources Study, Roebling Steel Company Site, Roebling, New Jersey, prepared for U.S. EPA, Region II, prepared by Foster Wheeler Environmental Corporation, June 1996.

P. 301331- 301374 Report: Final Historic Preservation Alternatives for Cultural Resources, Roebling Steel Company Site, Roebling, New Jersey, prepared for U.S. EPA, Region II, prepared by Foster Wheeler Environmental Corporation, June 1996.

P. 301375- 301628 Report: Final Documents Characterization Study, Roebling Steel Company Site, Roebling, New Jersey, prepared for U.S. EPA, Region II, prepared by Foster Wheeler Environmental Corporation, June 1996.

3.5 Correspondence

P. 301629- 301653 Memorandum (with attached appendices) to Regional Administrators I-X, from Mr. Elliot P. Laws, Assistant Administrator, U.S. EPA, Washington, D.C., re: Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, July 14, 1994.

P.	301654-301682	Memorandum (with attachments) to Addressees listed, from Ms. Lynn R. Goldman, M.D., Assistant Administrator, U.S. EPA, Washington, D.C., re: attached Guidance on Residential Lead-Based Paint, Lead-Contaminated Dust, and Lead-Contaminated Soil, July 14, 1994.
P.	301683-301684	Letter to Mayor Fritz Wainwright, Mansfield Township, New Jersey, from Mr. Walter Trommelen, Health Officer, Public Health Coordinator, Board of Chosen Freeholders of the County of Burlington, re: Roebling Steel Superfund Site, February 14, 1995.
P.	301685-301686	Letter to Mr. Richard Brook, Township Administrator, Florence Township Board of Health, from Mr. Walter Trommelen, Health Officer, Public Health Coordinator, Board of Chosen Freeholders of the County of Burlington, re: Roebling Steel Superfund Site, February 14, 1995.
P.	301687-301688	Letter to Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, U.S. EPA, Region II, from Mr. Walter Trommelen, Health Officer, Public Health Coordinator, Board of Chosen Freeholders of the County of Burlington, re: Roebling Steel Superfund Site, Florence Township, NJ, February 15, 1995.
P.	301689-301692	Letter to Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, U.S. EPA, Region II, from Mr. Walter Trommelen, Health Officer, Public Health Coordinator, Board of Chosen Freeholders of the County of Burlington, re: Roebling Steel Superfund Site, Lead Screening Survey of Children in Roebling/Kinkora Area, June 16, 1995. (Attachments: (1) Roebling Superfund Site Screening Survey, Spring 1995 (from April 24 - May 11); (2) Blood Lead Levels: What They Mean - What to do; (3) News Release, re: Lead-Screening Survey/Roebling Steel Site Superfund Site, June 15, 1995.)

4.0 FEASIBILITY STUDY

4.3 Feasibility Study Reports

P. 400001- 400221 Report: Final Focused Feasibility Study for OU-4, Roebling Steel Company Site, Florence Township, New Jersey, Volume 1 of 3, prepared for U.S. EPA, Region II, prepared by Foster Wheeler Environmental Corporation, July 1996.

P. 400222- 400779 Report: Final Focused Feasibility Study for OU-4, Roebling Steel Company Site, Florence Township, New Jersey, Volume 2 of 3, prepared for U.S. EPA, Region II, prepared by Foster Wheeler Environmental Corporation, July 1996.

P. 400780- 401374 Report: Final Focused Feasibility Study for OU-4, Roebling Steel Company Site, Florence Township, New Jersey, Volume 3 of 3, prepared for U.S. EPA, Region II, prepared by Foster Wheeler Environmental Corporation, July 1996.

7.0 ENFORCEMENT

7.7 Information Request Letters and Responses - 104Es

P. 700001- 700016 Notice letter to Mr. Robert S. Evans, President, Crane Company, from Ms. Kathleen C. Callahan, Director, Emergency and Remedial Response Division, U.S. EPA, Region II, re: Request for Information, Roebling Steel Superfund Site, Roebling, Burlington County, New Jersey, June 19, 1996. (Attachment: Instructions for Responding to Request for Information.)

P. 700017- 700075 Notice letter to various PRPs (see Attached Addressees), from Ms. Kathleen C. Callahan, Director, Emergency and Remedial Response Division, U.S. EPA, Region II, re: Request for Information, Roebling Steel Superfund Site, Roebling, Burlington County, New Jersey, June 24, 1996. (Attachments: (1) Instructions for Responding to Request for Information; (2) Request for Information to each addressee.

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10.0 PUBLIC PARTICIPATION

10.9 Proposed Plan

P. 1000001- 1000020 Plan: <u>Superfund Propcsed Plan, Roebling Steel Company, Florence Township, Burlington County, New Jersey</u>, prepared by U.S. EPA, Region II, July 1996.

ROEBLING STEEL SITE
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(Preliminary Addendum)

3.0 REMEDIAL INVESTIGATION

3.4 Remedial Investigation Reports

P. Report: Final Testing/Sampling and Analysis Plan, Building Decontamination Treatability Study, Roebling Steel Superfund Site, prepared by Republic Environmental Systems, October 6, 1995.

P. Report: Final Health and Safety Plan, Treatability Study, Roebling Steel Superfund Site, prepared by Republic Environmental Systems, October 9, 1995.

3.5 Correspondence

P. Letter to Mr. Richard Caspe, Division Director, ERRD, U.S. EPA, from Mr. Bruce Means, Chairman, National Remedy Review Board, re: Findings from the Board's review of the Roebling Steel Superfund Site, August 12, 1996.

P. Letter to Mr. Bruce Means, Chairperson, National Remedy Review Board, to Mr. Richard Caspe, Division Director, ERRD, U.S. EPA, re: Response to Mr. Bruce Means August 12, 1996 letter, August 27, 1996.

P. Letter to Ms. Jeanne Fox, U.S. EPA Regional Administrator, to Mr. Robert Shinn, Jr., NJDEP Commissioner, re: Concurrence Letter for the ROD, September 27, 1996.

7.0 ENFORCEMENT

7.7 Information Request Letters and Responses - 104Es

P. Letter to various PRPs (see attached addressee list), from Ms. Kathleen Callahan, Division Director, U.S. EPA, re: Providing the PRPs an opportunity to comment on the Proposed Plan, July 17, 1996.

P. Letter to various companies (see attached addressee list), from Ms. Kathleen Callahan, Division Director, U.S. EPA, re: Providing an opportunity to comment on the Proposed Plan, July 17, 1996.

P. Letter to PRPs and various companies (see attached addressee list), from Ms. Carole Petersen, Chief, ERRD, U.S. EPA, re: Extension of Public Comment Period for the Roebling Steel Superfund Site, August 16, 1996.

Note - Responses to 104(e) Information Request Letters to PRPs are on file at U.S. EPA Region II Offices.

10.0 PUBLIC PARTICIPATION

P. Letter to Mr. Richard Brook, Administrator, Florence Township, from Mr. John Gorgol, Site Manager, Foster Wheeler Environmental Corporation, re: Submittal of Documents to the Information Repository, July 12, 1996.

P. Letter to Ms. Marian Huebler, Librarian, Florence Township Public Library, from Mr. John Gorgol, Site Manager, Foster Wheeler Environmental Corporation, re: Submittal of Documents to the Information Repository, July 12, 1996.

P. Letter to Mr. Richard Brook, Administrator, Florence Township, from Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, re: Submittal of Documents to the Information Repository, July 15, 1996.

P. Letter to Ms. Marian Huebler, Librarian, Florence Township Public Library, from Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, re: Submittal of Documents to the Information Repository, July 15, 1996.

P. U.S. EPA Factsheet, re: Notice of Public Meeting and Start of Public Comment Period for the Roebling Steel Superfund Site, July 15, 1996.

P. Letter to Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, from Ms. Sydne Marshall, Foster Wheeler Environmental Corporation, enclosing Public Notice issued in the *Burlington County Times*, re: Notice of Public Meeting and Start of Public Comment Period for the Roebling Steel Superfund Site, July 17, 1996.

P. Letter to Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, from Ms. Sydne Marshall, Foster Wheeler Environmental Corporation, enclosing Public Notice issued in the *Register-News* re: Notice of Public Meeting and Start of Public Comment Period for the Roebling Steel Superfund Site, July 18, 1996.

P. Public Meeting Transcripts taken at the Florence Township Municipal Building, Florence, NJ, July 25, 1996.

P. U.S. EPA Factsheet, re: Extension of Public Comment Period for the Roebling Steel Superfund Site, August 13, 1996.

P. Letter to Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, from Ms. Sydne Marshall, Foster Wheeler Environmental Corporation, enclosing Public Notice issued in the *Burlington County Times*, re: Extension of Public Comment Period for the Roebling Steel Superfund Site, August 15, 1996.

10.9 Proposed Plan

P. Information provided from Mansfield Township at the public meeting, re: JARSCO property in Mansfield Township, July 25, 1996.

P. Letter to Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, from Mr. Mark Remsa, Principal Planner, Board of Chosen Freeholders of Burlington County, re: Public Comment on the Preferred Remedy for the Roebling Steel Superfund Site, July 30, 1996.

P. Letter to Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, from Mr. Richard Brook, Administrator, Florence Township, re: Public Comment on the Preferred Remedy for the Roebling Steel Superfund Site, August 14, 1996.

P. Letter to Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, from Mr. Luke W. Mette, Attorney, Stauffer Management Company, re: Public Comment on the Preferred Remedy for the Roebling Steel Superfund Site, August 14, 1996.

P. Letter to Ms. Patricia Carr, Legislative Liaison, U.S. EPA, from Senator Bill Bradley, re: A constituent's concerns and current status of the Roebling Steel Superfund Site, August 16, 1996.

P. Letter to Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, from Ms. Donna McElrea, President, Roebling Historical Society, re: Public Comment on the Preferred Remedy for the Roebling Steel Superfund Site, August 19, 1996.

P. Letter to Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, from Ms. Joan Geary, Chairperson, Florence Township Economic Development Council, re: Public Comment on the Preferred Remedy for the Roebling Steel Superfund Site (four attachments), August 20, 1996.

P. Letter to Mr. Remsa, Principal Planner, Board of Chosen Freeholders of Burlington County, from Ms. Tamara Rossi, U.S. EPA Site Manager, ERRD, re: Response to July 30, 1996 Letter, August 21, 1996.

P. Letter to Senator Bill Bradley, from Ms. Jeanne Fox, Regional Administrator, U.S. EPA, re: Response to Senator Bill Bradley's August 16, 1996 letter, September 10, 1996.

RECORD OF DECISION

P. Record of Decision, Roebling Steel Superfund Site, re: Remediation of Buildings and Contamination Sources, September 30, 1996.

GUIDANCE AND OTHER INFORMATION

Memorandum to Toxic and Waste Mangement Division Directors U.S. EPA Regions I-X, from Mr. William N. Hedeman, Jr., Director, ERRD, and Gene Lucero, Director, Office of Waste Programs Enforcement, re: Policy on Floodplains and Wetland Assessments for CERCLA Actions, August 6, 1985.

Memorandum to Mr. Kevin Lynch, Chief, ERRD, to Mr. William Lawler, Chief, EIB, re: Floodplain Considerations for CERCLA/SARA Actions, April 23, 1991.

Memorandum (with attachment) to Division Directors Regions I-X, from Mr. Elliot P. Laws, Assistant Administrator, U.S. EPA, Washington, D.C., re: Final Soil Screening Guidance (EPA/540/R-94/101), May 17, 1996.

U.S. EPA Region III - Risk Based Concentration (RBC) Table, distributed Semi-Annually by Roy L. Smith, Ph.D., U.S. EPA Region III, Philadelphia, PA.

U.S. Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing, June 1995.

New Jersey Lead Hazard Evaluation and Abatement Code (N.J.A.C. 5:17), January 1996.

New Jersey Guidance Management of Excavated Soils, May 14, 1993.

New Jersey Field Sampling Manual, May 1992.

EPA's Office of Solid Waste and Emergency Response Directive No. 9934.11, "Revised Procedures for Planning and Implementing Off-site Response Actions".

PCB Spill Cleanup Policy, 40 Sections CFR 761.120-761.139.

Draft Guidelines for Permit Applications and Demonstrations - Test Plans for PCB Disposal by Non-Thermal Alternate Methods, U.S. EPA 1986.

Verification of PCB Spill Cleanup by Sampling and Analysis, U.S. EPA 1985.

Guidance on Remedial Actions for Superfund Sites with PCB Contamination, U.S. EPA 1990.

Note - Guidance Documents are located at U.S. EPA Region II Offices.

ATTACHMENT 3

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

RECORD OF DECISION

ROEBLING STEEL SUPERFUND SITE

The United States Environmental Protection Agency (EPA) held a public comment period from July 17, 1996 through August 25, 1996 for interested parties to comment on EPA's July 1996 Focused Feasibility Study and August 1996 Proposed Plan for remedial action at the Roebling Steel Superfund Site (Site) in Florence Township, Burlington County, New Jersey.

EPA held a public meeting on July 25, 1996 at the Florence Township Municipal Building in Florence, New Jersey to discuss the findings of the FFS, describe the remedial alternatives which were evaluated, and present EPA's Preferred Remedial Alternatives to remediate 70 abandoned buildings which contain contaminated process dust, contaminated equipment, tanks, pits and sumps, underground piping, and friable asbestos.

A responsiveness summary is required for the purpose of providing EPA and the public with a summary of citizens' comments and concerns about the Site raised during the public comment period and to present EPA's responses to those concerns. All comments summarized in this document will be considered in EPA's final decision for selection of the remedial alternatives for cleanup of the Site, and contained in the Record of Decision (ROD). The responsiveness summary is organized into the following sections:

I. **Responsiveness Summary Overview.** This section briefly describes the public meeting held on July 25, 1996 and includes historical information about the Site along with the proposed remedial alternatives to clean up the Site.

II. **Background on Community Involvement and Concerns.** This section provides a brief history of the community interest and concerns regarding the Site.

III. **Summary of Major Questions and Comments Received During the Public Comment Period and EPA Responses to Comments.** This section summarizes oral and written comments submitted to EPA at the public meeting and during the public comment period and provides EPA's responses to these comments.

Attached to this responsiveness summary are three appendices: Appendix A is EPA's agenda for the public meeting; Appendix B is EPA's Proposed Plan for the Site; and Appendix C is the public meeting sign-in sheet.

I. RESPONSIVENESS SUMMARY OVERVIEW

A. PUBLIC MEETING AND SITE HISTORY

The public meeting for the Roebling Steel Site began at approximately 7:00 p.m. on July 25, 1996 with presentations by EPA, and its contractor Foster Wheeler Environmental Corporation. Immediately afterward, a township consultant presented their conceptual land use plan for the Site. Question and answer sessions were also conducted. Approximately 57 residents and local officials attended the meeting.

EPA representatives were Charles Tenerella, Team Leader in the New Jersey Remediation Branch, Tamara Rossi, Remedial Project Manager, Mark Maddaloni, Risk Assessor, and Pat Seppi, Community Relations Coordinator. Foster Wheeler Environmental Corporation representatives were John Gorgol, Site Manager, and Sydne Marshall, Cultural Resources Specialist. A local resident, Tamara Lee, presented a conceptual land use plan for the Site following cleanup.

Mayor Sampson opened the meeting by welcoming all who were present. After brief introductory remarks, he turned the meeting over to Pat Seppi. Ms. Seppi introduced each of the speakers and explained that the purpose of the meeting was to discuss the results of the July 1996 Focused Feasibility Study (FFS) and to present EPA's preferred remedial alternative for addressing remediation of the buildings at the Site. Since the agenda was full, she encouraged the audience to hold off from asking questions until the end of the presentations by EPA. Questions would then be entertained after which Ms. Lee would be invited to present her conceptual plan for future use of the Site.

Ms. Seppi explained that the community's concerns would be factored into EPA's next ROD (the third ROD) for the Site, expected, in September 1996. Ms. Seppi also informed the audience that EPA would accept comments throughout the remainder of the public comment period that was scheduled to close on August 15, 1996. EPA extended the public comment period to August 25, 1996 at the request of a potentially responsible party (PRP). Ms. Seppi also informed the group that the FFS report and other site-related documents are available for public review at the local information repositories listed in the Proposed Plan. Copies of the Proposed Plan were available for the taking at the meeting. Ms. Seppi then introduced Mr. Tenerella.

Mr. Tenerella began by explaining how the Superfund process works. He noted that the Site is a very sophisticated and complex site that required a good deal of time and study. He indicated that it is unique among other Superfund sites in the country and that some of the activities and decisions being made at the Site are on the leading edge of processes used for EPA site cleanups. He reminded the group that there have been a number of previous RODs and removal actions. Toxic and hazardous material that posed the most imminent risks have already been removed from the Site. The remaining actions, including those scheduled for the evening's discussions, will ensure that the Site poses no unacceptable risks to the public health. Mr. Tenerella indicated that the decisions made on this phase of the project would be the most critical in relation to having the community acquire the property for future uses. He informed the group that while future land use planning is not EPA's responsibility, EPA has been working with community members, including Mayor Sampson and Ms. Lee, so that the EPA cleanup integrates successfully with the community's future land use plans. He explained that while the presenters had been directed to keep their presentations short, they were willing to stay as long as necessary to answer questions.

Mr. Tenerella informed the group that the funding situation for EPA has changed resulting in a far more restrictive budget. There is now a priority list nation-wide used to distribute the limited remedial action funds available presently and the work planned under this ROD may not merit being placed high up on the list to receive funding for cleanup as immediately as the community may wish. Ms. Rossi has been able to plan ahead and provide design money so that the engineering design for the actions described during the meeting will continue to progress.

Ms. Seppi then turned the floor over to Mr. John Gorgol. Mr. Gorgol summarized the results of the field investigations and talked about the human health risks posed by the buildings and other portions of the Site which are part of the third ROD. Samples taken of building dust and dirt from earthened floors showed the widespread presence of lead, arsenic, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). Lead was detected at maximum concentrations of over ten percent and is presumably attributable to the molten lead baths that were used in the wire treatment processes. Arsenic, found at much lower levels, was found as high as about 200 parts per million and was probably a residue from coal ash. The PAHs are attributable to incomplete combustion processes, and PCBs are present as oil residues from transformers at the Site. Residues on equipment that were tested showed similar results to those from the floor dust samples. Building wall wipe and chip samples showed high levels of lead. Metals of concern identified in the sumps and pits samples taken both within and outside of the buildings were copper, lead, and zinc. Samples taken from tank contents tested positive for the presence of barium, lead and/or cadmium in hazardous waste concentrations. Most of the insulation samples taken were positive for friable asbestos.

Mr. Gorgol then proceeded to discuss the risks associated with each type of contaminant discussed previously. The average lead level in the floor dust was about 6,000 parts per million, and this poses an unacceptable risk. Mr. Gorgol explained the assumptions made in the assessment of risk from exposure to PAHs, PCBs, and arsenic in the building dust and soil. Assumed exposure pathways would include eating, contact with the skin, and inhalation. The four potential hypothetical populations considered for these analyses were: building workers, commercial workers, residents (adults and children).

The risk assessment shows that under hypothetical present use conditions, building workers regularly exposed to contamination from the building dusts would be at a cancer risk slightly outside EPA's acceptable risk range of 10^{-4}-10^{-6}. Under future use conditions, such as commercial and residential, the cancer risk falls outside the acceptable risk range. The calculated risk values are 3.1×10^{-4} for commercial workers, 6.5×10^{-4} for residential (adults) , and 3.0×10^{-4} for residential (children). For example, the risk value of 3.1×10^{-4} suggests that a commercial worker has a three-in-ten thousand increased chance of developing cancer as a result of exposure to building dusts.

Mr. Gorgol also discussed noncarcinogenic risks at the Site, which were outside the range EPA considers acceptable. He closed his discussion with reference to potential risks to human health and the environment due to potential releases from hazardous substances in tanks and pits. Ms. Marshall was then called to the front to make her presentation.

Ms. Marshall focused her discussion on the elements of the Site which led EPA to determine that it is eligible for listing on the National Register of Historic Places (NRHP). She explained that among the many issues which EPA must consider during the Superfund process is compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended). This law requires that federal agencies consider the effects of their actions on historic properties deemed eligible for, nominated to, or listed on the NRHP. She informed the group that a number of cultural resources studies had been performed at the Site over the years. The Site is an unusual one in that it meets all four criteria for NRHP eligibility (often sites are considered eligible though they meet only one criterion). Ms. Marshall explained the criteria in relation to the Site. The Site possesses integrity of location, design, setting, materials, workmanship, feeling and association. In addition it satisfies all four criteria:

- Criterion A (property is associated with events that made a significant contribution to broad patterns of history) - the Roebling property is where rope and cable were manufactured and used in many major bridges constructed in the country and around the world and as the Site where a number of technological engineering innovations were developed and used;

- Criterion B (historic property associated with significant persons) - the Site is associated with the Roebling family of engineers and bridge designers;

- Criterion C (historic property is representative of a type, period, or method of construction) - the Site is an excellent example of early 20th century industrial architecture and of how a site modernized gradually over a 50 year period; and

- Criterion D (property has yielded or may be likely to yield information important in prehistory or history) - the Roebling property contains archeological remnants of earlier industrial buildings which were torn down and replaced by the Roeblings.

Ms. Marshall indicated that EPA has been considering the potential impact of various cleanup alternatives on the historic property. EPA has come up with a very conservative approach. The preferred alternative maintains the Site's context and integrity and retains as much of the Site as possible while eliminating structures which are no longer structurally sound or where contamination has permeated into the materials from which the building was built or that do not date to the period of significance of the Site. Ms. Marshall informed the group that more detailed discussions of the historic and cultural resources aspects of this Site are available for review in the information repositories.

Ms. Seppi then called on Ms. Rossi to discuss EPA's remedial alternatives. Ms. Rossi began by discussing the remedial action objectives for the Roebling buildings. The objectives are to prevent human health exposure to contaminants found in the buildings, to prevent future migration of contaminants to the environment, and also to minimize impacts of the remedial actions on cultural and historic resources.

Ms. Rossi explained that there were six alternatives evaluated in the FFS. An analytical starting point was to conceptually organize the buildings into different groups. Group A buildings are contaminated buildings that have no future use because they are either structurally unsound, or they are so highly contaminated that decontamination is not feasible. Group B buildings are contaminated buildings that may be successfully decontaminated and reused in the future. Group C buildings are those for which the only necessary remediation will be the removal of friable asbestos.

According to Ms. Rossi, Alternative 1 is No Further Action with Institutional Controls. This is used as a baseline to compare with other alternatives. This would include restricting access with fences and future land uses with deed restrictions. Given that no contamination would be removed, this alternative would require periodic inspections by EPA and a five year review to assess the migration of contaminants. Alternative 2 addresses eleven underground storage tanks from which material would be removed and disposed of off-site. EPA would also perform asbestos abatement in all of the buildings, and historic preservation activities would be limited to restoration of the main gate house, preservation of documents and drawings from the Site, and development of a historic preservation mitigation plan. Alternatives 3 through 6 include the basic components of Alternative 2, and have in common that Group C buildings would have no further action beyond removal of the friable asbestos. Alternatives 3 through 6 include removal and decontamination of equipment including removal of waste from inside the equipment, interior tanks, pits and sumps, and recycling of scrap metal and equipment. The debris from demolished buildings would be separated by material type to facilitate scrapping of metal. Hazardous wastes would be disposed of off-site.

For Alternative 3, Group A buildings would be grossly decontaminated (dust collection) and then demolished and Group B buildings would undergo dust collection and then decontamination via vacuuming and water washing. Nonhazardous building demolition debris would be disposed of on-site. Historic preservation activities would be expanded to record the historic aspects of all buildings, even the Group B buildings from which equipment would be removed. Alternative 4 is the same as Alternative 3 except all demolition debris would be disposed of off-site. Alternative 5 involves dust collection and demolition of both Group A and B buildings and placement of the demolition debris on-site. Alternative 6 involves demolition of Group A and B buildings and disposal of the demolition debris off-site. Ms. Rossi reported to the group that after careful consideration, Alternative 3 was selected as the preferred alternative since it satisfies the remedial objectives at the Site at the least cost. She concluded by informing the group that the estimated total cost of the preferred alternative is approximately 39 million dollars.

Before Ms. Seppi opened the meeting to questions about the information presented, Mr. Tenerella reiterated several points. He alluded to the conceptual land use plan which would be presented later by Ms. Lee. He stressed that EPA would clean up the Site to be allowable for commercial/industrial use as specified by the present zoning of the Site. However, this cleanup would then make the property more attractive for a developer to come in and clean portions of it further to make it suitable for other types of future use in addition to industrial use, such as residential housing in some areas. He stressed EPA's cooperation with the town officials to help assure a successful future reuse of the Site.

II. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

Local officials and township residents first learned of the Site's Superfund status in September 1983 through media announcements. At that time, local officials maintained that they were not adequately briefed prior to the release of the information to the media and that communication lines between local and State or Federal officials were uncertain.

Since then, EPA has distributed several printed updates in an effort to keep residents and local officials informed of the site-related activities. EPA's community relations outreach activities have included:

- March 1989 - Superfund Update announcing the initiation of the site-wide remedial investigation and feasibility study (RI/FS);
- January 1990 - Superfund Update describing the findings of the FFS supporting the first ROD and inviting public comment;
- October 1990 - Flyer describing planned EPA action including fencing of the slag area;
- July 1991 - Superfund Update and Superfund Proposed Plan describing the remedial alternatives supporting the second ROD and inviting public comment;

- August 1992 - Fact sheet described PRP bankruptcy proceeding, remedial design of the slag area, RI report, and announced an upcoming Availability Session;
- August 1992 - Public Availability Session held;
- August 1994 - Fact sheet described sampling of the slag area, remedy selected for the Southeast Playground, RI activities at areas of concern, and a discussion of the status of enforcement;
- September 1995 - Town Council Meeting where questions about RI activities were entertained;
- September 1995 - Public Meeting - EPA met with community members to entertain questions about RI activities;
- September 1995 - Press conference at the Site with EPA Administrator Carol Browner and Senator Frank Lautenberg;

In addition, EPA has participated in a number of health-related activities regarding this project. In April 1995, EPA sampled Mansfield Township residents' private wells, as a follow-up to an initial study conducted by the Burlington County Health Department (BCHD). In November 1995, EPA conducted a Site visit with New Jersey Department of Health (NJDOH), Agency for Toxic Substances and Disease Registry (ATSDR), and BCHD. During January 1990, April 1995, and September 1995, EPA supported BCHD in conducting Roebling community lead screening for children.

To this day, community interest in the cleanup of the Site remains high. Many residents believe that an effective cleanup of the Site would enhance civic pride and make the community more attractive to tourists and to industry. The main areas of concern for the community include: dissemination of information to the public regarding Site activities; public health and safety issues, e.g., site security measures, contaminant releases during excavation, long-term health risks; use of local labor resources during remediation; aesthetic concerns during and following remediation; future economic potential of the Site; and the potential for partial deleting of areas of the Site from the National Priorities List (NPL) of Superfund sites.

III. SUMMARY OF MAJOR QUESTIONS AND COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA RESPONSES TO THOSE COMMENTS

Oral Comments Received at the Public Meeting

Issues and comments raised during the public comment period in support of the third ROD for the Site are summarized below and are organized into the following categories:

A. Contaminants and Debris On-Site and Off-Site
B. Slag Area
C. Cost and Schedule
D. Vegetation Control
E. Future Land Use
F. Health Risks
G. Ground Water
H. Town of Mansfield

A. CONTAMINANTS AND DEBRIS ON-SITE AND OFF-SITE

1. **COMMENT:** Are the contaminants listed in the Proposed Plan still on the Site after all of the cleanup that has been done?

   EPA RESPONSE: Yes. In the previous removal actions and remedial actions, EPA dealt with contamination sources that were unstable and uncontained, including drums, transformers containing PCB-contaminated oil, above-ground storage tanks, baghouse dust, chemical piles, lab pack containers, and compressed gas cylinders. The Proposed Plan addresses other sources of contamination that were not previously dealt with, such as underground storage tanks and piping systems, friable asbestos, and the contaminated building interiors (tanks, pits and sumps, equipment).

2. **COMMENT:** Where was contaminated material from previous response actions disposed of off-site? Was the Burlington County Landfill used?

   EPA RESPONSE: Contaminated material was transported off-site to several permitted treatment/disposal facilities. Treatment and disposal facilities accept different types of waste, depending on the contaminants and concentrations found in the material. Contaminated material was not disposed of at the Burlington County Landfill.

3. **COMMENT:** Will cleanup by EPA meet cleanup levels required by New Jersey Department of Environmental Protection?

   EPA RESPONSE: New Jersey has no promulgated cleanup levels for equipment or building interiors. EPA will decontaminate Group B buildings to risk-based remediation goals calculated for the Site, which would allow for potential reuse of these structures for commercial and industrial purposes. In addition, EPA will use the State proposed standards for building interiors as guidelines. EPA, in consultation with appropriate health agencies will conduct a qualitative evaluation to assure the effectiveness of the decontamination process. Furthermore, all on-site and off-site disposal of building materials will meet State and Federal requirements.

4. **COMMENT**: Does EPA propose to bury contaminants on-site?

EPA RESPONSE: Hazardous building debris will be separated from non-hazardous building debris by utilizing RCRA Toxic Compound Leaching Procedure (TCLP) testing methods. Contaminated debris will be disposed of off-site at a landfill licensed to accept hazardous waste. Other construction debris, including brick and concrete, will be used on-site as fill material in the slag disposal area.

5. **COMMENT:** How will burying construction debris affect potential future expansion or building on the Site?

EPA RESPONSE: The burial of construction debris within the slag area may have potential affects on future construction at the Site. In addition, EPA anticipates that some land use restrictions related to what may be constructed, how, and where at the Site will be part of the fourth Record of Decision expected in 1997.

6. **COMMENT:** Has there been an area of the Site designated for the landfilling of construction waste?

EPA RESPONSE: Many of the materials such as metals will be recycled and thus will not be buried. EPA is proposing that the slag area is to be used for disposal of nonhazardous construction debris. The exact locations for deposition of this debris in the slag area will be determined during the design phase.

B. SLAG AREA

1. **COMMENT:** Is the plan to cover the slag area in the areas of 7th, 8th, 9th, and 10th Streets still part of the project?

EPA RESPONSE: Yes, this is still part of the planned site remediation which was selected in the 1991 Record of Decision. Testing of the slag material during remedial design demonstrated that a large portion of it proved to be a hot spot of contamination. Given this information, implementation of the selected remedy for the 34-acre slag area would be doubled in cost compared to the original cost estimate. Therefore, due to this increase of cost, EPA needs to review this remedial action. This review is currently ongoing. In addition, as part of this review, EPA is currently conducting studies related to the ground water passing through the slag area and discharging into the Delaware River. The studies are primarily ecological assessments to determine if there is an impact of the contaminated slag on the river. Following completion of the studies of the slag and the river, and the design of the remedy, then, EPA may proceed to cover the slag when funding becomes available.

2. **COMMENT:** Since EPA does not own the property, how will EPA have the ability to give the slag area to our community as park land?

   EPA RESPONSE: EPA is mandated to conduct a cleanup of the Roebling Steel Site, but does not take ownership of the abandoned property. Following the cleanup of the slag area, EPA would certify that the remediation of this portion of the Site is complete. The local municipality, which has a lien on the property for nonpayment of taxes, would have to pursue this legal issue independent of EPA. If the local municipality acquired the property through such legal action, they may use it as a community park.

3. **COMMENT:** What kind and how extensive is the contamination in the slag area?

   EPA RESPONSE: Metal contamination in the slag area is widespread and found at all depths. There is no pattern to the occurrence of contamination due to its heterogeneous nature. Remedial design sampling results showed that an extensive area (approximately eight acres) of the slag material has elevated levels of lead and cadmium which could leach into the ground water under the slag area. These hot spot areas may extend as deep as 30 feet.

4. **COMMENT:** When will the fence around the slag area come down? Must that wait until the entire Site is cleaned up?

   EPA RESPONSE: Cleanup of the slag will be a separate action. EPA policy now allows a portion of a site to be segmented from the rest so that it may be deleted from the NPL following completion of a remedy. When the slag area is covered with clean soil, and the remediation of that area is complete, then the fence will come down.

5. **COMMENT:** Why was testing conducted on top of the hill?

   EPA RESPONSE: Testing was conducted on top of the hill near the fence line bordering the western edge of the slag area in order to delineate the extent of the slag area. This will be important when it comes time to regrade the Site and develop appropriate sloping for drainage of rain water runoff. The contouring of the slag area will also be compatible with potential future land use plans as much as technically possible.

C. COST AND SCHEDULE

1. **COMMENT:** Will the cleanup cost 39 million dollars? How much of that money is immediately available for the cleanup of the Site?

   EPA RESPONSE: Yes, at this time EPA's estimate for this action is 39 million dollars. For this part of the cleanup, EPA does not have money available. EPA currently has several million dollars which will be spent on designing the remedy, which is expected to take about eighteen months to two years. In the meantime, EPA is hopeful that funding will become available for implementation of the remedy.

2. **COMMENT:** Would it be possible for EPA to work on Records of Decision 3 and 4 simultaneously so as to speed up the work process since Florence Township is in dire need to have the property contributing once again to the local tax burden?

   EPA RESPONSE: EPA is working on these Records of Decision simultaneously. Concurrent with this Record of Decision and ongoing remedial design activities, an RI/FS which will support a fourth ROD is currently underway. This RI/FS will incorporate an extensive data investigation and discussion of potential cleanup alternatives for remaining areas of the Site, which include: the on-site landfill, the sludge lagoons, potential buried drums, area-wide contaminated site soils throughout the main plant complex, river and creek sediments, and ground water.

3. **COMMENT**: The EPA has been present at the Site since 1983 and much money has been spent, but the local community rarely sees many people working to clean up the Site. Why does this take so long and when will the community see progress at the Site? For instance, when will the fence around the slag area be removed?

   EPA RESPONSE: There is quite a lot of activity at the Site that is not obvious to the general public. Cleanup at the Site takes a great deal of time because this is a large and very complicated site. To date, EPA has made substantial progress at the site and has removed many contaminant sources at the site including numerous drums containing corrosive and toxic materials, PCB contaminated transformers, chemical piles, baghouse dust piles, compressed gas cylinders and lab pack containers. EPA believes that the phased cleanup strategy developed for this site has, and will continue to be, an efficient and effective mechanism to ensure a timely remediation. Concurrent with this ROD and ongoing remedial design activities, and RI/FS which will support a fourth ROD is currently underway. This RI/FS will incorporate and extensive data investigation and discussion of potential cleanup alternatives for remaining areas of the site, which include: the on-site landfill, the sludge lagoons, potential buried drums, area-wide contaminated site soils throughout the main plant complex, river and creek sediments, and ground water. EPA's mandate is the protection of the environment and public health, so these are the agency's priorities, sometimes at the expense of local aesthetics (e.g. the fence around the slag area). As previously discussed, EPA expects to remove the fence once the cleanup of the slag area is complete.

4. **COMMENT:** How long will this project go on? We were originally promised two years and it has been over six years. We want ACTION.

   EPA RESPONSE: The schedule for the project cannot be defined at this time because it depends on unknown factors such as the reauthorization of Superfund and Congressional budgeting. In addition, EPA has yet to select a remedy for the remaining areas of the Site, and the completion of these actions may take several years.

5. **COMMENT:** What can members of this community do to help things move forward and get the financial assistance needed for this cleanup?

   EPA RESPONSE: Local citizens can continue to participate in the cleanup process and communicate their support and concerns to their Congressional representatives and local officials.

6. **COMMENT:** If and when the government gave you 39 million dollars, would this cover the entire cost of the site cleanup?

   EPA RESPONSE: No, that cost is just for this segment (the third ROD) of the cleanup. Next year's segment will cost more money. EPA has projected that the cost for the entire cleanup could run as high as 150 million dollars in total.

7. **COMMENT:** Is there a time schedule for completing the cleanup?

   EPA RESPONSE: Since the funding situation is uncertain, there is no set time schedule. It will take at least two years to do the design for the cleanup of the buildings, and when funding becomes available, approximately two years for demolition of some buildings and decontamination of the remaining structures. Once the ROD is signed for the remaining areas of the Site (projected for the Fall of 1997), it may take an additional 4-5 years to implement that remedy.

8. **COMMENT:** When the project progresses to the point of having many workmen on the scene, I am concerned about noise, dust, and traffic levels?

EPA RESPONSE: All of these concerns will be addressed in the design. Appropriate health and safety plans will be developed by EPA. Before work is initiated, EPA will hold another community meeting to discuss these issues.

9. **COMMENT:** When EPA has finished developing the design, is the agency obligated to go back to the PRPs to ask them to implement it first?

   EPA RESPONSE: Yes. EPA's goal is always to pursue negotiations with PRPs for implementation of the remedy, prior to obligating Federal funds. If viable PRPs are identified and negotiations fail, EPA can either unilaterally order the PRPs to force them to take action or fund the action using Superfund dollars.

D. VEGETATION CONTROL

1. **COMMENT:** Would it be possible for EPA to institute a vegetation control program? When Carol Browner visited the Site, she gave the community the impression that it would be all right to remove vegetation from the area along Second Avenue and the riverfront. Has she reneged on that?

   EPA RESPONSE: EPA has not reneged on promises made by Carol Browner. Vegetation has been, and will continue to be, cut when it improves security and contributes to beneficial health effects. Once cleanup is initiated at the slag area, the vegetation in the slag area will be removed as part of a clearing and grubbing program. Erosion control measures will influence specifically how this will be accomplished.

2. **COMMENT:** Why does the vegetation grow so well on the Site when the soils are contaminated?

   EPA RESPONSE: There is not always a direct relationship between the level of vegetative growth and contaminant levels. Also, contaminant levels in the slag area are highly variable both on the surface and at depth.

3. **COMMENT:** Do the Responsible Parties you identified own the property where all of the weeds grow?

   EPA RESPONSE: They no longer own the property, so it's not possible to make them responsible for cutting the unwanted vegetation. The legal owner on record is John A. Roebling Steel Corporation, a defunct company that went bankrupt in 1983.

E. FUTURE LAND USE

1. **COMMENT**: Are there options for future use of the Site other than creating a historical site?

   EPA RESPONSE: EPA recognizes that the property is historic. However, the conceptual future land use plan presented by Tamara Lee at the public meeting illustrated multiple potential uses of the property other than creating an historic site.

2. **COMMENT:** What will happen to Roebling's Main Street if a plan such as that presented by Tamara Lee is implemented at the Site?

   LOCAL PLANNER RESPONSE: The streetscape along Main Street will be redeveloped so that it conforms with the development at the Site.

3. **COMMENT:** Will you be using the same contractors previously used to perform the soil excavation in the southeast park two years ago? If so, we hope you change the contractor because the soil that was used contained pieces of brick, rock, and glass. The soil is very red and nothing will grow there.

   EPA RESPONSE: EPA does not know now which contractor it will use for future work. However, EPA inspected the southeast park recently and indeed, found the soil used to be unacceptable. We are arranging to correct the situation.

F. HEALTH RISKS

1. **COMMENT:** Is the cancer risk to children less than the risk to adults?

   EPA RESPONSE: That is correct. This is because cancer may be a cumulative-type health effect. The exposure duration assumed for children is 6 years, while the exposure duration assumed for adults is 30 years.

2. **COMMENT:** What's happening in the Toms River area where there seems to be a cancer cluster among children, and not among adults?

   EPA RESPONSE: That situation is currently being investigated, but for now there is no explanation for that situation. Studies of that community are focusing on children because the incidence of brain stem cancers among children appears to be higher than the State average. With regard to the Site, the types of cancers that could result from chemicals present at this Site, including PCBs, arsenic, polycyclic aromatic hydrocarbons, affect children and adults alike.

3. **COMMENT:** A representative from the fire department asked who is the point of contact for the project in the case of an emergency? Who will have information about contents in underground tanks and which buildings are structurally unsound?

EPA RESPONSE: In case of an emergency at the Site, the EPA Emergency Spill Reporting Hotline is (908) 548-8730. All of this information appears in various site documents. Ms. Rossi is the primary EPA contact for the Site and can be contacted at (212) 637-4368 for further information. EPA indicated that copies of these documents would be provided to the fire department personnel.

G. GROUND WATER

1. **COMMENT:** Has the direction of ground water flow at the Site been determined, and has it been determined yet whether the Site is a recharge area? Where will the ground water be tested, near the slag or more in the area of the plant?

EPA RESPONSE: Most of the ground water sampling in both the slag area and main plant was already done as part of previous investigations. However, the flow of ground water is still under investigation. The direction of ground water flow of the shallow aquifer is generally toward the Delaware River. Ground water studies in the slag area show that the water flows through the slag area and discharges into the river. The studies underway are designed to determine how much ecological impact this has on the river. Additional sampling in the main plant area of the Site is scheduled for the Fall of 1996. The last Record of Decision (ROD 4) will include ground water.

H. TOWN OF MANSFIELD

1. **COMMENT:** Will your studies include the portion of the Superfund site which is located within the Town of Mansfield?

EPA RESPONSE: Yes. All remaining contamination problems at the Site will be identified and characterized in an RI/FS, which is currently underway. This study will include an investigation of soil, creek sediments and surface water, and ground water east of Crafts Creek, which is located in Mansfield Township. If site-related contamination is found in these areas adjacent to Crafts Creek, then EPA will include these areas within the definition of the Site. EPA will make this determination at the completion of the RI, which is scheduled for completion in 1997.

2. COMMENT: Concerns were raised about the Roebling Site no longer contributing to the tax base of the community.

   EPA RESPONSE: EPA understands the community's concerns to have the Site returned to productive uses as soon as possible, so that tax revenues may be generated. Once remedial actions have been implemented at areas of the Site, they may be deleted from the NPL and hopefully will be returned to a beneficial use which will generate tax revenues.

The Written Comments Received During Comment Period

Letters received during the public comment period are included herein and include:

1. **Letter from the Township of Florence, dated August 14, 1996.**

2. **Letter from the Roebling Historical Society, dated August 19, 1996.**

3. **Letter from the Florence Township Economic Development Council, dated August 20, 1996. This letter included four enclosures.**

   - Memorandum from the Florence Township Economic Development Council, dated July 25, 1996, which was recited at the public meeting.
   - Copy of a letter to Congressman Christopher Smith, dated August 9, 1996.
   - Copy of a letter from the Board of Chosen Freeholders of Burlington County, dated July 30, 1996.
   - Copy of a letter from the Florence Township Administrator, dated August 14, 1996.

4. **A letter dated August 16, 1996 was received from Senator Bill Bradley, written on behalf of a constituent. This letter and EPA's response are attached.**

5. **Letter from Board of Chosen Freeholders of the County of Burlington, dated July 30, 1996.**

6. **Letter from Stauffer Management Company, dated August 14, 1996.**

Many of the commentors raised similar issues regarding the Site. A summary of the issues raised in letters from Florence Township, the Roebling Historical Society, and the Economic Development Council, and EPA's responses are as follows:

1. COMMENT: Questions were raised about EPA's process to delete portions of sites from the NPL and how this process could be applied to the Roebling Steel Site. In particular, there is great interest in deleting the Main Gate House from the NPL so that it could be used as a historical museum. In addition, concerns were raised by the Township of Florence that the cleanup of the site or portions

of it proceed as quickly as possible so that future development could take place and provide more tax revenues to the Township.

EPA RESPONSE: EPA is sensitive to the economic burdens imposed on local communities with Superfund sites and has instituted several new policies to reduce the alleged "stigma" of having been on the NPL and to encourage potential investors or developers to undertake economic redevelopment activities at a site without assuming potential liability.

One of these policies will now allow the deletion of portions of a site from the NPL, once unacceptable risks to health and the environment have been properly addressed, and recognizes the usefulness of such determinations to promote faster reuse of cleaned up parcels. At the Roebling Steel Site, township officials and the local community want EPA to partially delete two areas of the site, namely the slag disposal area and the historic Main Gate building. Upon successful implementation of remedies at these areas, EPA will proceed with partial deletion at the Roebling Steel Site.

The second of such policies has revised the criteria EPA uses to evaluate prospective purchaser agreements thereby allowing the Agency greater flexibility to consider agreements with covenants not to sue, to encourage reuse and development of contaminated property that would have substantial benefits to the community. In the case of the Roebling Steel Site, where EPA response actions are ongoing, a prospective purchaser agreement would require continuation of the cleanup in such a fashion that it would be consistent with ongoing EPA remedial activities, or the purchaser would reimburse EPA for the cost of the cleanup.

EPA believes that the Roebling Steel Superfund Site is a prime candidate for redevelopment, similar to the Roebling Complex in Trenton. Both partial deletion and prospective purchaser agreements could help facilitate the future goals of the local community.

In fact, the Township has prepared a conceptual redevelopment plan for the Roebling Steel Site which includes a ferry servicing Trenton and Philadelphia, a riverfront shopping village, parkland, and commercial space. EPA will continue working with the Florence Township community to make the Roebling Steel Site available for productive, safe uses as quickly as possible.

2. **COMMENT:** Concerns were raised regarding the old Roebling Water Tower. The Township of Florence stated that it is in deplorable condition and should be demolished. The Roebling Historical Society requested EPA's assistance in determining the owner of the tower so that they could contact the owner to have it repaired and painted.

EPA RESPONSE: EPA will try and assist the Township in determining the owner of the tower and will check whatever records may exist in EPA's offices.

3. **COMMENT**: Concerns were raised about the pace of the cleanup and the phased approach that EPA has taken with respect to this site.

EPA RESPONSE: EPA understands the community's frustrations with the pace of the cleanup and perceived lack of progress. The Roebling Steel Site is an extremely large and complex Superfund site. EPA has phased activity at the Site because of the large scale of the Site (200 acres), and in an effort to make incremental, tangible progress.In addition, our initial activities were aimed at addressing those areas of the site posing the most imminent health and environmental threats. To date, EPA has made substantial progress at the site and has removed many contaminant sources at the site including numerous drums containing corrosive and toxic materials, PCB contaminated transformers, chemical piles, baghouse dust piles, compressed gas cylinders and lab pack containers. EPA believes that the phased cleanup strategy developed for this site has, and will continue to be, an efficient and effective mechanism to ensure a timely remediation. Concurrent with this ROD and ongoing remedial design activities, an RI/FS which will support a fourth ROD is currently underway. This RI/FS will incorporate an extensive data investigation and discussion of potential cleanup alternatives for remaining areas of the site, which include: the on-site landfill, the sludge lagoons, potential buried drums, area-wide contaminated site soils throughout the main plant complex, river and creek sediments, and ground water.

4. **COMMENT**: Concerns were raised about the availability of funds to complete the remediation at the site.

EPA RESPONSE: Due to the funding shortfall for remedial actions, EPA has developed a national risk-based prioritization process to rank all remedial actions planned for funding during a given fiscal year. The sites are evaluated by a national panel representing all EPA Regional offices and EPA Headquarters. The above-referenced limitations in EPA's budget are a result of the number of sites which have progressed to the remedial action phase. This excess of remedial actions, which is basically due to the maturity of the program, has created the current situation wherein sites must be prioritized for cleanup.

At this time EPA has adequate funds to complete the ongoing remedial design of the slag area, complete the Comprehensive Remedial Investigation that is ongoing and to initiate the designs for the areas covered by this ROD. However, it is uncertain if the Roebling site will rank high on this national list in order to receive funds to undertake the slag area remediation in fiscal year 1997. EPA will keep the community informed as information is obtained regarding funding.

5. **COMMENT**: Concerns were raised about the risks to the community, in particular to trespassers.

EPA RESPONSE: EPA has expressed repeatedly that the dilapidated condition of on-site buildings and other structures are dangerous and should be avoided. Portions of several buildings have either already collapsed or are threatening to collapse. EPA has funded site security for many years in order to minimize trespassing, vandalism, arson fires, illegal dumping, and unauthorized removal of equipment and scrap metal. In addition, a fence was installed around the perimeter of the site to restrict access.

6. **COMMENT**: A question was raised by the Florence Township Economic Development Council as to whether bricks from buildings that will be demolished could be decontaminated and sold.

EPA RESPONSE: Generally, bricks from demolished buildings can be decontaminated and reused. However, due to the high levels of contamination found in the bricks from buildings at the Roebling Site, it would be technically infeasible to decontaminate these bricks to acceptable health-based levels for reuse.

Other written comments not previously addressed:

7. **COMMENT:** The Burlington County Board of Chosen Freeholders requested copies of the FFS and Proposed Plan and asked to be added to the mailing list to receive updates and information.

EPA RESPONSE: Copies of the FFS and Proposed Plan were mailed directly to the Board of Chosen Freeholders of Burlington County. Copies of all site-related information may be found in two information repositories located near the Site: Florence Township Public Library, 1350 Hornberger Avenue, Roebling, New Jersey and at the Florence Township Municipal Building, 711 Broad Street, Florence, New Jersey. In addition, copies are available at EPA, 290 Broadway - Floor 19, New York, New York 10007.

8. **COMMENT:** Stauffer Management Company concludes that they have no liability at the Site and respectively declines to comment on the proposed remedy.

EPA RESPONSE: EPA is currently evaluating documentation relating to Stauffer's liability and will make a determination at a later date.

A COMMUNITY WITH CHARACTER AT THE BEND IN THE RIVER

TOWNSHIP OF FLORENCE

August 14, 1996

Tamara Rossi, Project Manager
United States Environmental Protection Agency
Region II
290 Broadway - 19th Floor
New York, NY 10278

Re: Roebling Steel Plant

Dear Ms. Rossi:

As the clean up of the Roebling Steel Plant is progressing, the Township would like to find out how we could go about delisting portions of the site for future development. For example, the old Roebling Water Tower is in deplorable condition and needs to be demolished. Further, the gate house on 2nd Avenue holds much historical significance for residents of the area and it would be a wonderful move to eventually turn the building over to a local historic group for restoration.

On behalf of Florence Township, please let me know if it is possible to begin delisting sections of the Roebling Steel Site. If your answer is a positive one, then please advise on the procedures we must follow to actually remove parts of the property from the Superfund list.

Thank you.

Very truly yours,

RICHARD A. BROOK,
Administrator

cc: Mayor and Township Council
Joan Geary, Florence Township
Economic Development Commission

FLORENCE TOWNSHIP MUNICIPAL COMPLEX
711 BROAD STREET
FLORENCE NEW JERSEY 08518-2323

INCORPORATED MARCH 1872

(609) 499-2525 ADMINISTRATIVE OFFICES
(609) 499-2222 MUNICIPAL COURT
(609) 499-3131 POLICE DEPARTMENT
(609) 499-2130 CONSTRUCTION CODE OFFICIAL

Florence Township Economic Development Council

MUNICIPAL COMPLEX

BROAD STREET. FLORENCE. N J. 08518

609·499·2525

August 20, 1996

Ms. Tamara Rossi, Project Manager
United States Environmental Protection Agency
Region II
290 Broadway--19th Floor
New York, NY 10278

Re: Roebling Steel Superfund Site
Region 2
Roebling, NJ, Burlington County, NJ

Dear Ms. Rossi:

In regard to your Public Comment Period on the above referenced site we have enclosed herein the following:

1. Memo dated 7/25/96 from Florence Township Economic Development Council which was prepared for your evening presentation in Florence Township.

2. Copy of letter dated 8/9/96 to Congressman Christopher H. Smith which is self-explanatory.

3. Copy of letter dated 7/30/96 from the Board of Chosen Freeholders which further details the concerns on the Burlington County level.

4. Copy of letter dated 8/14/96 from Florence Township Administrator Richard A. Brook, which also expresses our concerns.

To summarize - we need this site completed. We need certain eligible areas delisted. We desperately need tax ratables in Florence Township. We need total concentration on the Roebling Steel Site. Moving in and out of the project cost money. In efforts to save taxpayer's tax dollars - organize the job and get it done! If a private contractor bid on this job they would get in and get the job done efficiently and as economically and profitably as possible. It appears the EPA is performing this project with an endless flow of money, with no consideration of the cost to taxpayers!

Very truly yours,

Joan K. Geary, Chairperson

enclosures 4

Florence Township Economic Development Council

MUNICIPAL COMPLEX

BROAD STREET, FLORENCE, N.J. 08519

609-499-2525

TO: Ms. Tamara Rossi, Remedial Project Manager
U. S. Environmental Protection Agency

FROM: Florence Township Ecnonomic Development Council
Joan K. Geary, Chairperson

RE: Roebling Steel Company Superfund Site

DATE: July 25, 1996

1. Florence Township is in very dire need to have this site cleaned of environmental problems and removed from the Superfund list.

   We have lost years of taxable income which has put a tremendous tax burden on its citizens.

   There are numerous potential uses for the property which would bring ratables into our community.

2. Do you have funds available to complete the clean-up of the site?

3. What is your proposed time frame to complete the two final phases?

4. In your proposed demolition of buildings whereby steel would be sold for scrap metal, can the bricks be decontaminated and sold?

5. How long do you anticipate it will take to resolve the ground water problem?

6. Can ROD 3 and ROD 4 be worked on simultaneously to speed up the work process?

7. Our community has been exposed to health hazards and environmental risks and in particular the risk of trespassers being hurt on site.

Florence Township Economic Development Council

MUNICIPAL COMPLEX

BROAD STREET FLORENCE, N J 08518

609-499-2525

August 9, 1996

Congressman Christopher H. Smith
1720 Greenwood Avenue
Trenton, NJ 08609

Attention: Mrs. Golden

Re: Roebling Steel Superfund Site
Roebling, NJ
Florence Township, NJ

Dear Congressman Smith:

We respectfully invite you to attend our Economic Development Council meeting on Tuesday, September 10, 1996 to discuss our concerns regarding the above referenced matter.

Briefly, the EPA has been in charge of this clean up project for at least 13 years costing the taxpayers over $25 million as of September 1995 with only one-third of the work completed. During a meeting in Florence Township on 7/25/96 the representatives of the EPA indicate they have no funds at the present time and estimate the final cost to be at least $150 million.

The Township of Florence has been without tax revenue from this site for several years. We desperately need ratables. There is presently a conceptual plan for the proposed use of the site by a local planner.

The problem is that when the funds were available, we feel the clean up could have been completed and this property back on the tax rolls. However, in our opinion the EPA has not managed the site clean up effectively nor efficiently. We firmly believe that if this operation were in the hands of private industry we would have ratables on the site at this time.

The Florence Township tax rate is $3.052 per hundred valuation.

We have a large percentage of Senior Citizens in the community who are devastated with the cost of living in Florence Township.

Our tax dollars are being wasted in the system. Our prime issue in speaking with you is to express our concern and seek your advice as to what avenue we can proceed. Since this matter is of such grave concern to the citizens of Florence Township, we respectfully request that you personally address this vital issue.

Very truly yours,

Florence Township Economic
Development Council

Joan K. Geary, Chairperson

Marvin L. Wainwright, Vice-Chairperson

JKG:sg

cc: Mayor George E. Sampson and Council

Please reply to: Joan K. Geary
M. E. Keating, Inc.
P. O. Box 187
Florence, NJ 08518

(609) 499-0550

Board of Chosen Freeholders
Of The County of Burlington

MOUNT HOLLY, NEW JERSEY

08060

Clerk of the Board
Office of Land Use Planning
Room 222
49 Rancocas Road
P.O. Box 6000
Mt. Holly, NJ 08060

Telephone No.
609-265-5787

July 30, 1996

COPY FOR YOUR INFORMATION

RECEIVED JUL 31 1996

Ms. Tamara Rossi, Project Manager
United States Environmental Protection Agency
Region II
290 Broadway--19th Floor
New York, NY 10278

Re: Roebling Steel Site
Roebling
Florence Township, NJ

Dear Ms. Rossi:

On behalf of the Burlington County Board of Chosen Freeholders, I am writing to you to obtain information about the cleanup of the Roebling Steel Site which is under consideration by the US Environmental Protection Agency (EPA).

The County Freeholders have recently initiated a consensus planning study aimed at revitalizing the communities located in the Route 130/Delaware River corridor (Corridor), of which Florence Township is one. This consensus planning study is coordinated by the Burlington County Office of Land Use Planning. A major goal of this County initiative is to improve quality of life in the Corridor, including the cleanup of contaminated sites and rendering them productive once again. The Roebling Steel Site is such a site of concern and is integral to the revitalization of the Roebling section of Florence Township.

With these goals and concerns in mind, this office is interested in obtaining information about the Roebling Steel Site necessary for planning for the future of Roebling and the Corridor. To that end, please provide us with a copy of the Focused Feasibility Study, proposed cleanup plan and any other site-related documents for the subject site.

In addition, please put the Burlington County Office of Land Use Planning on your mailing list to keep us apprised of any developments regarding the cleanup of the Roebling Steel Site.

Should you have any questions in this matter, please do not hesitate to contact me at 609/265-5787.

Very truly yours,

Mark A. Remsa, PP, CLA, AICP
Principal Planner

cc: Martha Bark, Freeholder
Frederick Galdo, County Administrator
George Sampson, Mayor, Florence
Susan Craft, Coordinator, Office of Land Use Planning

doc: rt130.so.cen/t.rossi.epa.flor.ltr
files: consensus planning/crsp. & florence

TOWNSHIP OF FLORENCE

August 14, 1996

[illegible] Rossi, Project Manager
United States Environmental Protection Agency
Region II
290 Broadway - 19th Floor
New York, NY 10278

Re: Roebling Steel Plant

Dear Ms. Rossi:

As the clean up of the Roebling Steel Plant is progressing, the Township would like to find out how we could go about delisting portions of the site for future development. For example, the old Roebling Water Tower is in deplorable condition and needs to be demolished. Furthermore, the gate house on 2nd Avenue holds much historical significance for residents of the area and it would be a wonderful move to eventually turn the building over to a local historic group for restoration.

On behalf of Florence Township, please let me know if it is possible to begin delisting sections of the Roebling Steel Site. If your answer is a positive one, then please advise on the procedures we must follow to actually remove parts of the property from the Superfund list.

Thank you.

Very truly yours,

RICHARD A. BROOK,
Administrator

cc: Mayor and Township Council
Jean Geary, Florence Township
Economic Development Commission

Township Municipal Complex
711 Broad Street
Florence, New Jersey 08518-2323

Incorporated March 7, 1872

(609) 499-2525 ADMINISTRATIVE OFFICES
(609) 499-2222 MUNICIPAL COURT
(609) 499-3131 POLICE DEPARTMENT
(609) 499-2130 CONSTRUCTION CODE OFFICIAL

Roebling
Historical Society
Roebling, New Jersey 08554

19 August, 1996

Ms. Tamara Rossi, Remedial Project Manager
U.S. Environmental Protection Agency
NJ Remediation Branch
290 Broadway, 19th Floor
New York, New York 10007-1866

Dear Ms. Rossi:

We were glad for the opportunity to meet again with the EPA on July 25, 1996 and hear the latest on our Roebling Steel Superfund Site. We realize how hard you are working on our Roebling Steel Site and truly appreciate all your efforts in having it cleaned up.

However, the meeting could have been so much better if only EPA actually had the $38 million dollars to continue the clean-up of this property. We went into the meeting with such great hope, only to be disappointed once again. Our hearts are so heavy. The problem is the many long years it takes to do the studies and physical removal of contamination. We have such beautiful plans for this historical site and we will again have to wait until they can be further explored. Our historic town of Roebling is being cast aside and we will not let this happen. We are a proud people with strong roots and we love our town. This waiting is extremely discouraging.

I wanted to fax this letter to you because I am showing you that, indeed, the Roebling Main Gate is on the National Register of Historical Places. The Main Gate Building will serve as an excellent museum for the many items and artifacts that the Roebling Historical Society has been collecting over the years. How do we go about having the Main Gate "delisted" so that we may continue our venture? This building is not a "hot spot" and we are in dire need of a museum. Please send all information to me concerning the delisting procedure.

In addition to delisting the Main Gate, I see there is another problem we must address. Charlie Tenerella mentioned at the meeting that even if money became available, Roebling Steel Site would not receive the funds because all the most hazardous materials have been removed and, therefore, we are not high on the priority list. Is this true? Are we left, after starting this project and $25 million dollars later, with no resolve? Is this normal procedure for the government to leave areas only partially cleaned? How can this be fair? If indeed this is true, we must get areas delisted where there are no problems! Our taxes are sky high! We desperately need the tax ratables!

As President of the Roebling Historical Society, I want to inform you that the RHS is in favor of the #3 alternative. We need to keep all historical buildings and aspects alive! John A. Roebling instilled in us a strong community pride and the diligence to continue his works. I also would like to address another question. The tall water tower at our Roebling Park where the EPA replaced the surrounding soil needs to be painted. It too is a disgrace. We also need to know the ownership of the large water tower on stilts. We are having trouble locating the owner, as it too needs to be repaired and painted, perhaps "Roebling - Historic Village." Please check your records and help us find the owner. They must be contacted to either maintain and paint their tower, or remove it from our park. It is not presently in use and it is a hazard to anyone visiting our park.

In the spring of 1997, the Roebling Historical Society is planning the re-dedication of the 50th Anniversary Monument in the Roebling Park. It will be a day of festivities and we would like to invite you, Charlie Tenerella, and Pat Seppi to share the day with us. We feel you are an extension of our family because of your dedication to the Roebling Steel Site and hope that we can include you in our celebration plans.

Roebling will be 100 years old in the year 2005. Our plans for that centennial year are to have a monument of a wire worker erected on the Main Street Circle that will be looking toward the Main Gate, followed by a year long array of festivities. We hope, with grants, that our Main Gate Museum will be finished and open by then for everyone to enjoy and that cleanup of the Roebling Steel Site will be well underway.

The RHS is taking an active role in writing and voicing our concerns and disappointments to Senators Lautenberg and Singer, Congressman Chris Smith and Governor Christine Whitman. Someone must be able to help us. Either the EPA is granted the capital to finish the Roebling Steel Site or private enterprise must be allowed to purchase the land and clean up the property to EPA standards.

Please contact me if you have any questions. I am also the owner of "Donna's Deli and Grocery" on Main Street should you wish to stop by and discuss anything in more detail.

Sincerely,

Donna McElrea

Donna McElrea
President, Roebling Historical Society

500128

Board of Chosen Freeholders
Of The County of Burlington
MOUNT HOLLY, NEW JERSEY
08060

Clerk of the Board
Office of Land Use Planning
Room 222
49 Rancocas Road
P.O. Box 6000
Mt Holly, NJ 08060

Telephone No.
609-265-5787

July 30, 1996

Ms. Tamara Rossi, Project Manager
United States Environmental Protection Agency
Region II
290 Broadway--19th Floor
New York, NY 10278

Re: Roebling Steel Site
Roebling
Florence Township, NJ

Dear Ms. Rossi:

On behalf of the Burlington County Board of Chosen Freeholders, I am writing to you to obtain information about the cleanup of the Roebling Steel Site which is under consideration by the US Environmental Protection Agency (EPA).

The County Freeholders have recently initiated a consensus planning study aimed at revitalizing the communities located in the Route 130/Delaware River corridor (Corridor), of which Florence Township is one. This consensus planning study is coordinated by the Burlington County Office of Land Use Planning. A major goal of this County initiative is to improve quality of life in the Corridor, including the cleanup of contaminated sites and rendering them productive once again. The Roebling Steel Site is such a site of concern and is integral to the revitalization of the Roebling section of Florence Township.

With these goals and concerns in mind, this office is interested in obtaining information about the Roebling Steel Site necessary for planning for the future of Roebling and the Corridor. To that end, please provide us with a copy of the Focused Feasibility Study, proposed cleanup plan and any other site-related documents for the subject site.

In addition, please put the Burlington County Office of Land Use Planning on your mailing list to keep us apprised of any developments regarding the cleanup of the Roebling Steel Site.

Should you have any questions in this matter, please do not hesitate to contact me at 609/265-5787.

Very truly yours,

Mark A. Remsa, PP, CLA, AICP
Principal Planner

cc: Martha Bark, Freeholder
Frederick Galdo, County Administrator
George Sampson, Mayor, Florence
Susan Craft, Coordinator, Office of Land Use Planning

doc: rt130.so.cen/t.rossi.epa.flor.ltr
files: consensus planning/crsp. & florence

STAUFFER MANAGEMENT COMPANY

Environmental Law Department
Wilmington
Delaware 19897

Telephone (302) 886-3000
Fax (302) 886-2952

Luke W. Mette
(302) 886-3690

August 14, 1996

Tamara Rossi
New Jersey Superfund Branch I
U.S. Environmental Protection Agency
Region II
19th Floor
290 Broadway
New York, NY 10007

Re: **Roebling Steel Company Superfund Site**

Dear Ms. Rossi:

I write in response to Kathleen C. Callahan's July 17, 1996 letter to Rhone-Poulenc Inc. (the corporate successor by merger to the former Stauffer Chemical Company) (hereafter "Stauffer") requesting that Stauffer comment on EPA's proposed remedy for the Roebling Steel Company Superfund Site. In view of the fact that EPA has not identified Stauffer as a PRP and based on our investigation and conclusion that Stauffer has no liability at the Site (see my July 25, 1996 104(e) Request response), Stauffer respectively declines to comment on the proposed remedy.

Very truly yours,

Luke W. Mette
Attorney

LWM:kdc
08149601.kdc

BILL BRADLEY
NEW JERSEY

FINANCE
ENERGY AND
NATURAL RESOURCES
SPECIAL COMMITTEE ON
AGING

United States Senate

WASHINGTON, DC 20510-3001

August 16, 1996

TO:

Patricia Carr
Legislative Liaison
The United States Environmental Protection
Agency
Region 2
290 Broadway
New York, NY 10007

R2960454
ERRD
Date Received 8/19/96
Due Date 9/2/96

RE: Roebling Steel Mill Superfund Site

I forward the attached for your consideration and would appreciate receiving information in regard to Ms. Manser's concerns as soon as possible. In order to be of better assistance to her, I would appreciate receiving further information regarding background and current status of this site. Please direct your correspondence to Laurel Mackin of my staff. She can be reached in my Newark office at One Newark Center, 16th Floor, 07102-5297.

Thank you very much for your time and assistance in this matter, and I look forward to your prompt reply.

Sincerely,

Bill Bradley

Bill Bradley
United States Senator

BB/lmm

Margaret Manser
21 4th Ave.
Roebling, NJ 08554

July 8, 1996

Dear Senator Bradley,

Recently, in the Trenton newspapers there have been many articles about the revitalization of the Roebling Complex. This, along with other projects such as the Waterfront Park are just the economic boost Trenton needs.

As I read about all the renovations and projects connected with the Roebling Complex in Trenton, I keep thinking that it would be wonderful if that could be done for our own Roebling Steel Mill. That's right, there is another John A. Roebling Son's steel mill just a few miles south of Trenton. It is tucked away in a community on the Delaware River in Florence Township.

The people of Roebling (the town) have suffered the same as the people of Trenton did when the mill closed. As a member of the Roebling Historical Society, I know the important role the mill played to the people of this community. But what was once viewed as hope and opportunity, is now viewed as a sore that won't heal.

The buildings on this prime piece of property have become dilapidated, and it has been declared a Superfund site. A number of businesses have contacted our township officials about developing the site, but no one knows when it will be released to us. We have been waiting a long time, but we seem to have been forgotten. While we have been waiting, our property taxes have been skyrocketing, and our township resources have been stretched to the limit.

We need to revitalize Roebling (the town). The only way possible is to have the Roebling Steel Mill site released for use. The newspaper quoted Governor Whitman as saying "Today we make it official: The Roebling revolution has begun, rather than making wire rope and cable, we are creating hope and opportunity". She may have begun the Roebling revolution in Trenton, but we need to finish it in Roebling (the town). We could use some hope and opportunity again

Sincerely,

Margaret Manser

Margaret Manser

Honorable Bill Bradley
United States Senator
One Newark Center
16th Floor
Newark, New Jersey 07102-5297

Dear Senator Bradley:

This is in response to your letter of August 16, 1996, written on behalf of your constituent, Margaret Manser, concerning the future redevelopment of the Roebling Steel Superfund site in Florence Township, New Jersey. She raised concerns about the time it is taking to clean up the facility, and that the stigma of being a Superfund site has hindered the timely involvement of potential investors or developers. She cites the successful revitalization of the Roebling Complex in Trenton, New Jersey, which is not a Superfund site, as an example of a timely revitalization.

The Roebling Steel facility is a particularly large and complex Superfund site which will take a number of years to remediate, and the associated frustrations voiced by the surrounding community are quite understandable. EPA is pursuing a phased remedial approach at the site in an effort to make incremental, tangible progress. Over the years, EPA has signed two Records of Decision and completed four early response actions, to ensure that the most toxic and hazardous wastes were removed from the site. Concurrent with these actions, remedial investigation and design activities are still ongoing.

In the past, Florence Township officials asked EPA staff about acquiring portions of the site and returning them to the tax roles without assuming potential liability for site cleanup costs under the Comprehensive Environmental Response, Compensation and Liability Act, as amended. EPA, sensitive to the economic burdens imposed on local communities, has instituted several new policies to reduce the alleged "stigma" of having been on the National Priorities List (NPL), and to encourage potential investors or developers to undertake economic redevelopment activities at a site without assuming potential liability.

One of these policies will now allow the deletion of portions of a site from the NPL, once unacceptable risks to health and the environment have been properly addressed, and recognizes the usefulness of such determinations to promote faster reuse of cleaned up parcels. At the Roebling Steel Site, township officials and the local community want EPA to partially delete two areas of the site, namely the slag disposal area and the historic Main Gate building. Upon successful implementation of remedies at these areas, EPA will certainly consider partial deletion at the Roebling Steel Site. An approximate time frame for completion of these activities is two years.

The second of such policies has revised the criteria EPA uses to evaluate prospective purchaser agreements, thereby allowing the Agency greater flexibility to consider agreements with covenants not to sue in order to encourage reuse and development of contaminated property that would have substantial benefits to the community. In the case of the Roebling Steel Site, where EPA response actions are ongoing, a prospective purchaser agreement would require continuation of the cleanup in such a fashion that it would be consistent with ongoing EPA remedial activities, or the purchaser would reimburse EPA for the cost of the cleanup.

EPA believes that the Roebling Steel Superfund Site is a prime candidate for redevelopment, similar to the Roebling Complex in Trenton. Both partial deletion and prospective purchaser agreements could help facilitate the future goals of the local community.

EPA recently released a Proposed Plan to the public, which identified our preferred alternative for approximately 70 abandoned buildings and remaining contamination sources inside and outside of those buildings. During the development of the Proposed Plan, our staff worked with the Township of Florence to ensure that the proposed remedy would be compatible with potential future uses of the property. In fact, the Township has prepared a conceptual redevelopment plan for the Roebling Steel site which includes a ferry servicing Trenton and Philadelphia, a riverfront shopping village, parkland, and commercial space. Please be assured that EPA will continue working with the Florence Township community to make the Roebling Steel site available for productive, safe uses as quickly as possible.

In addition to copies of the policies, I have enclosed the Proposed Plan and NPL factsheet for further information regarding site background and status.

If you have any further questions or need additional information on activities at the Roebling site, please let me know, or have your staff contact Jeane Rosianski, Chief, Intergovernmental Affairs Branch at (212)637-3657.

Sincerely,

Jeanne M. Fox
Regional Administrator

Enclosures

cc: Robert C. Shinn, Commissioner
New Jersey Department of Environmental Protection

bcc: Rosemary Carroll
Executive & Congressional Communications

APPENDIX A

PUBLIC MEETING AGENDA

ROEBLING STEEL SUPERFUND SITE
FLORENCE, NJ

PUBLIC MEETING
JULY 25, 1996

AGENDA

Introduction	Pat Seppi, Community Relations Coordinator, EPA
Superfund Overview	Charlie Tenerella, Team Leader NJ Superfund Branch, EPA
Summary of Field Investigations and Risk Assessment	John Gorgol, Site Manager Foster Wheeler Environmental
Roebling as a Cultural Resource	Sydne Marshall, Cultural Resources Specialist, Foster Wheeler
Feasibility Study and Preferred Alternative	Tami Rossi, Project Manager EPA
Roebling Redevelopment Plan	Tamara Lee, PP, AICP, CLA

QUESTIONS AND ANSWERS

NOTE: Copies of the Proposed Plan, FFS Report, and other site-related documents are available at the following repositories:

Florence Twp. Public Library
1350 Hornberger Ave.
Roebling, NJ
(609) 499-0143

Florence Twp. Municipal Bldg.
711 Broad Street
Florence, NJ
(609) 499-2525

APPENDIX B

PROPOSED PLAN

Superfund Proposed Plan

Roebling Steel Company
Florence Township
Burlington County, New Jersey

EPA Region 2 July 1996

PURPOSE OF PROPOSED PLAN

This document describes the remedial alternatives considered for addressing contamination of selected areas of the Roebling Steel Company Superfund site located in Florence Township, New Jersey. The Proposed Plan identifies the preferred alternative for the remediation of abandoned buildings containing contaminated process equipment, tanks, pits, sumps, underground piping and friable asbestos. This document is issued by the U.S. Environmental Protection Agency (EPA), the lead agency for site activities, in conjunction with the New Jersey Department of Environmental Protection (NJDEP), the support agency for this project. The EPA is distributing the Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, (CERCLA) and Section 300.430 (f) of the National Contingency Plan (NCP). This document summarizes information that can be found in greater detail in the Focused Feasibility Study (FFS) report and other supporting documentation.

This Proposed Plan is being provided as a supplement to the FFS report, to inform the public of EPA's and NJDEP's preferred remedy, and to solicit public comments pertaining to all the remedial alternatives evaluated, as well as the preferred alternative.

The remedy described in this Proposed Plan is the preferred remedy for the site. Changes to the preferred remedy, or a change from the preferred remedy to another remedy, may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selected remedy will be made after EPA has taken all public comments into consideration. We are soliciting public comments on all of the alternatives considered in the detailed analysis of the FFS because EPA and NJDEP may select a remedy other than the preferred remedy.

COMMUNITY ROLE IN SELECTION PROCESS

EPA and NJDEP rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the FFS report, Proposed Plan, and supporting documentation has been made available to the public for a public comment period which begins on July 17, 1996 and concludes on August 15, 1996.

A public meeting will be held during the public comment period at the Florence Township Municipal Building on 711 Broad Street in Florence, on July 25 at 7:00 pm to present the conclusions of the FFS, to elaborate further on the reasons for recommending the preferred remedial alternative, and to receive public comments.

Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document which formalizes the selection of the remedy.

wetlands and ground water. The years of industrial activities at the site have resulted in widespread contamination with both organic and inorganic compounds.

The site is located in the Village of Roebling in Florence Township, Burlington County, New Jersey (Figure 1). It is bordered by Second Street on the west and Hornberger Avenue on the south. Residential lands are located to the west and southwest of the site at a zoning density of approximately eight dwellings per acre. Two public playgrounds are adjacent to the site. The Delaware River forms the northern boundary of the site, and Crafts Creek forms its eastern boundary. U.S. Route 130 and a Penn Central (Conrail) track are located to the south of the site. Previous plant owners and operators of the site were cited for violating environmental regulations associated with waste handling and disposal during periodic inspections performed by the New Jersey Department of Health and NJDEP. The site was proposed for inclusion on EPA's National Priorities List of Superfund sites in December 1982, and added to the list in September 1983. In February 1983, the owner abandoned the site.

In May 1985, EPA began a remedial investigation and feasibility study (RI/FS) to characterize the nature and extent of the contamination present at the site. Due to the numerous contamination sources, and various pathways for exposure associated with the Roebling Steel site, EPA is addressing the remediation in a phased approach. Three removal actions have been conducted at the site. In December 1985, the State of New Jersey removed picric acid and other explosive chemicals from one of the on-site laboratories. EPA performed a removal action between October 1987 and November 1988; this action included the removal of lab pack containers and drums containing corrosive and toxic materials, acid tanks, and compressed gas cylinders. EPA conducted another removal action in October 1990, that included fencing a portion of the slag area and excavating contaminated soil in an area of the Roebling Park, which borders the facility.

The first ROD for the site was signed in March 1990, resulting in the completion of a remedial action in September 1991. That remedial action, the first of several anticipated remedial actions, known as operable units (OUs), continued the removal or remediation of contaminated source areas. It included the removal and off-site treatment and disposal of remaining drums, transformers containing oil contaminated with polychlorinated biphenyls (PCBs), the contents of exterior abandoned tanks, a baghouse dust pile, chemical piles, and tire piles.

A second ROD was signed in September 1991, to address the southeast playground (OU-2), and a 34-acre slag disposal area (OU-3). The Corps of Engineers (COE) was given the responsibility to design and implement the remedies selected in the ROD. The remedy selected for the southeast playground included excavating contaminated soil hotspots, off-site treatment, and disposal at an appropriate facility. To expedite this portion of the remedial work, the Region II Removal Action Branch conducted the cleanup of the playground in the Fall of 1994, after the COE submitted a final design to EPA. The remedy selected for the slag area includes treating hotspots, defined as highly contaminated slag material that fails a Toxic Compound Leaching Procedure (TCLP) test, and then covering the entire 34-acre slag area with a soil cover and vegetation. Remedial design sampling in the slag area has been completed.

The overall strategy for the Roebling Steel site addresses contamination in a manner that would allow most of the site to be returned to productive use for industrial, commercial, or recreational purposes. Two RODs have already been completed to deal with site contamination. Further site cleanup work has been divided into two additional RODs. Concurrent with ongoing remedial investigation and design activities, an

FFS was recently completed, which deals with the imminent threat posed by 70 abandoned buildings, and remaining contamination sources inside and outside of those buildings. These are areas that must be dealt with, prior to undertaking any large scale soil or ground water remediation. The FFS report forms the basis of this Proposed Plan for the third ROD at the Roebling Steel site. A fourth ROD will be prepared after all remaining contamination problems are identified and characterized in an RI/FS (which is currently underway), and after a proposed plan for any remaining problems is issued for comment. The RI/FS for the Roebling Steel site will incorporate an extensive data investigation and discussion of potential cleanup alternatives for remaining areas of the site including: the on-site landfill, the sludge lagoons, potential buried drums, area-wide contaminated site soils throughout the main plant complex, river and creek sediments, and ground water.

RESPONSE ACTIONS	DESCRIPTION AND STATUS
Removal Actions	
• Removal Action 1	- Removal of drums, lab pack containers, acid tanks, and compressed gas cylinders. Action completed in 1988.
• Removal Action 2	- Removal of contaminated surface soils from the Roebling Park, and installation of a perimeter fence around the slag area. Action completed in 1991.
ROD 1 (March 1990)	
• OU-1	- Removal of drums, transformers with PCBs, tanks, a baghouse dust pile, chemical piles, tires. Action completed in 1991.
ROD 2 (September 1991)	
• OU-2	- Removal of contaminated surface soils from the Southeast Park. Action completed in 1994.
• OU-3	- Design of the remedy for a 34-acre slag area, including treating hotspots, and covering entire area with a soil cover and vegetation. Design underway.
ROD 3 (Planned for September 1996)	- The upcoming ROD (the subject of this Proposed Plan) would address remediation of 70 abandoned buildings which contain contaminated process dust, contaminated equipment, tanks, pits and sumps, underground piping, and friable asbestos.
ROD 4 (Planned for 1997)	- This ROD would address all remaining contamination problems at the site, including an on-site landfill, sludge lagoons, potential buried drums, soils, river and creek sediments, and ground water. An RI/FS is planned for completion in Spring of 1997.

Interior Tanks - The noncarcinogenic PAH, 2-methylnaphthalene, was present in almost all of the oil samples from interior tanks, with detected concentrations ranging from 25 mg/kg to 195 mg/kg. The only carcinogenic PAH detected in the oil samples was chrysene. Oil samples exhibited low concentrations of a small number of volatile organics; PCBs were not detected in the tank oil samples.

Buildings

Chip, dust, and pit and sump (liquid and solid) samples were collected from buildings to evaluate alternatives for building decontamination and demolition, and the remediation of building pits and sumps.

Chips - Samples of building surfaces were chiseled from selected buildings, based on a knowledge of historical processing operations, previous sampling results, visual evidence of staining, and were characterized for potential disposal. Eight out of forty-seven (17%) chip samples failed the Toxic Compound Leaching Procedure (TCLP), used to determine hazardous waste thresholds. Seven of the exceedances were for lead, while one was for chromium.

Floor Dust - Sampling results indicate that several inorganics, carcinogenic polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) are the primary contaminants of concern for floor dusts. Inorganic analytes of concern in floor dusts include lead, arsenic, and zinc. The average and maximum lead concentrations detected in floor dust samples were 5,908 ppm and 169,000 ppm, respectively. The average and maximum arsenic concentrations detected in floor dust samples, in parts per million (ppm), were 31 ppm and 231 ppm, respectively. Elevated zinc concentrations correlated fairly well with lead concentrations in floor dust samples. The average and maximum zinc concentrations detected in floor dust samples were 8,351 ppm and 395,000 ppm, respectively. Elevated concentrations of barium, chromium and copper were also detected in floor dust samples. Concentration ranges detected in the floor dust, in parts per billion (ppb), of non-carcinogenic and carcinogenic PAHs are 8,772-248,400 ppb and 466-198,900 ppb, respectively. PCB maximum concentrations found in the floor dusts were 11,000 ppb and 68,000 ppb for Aroclor-1248 and Aroclor-1260, respectively.

Soil floors in Buildings 2, 3, 4, 5, and 18 were sampled at 0.5 to 1.0 feet intervals. The highest concentrations were generally found in surficial samples (0-0.5 feet). Soil floor sampling in Buildings 2 and 3 indicated that lead and zinc concentrations decrease with depth. Nearly all significantly elevated concentrations of lead and zinc detected in floor dust samples occur within one-half foot (0.5) of surface grade. The concentration range of lead detected in the earthen floors of Buildings 2, 3, 4, 5, and 18 is 25.1-4,370 ppm.

Pits and Sumps - The pit and sump sludge/solids exhibited significantly elevated concentrations of copper, lead, and zinc, as high as 185,000 ppm, 6,380 ppm, and 41,200 ppm, respectively. Pit sludge/solids revealed low or non-detectable levels of PAHs, and non-detectable levels of PCBs. Low levels of volatile and semi-volatile organic contaminants were detected in the liquids from several pits.

Asbestos

An asbestos survey was conducted by certified asbestos personnel for individual buildings. The investigators inspected only those areas which were accessible (not flooded), and only buildings which were structurally sound. Each building was examined with regards to location, type of material, quantity, friable/non-friable, and damaged/not damaged. Insulation on several miles of exterior piping, and on vessels covered with thermal insulation, was also included in the survey. Approximately 244,000 square feet, and 44,000 linear feet of friable asbestos material was identified throughout the facility. Insulation materials around pipes in buildings were sampled and analyzed for asbestos. Friable asbestos was found in every building sampled, with maximum concentrations reported at 90% asbestos.

during remediation, and to prevent releases of hazardous contaminants into the environment.

Quantitative Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: *Hazard Identification* - identifies the contaminants of concern at the site based on several factors such as toxicity, frequency of occurrence, and concentration. *Exposure Assessment* - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways, by which humans are potentially exposed. *Toxicity Assessment* - determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). *Risk Characterization* summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. Both average case and reasonable maximum case exposure scenarios were evaluated.

The baseline risk assessment identifies contaminants of potential concern, evaluates exposures pathways, and quantifies the degree of risk. The contaminants that are likely to pose the most significant risks to human health and the environment were identified, and are evaluated in detail. Contaminants of concern detected in the building dust include semi-volatiles (carcinogenic and non-carcinogenic PAHs), pesticides and PCBs, and metals (antimony, arsenic, barium, cadmium, manganese, thallium, vanadium, and zinc).

The baseline risk assessment evaluated the health effects which could result from exposure to contamination as a result of ingestion, dermal, and inhalation exposure pathways. The risk assessment evaluated the exposure pathways believed to be associated with the greatest potential exposures. An identified pathway does not imply that exposures are actually occurring, but only that the potential exists for the pathway to be completed. The potential exposure routes identified with present use of the buildings by site workers include inadvertent ingestion and dermal contact with building dust, and inhalation of suspended building dust. In the future-use scenario, both residential and commercial land uses are considered for the buildings. The potential exposure routes identified during future use of the buildings include ingestion, dermal contact, and inhalation of interior building dust. Exposure assumptions were made for both average case and reasonable maximum case exposure scenarios.

For risk assessment purposes, contaminants are separated into two categories of health hazards, depending on whether they exhibit carcinogenic or non-carcinogenic effects. For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} to 10^{-6}, representing a probability of one-in-ten thousand to one-in-one million that an individual could develop cancer as a result of site-related exposure to a carcinogen over one's lifetime (70-year period). Overall potential non-carcinogenic effects posed by contaminants are summarized as a Hazard Index (HI) for a particular exposure pathway. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium. The HI is the ratio of the chronic daily ingestion of contaminant(s) divided by acceptable exposure level(s). When the HI exceeds one, there may be potential non-carcinogenic health effects.

The results of the baseline risk assessment indicate that the building dusts on the site pose risks that are slightly greater than the acceptable risk range. Under hypothetical present use conditions, the risk assessment shows that people on the site who might be regularly exposed to contamination from the building dusts are at a potential total excess lifetime cancer risk of 1.5×10^{-4}, and a non-carcinogenic HI of 1.5, for the reasonable maximum exposure scenario.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA requires that each selected site remedy be protective of human health and the environment, be cost effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

The FFS report evaluated, in detail, six remedial alternatives to address the contamination associated with the buildings. With reference to the specific building groups (A, B, and C) defined below, remedial alternatives range from no further action with institutional controls; to decontamination for reuse of the buildings; to minimal decontamination followed by demolition and excavation with on-site and off-site management of debris. Asbestos abatement, closure of contaminated underground tanks, and drainage of underground piping are included in all of the proposed alternatives except no further action, because they are needed to protect cleanup workers in the buildings and to protect the environment from asbestos release and failure of the tanks or piping releasing their contents into the environment.

A brief description of each of the six remedial alternatives developed for the buildings, as well as an estimate of their cost and implementation time frames, are listed below. Note that the time frames represent actual construction periods once design activities have been completed. The design work can take up to two years to perform, depending on the particular alternative. These alternatives have been prepared from the technologies and process options remaining after the initial screening, taking into account contamination levels and future reuse potential for the three building groups (A, B, and C).

Remedial Approach

The remedial approach involves separating the abandoned building into three groups based on the extent of contamination and the structural stability of the buildings. The groups are defined as follows:

Building Group A: Contaminated buildings that are structurally unsound.

Building Group B: Contaminated buildings that are structurally sound.

Building Group C: Buildings with no significant chemical contamination.

The reuse potentials for individual buildings have also been assessed based on current structural conditions, building sizes and configurations, specific locations of buildings on the site, and other considerations. As noted above, buildings that are contaminated have been segregated into two groups (A and B) to facilitate the development of a variety of decontamination/demolition alternatives. Group A buildings would have limited or no reuse potential due to lack of structural soundness, and high levels of contamination that would be infeasible to decontaminate. The most logical method to address the risks posed by contamination in these buildings is to perform decontamination to minimum levels required for demolition, followed by demolition. For Group B buildings, it would be feasible to address the contamination risks by decontamination to specific risk-based cleanup standards. It should be noted that some building designations may change based on architectural and historical evaluations during remedial design. For buildings with no significant chemical contamination except asbestos (Group C), remediation options, except for asbestos removal, are not considered. Figure 1 graphically depicts the building group designations.

As discussed in Alternative 1, institutional controls would be placed on the site following asbestos abatement and tank removal.

Alternative 3: Contaminated Underground Tanks Closure / Underground Piping Drainage / Asbestos Abatement for All Buildings, and:

Building Group A: Gross Decontamination, Demolition, and On-site Management of Selected Demolition Debris
Building Group B: Decontamination
Building Group C: No Further Action

Estimated Capital Cost:	$38,800,442
Estimated Annual O&M Cost:	$0
Estimated Present Worth:	$38,800,442
Estimated Construction Time:	2 years

Alternative 3 incorporates the basic components of Alternative 2, in terms of contaminated underground tank closure, underground pipe drainage, and asbestos abatement; however, this alternative also addresses the primary (gross) decontamination and demolition of buildings in Group A, and both primary and secondary decontamination of the buildings in Group B. Alternative 3 includes the on-site disposal of non-hazardous building demolition debris only. Contaminated equipment, process dusts, and contents from above-ground tanks, and pits/sumps would be disposed off-site. Asbestos abatement activities would also be completed to varying extents under this alternative for those buildings that would be demolished. Buildings in Group A would require the additional removal of asbestos containing material that could become friable when crumbled, pulverized, or reduced to powder during demolition. Asbestos containing material, such as pipe insulation tar paper, ceiling and floor tiles, transite wallboard, and firebricks, would also be disposed of at an off-site landfill.

Equipment Removal and Decontamination - Equipment and loose debris from buildings in Groups A and B would be removed from the buildings to facilitate subsequent decontamination of the buildings. Large, heavy machinery would be cut down to manageable pieces. Piping and ductwork would be dismantled. All accumulated liquid wastes and sludges from the tanks, pits, and sumps would be properly characterized prior to off-site disposal. A significant quantity of equipment is salvageable due to metal content, and recycling would reduce the cost of this alternative. Equipment, tanks, and other items would be decontaminated prior to recycling. Decontamination wastewaters and sludges would be properly characterized prior to off-site disposal.

Building Decontamination - Primary (gross) decontamination of the buildings (needed to ensure safe demolition and disposal) in Group A and B would involve collecting and containing the dust for off-site disposal. Contaminated soil from buildings with earthen floors would be excavated and backfilled with clean soil fill. Following primary decontamination to demolition standards, Group A buildings would be demolished. These structures are unstable and cannot be reoccupied safely. Group B buildings would require a more thorough decontamination process so that the structures can be reused. This "secondary" stage decontamination would consist of deep cleaning the interior walls and floors with a vacuum, followed by pressure washing. Temporary berms, culverts, and pumps would be used to direct and collect wastewater generated during decontamination of the buildings. Hazardous wastewater would be containerized for off-site treatment and disposal, and nonhazardous wastewater would be discharged to the local sewer system following any pretreatment which is required by the receiving facility. Liquid waste and sludge from pits and sumps, and other process areas would be containerized and characterized for off-site transport and disposal.

Building Demolition - Group A buildings would be demolished following asbestos removal and primary (gross) decontamination. Standard demolition equipment (e.g., backhoes, wrecking balls, winches) would be used. Control measures would be implemented as necessary during demolition activities to minimize generation of fugitive dusts. Building debris

Alternative 5 parallels Alternative 3 in the abatement of asbestos, closure of contaminated underground tanks, underground pipe drainage, primary (gross) decontamination and demolition of buildings in Group A, and management of debris generated during demolition. This alternative expands Alternative 3 with respect to the way Group B buildings would be addressed. Under Alternative 5, Group B buildings would be decontaminated to demolition standards only; no secondary vacuuming or pressure washing would be performed. All equipment and materials in each Group B building would be removed for separate decontamination and possible salvage. Using standard equipment, Group A and B buildings would then be demolished. Masonry, wood, and glass debris from these buildings would be crushed for use on-site as nonhazardous fill. Metal debris would be recycled off-site. Historic building recording activities would be expanded due to the larger number of buildings to be demolished.

Alternative 6: Contaminated Underground Tanks Closure / Underground Piping Drainage / Asbestos Abatement for All Buildings, and:

Building Groups A and B: Gross Decontamination, Demolition, and Off-site Management of Selected Demolition Debris
Building Group C: No Further Action

Estimated Capital Cost:	$44,925,665
Estimated Annual O&M Cost:	$0
Estimated Present Worth:	$44,925,665
Estimated Construction Time:	3 years

Alternative 6 parallels Alternative 4 in the abatement of asbestos, closure of contaminated underground tanks, underground pipe drainage, primary (gross) decontamination and demolition of buildings in Group A, and management of debris generated during demolition. This alternative expands Alternative 4 with respect to the way Group B buildings would be addressed. Buildings in both Groups A and B would be demolished following gross decontamination to demolition standards as described under Alternative 5, but all debris would be transported off-site for disposal and/or recycling. Secondary decontamination would not be performed under Alternative 6.

EVALUATION OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, including, overall protection of human health and the environment, compliance with applicable or relevant and appropriate requirements, long-term effectiveness and permanence, reduction of toxicity, mobility or volume, short-term effectiveness, implementability, cost, and state and community acceptance.

The evaluation criteria are described below:

- <u>Overall protection of human health and the environment</u> addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- <u>Compliance with applicable or relevant and appropriate requirements (ARARs)</u> addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- <u>Long-term effectiveness and permanence</u> refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

- <u>Reduction of toxicity, mobility, or volume</u> is the anticipated performance of the treatment technologies a remedy may employ.

- <u>Short-term effectiveness</u> addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed wastewaters generated from equipment and building decontamination, and process dust would be disposed in compliance with ARARs. Alternatives 3 and 5 could be implemented in compliance with ARARs related to on-site disposal of TCLP tested crushed demolition debris, which would be used as non-hazardous fill for portions of the site. Should this debris prove hazardous, it would require treatment prior to disposal at an off-site facility in accordance with the RCRA land disposal restrictions. Under Alternatives 5 and 6, it may be more difficult to achieve compliance with the National Historic Preservation Act. Demolition of Groups A and B buildings would adversely effect the buildings and process equipment which are considered eligible for the National Register of Historic Places. Alternative 2 would only meet the ARARs related to UST closure and asbestos abatement. Alternative 1 would not achieve ARARs related to the disposal of RCRA hazardous wastes from the buildings, closure of contaminated underground tanks, drainage of piping, and asbestos abatement. A complete list of ARARs may be found in Section 3 of the FFS report.

Long-Term Effectiveness and Permanence

Alternatives 3 through 6 would all effectively minimize the public exposure and contaminant migration associated with the buildings, including friable asbestos and contaminated underground tanks and piping. Long-term permanence is maximized by removing contaminants from building interiors to acceptable levels through a combination of both decontamination and demolition. Levels of decontamination can be attained which would allow for demolition of the building and disposal of the debris, or to levels which would allow future reuse of the buildings. Considerable sampling of building surfaces and equipment would be required to ensure contamination was reduced to acceptable levels.

Long-term effectiveness and permanence would be somewhat more enhanced under Alternatives 4 and 6 than Alternatives 3 and 5, because demolition debris would be disposed of off-site. On-site disposal raises some long-term uncertainties regarding potential residual contaminants migrating to the surrounding environment. However, decontamination of buildings would be performed to non-hazardous levels prior to demolition to allow for safe on-site disposal. Following demolition, debris would be sampled, and should this debris prove hazardous, it would require treatment prior to off-site disposal in accordance with the RCRA land disposal restrictions. Alternatives 3 and 5 would be subject to a five year review because contaminants, although at acceptable levels, would remain on-site.

Under Alternative 2, asbestos abatement and contaminated underground tank removal should effectively and reliably eliminate risk associated which these materials. The magnitude of residual risk is highest for Alternative 1, reduced slightly for Alternative 2 and reduced significantly for the remaining alternatives. Alternative 1 relies on institutional controls, which are not always reliable. Trespassing, vandalism, and unauthorized removal of scrap metals continue despite the 24-hour security and perimeter fencing.

Reduction of Toxicity, Mobility or Volume

The greatest reduction of toxicity, mobility, and volume of contaminants would be achieved by Alternatives 3 and 4, where decontamination of building interiors would be implemented as the principal remedial technology. In Alternatives 5 and 6, both Group A and B buildings would undergo primary (gross) decontamination to remove surficial dust for demolition purposes. In Alternatives 3 and 4, Group B buildings would undergo both primary (gross) and secondary decontamination, which would remove a greater volume of contaminants from the building interiors, and transfer them to residues and wastewaters. Appropriate off-site treatment and disposal of these decontamination residuals and wastewaters would reduce the toxicity, mobility, and volume of contaminants remaining at the site. Also, less demolition debris tainted with residual contaminants would be generated in Alternatives 3 and 4, since only

Cost

The estimated present worth costs range from $606,200 for Alternative 1 to $44,925,665 for Alternative 6. In evaluating cost effectiveness between Alternatives 3 through 6, Alternative 3 ($38,800,442) satisfies the remedial action objectives at the least cost, and removes the risks associated with the potential reuse of buildings. The cost differences between Alternatives 3 or 4 and 5 or 6 are not significant. Alternative 1 is the lowest cost but provides no additional protection of human health and the environment. Alternative 2 is significantly more costly than Alternative 1, but only partially meets the remedial action objectives.

PREFERRED ALTERNATIVE

Based upon an evaluation of the various alternatives, EPA and NJDEP recommend Alternative 3. The components of the Preferred Alternative include the closure of USTs, removal of the contents from underground piping for off-site disposal, and asbestos abatement, demolition of buildings in Group A, and decontamination of the buildings in Group B. Non-hazardous building demolition debris would be managed on-site. Scrap metal from building debris and contaminated equipment would be decontaminated and sent off-site for metal recycling or landfill disposal. Process dust and the contents of above-ground tanks and pits/sumps would be disposed off-site. Demolition debris that exceeds regulatory levels would be sent off-site for disposal.

Alternative 3 eliminates the risk of exposure to building contaminants by demolishing Group A buildings, and decontaminating Group B buildings to health-based cleanup levels. Alternative 3 would comply with ARARs, particularly RCRA regulations dealing with the treatment and disposal of hazardous wastes and land disposal restrictions. Alternative 3 would be the most desirable in order to achieve compliance with the National Historic Preservation Act. Decontamination of building interiors would remove contaminants through pressure washing (treatment), and transfer them to residues and wastewaters. Less demolition debris would be generated and therefore could be effectively managed on-site. Less material would require off-site disposal, therefore imposing the least amount of impact to the neighboring community. Alternative 3 satisfies the remedial action objectives at the least cost.

The preferred alternative (Alternative 3) would provide the best balance of trade-offs among alternatives with respect to the evaluating criteria, and achieve cleanup objectives at less cost than the other options. EPA and the NJDEP believe that the preferred alternative would be protective of human health and the environment, would comply with ARARs, would be cost effective, and would utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The remedy also would meet the statutory preference for the use of treatment as a principal element, as a majority of the buildings would be decontaminated to cleanup levels.

Mailing List Additions

If you or someone you know would like to be placed on the Roebling Steel Superfund Site Mailing List, please fill out and mail this form to:

Pat Seppi
Community Relations Coordinator
U.S. Environmental Protection Agency
290 Broadway
New York, NY 10017-1866

Name: ______________________________

Address: ______________________________

____

Telephone: ______________________________

Affiliation: ______________________________

APPENDIX C

PUBLIC MEETING SIGN-IN SHEET

ROEBLING STEEL SUPERFUND SITE
FLORENCE, NEW JERSEY

PUBLIC MEETING
July 25, 1996

SIGN-IN SHEET

NAME	ADDRESS	PHONE NUMBER
George E Simpson	Mayor - Municipal Bldg	499 2525
[illegible]	3 [illegible] Ave Roebling	unlisted
[illegible]	" " "	
Frank [illegible]	Burlington [illegible]	[illegible]
Arlene [illegible]	Senator [illegible]'s Office	757-5353
Marion McDowell	23 Riverside Ave. Roebling	499-2347
[illegible] McDowell	" "	
John Gruze	1055 Yurcisin St Roebling	609-499-0985
[illegible] Schlegel	49 Second Ave Roebling	499 4705
Patrick Schlegel	" "	" "
Michael Muchowski	210 5th Ave, Roebling NJ	499-0534
Mike Zlotnick	1500 S 6th St Camden NJ	365-7500
[illegible]	[illegible]	[illegible]
Elaine Brown	50 Riverside Ave. Roebling	609-499-1043
Rose Carris	10 - Fourth Ave Roebling	609 499-2245
Tom Pierson	64 Riverside Ave Roebling	499-0751
Shirley Pierson	" " " "	" "
Mike Chofey	15 River Bank Hts Roebling	499-4197
Mary Pattek	24-4th Roebling	499-1442
Harold [illegible] Miller	16-4th	499-1456
Boyd Lovett	11 Windsor Place Mt Holly	267-1158
[illegible]	20-4th Ave Roebling N.J.	499-1160
[illegible]	10 6th Ave Roebling	499-3887
Tom [illegible]	[illegible] E Front St	" 2376

PUBLIC MEETING

SIGN-IN SHEET

NAME	ADDRESS	PHONE NUMBER
[illegible]	[illegible]	[illegible]
Ramit Payne	31 Amboy Roebling	499-3013
[illegible]	21 4th Ave [illegible]	499-3209
[illegible]	40 Riverside Ave.	499-1334
[illegible]	23 255 Columbus Rd	298-1406
[illegible]	610 WEST FRONT ST	499-9457
[illegible] McElrea	119-2nd Roebling	499-2379
[illegible]	[illegible]	[illegible]
[illegible]	RR.2 Box 681 [illegible] Rd [illegible]	478-4004
[illegible]	911-William Ave Roebling NJ	499-2347
[illegible]	"	"
Don Lucas	5 Railroad Ave Roebling	499-3244
[illegible]	25-5th Ave. Roe	499-2296
[illegible]	" "	" "
[illegible]		
[illegible]	410 E. 5th St Florence	499-3951
[illegible]	31 3rd Ave Roebling	499-3045
[illegible] Wilkie	208 6th Ave Roebling	499-0820
[illegible]	66 Riverside Roebling	
[illegible]	BCT	
[illegible]	137 Hanover Ave	499-3282
[illegible]	[illegible] Bordentown NJ	267-7502
[illegible]	30 Riverside Ave	499-[illegible]
[illegible]	416 E. 4th St.	499-3323

500153

PUBLIC MEETING

SIGN-IN SHEET

NAME	ADDRESS	PHONE NUMBER
[illegible]	[illegible]	499-[illegible]
[illegible] Del Vecchio	24165 N. Main St Columbus, NJ	298-6289
Dorothy [illegible]	2187 RT. 206 Columbus NJ	298-6203
JOHN SHIELDS	35 RAILROAD AVE ROEBLING NJ	4999561
Paul [illegible] Jr	20-4th Ave Roebling	499-9259
[illegible] Pierce	33 Railroad Ave Roebling	499-[illegible]
BILL LUCKENBILL (FLORENCE FIRE DIST	1350 HORNBERGER AVE ROEBLING	499-1393
[illegible]	435 E 3rd St Florence	4991922
John HOFFLINGER	114 SIXTH AVE ROEBLING NJ	499-2038

ATTACHMENT 4

NJDEP LETTER OF CONCURRENCE

Post-it™ brand fax transmittal memo 7671	# of pages ▸
To Carol Peterson	From T. Cozza
Co. EPA	Co. DEP
Dept. ——	Phone # 633-0764
Fax # (212)637-4429	Fax # ——

New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

SEP 27 1996

Ms. Jeanne M. Fox
Regional Administrator
USEPA - Region II
290 Broadway - Floor 19
New York, NY 10007 - 1866

Subject: Roebling Steel Superfund Site
Record of Decision (ROD) - Operable Unit 4 (OU-4)

Dear Ms. Fox:

The Department of Environmental Protection has evaluated and concurs with the Roebling Steel Site Superfund ROD for OU-4 (see attached ROD) which addresses the remedy for 70 contaminated buildings occupying most of the property.

The Department is aware that this ROD represents the third of four RODs planned for the site. The first ROD was signed in March 1990 and the Remedial Action was completed in September 1991. The second ROD was signed in September 1991 to address the southeast playground (OU-2) and a 34-acre slag disposal area (OU-3). The Region II Removal Action Branch conducted the cleanup of the playground (OU-2) in the fall of 1994. The Corps of Engineers has completed the draft 65% design plans and specifications for the slag disposal area (OU-3). This third ROD for OU-4 addresses the remedy for 70 on-site contaminated buildings. The final fourth ROD for OU-5 will address the cleanup alternatives for remaining areas of the site which include: the on-site landfill, the sludge lagoons, potential buried drums, area-wide contaminated site soils throughout the main plant complex, river and creek sediments, and ground water.

The specific components of the selected remedy outlined in the ROD for OU-4 include the following:

- Demolition of Group A buildings and decontamination of Group B buildings;
- Removal and off-site disposal of continued liquids and sludges contained in the underground storage tanks, underground piping systems, above ground tanks, and pits/sumps; contaminated process dust; hazardous demolition debris; and asbestos abatement;
- On-site management of non-hazardous building demolition debris;

- Decontamination and off-site recycling or disposal of scrap metal from building and contaminated equipment.

It should be noted that the NJDEP does not have applicable non-residential cleanup criteria for building interiors. Therefore, NJDEP cannot give final approval for the suitability of the buildings for reuse. It is recommended that the suitability of reuse of the site buildings be determined by the individuals who are interested in purchasing the sites along with any other appropriate agencies.

The State of new Jersey appreciates the opportunity to participate in the decision making process and looks forward to future cooperation with the USEPA.

Sincerely,

Robert C. Shinn, Jr.
Commissioner

Attachment: Roebling ROD (OU-4)