



WehranEnviroTech

56272

APPENDICES

**FOR THE FINAL WORK PLAN FOR
OPERABLE UNIT 2**

REMEDIAL INVESTIGATION FEASIBILITY STUDY

KIN-BUC LANDFILL

Edison Township, Middlesex County

New Jersey

VOLUME 1

Prepared For

KIN-BUC, INC.

October 1989

Wehran-New York

Middletown, New York

Environmental Engineers • Scientists • Constructors

KBC 001 1002

TABLE OF CONTENTS
APPENDICES

Appendix A	Record of Decision
Appendix B	General Site Plan
Appendix C	Mill Brook/Martins Creek Analytical Data
Appendix D	Edmunds Creek, Control Creeks, and Raritan River Analytical Data
Appendix E	Internal Wehran Memorandum: Preliminary Ecological Review of Kin-Buc Landfill
Appendix F	Water Quality Data

APPENDIX A
RECORD OF DECISION
KIN-BUC LANDFILL - OPERABLE UNIT I
EDISON TOWNSHIP
MIDDLESEX COUNTY, NEW JERSEY

KBC 001 1004

DECLARATION STATEMENT

RECORD OF DECISION

Kin-Buc Landfill - Operable Unit I, Edison Twp., Middlesex County, New Jersey

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Kin-Buc Landfill-Operable Unit I in Edison Township, New Jersey; developed in accordance with CERCLA, as amended by SARA, and to the extent practicable, the National Contingency Plan. This decision is based on the administrative record for this site. The attached index identifies the items that comprise the administrative record upon which the selection of the remedial action is based.

The State of New Jersey has concurred on the selected remedy.

DESCRIPTION OF THE SELECTED REMEDY

This operable unit was developed to protect public health and the environment by controlling the major sources of contamination as well as treating leachate and contaminated groundwater to the maximum extent practicable. The operable unit is fully consistent with all planned future site activities. Future site activities include further evaluation of potential areas of contamination and developing measures to manage migration of contaminants as well as the overall site remedy.

The selected remedy for the Kin-Buc Landfill - Operable Unit I consists of the following components:

- circumferential slurry wall installation to bedrock on all of the sides of the site;
- maintenance, and upgrading if necessary, of the Kin-Buc I cap and installation of a cap in accordance with RCRA Subtitle C and State requirements on Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C;
- collection and off-site incineration of oily phase leachate;
- collection and on-site treatment of aqueous phase leachate and contaminated groundwater with disposal via direct surface water discharge;
- periodic monitoring and
- operation and maintenance.

Alternatively, pre-treatment of aqueous phase leachate and contaminated groundwater and discharge to the Middlesex County Utilities Authority (MCUA) publically owned treatment works (POTW) (versus treatment and direct surface water discharge) is an acceptable option should approval to discharge to the POTW be granted by the MCUA.

DECLARATION

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300, I have determined the selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate for this remedial action and is cost-effective. This remedy satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Sept. 30, 1989
Date

William J. Mysynski
William J. Mysynski, P.E.
Acting Regional Administrator

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

KIN-BUC LANDFILL - OPERABLE UNIT I

EDISON TOWNSHIP, NEW JERSEY

SITE NAME, LOCATION AND DESCRIPTION

The Kin-Buc Landfill consists of a number of individual inactive disposal sites extending over 220 acres and is located at the end of Meadow Road in Edison Township, Middlesex County, New Jersey. Directly north of the site is an industrial park. The Edison Township Municipal Landfill is approximately 600 feet south of the site. Marshlands and a former borrow area are directly to the east of the site. The Raritan River borders the site on the west. Figure 1 depicts the general location of the site and Figure 2 is a site map. Figure 2 also shows that other landfills and a chemical company are within 1 mile of the site.

The Kin-Buc Landfill site includes the following components. The larger of two major mounds, designated Kin-Buc I, covers approximately 30 acres and rises to a maximum elevation of 93 feet. The other major mound, designated Kin-Buc II, covers approximately 12 acres, rises to a maximum elevation of 51 feet and is just north of Kin-Buc I. A low lying minor mound covers approximately 9 acres, rises 15 to 20 feet high and is designated as Mound B. Mound B lies west-southwest of Kin-Buc I, across the Edison Township Municipal Landfill access road and adjacent to the Raritan River. Three pits of black, oily leachate have developed at the southeastern edge of Kin-Buc I and are known as Pits A, B, and C. Adjacent to the pits is an area of impounded, tidally affected water referred to as Pool C. Marshland to the east of Pool C is cut by numerous mosquito drainage channels, with its major drainage feature being Edmonds Creek, a tidally affected shallow stream which flows into the Raritan River to the south of Kin-Buc I. Pool C is connected to Edmonds Creek by a small channel. Mill Brook, is northwest of the site, flows into Martins Creek which has been partially filled in by Kin-Buc II. Flowing west, Martins Creek runs into the Raritan River just north of Mound B. Figure 2 depicts the aforementioned site features.

Two residential populations are within 1 mile of the Kin-Buc Landfill: a densely populated residential area located northwest of the site across the New Jersey Turnpike near Meadow Road; and an apartment complex located north-northeast near the Middlesex County College. There are three additional populations to the north and east of the site. First, Middlesex County College

Figure 1

Kin-Buc Landfill Site Location Map,
Edison Township, Middlesex County, New Jersey

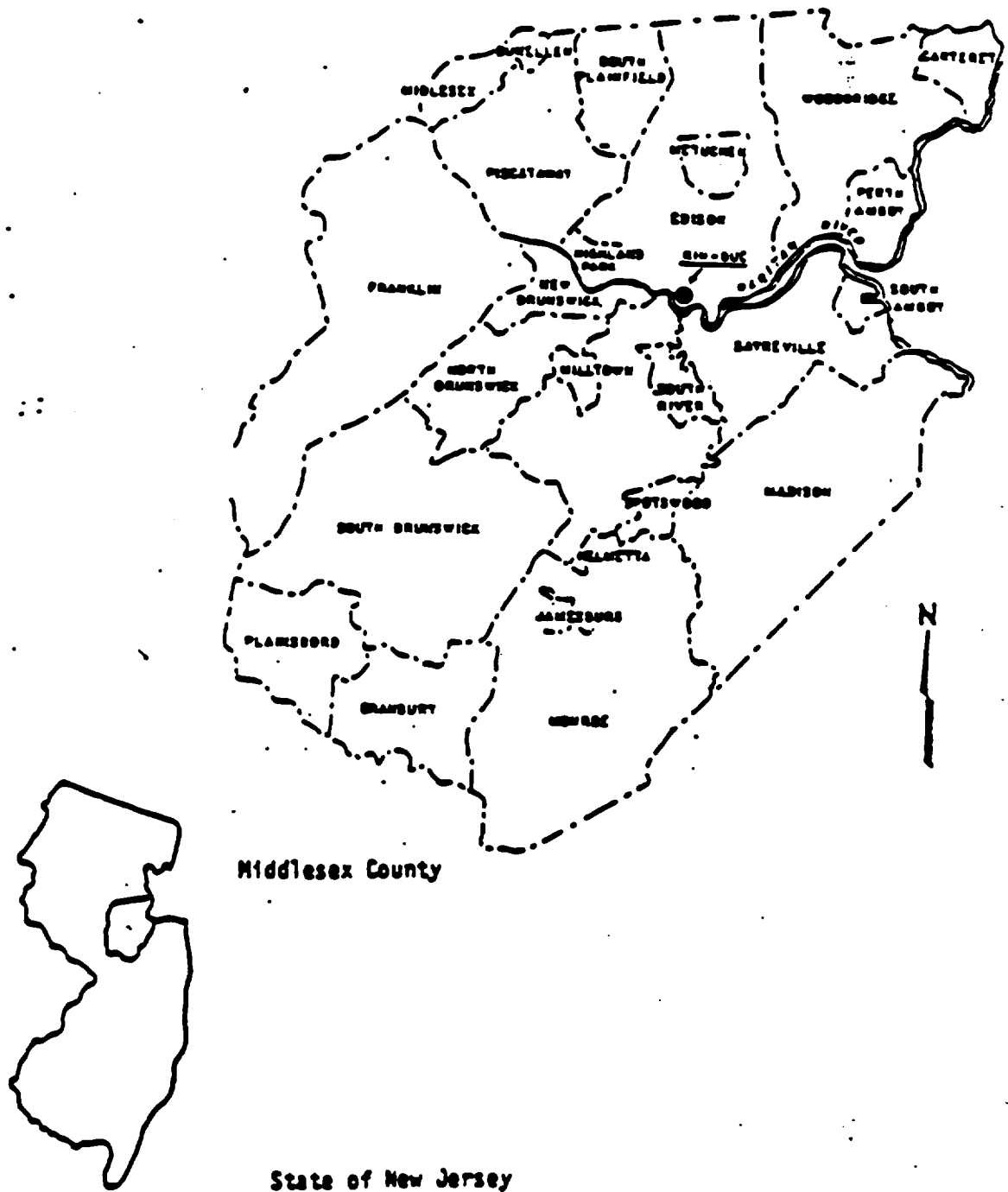
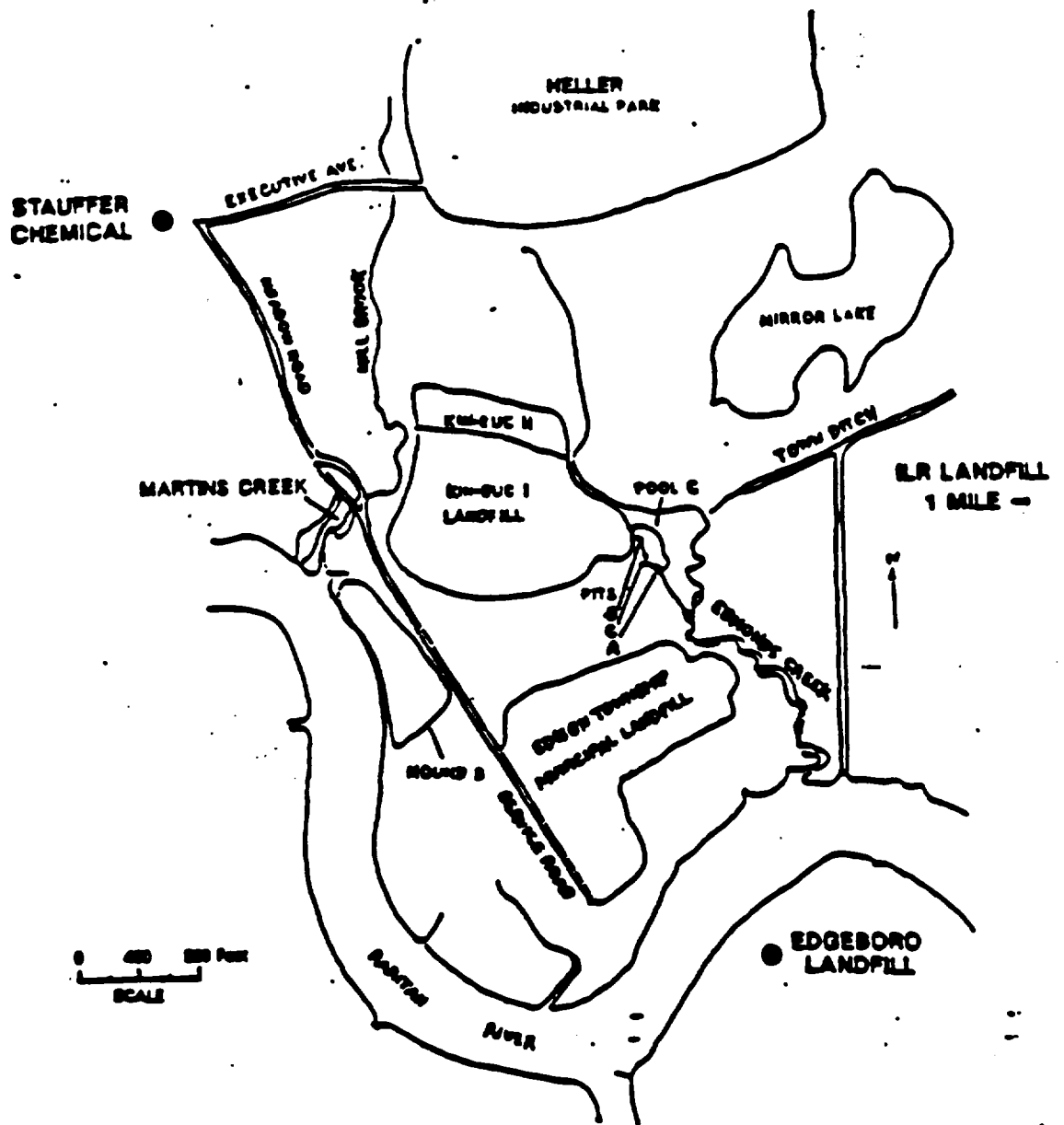


Figure 2

Kin-Buc Landfill Site Map



Note: Adapted from GCA Corporation, 1981, Information Evaluation for the Kin-Buc Landfill, Edison, New Jersey.

is approximately three quarters of a mile north-northeast of Kin-Buc Landfill. Second, the Heller Industrial Park is a light industrial complex one-half mile north of Kin-Buc II. Third, the Mirror Lake Beach Club is approximately one-half mile northeast of the site and is used by the employees and families of the Heller Industrial Park on a seasonal basis for swimming, boating, and tennis.

Based on a review of available file information and discussions with representatives of the local health department, there are no public or private potable wells presently drawing groundwater from contaminated aquifers immediately downgradient of the Kin-Buc Landfill. Most of the public water supply in the area is predominately surface water, the majority of which comes from the Raritan River upstream of the site. Edison Township has six reserve wells screened in the Brunswick formation (bedrock) within approximately 2 to 2-1/2 miles upgradient of Kin-Buc II. According to local health officials, these wells are currently not in use. In addition, Edison Township has 700-800 private and industrial wells upgradient of the site. None of these wells are located between the site and the Raritan River.

SCOPE AND ROLE OF OPERABLE UNIT WITHIN SITE STRATEGY

EPA determined that the site should be remediated in operable units. Remediation of Operable Unit I, the subject of this Record of Decision (ROD), constitutes source control measures for the site. The components of the site addressed in Operable Unit I are as follows:

- ° Kin-Buc I
- ° Kin-Buc II
- ° Pool C
- ° Low-lying area between Kin-Buc I and the Edison Landfill

The components of the site to be addressed in Operable Unit II (the subject of a future ROD) consist of:

- ° Mound B;
- ° Raritan River;
- ° Mill Brook;
- ° Martins Creek;
- ° Edmonds Creek, including the connecting channel from Pool C;
- ° adjacent wetlands and
- ° groundwater contamination emanating from the site.

KBC 001 1010

Operable Unit II will address the measures that may be necessary to mitigate any off-site impacts resulting from contaminant migration. EPA has determined that a Supplemental Remedial Investigation will be required to adequately characterize the nature and extent of off-site contamination. Upon completion of the Supplemental Remedial Investigation for Operable Unit II, a Feasibility Study (FS) evaluating the remedial alternatives will be conducted and the process will culminate in a subsequent ROD.

SITE HISTORY

The Kin-Buc Landfill began operating as early as 1947. During its period of operation, the landfill was utilized for disposal of municipal, industrial and hazardous waste. Detailed information on the owner/operators and site activities from 1947 to 1968 could not be located. However, the site, owned by Inmar Associates, was later leased to Kin-Buc, Inc., a division of Scientific, Inc. Kin-Buc, Inc. operated the site as a landfill from approximately 1968 to July, 1976. From 1971 to 1976, the site was a state-approved landfill for industrial (solid and liquid) and municipal wastes. Kin-Buc Landfill was registered with the New Jersey Department of Environmental Protection (NJDEP), Solid Waste Administration. During this period, the site accepted hazardous waste. In 1976, the NJDEP revoked Kin-Buc's permit to operate because of violations of a number of environmental statutes.

The total quantity of waste disposed of at Kin-Buc Landfill has not been definitively determined. EPA estimates that at least 70 million gallons of liquid waste, including 3 million gallons of oily waste, and over 1 million tons of solid waste were disposed of between 1973 and 1976.

There are two major sources of information regarding the type and diversity of chemical wastes (including hazardous wastes) disposed of at Kin-Buc. First, EPA sent information request letters under CERCLA Section 104(e), to approximately 400 potentially responsible parties (PRPs). Typical categories of wastes included in responses are:

- waste lacquer residue and ferric chlorides
- solvents, strip-away wastes, oils, rubber cement
- wastewater, acetone
- waste oils
- solvent mix, silicone
- ethyl acetate, toluol flammables
- chloroethane, cutting oils, ether, paint thinner
- cyanides
- metal stripper, cyanides, copper
- oil, alcohol, kerosene

KBC 001 1011

Second, EPA compiled and summarized data from of waste shipments accepted between 1972 and 1976. Table 1 is a summary which lists 45 types of waste, (most of which would be considered hazardous) disposed at the site.

The mode of disposal operations while the site was active provides useful information to evaluate the contamination that resulted at the site. Wastes that arrived in containers were buried on-site and then compacted with bulldozers. Liquid waste was discharged into a bulldozed pit, approximately 75 to 100 feet in diameter at the top of Kin-Buc I.

Tank trucks carrying the liquid waste would stop at the entrance to the landfill where samples of the load would undergo limited testing (pH and flammability). The tank trucks then proceeded to the top of Kin-Buc I, opened their discharge ports and allowed the contents of the truck to drain into the pit.

Liquid waste also arrived in 55-gallon drums and was received along the northeast side of Kin-Buc I; an area now covered by Kin-Buc II. The drum contents were emptied into temporary storage ponds from which the contents were pumped into the pit at the top of the landfill. Once the active pit was filled, it would be closed and another one dug. These operational practices resulted in a large number of citizen complaints, caused frequent major on-site fires and a number of serious occupational injuries.

SUMMARY OF SITE CHARACTERISTICS

The Remedial Investigation (RI) includes investigations of ground-water, surface water, sediment and air. Major findings and conclusions of the RI as they pertain to the components of the site addressed in Operable Unit I are as follows:

- 1) The large volume of wastes in Kin-Buc I is a source of contamination of the immediately surrounding environment. These wastes included hazardous waste liquids, added to municipal and other solid wastes, with the intent that the liquids would be largely absorbed into the solid waste. Although the disposal of hazardous waste in Kin-Buc II has not been documented; liquid waste was received along the northeast side of Kin-Buc I (an area now covered by Kin-Buc II). Therefore, EPA considers there to be a high probability that hazardous substances are in or under the Kin-Buc II mound.
- 2) Precipitation infiltration into the refuse appears to be most significant in the lowland refuse-filled marsh area between Kin-Buc I and the Edison Landfill.

Table 1

Summary of Waste Disposed at Kin-Buc Landfill 1972 - 1976
Statistical Total for Each Chemical Type
(Sheet 1 of 2)

<u>Chemical Type</u>	<u>Quantity*</u> <u>(1000 Gallons)</u>
Waste Material	47580.10
Miscellaneous Waste	33405.91
Waste Water/Liquid	17249.77
Waste Sludge	11176.17
Waste Chemicals	11067.92
Acid & Alkaline Solution	5296.62
Waste Oil	2739.82
Septic	2265.39
Filter Aid	1358.97
Contaminated Dirt & Sand	1135.38
Waste/Spent Solvents	1510.89
Hazardous Materials	256.56
Waste Acid	146.68
Paint Sludge	133.65
Solids	109.56
Waste Caustic	52.10
Hydrochloric Acid	45.00
Aluminum Chloride	40.62
Waste Slop	34.87
Waste Cyanide	24.21
Nitric Acid	22.50
Tar	21.16
Sulfuric Acid	19.03
Resins	17.97
Industrial Waste	12.29
Phenolics	9.68
Chromic Acid	7.09
Waste Catalyst	6.64
Isopropyl Alcohol	6.00
Scrap Metal	5.77
Phenols	5.50
Acetic Acid	5.04
Still Bottoms	4.78

Table 1

**Summary of Waste Disposed at Kin-Buc Landfill 1972 - 1976
Statistical Total for Each Chemical Type
(Sheet 2 of 2)**

<u>Chemical Type</u>	<u>Quantity^a (1000 Gallons)</u>
Styrene	4.40
Waste Lachrymators	3.96
Gasoline	2.50
Xylene	2.50
Chloro Ethylene	1.92
Copper Solution	0.44
Formaldehyde	0.40
Jet Fuel	0.38
Path Waste Material	0.21
Lead	0.16
Lacquers	0.14
Isopropyl Ether	0.01
 Total	 <u>135790.66</u>

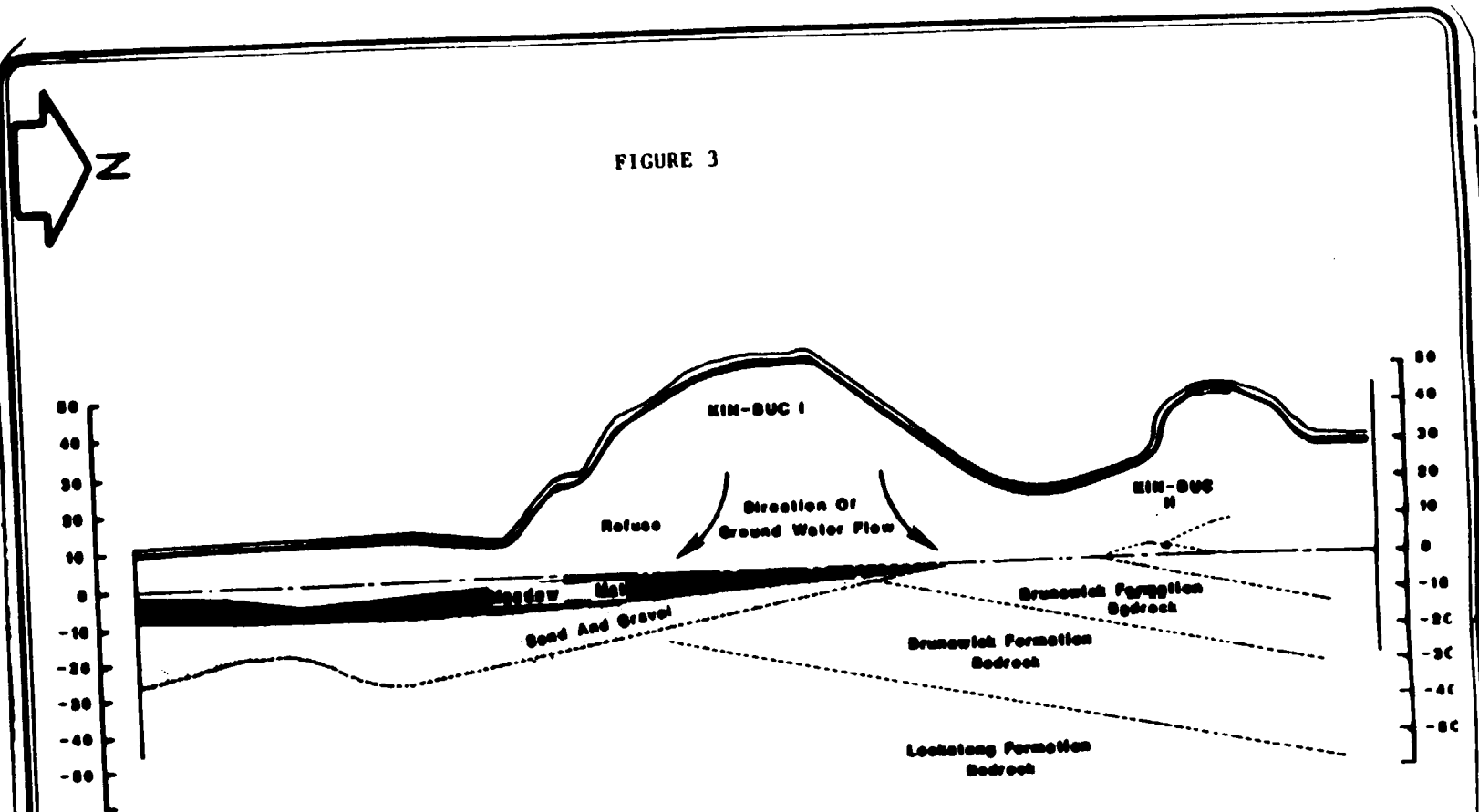
Notes:

Data compiled from a U.S. EPA Region II summary (undated) of invoices from Scientific, Inc. and SCA, Inc., of waste shipments accepted at Kin-Buc Landfill between 1972 and 1976.

^a All waste volumes have been converted to gallons for comparison purposes as part of U.S. EPA Region II's computer summary.

- 3) A low permeability cap over Kin-Buc I and low permeability cover materials over Kin-Buc II have provided reduced precipitation infiltration in these areas since the cap/cover was installed.
- 4) Radial subsurface flow patterns in the Kin-Buc I and II mounds have been identified. Overall, groundwater flow predominates in a southerly direction to the refuse-filled, low-lying area immediately south of Kin-Buc I, and to major discharge points in the area including Mill Brook, the marsh and the Raritan River.
- 5) Oily phase leachate containing polychlorinated biphenyls (PCBs) has migrated from Kin-Buc I into the refuse in the low-lying area between Kin-Buc I and the Edison Landfill. Flow patterns indicate the potential for the continued migration of this leachate toward the marsh area to the east, and to the Raritan River, west of the site.
- 6) The most significant and obvious manifestation of the subsurface flow and a primary pathway for contaminant migration are the leachate seeps over a substantial area south of Kin-Buc I (as discussed in #4 above) and Pool C.
- 7) Pool C is the source of PCB contamination (up to 68 ppm) found in the sediments of Edmonds Creek. The primary source of contamination in Pool C is Kin-Buc I.
- 8) Leachate at the site can be separated into two phases: an oily phase and an aqueous phase. Sampling and analysis of these two phases of leachate indicate that the oily phase leachate is contaminated with PCBs (up to 5,822 ppm) and the aqueous phase leachate contains hazardous substances including, but not limited to, metals, volatile organics, base neutral compounds, acid extractable compounds, PCBs, pesticides and cyanide. Sampling and analysis of raw leachate (prior to separation) and liquids from Pits B, C and Pool C show the same types of hazardous substances. Analytic data for sampled leachate is summarized in the RI.
- 9) There are five stratigraphic units of concern at the site: first is the solid waste/fill material of the landfill itself, second is the meadow marsh mat which immediately underlies the southern two-thirds of Kin-Buc I, third is the sand and gravel layer which lies under the meadow marsh mat and also underlies the southern two-thirds of Kin-Buc I. Finally, two bedrock formations lie below the sand and gravel layer. Only the sand and gravel and the bedrock formations are considered aquifers. Figure 3 depicts the site stratigraphy.

FIGURE 3



Not To Scale

EPA

CDM - Federal Programs Corporation

- 10) Within the solid waste/fill material (refuse layer); two entire well series and a single well from a third series have been installed to investigate the nature of contamination. In 1981, Fred C. Hart & Associates installed 14 wells (FCHA series) under contract to EPA; 10 of which were screened in the refuse layer. Limited analysis of hydrocarbon material found in 6 of the 10 wells revealed the presence of PCBs ranging in concentration from 111-4,478 ppm. The "A" series wells, installed by AGES for the owner/operators are also screened in the refuse layer. Analytic data revealed concentrations of PCBs in the floating oil in these wells ranging from 93 to 5,791 ppm. Finally, Well GEI-6G of the GEI series, installed by GeoEngineering, Inc. for the owner/operators and screened in the refuse layer was sampled for parameters other than PCBs. Analytic data revealed concentrations of volatile organics ranging from 10 to 100 ppb and concentrations of heavy metals ranging from 10 to 210 ppb.
- 11) Wells screened in the sand and gravel aquifer include the entire KINWT series, NJDEP-5 and NJDEP-6 and the remaining wells in the GEI series. Contaminant concentration ranges developed from 84 samples taken between 1976 - 1984 reveal the following:
- ° presence of heavy metals including, but not limited to lead (up to 2.7 ppm), chromium (up to 0.64 ppm) and zinc (up to 137 ppm);
 - ° presence of 39 organic priority pollutants including, but not limited to benzene, chlorobenzene, 4-methyl-2-pentanone, phenol and toluene which were detected at concentrations greater than 10 ppm; compounds such as vinyl chloride (up to 190 ppb), tetrachloroethene (up to 1.8 ppm) and 1,2-transdichloroethene (up to 5.4 ppm);
 - ° concentrations of chloride (60.5 to 4,670 ppm; mean concentration = 1838 ppm) and total dissolved solids (140 to 10,360 ppm; mean concentration = 4,928 ppm), due at least in part to the brackish nature of the water.

Appendix 1 summarizes the data obtained from groundwater monitoring wells screened in the sand & gravel aquifer.

Note that KINWT 1-A is considered to be screened in the sand and gravel aquifer. However, further investigation of this well has led to the conclusion that construction of this well was faulty and that data obtained from KINWT 1-A is questionable in terms of whether or not it is indicative of the water quality in the sand & gravel aquifer. Therefore, data from this well has not been utilized in discussing the aforementioned ranges of contaminants in the sand & gravel aquifer.

KBC
001 1017

- 12) A limited number of wells have been screened in the bedrock aquifer. Comparison of wells considered upgradient (MW-1, MW-2, MW-3 and MW-4 which are north of Kin-Buc II) versus downgradient (MW-5, GEI-9R, and GEI-12WR) indicate the following:
- presence of heavy metals at approximately the same mean concentrations in upgradient and downgradient wells
 - an increase in the number and frequency of organic priority pollutants detected -- two contaminants in upgradient versus nine contaminants in downgradient wells.

Appendix 2 summarizes data obtained from groundwater monitoring wells screened in the bedrock aquifer. However, the nature and extent of bedrock aquifer contamination is not adequately characterized based on the data gathered to date. The nature and extent of groundwater contamination in this aquifer will be a subject of the Supplemental Remedial Investigation.

- 13) The only significant source of air contamination is in the immediate vicinity of the Pool C area. The major contaminants of concern in terms of air releases are volatile organics and PCBs.
- 14) Surface water and sediment data are presented in the RI. However, these surface waters (Raritan River, Martins Creek, Mill Brook and Edmonds Creek), their sediments and adjacent wetlands will be the subject of further studies as part of a Supplemental Remedial Investigation for Operable Unit II.

SUMMARY OF SITE RISKS

As an aid in determining the impact of the site on public health and the environment, an endangerment (risk) assessment was conducted by EPA.

Indicator contaminants utilized in the evaluation (eight indicator contaminants were chosen from over one hundred contaminants identified in the various media at the site (groundwater, surface water, sediment and air) included benzene, chloroform, 1,1-dichloroethene, PCBs, vinyl chloride, arsenic, cadmium, and lead.

The risks associated with exposure scenarios for the identified populations in the endangerment assessment were characterized and estimated. The risk characteristics and estimated risks are summarized as follows:

- ° At present, the contaminated aquifers (sand & gravel and bedrock) immediately downgradient of the site are not utilized as a drinking water source. If these aquifers are used in the future, a potential upper-bound excess lifetime cancer risk that exceeds 10^{-5} due to lifetime ingestion of contaminated drinking water from the bedrock aquifer exists.
- ° For the scenarios involving inhalation of gases released from the leachate collection pool and pits, it was concluded that on-site concentrations of contaminants measured in air neither exceed occupational standards nor pose a potential significant risk to on-site workers or persons off-site. Estimated maximum concentrations of air contaminants based on models which utilize conservative assumptions concerning human exposure indicate a potential risk to on-site workers (assuming no personal protection is used by workers) due to volatilization of PCBs from Pool C and average and maximum estimated concentrations of air contaminants considered for off-site exposure indicate potential risk due to volatile organics and PCBs.
- ° Workers who come in contact with the oily fraction of leachate may be subject to a potential upperbound excess lifetime cancer risk that exceeds 10^{-6} , based on the concentration of PCBs in the leachate.
- ° There is a potential risk from the consumption of aquatic life due to the organisms' bioaccumulation of PCBs. Estimates of the concentration of PCBs in the tissue of fish found in the Raritan River could be as high as 9 ppm, which exceeds the Food and Drug Administration limit of 2 ppm.
- ° Aquatic populations in the creeks adjacent to the site will be at risk due to chronic exposure to cadmium in the surface water. There is also a potential for bioaccumulation of PCBs by the aquatic life of PCBs from the sediments.
- ° The terrestrial populations, especially birds, may be at a limited risk due to direct contact with leachate, especially the oily phase leachate.

There are uncertainties associated with the estimates of risks and the assumptions made in developing these risks tend to be conservative. For this site, there is a level of uncertainty associated with the data and the assumptions used. The major uncertainties are summarized as follows:

- ° Sampling data used to evaluate exposures and risks were collected over greater than a 10-year period by numerous sampling teams. Sampling and quality assurance/quality control procedures utilized for each sampling event often were not documented. A level of uncertainty is associated with the combining of these results.

- ° Most of the exposure assumptions are based on values in the scientific literature or assumptions made by EPA; not site-specific data. Such site-specific data did not exist.

From the risk characteristics and estimations presented, it can be concluded that releases from the site present a potential significant risk to public health and the environment. Additionally, it must be kept in mind that large quantities (at a minimum 70,000,000 gallons between 1972 and 1976) of waste materials, many of which are highly toxic and potentially carcinogenic, were disposed of at the site.

ENFORCEMENT ACTIVITIES

The Kin-Buc site was operated as a landfill from approximately 1968 until July, 1976. From 1971 to 1976, the site was a state-approved landfill for industrial (solid and liquid) and municipal wastes and was registered with the NJDEP Solid Waste Management Administration. During this period, the site accepted hazardous waste.

Operational practices at the landfill resulted in frequent on-site fires and a number of serious occupational injuries. Twelve to fifteen major fires occurred between 1971 and 1976. In a 1974 fire, a 55-gallon drum exploded killing a bulldozer operator. As a result of this incident, the Occupational Safety and Health Administration issued six citations for violation of the Occupational Safety and Health Act of 1970. On a number of occasions, landfill operations were in violation of New Jersey environmental statutes. NJDEP issued Notices of Prosecution for violations including, but not limited to,

- ° leachate seepage into the Raritan River;
- ° failure to provide records of the hazardous waste received;
- ° failure to maintain an adequate cover over the landfill surface and
- ° unauthorized excavations.

EPA investigation of the site began in January, 1976 at the time of oil spill at the facility. Unpermitted point source discharges were noted by EPA site investigators, leading to a full scale monitoring investigation revealing the discharge of hazardous substances from the facility. Operation of the site was closed to receipt of further liquid wastes by July 1, 1976. Based on these and other violations, NJDEP revoked Kin-Buc's operating permit.

A November 1977 litigation report prepared by EPA led to the filing of a civil complaint against 11 owner/operators of the landfill on February 7, 1979 which directed the defendants to take corrective action under a variety of federal environmental statutes including the Federal Water Pollution Control Act, the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act and the Rivers and Harbors Appropriation Act of 1899. In January 1980 a stipulation termed a "partial settlement" was entered into between the United States and Kin-Buc, Inc. (but not the remaining defendants) under which Kin-Buc, Inc. was to undertake installation of a cap for the landfill and conduct a long-term monitoring program. In September 1980, Kin-Buc, Inc. complied with a portion of the lawsuit by placing a synthetic membrane and clay cap on Kin-Buc I. Clay cover was also placed on Kin-Buc II. However, Kin-Buc, Inc. refused to take measures to contain the flow of leachate or clean up the area, claiming the area was not on its property.

EPA began cleanup activities at the site in February, 1980 using funds from the Federal Clean Water Act, Section 311(K). These activities consisted of collection (in 55-gallon drums), treatment and disposal of Pool C leachate. Beginning September, 1981 a drum reduction program was initiated (approximately 4000 drums had accumulated on-site). Oily phase leachate was collected and continued to be stored in drums on-site and aqueous phase leachate was pre-treated and sent to the Middlesex County Utility Authority (MCUA) treatment plant under a 1981 emergency permit issued by NJDEP.

In October, 1981 the site was placed on EPA's Superfund National Priorities List.

In September 1982, Kin-Buc, Inc. assumed the removal operation at the Pool C area that EPA had been conducting since February 1980. In addition, EPA attempted negotiations with Kin-Buc, Inc. based on a proposed CERCLA §106 consent order. Negotiations were unsuccessful and led to issuance of a unilateral CERCLA §106 order (Findings of Fact, Determination and Order Docket No: II-CERCLA-30102) against the 11 initial defendants of the 1979 civil action on September 23, 1983. The unilateral CERCLA §106 order against the owner/operators required the following:

- a Removal Program which was ongoing and included:
 - a) drum removal
 - b) oil collection
 - c) aqueous collection
- conduct of a RI/FS

KBC 001 1021

- implementation of the selected remedial action and
- operation and maintenance.

In January 1984, EPA sent correspondence to approximately 400 companies who were determined to be potentially responsible parties (PRPs) at Kin-Buc based on information including, but not limited to, the business records of an owner and operator of the site (Scientific, Inc. and/or its subsidiaries, including Kin-Buc, Inc.) and the business records of SCA Services, Inc. and/or the Earthline Company, in which a subsidiary of SCA Services, Inc. held a partnership interest. The purpose of this correspondence was to notify the companies of their status as PRPs, cost recover funds expended to that point in time and request information from the PRPs under CERCLA 104(e)(1).

In May, 1984 a draft RI/FS was submitted to EPA by the owners and operators of Kin-Buc. On March 25, 1986, EPA issued an amended unilateral CERCLA §106 administrative order (Findings of Fact, Determination, and Amended Order Docket No.: II-CERCLA 60105). The purpose of this order was to "update" the 1983 CERCLA order by requiring the owners and operators to follow guidance that had been established during the interim period on the conduct of an RI/FS. The draft RI was submitted in April 1988 and the draft FS was submitted in May 1988.

The owner/operators are under unilateral order to implement the selected remedy and subject to treble damages for failure without cause to implement the selected remedy. Additionally, the site will be remediated in operable units and the PRPs have expressed a strong interest in conducting the Supplemental Remedial Investigation and FS. The PRPs are comprised mainly of two financially viable companies (Transtech Industries, Inc. formally Scientific, Inc. and Waste Management, Inc. who bought SCA Services, Inc.

DESCRIPTION OF ALTERNATIVES

The FS established five objectives for remedial action of Operable Unit I. Remedial objectives were developed based on the RI. The remedial objectives are:

- control lateral movement of contaminants within the refuse layer represented by Kin-Buc I, Kin-Buc II and the low-lying area between Kin-Buc I and the Edison Landfill;
- control manifestation of subsurface flow as surface seeps which can contribute to surface water contamination;
- control surficial contamination (i.e. Pool C and vicinity) which may contribute to air contamination;
- control migration of contaminants into the underlying sand and gravel aquifer and, in so doing, evaluate the effectiveness of the natural barriers which may exist (i.e. meadow marsh mat) and

KBC 001 1022

- control of the migration of contaminants into the underlying bedrock considering the same issues noted above for the sand and gravel.

A description of each of the alternatives that were evaluated in detail in the FS are presented on the following pages. Each alternative is described in terms of its treatment components, containment components and institutional controls including operation and maintenance.

The C3 and C4 alternatives that are subsequently described, have common components developed to achieve the objectives for the remedial action. Both alternatives involve capping, containment, collection, treatment and discharge, long-term monitoring as well as operation and maintenance of the site. The key differences between the C3 and C4 alternatives are how specific components of each alternative are combined to achieve the remedial objectives. The differences are described as follows:

- 1) There are two options relating to the depth of installation of the circumferential slurry wall utilized for containment. The slurry wall for the C3 alternatives is installed to the bedrock in the northern portion of the site and to the meadow marsh mat in the southern portion of the site while the C4 alternatives is installed to the bedrock on all sides of the site.
- 2) There are two options for construction of a cap over Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C. One option is to extend the existing Kin-Buc I cap design to the aforementioned areas while the other option is to cap those areas in accordance with Resource Conservation and Recovery Act (RCRA) Subtitle C and State cap requirements.
- 3) There are two options for the disposal of treated aqueous phase leachate. One option is complete on-site treatment and direct surface water discharge while the other option is off-site treatment at the MCUA POTW.

Figure 4 is a matrix which presents the remedial alternatives, including each of the four subalternatives developed for the C3 and C4 alternatives. Each of the four subalternatives for C3 and C4 combines the capping and disposal of treated aqueous phase leachate options discussed.

ALTERNATIVE A -- NO FURTHER ACTION WITH MONITORING

This alternative consists of the following:

- continued performance of existing site mitigative measures and monitoring activities including:

- inspection and maintenance of Kin-Buc I cap
- inspection and maintenance of Kin-Buc II cover materials
- collection of aqueous phase leachate in Pool C and vicinity for off-site treatment
- collection of oily-phase leachate in Pool C and vicinity for off-site incineration
- a groundwater monitoring program which includes semi-annual water level measurements for eighteen wells and groundwater sampling and analysis for ten wells for the following parameters: volatile organics, pesticides, PCBs, Total Organic Carbon, Chemical Oxygen Demand, chloride, arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc with the ability to increase the number of wells if necessary
- an air monitoring program which includes monthly monitoring at twenty locations on-site using an organic vapor analyzer

ALTERNATIVE C3

Four subalternatives have undergone detailed evaluation and costing in the FS.

Alternatives C3a - C3b

Components common to these two alternatives are as follows:

- ° circumferential slurry wall installation to bedrock in the northern portion of the site and to the meadow marsh mat in the southern portion of the site;
- ° collection of oily phase leachate and off-site incineration;
- ° maintenance, and upgrading if necessary, of the Kin-Buc I cap and extension of the existing Kin-Buc I cap design to Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C;
- ° periodic monitoring;
- ° operation and maintenance

The final component of the two alternatives addresses collection and treatment of aqueous phase leachate. The disposal of treated aqueous phase leachate is what differentiates C3a and C3b. Alternative C3a provides for on-site aqueous phase leachate pretreatment with discharge to the MCUA POTW. Alternative C3b provides for on-site aqueous phase leachate treatment with direct surface water discharge.

FIGURE 4

MATRIX FOR COMPONENTS OF REMEDIAL ALTERNATIVES

ALTERNATIVE A - NO ACTION

ALTERNATIVE D - COMPLETE EXCAVATION

ALTERNATIVE C - CONTAINMENT, CAPPING, COLLECTION, AND DISCHARGE OF TREATED OF
LEACHATE, MONITORING, OPERATION & MAINTENANCE

COMPONENTS	<u>SLURRY WALL</u>	<u>CAP</u>	<u>DISCHARGE OF TREATED AQUEOUS PHASE LEACHATE</u>	<u>INCINERATION OF OILY PHASE LEACHATE</u>	<u>MONITORING/OPERATION MAINTENANCE</u>
C3a	meadow mat	existing Kin-Buc I design	POTW	Yes	Yes
C3b	meadow mat	existing Kin-Buc I design	Surface Water	Yes	Yes
C3c	meadow mat	RCRA & State req.	POTW	Yes	Yes
C3d	meadow mat	RCRA & State req.	Surface Water	Yes	Yes
C4a	bedrock	existing Kin-Buc I design	POTW	Yes	Yes
C4b	bedrock	existing Kin-Buc I design	Surface Water	Yes	Yes
C4c	bedrock	RCRA & State req.	POTW	Yes	Yes
C4d	bedrock	RCRA & State req.	Surface Water	Yes	Yes

Alternatives C3c & C3d

Components common to these two alternatives are as follows:

- ° circumferential slurry wall installation to bedrock in the northern portion of the site and to the meadow marsh mat in the southern portion of the site;
- ° collection of oily phase leachate and off-site incineration;
- ° maintenance, and upgrading if necessary, of the Kin-Buc I cap and installation of cap in accordance with RCRA Subtitle C and State requirements on Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C;
- ° periodic monitoring and
- ° operation and maintenance.

The final component of the two alternatives addresses collection and treatment of aqueous phase leachate. The disposal of treated aqueous phase leachate is what differentiates C3c and C3d. Alternative C3c provides for on-site aqueous phase leachate pre-treatment with discharge to the MCUA POTW. Alternative C3d provides for on-site aqueous phase leachate treatment with direct surface water discharge.

ALTERNATIVE C4

As with Alternative C3, four subalternatives have been developed for detailed evaluation and costing in the FS.

Alternatives C4a - C4b

The common components of these two alternatives are as follows:

- ° circumferential slurry wall to bedrock on all sides of the site;
- ° collection of oily phase leachate and off-site incineration;
- ° maintenance, and upgrading if necessary, of the Kin-Buc I cap and extension of the existing Kin-Buc I cap design to Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C;
- ° periodic monitoring and
- ° operation and maintenance.

The final component of the two alternatives addresses collection and treatment of aqueous phase leachate and contaminated groundwater. The disposal of treated aqueous phase leachate and contaminated groundwater is what differentiates C4a and C4b. Alternative C4a provide for on-site aqueous phase leachate and contaminated groundwater pretreatment with discharge to the MCUA POTW. Alternative C4b provides for on-site aqueous phase leachate and contaminated groundwater treatment with direct surface water discharge.

Alternatives C4c & C4d

The common components of these two alternatives are as follows:

- ° circumferential slurry wall to bedrock on all sides of the site;
- ° collection of the oily phase leachate and off-site incineration;
- ° maintenance, and upgrading if necessary, of the Kin-Buc I cap and installation of a cap in accordance with RCRA Subtitle C and State requirements on Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C;
- ° periodic monitoring and
- ° operation and maintenance.

The final component of the two alternatives addresses collection and treatment of aqueous phase leachate and contaminated groundwater. The disposal of treated aqueous phase leachate and contaminated groundwater is what differentiates C4c and C4d. Alternative C4c provides for on-site aqueous phase leachate pretreatment with discharge to the MCUA POTW. Alternative C4d provides for on-site aqueous phase leachate and contaminated groundwater treatment with direct surface water discharge.

ALTERNATIVE D -- COMPLETE WASTE EXCAVATION FOR OFF-SITE
INCINERATION

This alternative would consist of the following:

- ° excavation and off-site incineration of the source of contamination represented by Kin-Buc I, Kin-Buc II, the Pool C environs, and the contaminated portion of the low-lying area between Kin-Buc I and the Edison Landfill which totals approximately 4.6 million cubic yards of hazardous waste
- ° backfilling, grading, revegetation and drainage controls
- ° verification sampling

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

EPA's selection of a remedial alternative must be in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. Secs. 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act (SARA) (enacted October 17, 1986), and the requirements of its governing regulations, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300.

In this section, the relative performance of the alternatives are summarized by highlighting the key differences between the alternatives in terms of the nine remedial criteria.

The nine remedial criteria summarize CERCLA §121(b)(1) (A-G) and are as follows:

1. overall protection of human health and the environment,
2. compliance with applicable or relevant and appropriate requirements (ARARs),
3. long-term effectiveness and permanence,
4. reduction of toxicity, mobility or volume,
5. short-term effectiveness,
6. implementability,
7. cost,
8. state acceptance and
9. community acceptance,

1. OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

This criterion 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.

Alternatives C4a-d & C3a-d - Containment, Capping, Collection, Treatment and Discharge

Containment

Circumferential slurry wall installation to bedrock on all sides (Alts. C4a-d) eliminates the potential for continued uncontrolled

releases of contaminants to both the bedrock aquifer and the surrounding environment, including adjacent wetlands and surface waters. Therefore, risks to public health and the environment in current and future use exposure scenarios would be mitigated, resulting in protection of public health and the environment.

Circumferential slurry wall installation to the meadow marsh mat (Alts. C3a-d) would not adequately control releases of contaminants to the environment including adjacent wetlands and surface waters. The vertical migration of contaminants from the refuse layer through the meadow marsh mat into the sand and gravel and potentially the bedrock aquifer as well as lateral migration of contaminants to adjacent wetlands and surface waters would continue. Risks to the environment under current use exposure scenarios would not be completely mitigated. Risks to public health under future use scenarios involving ingestion of contaminated groundwater (if used for drinking purposes) would not be mitigated. Therefore, overall protection of public health and the environment is not achieved.

Capping

A cap utilizing the existing Kin-Buc I design for Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C appears to be protective of public health and environment, pending verification of the integrity of the Kin-Buc I cap (Alts. C3a, C3b, C4a, C4b).

Cap design in accordance with RCRA Subtitle C and State requirements (Alts. C3c, C3d, C4c, C4d) on Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C may afford a greater level of protection since such a cap design includes a thicker layer of clay and topsoil than the existing Kin-Buc I cap design.

Collection/Treatment/Discharge

Collection, treatment and discharge (whether it is direct surface water discharge or discharge to the MCUA POTW) processes are the same for the the C4a-d and C3a-d alternatives. The C4a-d and C3a-d alternatives collect oily phase leachate and incinerate it off-site. However, the C4 alternatives collect, treat and discharge aqueous phase leachate as well as contaminated groundwater from the sand and gravel aquifer. The C3 alternatives collect, treat and discharge only aqueous phase leachate. Therefore, the C4 alternatives are considered more protective of public health and the environment because aqueous phase leachate and contaminated groundwater will be treated.

Alternative D -- Complete Excavation with Off-site Incineration

Implementation of the complete excavation with off-site incineration alternative would mitigate the long-term risks to public health and the environment posed by the components of Operable Unit I. The source of contamination at the site would be removed. However, the short-term risks and impacts associated with this alternative are so great that selection of this alternative would be less protective of public health and the environment than other alternatives evaluated. The same level of long-term protection of public health and the environment can be achieved without the substantial short-term risks and implementability problems through other remedial alternatives evaluated.

Alternative A -- No Further Action with Monitoring

This alternative would not result in reducing the magnitude of public health and environmental risk associated with the components of Operable Unit I. Specifically, environmental releases that would continue as a result of implementation of this alternative may subject workers who come in contact with the oily phase leachate to a potential upperbound excess lifetime cancer risk that exceeds 10^{-6} , based on the concentration of PCBs in the leachate. Models estimating average and maximum concentrations of air contaminants off-site indicate a potential risk due to exposure of volatile organics and PCBs. However, on-site concentrations of contaminants measured in air since the cap was installed over Kin-Buc I in 1980 neither exceed occupational standards nor pose a potential significant risk to on-site workers (who wear proper personal protection as part of a health and safety plan) or persons off-site. The continued release of contaminants that would occur despite implementation of this alternative poses a potential risk with respect to ingestion of groundwater under a future use scenario. At present, both the sand and gravel aquifer (shown to be contaminated) and the bedrock aquifer (a component of the Supplemental Remedial Investigation for Operable Unit II which could be potentially contaminated due to its connection to the sand and gravel aquifer) are not utilized immediately downgradient of the site as a drinking water source. However, if the bedrock aquifer is used in the future, there is an estimated potential upperbound excess lifetime cancer risk that exceeds 10^{-5} due to lifetime ingestion of contaminated drinking water from the bedrock aquifer.

Aquatic populations in the adjacent surface waters will be at risk due to chronic exposure to cadmium in the surface water. Terrestrial populations, especially birds may be at limited risk due to direct contact with leachate.

The long-term public health and environmental impacts of implementation of this alternative are significant if no further action is taken and source control is not achieved.

2. COMPLIANCE WITH ARARS

This criterion addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements (ARARs) of other environmental statutes.

During development of the FS, ARARs and Criteria, Guidances and Advisories to be considered (TBCs) were established for Operable Unit I site remediation. Appendix 3 represents Federal and State ARARs and TBCs as well as their potential applicability to those alternatives that have undergone a detailed evaluation in the FS.

Alternatives C4a-d & C3a-d - Containment, Capping, Collection, Treatment and Discharge

Containment

Circumferential slurry wall installation to bedrock on all sides (Alts. C4a-d) in conjunction with collection and treatment are expected to meet ARARs for releases to groundwater and surface water.

Circumferential slurry wall installation to the meadow marsh mat (Alts. C3a-d) would not result in attainment of all ARARs because releases of contaminants from the refuse layer through the meadow marsh mat to the underlying sand and gravel aquifer, potentially to the bedrock aquifer and to adjacent surface waters would continue. Contaminated groundwater in the sand and gravel aquifer would not be remediated by Alternatives C3a-d. Therefore, ARARs for releases to groundwater and surface water are not expected to be met.

Capping

A cap utilizing the existing Kin-Buc I design for Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C (Alts. C3a, C3b, C4a, C4b) would not meet State ARARs for cap design.

Cap design in accordance with RCRA Subtitle C and State requirements (Alts. C3c, C3d, C4c, C4d) for Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C would meet ARARs.

Collection/Treatment/Discharge

The collection, treatment and discharge (whether it is direct surface water discharge or discharge to the MCUA POTW) processes are the same for the C4a-d and C3a-d alternatives. Both the C4a-d and C3a-d alternatives collect oily phase leachate and incinerate it off-site. However, the C4 alternatives collect, treat and discharge aqueous phase leachate as well as contaminated groundwater from the sand and gravel aquifer. Therefore, the collection of aqueous phase leachate and contaminated groundwater in conjunction with treatment and discharge would result in meeting ARARs for releases to groundwater and surface water. In comparison, the C3 alternatives collect, treat and discharge only aqueous phase leachate and contaminated groundwater would not be collected for these alternatives. ARARs would not be met because releases to groundwater and surface water would continue.

Alternative D -- Complete Excavation with Off-site Incineration

Implementation of this alternative would result in total source removal of the components of Operable Unit I. Compliance with all Federal and State ARARs as well as TBCs is expected.

Alternative A -- No Further Action with Monitoring

Implementation of this alternative would not result in meeting the Federal and State ARARs or TBCs. Federal and/or State ARARs as well as TBCs would not be met under RCRA (e.g. capping, closure requirements). The continued release of contaminants to groundwater and surface waters would not comply with Federal and State groundwater or surface water ARARs.

3. LONG-TERM EFFECTIVENESS AND PERMANENCE

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

Alternatives C4a-d & C3a-d - Containment, Capping, Collection, Treatment and Discharge

Containment

Utilization of a circumferential slurry wall installed to bedrock on all sides (Alts. C4a-d), in conjunction with the other components of the remedy is the most effective strategy to prevent the migration of contaminants both laterally and vertically to groundwater, surface waters, and adjacent wetlands.

Installation of a circumferential slurry wall to the meadow marsh mat (Alts. C3a-d) would rely on the meadow marsh mat as an effective barrier to migration of contaminants from the refuse layer to the sand and gravel aquifer. Available information including sampling and analysis data for the sand and gravel aquifer and physical analysis of the meadow marsh mat indicate that the meadow marsh mat is neither continuous nor effective in precluding downward migration from the refuse layer to the sand and gravel aquifer. Releases to the sand and gravel aquifer and potentially the bedrock aquifer as well as to adjacent surface waters would continue. Therefore, this containment strategy would not provide long-term effectiveness.

Capping

A cap utilizing the existing Kin-Buc I design for Kin-Buc II, portions to the low-lying area between Kin-Buc I and the Edison Landfill and Pool C is expected to provide long-term effectiveness, pending verification of the integrity of the Kin-Buc I cap (Alts. C3a, C3b, C4a, C4b).

Installation of a cap designed in accordance with RCRA Subtitle C and State requirements on Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C (Alts. C3c, C3d, C4c, C4d) is expected to provide greater long-term effectiveness and permanence in terms of preventing precipitation infiltration because the cap design includes a thicker layer of clay and topsoil than the existing Kin-Buc I cap design.

Collection/Treatment/Discharge

The collection, treatment and discharge (whether it is direct surface water discharge or discharge to the MCUA POTW) processes are the same for the C4a-d and C4a-d alternatives. Both the C4a-d and C3a-d alternatives collect oily phase leachate and incinerate it off-site. However, the C4a alternatives collect, treat and discharge aqueous phase leachate as well as contaminated groundwater from the sand and gravel aquifer. The C3 alternatives collect, treat and discharge only aqueous phase leachate. Therefore, the C4 alternatives are considered to provide greater long-term effectiveness because both aqueous phase leachate and contaminated groundwater will be treated.

Alternative D -- Complete Excavation with Off-site Incineration

Incineration of the excavated wastes would result in a permanent reduction in the toxicity, mobility and volume of contaminants from the components of Operable Unit I. There would be total source removal and site restoration of the components of Operable Unit I upon successful completion of this remedy. The potential for exposure of human and environmental receptors to contaminants from Operable Unit I components would be mitigated.

Alternative A -- No Further Action with Monitoring

The continued performance of existing site mitigative measures and monitoring activities would not be sufficiently effective for the long-term protection of public health and the environment. There would be inadequate source control and continued environmental releases. The magnitude of the public health and environmental risks would remain unchanged.

4. REDUCTION OF TOXICITY, MOBILITY OR VOLUME

Alternatives C4a-d & C3a-d - Containment, Capping, Collection, Treatment and Discharge

Installation of a circumferential slurry wall to bedrock (Alts. C4a-d) will provide for the maximum reduction in the vertical and lateral mobility of aqueous phase leachate as well as contaminated groundwater.

Installation of a circumferential slurry wall to the meadow marsh mat (Alts. C3a-d) will not reduce the mobility of contaminants in the sand and gravel aquifer since containment of contaminants in the sand and gravel aquifer is not addressed.

Capping

The capping of Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C utilizing the existing Kin-Buc I design (Alts. C3a, C3b, C4a, C4b) will reduce the mobility of contaminants by preventing precipitation infiltration.

The capping of Kin-Buc II, portions the low-lying area between Kin-Buc I and the Edison Landfill and Pool C utilizing a cap design in accordance with RCRA Subtitle C and State requirements (Alts. C3c, C3d, C4c, C4d) is expected to provide a greater reduction in mobility of contaminants due to precipitation infiltration because the cap design includes a thicker layer of clay and topsoil than the existing Kin-Buc I cap design.

Collection/Treatment/Discharge

The C4a-d alternatives include collection and off-site incineration of the oily phase leachate, which provides maximum reduction of toxicity, mobility and volume of contaminants. For the C4a-d alternatives, the collection, treatment and discharge (whether it's direct surface water discharge or discharge to the MCUA POTW) of aqueous phase leachate as well as contaminated groundwater from the sand and gravel aquifer provides the most significant reduction of the toxicity, mobility and volume of aqueous phase leachate and contaminated groundwater.

The C3a-d alternatives include collection and off-site incinerations of oily phase leachate which provides maximum reduction of toxicity, mobility and volume of contaminants. However, because the C3a-d alternatives collect and treat only aqueous phase leachate and not contaminated groundwater; the reduction of toxicity, mobility and volume of contaminants in groundwater is not addressed.

Alternative D -- Complete Excavation with Off-site Incineration

Complete excavation with off-site incineration would permanently reduce the toxicity, mobility and volume of contaminants. Preliminary estimates of the waste quantity to be excavated at Kin-Buc for off-site incineration totals approximately 4.6 million cubic yards. Off-site incineration would result in no residual contamination remaining from the components of Operable Unit I.

Alternative A -- No Further Action with Monitoring

The existing cap over Kin-Buc I and the cover materials over Kin-Buc II provide reduced precipitation infiltration in these areas and thus, a reduction in the mobility of contaminants in the refuse layer. However, other areas of the site which are considered components of Operable Unit I such as the low-lying area between Kin-Buc I and the Edison Landfill and Pool C environs have not been capped. There would be no reduction of vertical mobility due to precipitation infiltration in these areas. In fact, there may be increased mobility of some contaminants from the surface to the subsurface as a result of precipitation infiltration. Existing aqueous and oily phase leachate collection controls in Pool C and vicinity reduce the lateral mobility of contaminants into Edmonds Creek, an adjacent surface water.

Collection and off-site treatment of aqueous phase leachate and collection and off-site incineration of oily phase leachate provides for a reduction in the toxicity and volume of collected leachate. However, the current site collection controls are passive systems and there is a significant volume of contaminated leachate that could be remediated more actively. In addition, there would be no active reduction in the toxicity, mobility and volume of contaminated groundwater in the sand and gravel aquifer.

5. SHORT-TERM EFFECTIVENESS

This criterion 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 clean-up goals are achieved.

KBC
001
1035

Alternatives C4a-d & C3a-d - Containment, Capping, Collection,
Treatment and Discharge

Containment

Potential short-term risks to worker health and safety and the environment associated with the C4 and C3 alternatives pertain to excavation during installation of the slurry wall. These risks can be effectively mitigated through the use of appropriate controls (e.g. drainage controls, dust suppressants) and by strict adherence to proper health and safety protocols during slurry wall installation.

Capping

Short-term risks with capping the site utilizing either the existing Kin-Buc I cap design or a design in accordance with RCRA Subtitle C and State requirements involve construction of the cap on Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C exist to worker health and safety and the environment. These risks can be effectively mitigated through the use of appropriate controls (e.g. dust suppressants) and by strict adherence to proper health and safety protocols during cap installation.

Collection/Treatment/Discharge

Short-term risks to worker health and safety and the environment are associated with installation of the collection system due to excavation activities for both the C4 and C3 alternatives. These risks can be mitigated through the use of appropriate controls (drainage controls, dust suppressants) and adherence to proper health and safety protocols during construction activities.

Alternative D -- Complete Excavation with Off-site Incineration

There are severe short-term impacts associated with this alternative. A 4.6 million cubic yard excavation of a wide variety of hazardous waste will require extensive safety planning. Despite best safety planning efforts, on-site workers utilizing Level B (self-contained breathing apparatus) or Level A (full encapsulation and protection from any body contact) would still be at significant risk in working with such a large volume of unknown hazardous material that potentially contains explosive, reactive, corrosive, flammable or highly toxic material. During the waste excavation, the potential for toxic air emissions, a fire or explosion would be high. This would pose a potentially significant risk to residents in close proximity to the site as well as on-site workers. Additionally, releases caused by accidental spills or escape of contaminated run-off to the surrounding environment, including adjacent surface waters could occur during excavation despite control measures that would be implemented to prevent such releases.

Other constraints concern transport of excavated waste off-site. Based upon the total volume of wastes to be excavated (over an estimated five-year excavation period), and assuming a 1600 pound per cubic yard in-place waste density, and a 20 ton vehicle payload; then approximately 37,000 truck trips to an incinerator(s) would be required on a yearly basis. This volume of truck traffic is anticipated to be disruptive to nearby residents and poses a potential risk due to highway accidents.

Additionally, the length of time it may take to implement and complete this alternative is a constraint. A considerable amount of time (estimated to be three years) will be required before actual waste excavation can commence due to the following factors: 1) the time to design and construct all the necessary on-site facilities (storage, staging, decontamination facilities, haul roads etc.), 2) the time to gain all necessary regulatory approvals and 3) the time it may take to obtain adjacent properties to provide space for the necessary on-site facilities. Furthermore, it is projected that it will take five years from the time actual excavation commences until excavation is completed. This projection is based upon an estimate of the minimum amount of time which may be required using conventional excavation equipment to excavate the estimated 4.6 million cubic yards of waste and perform all necessary functions (segregation, testing, packaging, etc.) for off-site incineration. This estimate neither considers any emergencies, unplanned events which could temporarily halt excavation nor the time it will take to actually incinerate all the waste.

Based upon the constraints discussed above, the short-term risks to public health and the environment are substantial.

Alternative A -- No Further Action with Monitoring

There would be minimal short-term effectiveness associated with this alternative. Although existing site mitigative measures include access restriction via a perimeter fence, cap/cover maintenance and, collection, treatment and disposal of aqueous and oily phase leachate; total source control is not achieved by the No Further Action with Monitoring alternative. Public health and environmental risks associated with components of Operable Unit I would not be mitigated by the implementation of this alternative.

6. IMPLEMENTABILITY

This criterion addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

KBC 001 1037

Alternatives C4a-d & C3a-d - Containment, Capping, Collection,
Treatment and Discharge

Containment

Constraints associated with installing a slurry wall for either alternatives C4a-d and C3a-d include the following:

- o pre-construction compatability testing and subsurface investigations for the slurry wall;
- o construction of a work platform for slurry wall installation which will require extensive excavation of hazardous waste;
- o on-site workers and residents health and safety considerations in light of the excavation work to be performed

Capping

Constraints associated with construction of a cap utilizing RCRA Subtitle C and State requirements (Alts. C3c, C3d, C4c, C4d) would involve obtaining a larger volume of clay and topsoil to complete cap construction versus utilizing existing Kin-Buc I cap design for Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C.

Collection/Treatment/Discharge

Constraints associated with implementing the C4a-d and C3a-d alternatives include the following:

- o pre-design treatability studies for the aqueous phase leachate treatment system,
- o construction of a work platform, and subsurface collection system which will require extensive excavation of hazardous waste,
- o on-site workers, POTW workers and residents health and safety consideration in light of the excavation work to be performed.

On-site treatment of aqueous phase leachate (C3 alternatives) and contaminated groundwater (C4 alternatives) with direct surface water discharge requires a more complex on-site treatment system than the treatment system anticipated for pretreatment and discharge to the MCUA POTW. Additional constraints specific to implementing an on-site treatment system with direct surface water discharge include:

- o generation of additional waste streams (e.g. sludges) that require greater handling, operation and maintenance, space requirements and proper treatment and/or disposal and

- the potential need to acquire adjacent properties for construction of the on-site treatment system necessary for surface water discharge.

The final design of a system for on-site treatment of aqueous phase leachate and contaminated groundwater (C4 alternative) with discharge to a POTW or surface waters is dependent on treatability studies necessary for various unit processes as well as specific discharge permit requirements by MCUA (to go to the POTW) or the State of New Jersey Department of Environmental Protection (to go to surface waters). Permit levels for discharge to surface water or the POTW will incorporate site-specific ARARs.

The time to implement either alternative is estimated to take one to one and one-half years but assumes initiation of construction activities at the beginning of the construction season and allows for scheduling contingencies that may extend the construction time frame. Long-term management and monitoring is required for both alternatives.

Alternative D -- Complete Excavation with Off-site Incineration

Potential constraints in implementing this alternative are as follows:

- the complexity of operations and technologies required to protect considering the large volume and diversity of wastes;
- the need to acquire adjacent properties, as sufficient space does not exist on-site to accommodate construction of the necessary facilities;
- the time to design and construct all the necessary on-site facilities (storage, staging, haul roads, etc.);
- the time to gain all necessary regulatory approvals and implement the remedy;
- the availability of sufficient and suitable incineration facilities and
- cost.

The techniques to be employed have been extensively and successfully used at other hazardous waste sites. The combination of these technologies to construct a complex facility to excavate and transport wastes to an incinerator is not widely employed due to the risks to on-site workers and nearby residents, short-term environmental impacts and costs.

Preliminary estimates of the waste quantity to be excavated at Kin-Buc for off-site incineration includes:

Wastes contaminated with PCB concentrations > 50 ppm	400,000 cubic yds.
Wastes contaminated with PCB concentrations < 50 ppm	4,205,000 cubic yds.
100,000 drums of unidentified liquids	<u>27,000 cubic yds.</u>
TOTAL	4,632,000 cubic yds.

However, due to existing disposal demands placed upon RCRA incinerators, it would be difficult for a single incinerator facility to dedicate itself to handling such a large volume of hazardous waste.

Furthermore, even if a single incinerator facility (regardless of whether or not it is PCB-approved or non-PCB approved) was capable of dedicating itself to the destruction of Kin-Buc wastes, there does not appear to be a RCRA incinerator in the country that is large enough to handle the disposal of the wastes from Kin-Buc within a reasonable time period. Considering the estimated large volume of wastes present at the Kin-Buc site requiring incineration under this alternative, even if the largest incinerator facility were capable of dedicating itself to Kin-Buc, it is estimated that it may take at least 35 years to complete incineration.

Alternative A -- No Further Action with Monitoring

The relative ease of implementing this alternative is evidenced by its successful performance to date. There is operational reliability of the existing monitoring wells. The aqueous and oily phase leachate collection relies on proven technologies. Readily available personnel and equipment exists on-site for the continued performance of this alternative.

7. COST

This criterion includes estimated capital, operation and maintenance costs and net present worth costs. These costs are summarized in Table 2 for Alternatives A, C3 (including subalternatives), C4 (including subalternatives) and D. Additional cost details are provided below:

Alternatives C4a-d & C3a-d - Containment, Capping, Collection, Treatment and Discharge

Annual operation and maintenance costs for Alternatives C4a and C4c

vary over the 30-year operational period from \$762,000 in Year 1 to \$398,000 in Years 12-30.

Annual operation and maintenance costs for Alternatives C4b and C4d vary over the 30-year operational period from \$848,000 in Year 1 to \$405,000 in Years 12-30.

Annual operation and maintenance costs for Alternatives C3a and C3c vary over the 30-year operational period from \$753,000 in Years 1 to Years 12-30.

Annual operation and maintenance costs for Alternatives C3b and C3d vary over the 30-year operational period from \$397,000 in Year 1 to Years 12-30.

Alternative D -- Complete Excavation with Off-site Incineration

For the purpose of calculating present worth, the capital cost for construction of on-site structures was equally distributed over the first three years of the implementation period, and the remaining costs were equally distributed over the last five years of the eight-year implementation period.

Alternative A -- No Further Action with Monitoring

The potential for future remedial action would be determined based on groundwater monitoring, air monitoring, continued performance of existing site mitigative measures and land use changes in the vicinity of the site. Changes in any of the aforementioned factors that increase the magnitude of risk to public health or the environment would require a re-assessment of the need for further remedial action. Based on the FS, present worth costs of any further remedial action could range from approximately twelve million to four billion dollars depending on the remedial alternative implemented.

8. STATE ACCEPTANCE

This criterion is utilized to support the Agency's comments.

Alternatives C4a-d & C3a-d - Containment, Capping, Collection Treatment and Discharge

Containment

NJDEP concurs with the need to install a circumferential wall to bedrock (Alts. C4a-d) versus to the meadow marsh mat (Alts. C3a-d) because a slurry wall to bedrock is more protective, provides greater reduction in mobility of contaminants both laterally and vertically and prevents uncontrolled releases to groundwater and surface water.

Table 2.
COST SUMMARY OF REMEDIAL ALTERNATIVES
KIN-BUC FEASIBILITY STUDY

Alternative ¹	Capital (\$1,000)	Annual ² O & M (\$1,000)	Present Worth (\$1,000)
No further action with monitoring (Alternative A)	-----	432	4,075
Circumferential wall to meadow mat on the south and rock on the north (Alternative C3)			
Sub-alternative a	7,425	varies	12,027
Sub-alternative b	(x) 8,139 (y) 7,863	varies varies	(x) 13,085 (y) 12,721
Sub-alternative c	9,890	varies	14,492
Sub-alternative d	(x) 10,643 (y) 10,329	varies varies	(x) 15,349 (y) 15,147
Circumferential wall to rock on all sides (Alternative C4)			
Sub-alternative a	8,303	varies	13,112
Sub-alternative b	(x) 9,016 (y) 8,741	varies varies	(x) 14,170 (y) 13,806
Sub-alternative c	10,767	varies	15,434
Sub-alternative d	(x) 11,481 (y) 11,206	varies varies	(x) 16,635 (y) 16,290
Waste excavation for off-site incineration (Alternative D)	7,023,455	-----	4,001,938

Notes: 1. Sub-Alternative Abbreviations

- a On-site aqueous pre-treatment with discharge to MCUA; extension of existing Kin-Buc I cap design
- b On-site aqueous treatment with direct surface water discharge; extension of existing Kin-Buc I cap design
- c On-site aqueous pre-treatment with discharge to MCUA; RCRA cap.
- d On-site aqueous treatment with direct surface water discharge; RCRA cap.

2. Annual O & M costs of slurry wall alternatives vary over the 30-year operational period. See Section 5.3.5 of the report for annual O & M costs.

- 3 x = Anaerobic/Aerobic Treatment
- y = Powdered Activated Carbon Treatment (PACT)

Capping

NJDEP concurs with the need to install a cap in accordance with RCRA Subtitle C and State requirements on Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C.

Collection/Treatment/Discharge

NJDEP concurs with the need for collection and off-site incineration of oily phase leachate as well as collection, treatment and discharge (whether it is direct surface water discharge or discharge to the MCUA POTW) of aqueous phase leachate and contaminated groundwater.

Alternative D -- Complete Excavation with Off-site Incineration

State acceptance of this alternative is not anticipated due to the significant public health and environmental risks associated with excavation of such a large volume of hazardous waste.

Alternative A -- No Further Action with Monitoring

This alternative would not adequately reduce the public health and environmental risks posed by the components of Operable Unit I. In addition, neither Federal or State ARARs nor TBCs would be met. Therefore, there would not be State acceptance of this alternative.

9. COMMUNITY ACCEPTANCE

This criterion summarizes the public's general response to the alternatives described in the Proposed Remedial Action Plan and RI/FS report. Specific responses to public comments are addressed in the Responsiveness Summary section of the ROD. A community relations history is presented in Appendix 4.

Alternatives C4a-d & C3a-d - Containment, Capping, Collection Treatment and Discharge

Alternative C4a-d would mitigate current and future use risks to public health and the environment. Use of on-site treatment of aqueous phase leachate and contaminated groundwater with discharge to surface water versus pre-treatment and discharge to the MCUA POTW is not expected to have a significant effect on community acceptance. The receiving body for the treated aqueous phase leachate and contaminated groundwater in either alternative is the Raritan River. Therefore, community acceptance is expected to be positive.

Alternative D -- Complete Excavation with Off-site Incineration

Community acceptance of this alternative is not anticipated to be positive due to significant community concern over the potential short-term risks to the environment and public health associated with this alternative.

Alternatives C3a-d meet some of the site-specific source control objectives via installation of the cap, containment and collection system. There is reduction in the toxicity, mobility and volume of aqueous and oily phase leachate. Community acceptance of this is anticipated to be positive. Significant community concern is anticipated regarding the fact that contaminated groundwater in the sand and gravel aquifer and potentially, the bedrock aquifer, would not be addressed. Since the meadow marsh mat is not considered an effective barrier to prevent downward migration of contaminants, uncontrolled releases would continue. For these reasons, the overall acceptance of either alternative is not anticipated to be positive. Use of on-site treatment and discharge to surface water versus discharge to MCUA POTW is not expected to have a significant effect on community acceptance. The ultimate receiving body for treated aqueous phase leachate in either option is the Raritan River.

Alternative A -- No Further Action with Monitoring

Implementation of the No Further Action with Monitoring alternative would neither mitigate the public health and environmental risks nor provide adequate control of releases of hazardous substances to the environment. There has been significant community concern about this site over time. Therefore, it is anticipated that there would not be community acceptance of this alternative.

SELECTED REMEDY

A) Description of the Selected Remedy

1. Scope and Function of the Remedy

The selected remedy for the Kin-Buc Landfill - Operable Unit I is Alternative C4d. This alternative consists of the following components:

- circumferential slurry wall installation to bedrock on all of the sides of the site;
- maintenance, and upgrading if necessary, of the Kin-Buc I cap and installation of a cap in accordance with RCRA Subtitle C and State requirements on Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C,

KBC 001 1044

- collection of oily phase and off-site incineration,
- collection and on-site treatment of aqueous phase leachate and contaminated groundwater with direct surface water discharge;
- periodic monitoring and
- operation and maintenance.

Figures 5 and 6 illustrate the components of the selected remedy.

Alternatively, The C4c alternative is acceptable if the MCUA POTW elects to accept pre-treated aqueous phase leachate and contaminated groundwater in accordance with their requirements.

2. Performance Goals

a. Management of Migration

The RI completed in April 1988, includes investigations of groundwater, surface water, sediments and air. The results of the RI indicate the potential for off-site public health and/or environmental impacts attributable to the Kin-Buc Landfill operations. Based on the results of the RI; the magnitude and the complexity of the site warranted remediation of the site in discrete phases (Operable Units). The remediation of Operable Unit I, the subject of this ROD, constitutes source control, treatment and removal measures for the site.

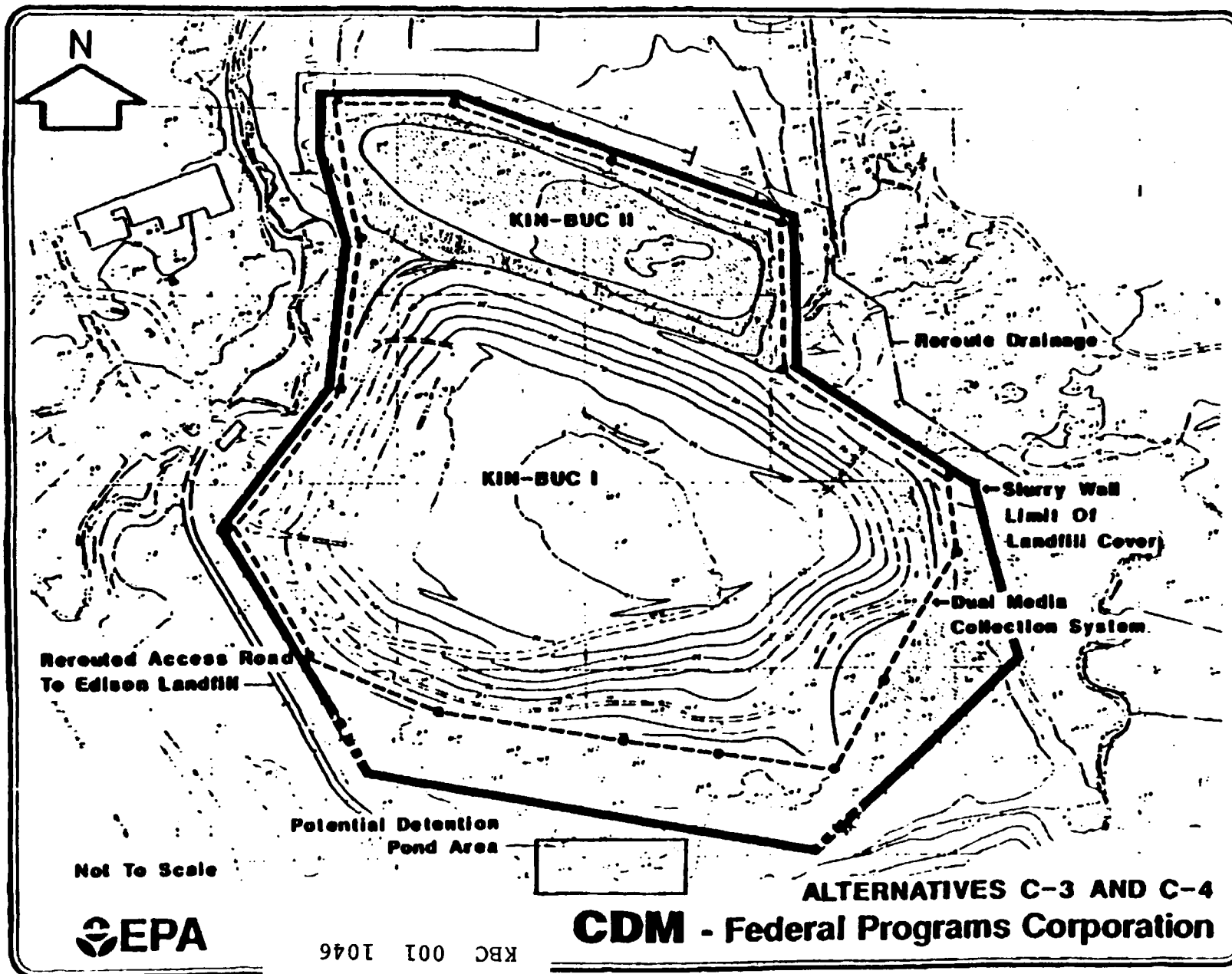
The components of Operable Unit I are.

- Kin-Buc I;
- Kin-Buc II;
- Pool C and
- Low-Lying area between Kin-Buc I and the Edison Landfill.

Operable Unit II will address the management of migration measures that will be determined to be necessary at the site.

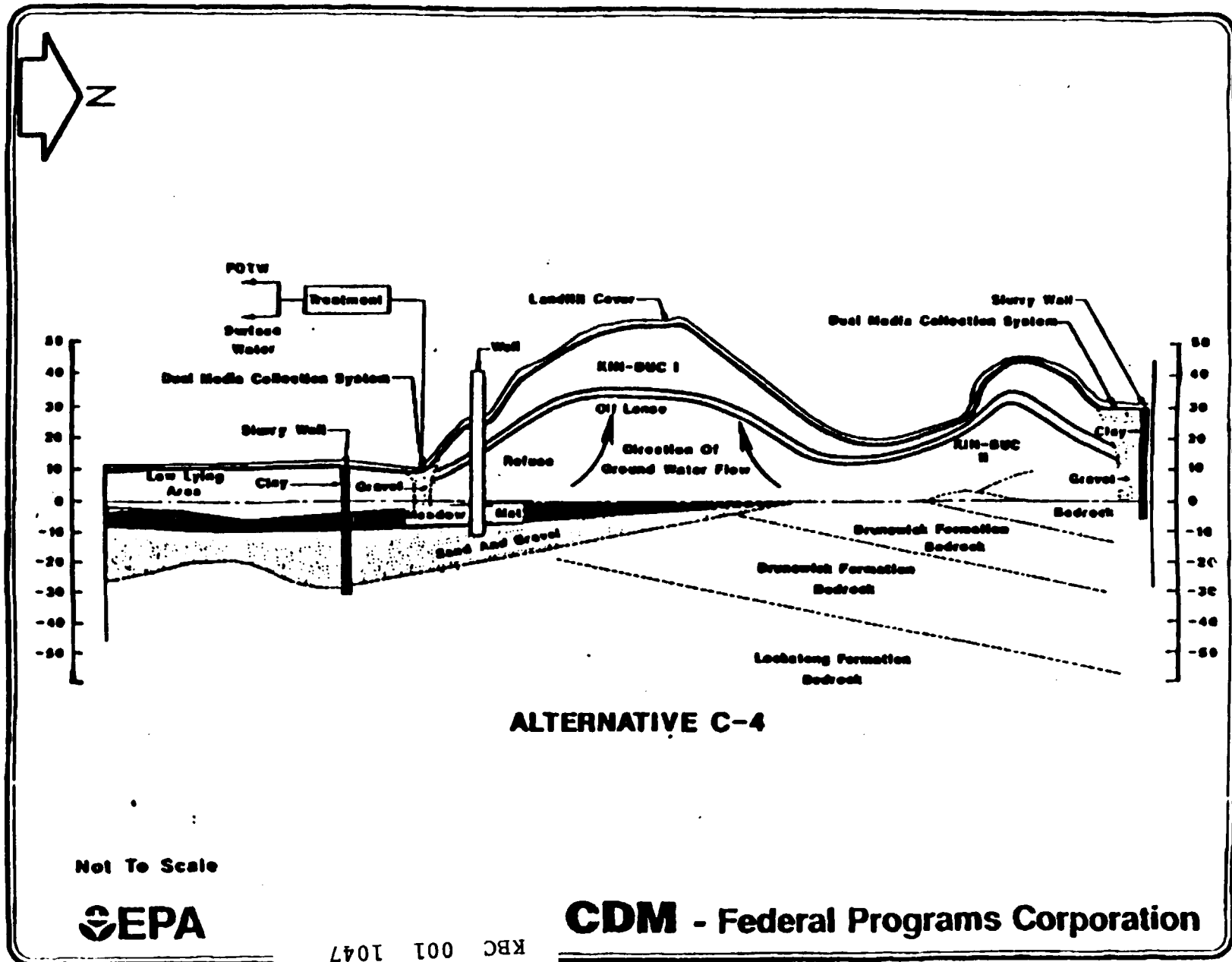
EPA has determined that a Supplemental Remedial Investigation will be required to adequately characterize the nature and extent of contamination from the components of Operable Unit II. Upon completion of the Supplement Remedial Investigation for Operable Unit II, an FS to develop and evaluate remedial alternatives will be conducted and the process will culminate in a subsequent ROD, which will document the selection of a remedy for management of migration of contaminants at the site. The process for selection of a remedy for Operable Unit II (Supplemental Remedial Investigation: FS, ROD) is expected to be completed in 1 and 1/2 to 2 years. Remedy selection for both Operable Units I and II is anticipated to result in total site remediation.

FIGURE 5



10-01-88 09:16 10:07 E 00 JF:DE TEL: 412-261-3135 FAX: 412-261-3135

FIGURE 6



The components of Operable Unit II are comprised of the following:

- Mound B
- Raritan River
- Mill Brook
- Martins Creek
- Edmonds Creek, including the connecting channel from Pool C
- adjacent wetlands
- groundwater contamination emanating from the site

The rationale for addressing each of the aforementioned components as part of Operable Unit II is provided in Appendix 5.

b. Source Control

- i. contaminated media and,
- ii. type and volume of waste

The total quantity of waste disposed of at Kin-Buc Landfill has not been definitively determined. EPA estimates that at least 70 million gallons of liquid waste, including 3 million gallons of oily waste, and over 1 million tons of solid waste were disposed of between 1973 and 1976. The type of waste disposed at the site was previously discussed in the Site History section of the ROD.

In addition to the Kin-Buc I and II mounds, the low-lying area between Kin-Buc I and the Edison Landfill is also refuse filled. Oily-phase leachate contaminated with PCBs has been detected in monitoring wells installed in this area.

Pool C is the most significant and obvious manifestation of both oily and aqueous phase leachate. It is adjacent to Kin-Buc I which is its' primary source of contamination. Pool C is the source of PCB contamination found in the sediments of Edmonds Creek.

Groundwater in the sand and gravel aquifer beneath and down-gradient of Kin-Buc I has been shown to be contaminated. Groundwater of the bedrock aquifer beneath the site could be potentially contaminated. The nature and extent of bedrock aquifer contamination is a component of Operable Unit II.

The selected remedy provides for collection and treatment of aqueous phase leachate, contaminated groundwater and oily phase leachate. A preliminary estimate of the volume of oily phase leachate to be collected and incinerated off-site is three million gallons. Preliminary estimates of the volume of aqueous

phase leachate and contaminated groundwater in the sand and gravel aquifer is as follows:

<u>Aqueous Phase Leachate</u> <u>(refuse layer)</u>		<u>Contaminated Groundwater</u> <u>(sand & gravel aquifer)</u>	
Short-term (gpd)	Long-term (gpd)	Short-term (gpd)	Long-term (gpd)
10,000	1,500	70,000	50,000
(yrs. 1-4)	(yrs. 5+)	(yrs. 1-5)	(yrs. 6+)

Therefore, the preliminary estimates of the volume of aqueous phase leachate plus contaminated groundwater from the sand and gravel aquifer to be handled by the on-site treatment system is equal to 80,000 gpd (years 1-5) and 61,500 gpd (years 5+). The significant difference between the short and long-term flows indicates the need for flexibility of operation in the treatment process ultimately utilized.

It should be emphasized that the flow values are preliminary estimates pending further treatability study work and additional subsurface investigations including evaluating the bedrock aquifer to determine its need for remediation. The conceptual treatment processes evaluated have been determined to be applicable for the aqueous phase leachate and contaminated groundwater. However, treatability study work on the various unit processes will be conducted and site specific discharge ARARS will be developed in conjunction with NJDEP to refine the operating parameters of the treatment system.

iii. treatment/residual levels

During development of the feasibility study, Federal and State ARARs as well as TBCs were evaluated for remediation of Operable Unit 1. Appendix 3 is a listing of Federal and State ARARs as well as TBCs for Operable Unit 1. A more detailed discussion of ARARs can be found in the subsequent portion of this document addressing consistency with other environmental laws.

The selected remedy entails collection and off-site incineration of oily-phase leachate. The oily-phase leachate has been shown, through sampling and analysis, to contain concentrations up to 5,822 ppm PCBs. Therefore, the incinerator utilized for the treatment of the oily-phase leachate must achieve a destruction and removal efficiency of 99.9999% according to RCRA Part 264, Subpart O, which discusses performance standards for incinerators.

Aqueous phase leachate and contaminated groundwater are to be collected, treated and discharged to surface water as part of the selected remedy. For purposes of the evaluation as part of the feasibility study, surface water quality criteria for an SEL

water (the surface water classification given to the Raritan River by the NJDEP) was utilized. These surface water quality criteria embodied in N.J.A.C. 7:9 - 4.1 et. seq. as well as wastewater discharge requirements provided in N.J.A.C. 7:9 - 5.1 et. seq. are the minimum treatment requirements for aqueous phase leachate and contaminated groundwater. Requirements of N.J.A.C. 7:9 - 4.1 et seq. and N.J.A.C. 7:9 - 5.1 et seq. are presented in Tables 3 and 4. Final site-specific discharge criteria will be established by NJDEP based on the results of treatability studies.

Sludges generated by the on-site treatment system for aqueous phase leachate and contaminated groundwater will be dewatered. The dewatered sludges are anticipated to be considered hazardous and therefore land disposal in a RCRA subtitle C facility would be required. However, the dewatered sludges will be subject to treatability studies to determine the potential for further reduction in toxicity, mobility and volume as well as to determine the optimal treatment and/or disposal option that is in accordance with RCRA and in an environmentally sound manner.

Any discharge into the air from the treatment of aqueous phase leachate and contaminated groundwater will require meeting the substantive requirements of N.J.A.C. 7:27-8.2.

The C4c alternative, which is the same as C4d except that aqueous phase leachate and contaminated groundwater would be pre-treated on-site and discharged to the MCUA POTW for final treatment, is an acceptable alternative provided approval to discharge is granted by the MCUA POTW. The typical reported discharge standards for the MCUA facility are:

- Total petroleum hydrocarbons less than 100 ppm
- PCB concentrations less than 1 ppm
- No hazardous vapors
- pH 6-9
- Possible restricted discharge times

NJDEP has established quality standards for leachates being discharged to POTWs. In addition to the basic MCUA discharge standards, NJDEP regulates total toxic organics, total toxic volatile organics and specific metals. Table 5 summarizes these quality standards. Final site-specific pre-treatment criteria for discharge to the MCUA POTW would be based on results of treatability studies and established by NJDEP and the MCUA. Approval to discharge to the POTW would have to be granted by the MCUA. Sludges generated by this on-site pre-treatment system for aqueous phase leachate and contaminated groundwater would be handled in the same manner as described for the on-site treatment and surface water discharge alternative.

TABLE 3

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
7:9-4.14(c) Surface Water Quality Criteria for
FW2, SE and SC Waters

(Expressed as maximum concentrations unless otherwise noted)

Substance	Criteria	Classifications
1. Bacterial quality (counts/100 ml)	i. Bacterial Indicators shall not exceed, in all shellfish waters, the standard for approved shellfish waters as established by the National Shellfish Sanitation Program as set forth in its current manual of operations. ii. Fecal Coliforms: (1) Fecal coliform levels shall not exceed exceed a geometric average of 200/100 ml nor should more than 10 percent of the total samples taken during and 30-day period exceed 400/100 ml. iii. Samples shall be obtained at sufficient frequencies and at locations during periods which will permit valid interpretation of laboratory analyses. As a guideline and for the purpose of these regulations, a minimum of five samples taken over a 30-day period should be collected, however, the number of samples, frequencies and locations will be determined by the department or other appropriate agency in any particular case.	Shellfish Waters FW2 (except as in (3) below), SE1, and SC 1500 feet to 3 miles from the shoreline. All Classifications

TABLE 3

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
7:9-4.14(c) Surface Water Quality Criteria for
FW2, SE and SC Waters

(Expressed as maximum concentrations unless otherwise noted)

Substance		
2. Dissolved oxygen (mg/l)	i. 24 hour average not less than 5.0, but not less than 4.0 at anytime (see paragraph viii below).	FW2-NT (except as in iv below), SE1
	viii. Supersaturated dissolved oxygen values shall be expressed as their corresponding 100 percent saturation values for purposes of calculating 24 hour averages.	FW2-TM, FW2-NT, SE1
3. Floating, colloidal, color and settleable solids; petroleum hydrocarbons and other oils and grease	i. None noticeable in the water or deposited along the shore or on the aquatic substate in quantities detrimental to the natural biota. None which would render the waters unsuitable for the designated uses.	All Classifications
	ii. For "Petroleum Hydrocarbons" the goal is none detectable utilizing the Federal EPA Environmental Monitoring and Support Laboratory Method (Freon Extractable - Silica Gel Adsorption - Infrared Measurement); the present criteria, however, are those of paragraph i. above.	All Classifications
4. pH (Standard Units)	i. 6.5-8.5	FW2, All SE

TABLE 3

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
7:9-4(c) Surface Water Quality Criteria for
FW2, SE and SC Waters

(Expressed as maximum concentrations unless otherwise noted)

Substance	Criteria	Classifications
6. Radioactivity	i. Prevailing regulations adopted by EPA pursuant to Secs. 1412, 1445 & 1450 of the Public Health Services Act, as amended by the Safe Drinking Water Act (PL 93-523).	All Classifications
7. Solids, Suspended (mg/l) [Non-filterable residue]	iii. None which would render the waters unsuitable for the designated uses.	All SE, SC
8. Solids, Total Dissolved [Filterable Residue] (mg/l)	ii. None which would render the water unsuitable for the designated uses.	All SE

TABLE 4

**STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NJAC 7:9-5.8 Minimum Treatment Requirements**

These minimum treatment requirements apply to all discharges, where effluent limitations based upon water quality studies acceptable to the Department have not been developed and are required by N.J.A.C. 7:9-4.5(e)4 or 4.6(a).

<u>Watershed</u>	<u>Classifications</u>	<u>BOD5 Removal*</u>	<u>BOD5 Maximum (mg/l)**</u>	<u>Discharge Type</u>
Raritan River Basin (including Raritan Bay and Sandy Hook Bay)	SE1	85	--	All

* Minimum percent reduction of BOD5 at all times including any four-hour period of a day when the strength of the wastes to be treated might be expected to or actually exceeds average conditions.

** Average over any four-hour period of a day, including periods when the strength of the wastes to be treated might be expected to or actually exceeds average conditions.

TABLE 5

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
QUALITY STANDARDS FOR
LEACHATE DISCHARGED TO POTW

	<u>Monthly Average</u>	<u>Daily Maximum</u>
<u>Total Toxic Organics*</u>	2.13 mg/l	--
<u>Total Toxic Volatile Organics</u>	0.1 Lb/Hr	--
Benzene (I.9.1)		
Carbon tetrachloride (I.12.4)		
Chloroform (I.12.3)		
Dioxane		
Ethylenimine (aziridine)		
Ethylene bromide (I.12.30)		
Ethylene dichloride (I.12.7), 1,2-dichloroethane		
Tetrachloroethane (I.12.10)		
Tetrachloroethylene (I.12.26)		
1,1,2 trichloroethane (I.12.9)		
Trichloroethylene (I.12.23)		
<u>Metals (ppb)</u>		
Cyanide	650	1,200
As	1,000	3,000
Cd	260	690
Cr	120	230
Cn	360	1,100
Pb	400	600
Ni	170	360
Zn	660	2,200
Cr ⁺⁶	60	110
Ag	240	430
Hg	48	--

*No PCB's, pesticides, insecticides

iv. estimated timeframe

Pre-design work including, but not limited to treatability studies and subsurface investigations are estimated to take 6 months to 1 year after the signing of the ROD. Design of the selected remedy is estimated to take 6 months to 1 year, but to a degree, can commence concurrently with pre-design work. The time required to construct the remedy is estimated to be 1 to 1 1/2 years. Therefore, the estimated timeframe for the selected remedy is 1 1/2 to 3 1/2 years.

B) STATUTORY DETERMINATIONS

1. Protectiveness

The selected remedy is protective of human health and the environment in that the source of groundwater contamination will be contained, thereby reducing lateral and vertical migration of aqueous phase leachate and contaminated groundwater. In addition, the collection and treatment of aqueous phase leachate and contaminated groundwater in the sand and gravel aquifer to meet surface water discharge criteria or alternatively criteria for discharge to the MCUA POTW will significantly reduce the toxicity and volume of contaminants in the groundwater and prevent further degradation of groundwater quality in the sand and gravel aquifer and potentially, the bedrock aquifer. The nature and extent of any bedrock aquifer contamination is a component of Operable Unit II. A determination of the need to remediate the bedrock aquifer will be made based on the RI/FS for Operable Unit II. However, the treatment system for Operable Unit I will be designed to consider the potential need to remediate groundwater in the bedrock aquifer.

The selected remedy mitigates the potential risk to public health by capping the Pool C environs (as well as Kin-Buc II and portions of the low-lying area between Kin-Buc I and the Edison Landfill), thereby preventing the uncontrolled release of contaminants to the air. Gas vents installed as part of the capping would be monitored in terms of the rate and composition of any airborne emissions and gases would be treated, if necessary. Meeting the substantive requirements of State air permits will be required for all landfill gas vents. In addition, the containment, collection and treatment of oily phase leachate (by off-site incineration) as well as aqueous phase leachate and contaminated groundwater (via onsite treatment and discharge to surface water or a POTW) reduces the mobility, toxicity and volume of contaminants which would be source of any air releases.

Workers who come in contact with oily phase leachate may be subject to a potential upperbound excess lifetime cancer risk that exceeds 10^{-6} , based on the concentration of PCBs in the leachate.

KBC 0 01 1056

This risk is primarily mitigated by the use of proper personal protection and strict adherence to health and safety protocols during any handling of oily phase leachate as part of the remedial action. Ultimately, collection and off-site incineration of oily phase leachate would remove the source of the potential risk to workers who would conduct long-term operation and maintenance at the site.

There is a potential risk from the consumption of aquatic life due to their bioaccumulation of PCBs. Estimates of the concentration of PCBs in the tissue of fish found in the Raritan River could be as high as 9 ppm, which exceeds the Food and Drug Administration limit of 2 ppm. Aquatic populations in the creeks adjacent to the site may be at risk due to chronic exposure to cadmium. The ongoing removal action has controlled the release of aqueous and oily phase leachate to the Raritan River and Edmonds Creek. The area had also been posted as a "No Fishing" area due to PCB contamination. The selected remedy will continue to control release of oily phase leachate as well as collect the material for off-site incineration. Removal and off-site incineration of oily phase leachate and collection and treatment of aqueous phase leachate and contaminated groundwater reduce the toxicity, mobility and volume of aqueous oily-phase leachate; thereby mitigating the risk to public health and the environment. During the Supplemental Remedial Investigation for Operable Unit II, impacts on surface water and sediments due to release of contaminants will be more fully evaluated.

Terrestrial populations, especially birds may be limited risk due to direct contact with leachate, predominately oily phase leachate. The capping of Pool C and its environs (the most overt manifestations of leachate) will preclude direct contact with leachate by terrestrial populations, especially birds, thereby mitigating the potential risk.

2. Consistency With Other Laws

During development of the feasibility study, applicable or relevant and appropriate requirements (ARARs) as well as TBCs were established for Operable Unit I site remediation based on current EPA guidance. Appendix 3 represents Federal and State ARARs and TBCs as well as their potential applicability to the selected remedy.

Applicable requirements are defined as those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance at a CERCLA site.

Relevant and appropriate requirements are defined as those cleanup standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location or other circum-

stances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site.

Non-promulgated advisories or guidance documents issued by Federal or State governments do not have the status of potential ARARs. However, they may be considered in determining the necessary level of cleanup for protection of public health and the environment.

There are several different types of requirements that Superfund actions may have to comply with. The classification of ARARs is presented below:

Location-specific requirements are restrictions on activities depending on the site or its immediate environs. As presented in Appendix 3, location specific requirements with regard to Kin-Buc Landfill-Operable Unit I pertain to portions of the site within a 100-year floodplain and within a coastal zone. Location-specific ARAR requirements are expected to be met by the selected remedy.

Action-specific requirements set controls or restrictions on particular kinds of activities related to management of hazardous substances, pollutants or contaminants. These requirements are triggered by the remedial activities selected to accomplish a remedy. Action-specific requirements may specify particular performance levels, actions or technologies, as well as specific levels (or a methodology for setting specific levels) for discharged or residual chemicals. As presented in Appendix 3, action-specific Federal and State requirements as well as TBCs pertain predominately to requirements under RCRA and the Clean Water Act and are expected to be met.

Chemical-specific requirements are usually health or risk-based concentration limits or ranges in various environmental media for specific hazardous substances, pollutants or contaminants. These requirements can indicate an acceptable level of discharge (e.g. air emission or wastewater discharge taking into account water quality standards) where one occurs in a remedial activity. Aqueous phase leachate and contaminated groundwater are to be collected, treated and discharged to surface water as part of the selected remedy for Operable Unit I.

With respect to capping the Kin-Buc site, EPA has selected a remedy which requires maintenance, and upgrading if necessary, of the Kin-Buc I cap and installation of a cap in accordance with RCRA Subtitle C and State requirements on Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C.

NJDEP has utilized the Federal RCRA guidance documents to develop design specifications for capping hazardous waste landfills and codified them into their hazardous waste landfill regulations. Therefore, cap design specifications contained in NJDEP's hazardous waste regulations are ARARs and must be met.

The existing cap design on Kin-Buc I was installed in 1980 as part of a partial stipulation under a Federal enforcement action. This cap meets performance criteria of RCRA Subtitle C requirements, assuming the integrity of the existing Kin-Buc I cap is verified during the Supplemental Remedial Investigation for Operable Unit II. For this reason, EPA does not believe that application of the State requirements to the Kin-Buc I cap is appropriate at this time. The continued maintenance, and upgrading if necessary, for the Kin-Buc I cap is the selected capping remedy for Kin-Buc I. However, Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C must be capped in accordance with RCRA Subtitle C and State requirements.

For purposes of the evaluation of alternatives in the feasibility study, surface water quality criteria for an SE1 water (the surface water classification given to the Raritan River by NJDEP) was utilized. These surface water quality criteria provided in N.J.A.C. 7:9-4. et seq. as well as waste water discharge requirements proved in N.J.A.C. 7:9-5.1 et seq. are the minimum treatment requirements for aqueous phase leachate and contaminated groundwater (see Tables 3 and 4 which present surface water quality criteria and wastewater discharge requirements respectively). Final site-specific discharge ARARs will be established by NJDEP based on treatability studies and are expected to be met by the selected remedy.

In the event that MCUA grants approval to discharge to their POTW, the quality standards for leachates being discharged to POTWs established by NJDEP in addition to MCUA's basic discharge standards would be the minimum requirements pending final site-specific pre-treatment criteria. Site-specific pre-treatment criteria for discharge to the MCUA POTW would be based on the results of treatability studies and established by NJDEP and the MCUA and are expected to be met by the selected remedy.

Finally, Title 7, Chapter 27, Subchapter 8 of the New Jersey Administrative Code describes general provisions required for landfill vents. The substantive requirements for air permits for landfill gas vents would be met. Upon installation of gas vents as part of the remedy, the rate and compositions of any volatile organic compounds emitted would be evaluated to determine the need for any chemical-specific requirements. The selected remedy is expected to meet those requirements.

3. Cost-Effectiveness

After careful consideration of all reasonable alternatives, EPA selected Alternative C4d for the remediation of Kin-Buc Landfill Operable Unit I. However, the C4c alternative, which is the same as C4d except for on-site aqueous phase leachate and contaminated groundwater pre-treatment with discharge to the MCUA POTW is an acceptable alternative which can be implemented should approval to discharge be obtained from the MCUA. The selected remedy was determined to provide the greatest overall effectiveness proportionate to its costs.

4. Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

This section provides the overall rationale for remedy selection, that is, how the remedy was judged to provide the best balance of trade-offs among the alternatives examined in detail. It also discusses the alternatives' utilization of permanent solutions and treatment to the maximum extent practicable.

Alternative A - No Further Action With Monitoring

This alternative was eliminated since no further action would allow for the continued uncontrolled release of hazardous substances into the environment, would not mitigate the potential public health and environmental risks posed by the site and would not provide control or adequate removal of the source of contamination. Therefore, this alternative would not utilize permanent solutions or treatment to the maximum extent practicable.

Alternatives C3a-d -- slurry wall installation to bedrock in the northern portion of the site and to the meadow marsh mat in the southern portion of the site, collection of oily-phase leachate for off-site incineration, collection and treatment of aqueous phase leachate, capping, periodic monitoring, operation & maintenance

These alternatives were eliminated because slurry wall installation to the meadow marsh mat in the southern portion of the site would not provide adequate source control. Contaminants would continue to be released to the sand and gravel aquifer; contaminated groundwater would not be collected or treated as part of these alternatives to the degree necessary. Hence, the potential for downward migration of contaminants into the bedrock aquifer and lateral migration of contaminants into the surrounding environment, including adjacent surface waters, would not be controlled. Additionally, Alternatives C3a and C3b do not provide for a cap on Kin-Buc II, Pool C and the low-lying area between Kin-Buc I and the Edison Landfill which would be in compliance with ARARs.

Therefore, uncontrolled releases of hazardous substances into the environment would occur, compliance with ARARs would not be achieved, there would not be utilization of permanent solutions and treatment to the maximum extent practicable. and the potential public health and environmental risks posed by the site may not be adequately mitigated.

Alternatives C4a and C4b - slurry wall installation to bedrock on all sides, collection of oily-phase leachate for off-site incineration, collection and treatment of aqueous-phase leachate and groundwater, existing cap design on Kin-Buc I extended to Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill and Pool C, periodic monitoring, operation & maintenance

These two alternatives were eliminated, because the cap would not be in compliance with ARARs.

Alternative D - Complete Waste Excavation for Off-Site Incineration

Utilization of permanent solutions and treatment would be to the maximum extent practicable. However, this alternative was eliminated because of the significant short-term risks posed to workers who would be remediating the site and nearby residents during implementation of this alternative. In addition, there are significant technical complexities (e.g. on-site space constraints, sequencing of operators) associated with a waste excavation of this magnitude.

If a single incinerator was capable or dedicating itself to the destruction of Kin-Buc wastes (unlikely), there does not appear to be an incinerator in the country that is large enough to handle the disposal of wastes from Kin-Buc within a reasonable time period. If the largest incinerator were capable of dedicating itself to incinerating Kin-Buc wastes, it is estimated that may take at least 35 years to complete incineration of the excavated wastes from the site.

5. Preference for Treatment as a Principal Element

The selected remedy satisfies the statutory preference for treatment as a principal element for remediation of the source of contamination.

To date, approximately 26,000 gallons of oily-phase leachate has been collected and incinerated off-site via a passive system. Oily-phase leachate, containing PCBs, will be actively collected and incinerated off-site. Containment, capping, active collection and treatment by off-site incineration of this material will significantly reduce its toxicity, mobility and volume. The

public health threat that the continued release of oily-phase leachate poses via potential exposure through direct contact, bioaccumulation or air, and the environmental threat posed via potential exposure through direct contact to animal and/or bird populations, bioaccumulation, surface water as well as continued degradation of the surrounding wetlands is mitigated. Contamination that has migrated beyond the source control area determined for Operable Unit I will be addressed in Operable Unit II.

To date, approximately 1.4 million gallons of aqueous phase leachate has been collected utilizing a passive collection system. Aqueous-phase leachate and contaminated groundwater will be actively collected and treated on-site for discharge to surface water (or alternatively, pre-treated and discharged to the MCUA POTW). Containment, active collection and treatment (whether entirely on-site or by the POTW) of this material will result in a significant reduction in its toxicity, mobility and volume. The potential public health and/or environmental threats posed by the continued release and aqueous-phase leachate and potential exposure through groundwater, surface water, air and direct contact will be mitigated. The selected remedy was determined to be the most appropriate solution for the site. It represents the best combination of the remedial evaluation criteria to achieve a preference for treatment to the maximum extent practicable. Alternative C4d best addresses public health and environmental concerns, compliance with ARARs, technical performance and cost-effectiveness.

KBC 001 1062

APPENDIX 1
Kin-Buc Ground-Water Monitoring Wells
Screened In Sand and Gravel^a
Sheet 1 of 3

<u>Element/Compound</u>	<u>Frequency of Detection</u>	<u>Minimum (ppm)</u>	<u>Maximum (ppm)</u>	<u>Geometric Mean^b (ppm)</u>
Ammonium Nitrogen	16/16	0.39	122.6	7.38
BOD	10/10	1.00	1,106.0	106.0
COD	12/12	1.00	727.0	340.0
Chloride	13/13	60.5	4,750.0	1853.8
Cyanide (total)	27/27	<0.001 ^c	0.5	0.012
Dissolved Solids	16/16	140	10,360.0	4928.0
Fluoride	1/1	2.10	2.10	2.10
Kjeldahl Nitrogen	4/4	13.3	96.50	39.2
Nitrate	13/13	0.07	2.43	0.37
Oil & Grease	9/9	<1.0	5.0	3.2
Organic Nitrogen	13/13	<0.1	23.4	3.1
Sulfate	8/8	36.2	300.0	169.0
Suspended Solids	5/5	67.0	7,640.0	822.0
TOC	17/17	1.7	1,100.0	75.9
Aluminum	13/13	0.064	21.6	0.977
Antimony	17/24	ND	2.0	0.093
Arsenic	33/34	ND	0.22	0.018
Barium	17/17	0.1	5.40	0.767
Beryllium	17/24	ND	0.026	0.006
Cadmium	26/29	ND	0.02	0.008
Chromium	24/34	ND	0.640	0.022
Cobalt	5/8	ND	0.073	0.031
Copper	23/34	ND	0.58	0.039
Iron	15/15	<0.1	582.0	10.740
Lead	35/45	ND	2.7	0.021
Manganese	14/14	0.470	13.5	1.489
Mercury	17/24	ND	0.0132	0.0004
Nickel	24/29	ND	0.48	0.093
Selenium	18/29	ND	0.021	0.005
Silver	14/20	ND	0.029	0.009
Thallium	20/29	ND	0.2	0.016
Tin	4/8	ND	0.083	0.041
Vanadium	3/8	ND	0.08	0.050
Zinc	45/45	0.01	137.0	0.506

— APPENDIX 1
 Analytical Results From
 Kin-Buc Ground-Water Monitoring Wells
 Screened In Sand and Gravel*

Sheet 2 of 3

<u>Element/Compound</u>	<u>Frequency of Detection</u>	<u>Minimum (ppm)</u>	<u>Maximum (ppm)</u>	<u>Geometric Mean^b (ppm)</u>
Acetone	2/34	ND	840.0	0.015
Benzene	40/78	ND	21.0	0.015
Benzoic Acid	1/33	ND	0.2	0.057
Bis (2-chloroethyl) ether	1/49	ND	0.005	0.010
Bis (2-ethylhexyl) phthalate	18/54	ND	3.40	0.021
Bromodichloromethane	1/44	ND	0.033	0.005
2-Butanone	1/33	ND	340.0	0.014
Butyl benzyl phthalate	6/53	ND	0.058	0.011
Chlorobenzene	23/74	ND	12.6	0.009
Chloroethane	10/73	ND	0.111	0.011
Chloroform	7/52	ND	0.170	0.005
p-Chloro-m-cresol	2/44	ND	0.01	0.010
4,4-DDD	1/55	ND	<0.01 *	0.0001
1,2-Dichlorobenzene	3/57	ND	0.085	0.010
1,1-Dichloroethane	8/74	ND	0.071	0.006
1,2-Dichloroethane	5/74	ND	0.660	0.006
1,1-Dichloroethene	4/52	ND	0.016	0.005
Diethyl phthalate	8/55	ND	0.340	0.010
2,4-Dimethyl phenol	1/4	ND	0.015	0.015
Di-n-butyl phthalate	20/54	ND	0.170	0.010
Di-n-octyl phthalate	15/53	ND	0.018	0.010
Ethylbenzene	20/72	ND	2.80	0.010
Methylene chloride	30/71	ND	0.370	0.010
4-Methyl-2-pentanone	1/28	ND	98.0	0.010
Naphthalene	5/57	ND	0.210	0.010
n-Nitrosodiphenylamine	1/47	ND	0.0053	0.010
PCB: Total	1/4	ND	0.116	0.002

APPENDIX 1
Analytical Results From
Kin-Buc Ground-Water Monitoring Wells
Screened In Sand and Gravel^a

Sheet 3 of 3

<u>Element/Compound</u>	<u>Frequency of Detection</u>	<u>Minimum (ppm)</u>	<u>Maximum (ppm)</u>	<u>Geometric Mean^b (ppm)</u>
Phenols (total)	31/40	ND	103	0.040
Tetrachloroethene	19/80	ND	1.80	0.009
Toluene	34/77	ND	42.0	0.008
trans-1,2-dichloroethene	14/71	ND	5.40	0.007
1,1,1-Trichloroethane	1/56	ND	0.56	0.005
Trichloroethene	10/78	ND	2.0	0.007
Vinyl chloride	6/74	ND	0.19	0.010
Xylene	10/23	ND	0.016	0.005
o-Xylene	4/29	ND	1.60	0.007

Notes: Data compiled from sources listed in Appendix B

ND = Not detected

- The wells included in this summary are those of the KINWT, GEI, (except wells 9R and 12WR) and NJDEP (Wells 5 and 6) series.
- Section 1.3.2 describes the procedures used to calculate the geometric means.
- Detected at concentrations less than the detection limit

KBC 001 1065

Screened in Bedouk/Brunswick shale
Upgradient and Downgradient Ground-Water Analysis
Sheet 1 of 2

Element/Compound	Frequency of Detection	Upgradient Wells ^a			Frequency of Detection	Downgradient Wells ^b		
		Minimum (ppm)	Maximum (ppm)	Mean (ppm)		Minimum (ppm)	Maximum (ppm)	Mean (ppm)
OD	7/7	1	31	7.0	5/5	1	35	3.0
OD	10/10	2.0	65	7.0	6/6	1	430	22.0
Chloride	9/9	0.9	14	4.0	5/5	7.4	23	11.3
Cyanide (total)	4/4	0.005	<0.01 ^c	0.005	4/4	<0.005 ^c	0.040	0.04
Dissolved Solid	0/0	04	170	136.0	5/5	212	315	256.0
Fluoride	1/1	0.3	0.3	0.3	0/0	d	d	--
Nitrate	4/4	0.1	0.27	0.16	3/3	0.08	0.35	0.21
Sulfate	4/4	11	20	17.0	3/3	10	116	47.0
DOC	2/2	1.7	4.7	2.8	1/1	4.4	4.4	4.4
Aluminum	2/2	0.112	0.660	0.270	1/1	0.310	0.310	0.310
Antimony	2/4	ND	<0.20	0.040	1/2	ND	<0.200	0.040
Arsenic	7/8	ND	0.013	0.000	7/7	0.002	0.015	0.000
Boron	3/4	ND	0.15	0.154	3/3	0.130	0.200	0.170
Beryllium	3/4	ND	0.0014	0.004	1/2	ND	<0.02	0.005
Cadmium	7/8	ND	0.01	0.006	3/5	<0.01	0.062	0.011
Chromium	6/8	ND	0.01	0.010	3/7	ND	<0.02	0.000
Cobalt	0/2	ND	ND	--	1/1	0.011	0.011	0.011
Copper	6/8	ND	0.035	0.036	6/7	ND	0.090	0.036
Iron	10/10	0.20	15.5	1.930	0/6	0.026	06.0	3.1

Summary of Monitoring Wells
 Screened in Bedrock/Brunswick Shale
 Upgradient and Downgradient Well Analysis
 Sheet 2 of 2

Element/Compound	Upgradient Wells ^a				Downgradient Wells ^b			
	Frequency of Detection	Minimum (ppm)	Maximum (ppm)	Mean (ppm)	Frequency of Detection	Minimum (ppm)	Maximum (ppm)	Mean (ppm)
Lead	8/8	0.007	0.070	0.015	5/7	ND	0.210	0.14
Manganese	4/6	0.1	0.4	0.180	3/3	0.2	2.74	0.60
Mercury	2/4	ND	<0.0005	0.0002	1/2	ND	0.0017	0.0006
Nickel	4/4	<0.02	0.170	0.054	3/4	ND	0.150	0.062
Selenium	4/8	ND	<0.020	0.005	4/7	ND	0.0009	0.005
Silver	4/6	ND	0.025	0.014	3/4	ND	0.05	0.019
Thallium	2/4	ND	<0.20	0.010	4/5	ND	0.20	0.020
Tin	0/2	ND	ND	--	1/1	0.012	0.012	0.012
Vanadium	1/2	ND	0.050	0.050	0/1	ND	ND	--
Zinc	8/8	<0.05	0.250	0.006	7/7	<0.04	0.25	0.120
Benzene	0/4	ND	ND	--	1/5	ND	<0.010 ^c	0.005
Chloroethane	0/4	ND	ND	--	1/5	ND	<0.010	0.010
1,1-Dichloroethane	0/4	ND	ND	--	2/5	ND	0.070	0.009
Ethyl benzene	0/4	ND	ND	--	1/5	ND	<0.010	0.005
Nethylene chloride	1/4	ND	1.3	0.020	3/5	ND	0.041	0.010
Phenols (total)	0/10	ND	0.0074	0.004	7/9	ND	2.43	0.010
Tetrachloroethane	0/2	ND	ND	--	2/5	ND	<0.010	0.005
Toluene	0/4	ND	ND	--	2/5	ND	<0.005	0.005
Trichloroethane	0/4	ND	ND	--	1/5	ND	<0.010	0.005

Notes:

Data compiled from sources listed in Appendix B

ND = Not detected

-- = Unable to calculate

^a Upgradient wells screened in bedrock are MW-1 and MW-2

^b Downgradient wells screened in bedrock are MW-3, MW-4, MW-5, OEI-9R, and OEI-12R

^c Detected at concentrations less than the method detection limit

^d Test not performed

APPENDIX 3
LOCATION SPECIFIC FEDERAL ARARS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

LOCATION	REQUIREMENT	Prerequisite(s)	Citation	Potential Applicability
Within 100-year floodplain	Facility must be designed, constructed, operated, and maintained to avoid washout	RCRA hazardous waste; treatment, storage, or disposal	40 CFR 264.18(b)	"Relevant and Appropriate" Alternatives, C3,, C4 and D, as it pertains to portions of the site which may be within the 100-year floodplain.
Within floodplain	Action to avoid adverse effects, minimize potential harm, restore and preserve natural and beneficial values	Action that will occur in a floodplain, i.e., lowlands, and relatively flat areas adjoining inland and coastal waters and other flood prone areas	Executive Order 11988, Protection of Floodplains, (40 CFR 6, Appendix A)	"Applicable" to Alternatives C3, C4 and D as it pertains to portions of the site which may be within floodplains.
Within coastal zone	Conduct activities in manner consistent with approved State management programs	Activities affecting the coastal zone including lands thereunder and adjacent shorelands	Coastal Zone Management Act (16.U.S.C. Section 1451 <u>et seq.</u>)	"Applicable" to Alternatives C3, C4 and D.

APPENDIX 3
ACTION SPECIFIC FEDERAL ARARSS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirement	Prerequisite(s)	Citation	Potential Applicability
Air Stripping	Proposed standards for control of emissions of volatile organics.	Proposed standard, to be considered	52 FR 3748 (February 5, 1987)	Proposed standard, not yet a ARAR but may be "applicable" in the future to Alternative C3 and C4 as it pertains to possible on-site aqueous air stripping pretreatment prior to off-site disposal.
Capping	Placement of a cap over waste (e.g., closing a landfill, or closing a surface impoundment or waste pile as a landfill, or similar action) requires a cover designed and constructed to: • Provide long-term minimization migration of liquids through the capped area • Function with minimum maintenance • Promote drainage and minimize erosion or abrasion of the cover • Accommodate settling and subsidence so that the cover's integrity is maintained • Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present. Restrict post-closure use of property as necessary to prevent damage to the cover. Prevent run-on and run-off from damaging cover. Protect and maintain surveyed benchmarks used to locate waste cells (landfills, waste piles).	Disturbance of hazardous waste and movement of it outside the unit or area of contamination will make requirements applicable; capping without disturbance will not make requirements applicable, but technical requirements are likely to be relevant and appropriate.	40 CFR 264.301(a) (Landfills) 40 CFR 264.117(c) (Closure and Post-Closure) 40 CFR 264.310(b)	"Relevant and Appropriate" to Alternatives C3 and C4.

APPENDIX
ACTION SPECIFIC FEDERAL ARARS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirement	Prerequisite(s)	Citation	Potential Applicability
Consolidation	Area from which materials are removed should be cleaned up. Consolidation in storage piles/storage tanks will trigger storage requirements	Disposal by disturbance of hazardous waste (listed or characteristic) and moving it outside unit or boundary of contaminated area.	See closure See Container Storage, Tank Storage, Waste Piles in this Exhibit.	"Applicable" to Alternative D if it is necessary for any reason to construct waste piles/storage tanks, etc. on-site to contain excavated wastes prior to off-site disposal.
Container Storage (On-Site)	Containers of hazardous waste must be: • Maintained in good condition • Compatible with hazardous waste to be stored; and • Closed during storage (except to add or remove waste). Inspect container storage areas weekly for deterioration. Place containers on a sloped, crack-free base, and protect from contact with accumulated liquid. Provide containment system with a capacity of 10% of the volume of containers of free liquids. Remove spilled or leaked waste in a timely manner to prevent overflow of the containment system. Keep containers of ignitable or reactive waste at least 50 feet from the facility's property line. Keep incompatible materials separate. Separate incompatible materials stored near each other by a dike or other barrier.	RCRA waste (listed or characteristic, held for a temporary period before treatment, disposal, or storage elsewhere, (40 CFR 264.10) in a container (i.e., any portable device in which a material is stored transported, disposed of, or handled (40 CFR 264.10)	All citations pertain to use and management of containers. 40 CFR 264.172 40 CFR 40 CFR 264.174 40 CFR 264.175 40 CFR 264.176 40 CFR 264.177	Applicable to Alternative D as it pertains to the used and management of containers used for excavated waste.

APPENDIX J
ACTION SPECIFIC FEDERAL ARARS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirement	Prerequisite(s)	Citation	Potential Applicability
Clean Closure Removal)	General performance standard requires minimization of need for further maintenance and control; minimization or elimination of post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products. Disposal or decontamination of equipment, structures, and soils.	Disturbance of RCRA hazardous waste (listed or characteristic) placed at site after November 19, 1980 and movement outside the unit or area of contamination. May apply to surface impoundment; contaminated soil, including soil from dredging or soil disturbed in the course of drilling, or excavation, and returned to land.	40 CFRA 264.111 (Closure and Post-Closure Performance Standard)	"Relevant and Appropriate" to Alternative D.
	Removal or decontamination of all waste residues, contaminated containment system components (e.g. liners, dikes), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and management of them as hazardous waste.	Not applicable to undisturbed material.	40 CFR 264.228 (a)(1) (Surface Impoundments-Closure and Post-Closure Care), and 40 CFR 264.258 (Waste Piles-Closure and Post-Closure Care)	"Applicable" to Alternative D if it is necessary for any reason to construct a surface impoundment or waste pile on-site to contain excavated wastes prior to off-site disposal, and "Applicable" to Alternatives C3 and C4 if a surface impoundment is constructed on-site as part of aqueous pretreatment prior to off-site disposal.
	Meet health-based levels at unit.	Disposal of RCRA hazardous waste (listed or characteristic) placed at site after November 19, 1980 after disturbance and movement outside the unit or area of contamination.	40 CFR 264.111	"Relevant and Appropriate" to Alternative D.

APPENDIX 3
ACTION SPECIFIC FEDERAL ARARS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirements	Prerequisite(s)	Citation	Potential Applicability
Closure with Waste in Place (Capping)	Installation of final cover to provide long-term minimization of infiltration. Post-closure care and groundwater monitoring.	Prerequisite same as for capping.	40 CFR 264.310 (Landfills)	"Relevant and Appropriate" to Alternatives and C3 and C4.
Closure with Waste in Place (Hybrid Closure)	Removal of majority of contaminated materials. Application of cover and post-closure monitoring based on exposure pathway(s) of concern.	Proposed rule, to be considered.	52 FR 8712 (March 19, 1987)	"Relevant and Appropriate" to Alternative D if for some reason a portion of the contaminated waste/soils are left in place (i.e., not excavated and removed).
Dike Stabilization	Design and operate facility to prevent overtopping due to overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error. Construct dikes with sufficient strength to prevent massive failure. Inspect liners and cover systems during and after construction. Inspect weekly for proper operation and integrity of the containment devices. Remove surface impoundment from operation if the dike leaks or there is a sudden drop in liquid levels. At closure, remove or decontaminate all waste residues and contaminated materials. Otherwise, free liquids must be removed, the remaining wastes stabilized, and the facility closed in the same manner as a landfill. Manage ignitable or reactive wastes so that it is protected from materials or conditions that may cause it to ignite or react.	Existing surface impoundment containing hazardous waste, or creation of new surface impoundment.	40 CFR 264.221 (Surface impoundment) 40 CFR 264.226 (Surface impoundment) 40 CFR 264.226 40 CFR 264.227 (Surface impoundment) 40 CFR 264.228 (Surface impoundment) 40 CFR 264.227	"Applicable" to Alternatives C3 and C4 if a surface impoundment is constructed on-site as part of aqueous pretreatment prior to off-site disposal. Also "Applicable" to Alternative D if it is necessary for any reason to construct a surface impoundment on-site to contain excavated wastes prior to off-site disposal.

ION OF THE FEDERAL BUREAU OF INVESTIGATION
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirement	Prerequisite(s)	Citation	Potential Applicability
Direct discharge of treatment system effluent	Use of best available technology (BAT) economically achievable is required to control toxic and nonconventional pollutants. Use of best conventional pollutants control technology (BCT) is required to control conventional pollutants. Technology-based limitations may be determined on a case-by-case basis.		40 CFR 122.44(a)	"Applicable" to Alternatives C3 and C4 as it pertains to possible on-site treatment with direct surface water discharge.
	Applicable Federally approved State water quality standards must be complied with. These standards may be in addition to or more stringent than other Federal standards under the CWA.		40 CFR 122.44 and State regulations approved under 40 CFR 131	
	Applicable Federal water quality criteria for the protection of aquatic life must be complied with when environmental factors are being considered.		40 CFR 122.44(d)	
	The discharge must conform to applicable water quality requirements when the discharge affects state other than the certifying state.			
	The discharge must be consistent with the requirements of a Water Quality Management plan approved by EPA water (WA §208(6)).			
	Discharge limitations must be established for all toxic pollutants that are or may be discharged at levels greater than that which can be achieved by technology-based standards.		40 CFR 122.44(e)	
	Develop and implement a BMP program and incorporate in the NPDES permit to prevent the release of toxic constituents to surface waters.		40 CFR 125.100	

Requirement	Prerequisite(s)	Citation	Potential Applicability
The BMP Program must:		40 CFR 125.104	
• Establish specific procedures for the control of toxic and hazardous pollutant spills			
• Include a prediction of direction, rate of flow, and total quantity of toxic pollutants where experience indicates a reasonable potential for equipment failure.			
• Assure proper management of solid and hazardous waste in accordance with regulations promulgated under RCRA.			
Discharge must be monitored to assure compliance. Discharge will monitor:			
• The mass of each pollutant			
• The volume of effluent		40 CFR 122.44(i)	
• Frequency of discharge and other measurements as appropriate			
Approved test methods for waste constituents to be monitored must be followed. Detailed requirements for analytical procedures and quality controls are provided.			
Sample preservation procedures, container materials, and maximum allowable holding times are prescribed.		40 CFR 136.1 - 136.4	
Permit application information must be submitted including a description of activities, listings of environmental permits, etc.	On site discharge surface waters must meet substantive NPDES permit requirements.	40 CFR 122.21	
Monitor and report results as required by permit (minimum of at least annually)		40 CFR 122.44(i)	

APPENDIX 3
ACTION SPECIFIC FEDERAL ARARS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirements	Prerequisite(s)	Citation	Potential Applicability
	Comply with additional permit conditions such as: • Duty to mitigate any adverse effects of any; discharge; and • Proper operation and maintenance of treatment systems.		40 CFR 122.41(i)	
Discharge to POTW ^a	Pollutants that pass through the POTW without treatment, interfere with POTW operation, or contaminate POTW sludge are prohibited. Specific prohibitions preclude the discharge of pollutants to POTWs that • Create a fire or explosion hazard in the POTW; are corrosive (pH5.0) • Obstruct flow resulting in interference • Are discharged at a flow rate and/or concentration that will result in interference • Increase the temperature of wastewater entering the treatment plant that would result in interference, but in no case raise the POTW influent temperature above 104°F). • Discharge must comply with local POTW pretreatment program, including POTW-specific pollutants, spill prevention program requirements, and reporting and monitoring requirements;		40 CFR 403.5 (Part 403-General Pretreatment Regulations for Existing and New Sources of Pollution. Section 5-National Pretreatment Standards; Prohibited Discharges.) 40 CFR 403.5 and local POTW regulations.	"Applicable" to Alternative C3 and C4 as it pertains to discharge of aqueous to a POTW treatment facility.

ACTION SPECIFIC FEDERAL ARAIS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirement	Prerequisite(s)	Citation	Potential Applicability
	RCRA permit-by-rule requirements must be compiled with for discharges of RCRA hazardous wastes to POTWs by truck, rail, or dedicated pipe.		40 CFR 264.71 and 264.72 (Manifest System, Record-keeping and Reporting).	
Excavation	Area from which materials are excavated may require cleanup to levels established by closure requirements.	Disposal by disturbance of hazardous waste and moving it outside the unit or area of contamination.	See Closure in this Exhibit (i.e., 40 CFR 264.111 closure performance standard, and 52 FR 8712, March 19, 1987).	Not considered to be "Applicable" (as it pertains to RCRA hazardous waste placed at the site after November 19, 1980), however, is "relevant and appropriate" to Alternative D.
Operation and Maintenance	Post-closure to ensure that site is maintained and monitored.		40 CFR 264.1 (Closure and Post Closure)	"Relevant and Appropriate" to Alternatives C3 and C4.
Surface Water Control	Prevent run-on and control and collect run-off from a 24-hour, 25-year storm (waste piles, land treatment facilities, landfills). Prevent overtopping of surface impoundment.		40 CFR 264.301(c).(d) 40 CFR 264.251(c).(d) 40 CFR 264.221(c)	"Relevant and Appropriate" to Alternatives C3 and C4. "Applicable" to Alternative D if it is necessary for any reason to construct a waste pile on-site to contain excavated wastes prior to off-site disposal. "Applicable" to Alternatives C3 and C4 if a surface impoundment is constructed on-site as part of aqueous pretreatment prior to off-site disposal. "Applicable" to Alternative D if it is necessary for any reason to construct a surface impoundment on-site to contain excavated wastes prior to off-site disposal.

APPENDIX 3
ACTION SPECIFIC FEDERAL ARARS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirement	Prerequisite(s)	Citation	Potential Applicability
Treatment	Proposed standards for miscellaneous units (long-term retrievable storage, thermal treatment other than incinerators, open burning, open detonation, chemical, physical, and biological treatment units using other than tanks, surface impoundments, or land treatment units) require new miscellaneous units to satisfy environmental performance standards by protection groundwater, surface water, and air quality, and by limiting surface and subsurface migration.	Proposed standard; to be considered	50 FR 40726 (November 7, 1986) 40 CFR 264 (Subpart X)	Proposed standard, to be considered but may be "applicable" in the future to Alternatives C3 and C4 as it pertains to on-site pretreatment of aqueous.

AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

ACTION	REQUIREMENT	Perequisite(s)	Citation	Potential Applicability
Consider Storage (On-Site) cont.	At closure, remove all hazardous waste and residues from the containment system, and decontaminate or remove all containers, liners.	See Previous Page	40 CFR 264.178	See Previous Page
Containment (Construction of New Surface Impoundment (On-Site) (See Closure with Waste in Place and Clean Closure)	Use two liners, a top liner that prevents waste migration into the liner and a bottom liner that prevents waste migration through the liner throughout the post-closure period. Design liners to prevent failure due to pressure gradients, contact with the waste, climatic conditions, and the stress of installation and daily operations. Provide leachate collection system between the two liners. Use leak detection system that will detect leaks at the earliest possible time.	RCRA hazardous waste (listed or characteristic) currently being placed in a surface impoundment.	40 CFR 264.220 (Surface Impoundments) 40 CFR 264.221 (Surface Impoundments)	"Applicable" to Alternatives C3 and C4 if a surface impoundment is constructed on-site as part of aqueous pretreatment prior to off-site disposal, and "applicable" to Alternative D if it is necessary for any reason to construct a surface impoundment on site to contain excavated wastes prior to off-site disposal.
Tank Storage (On-Site)	Tanks must have sufficient shell strength (thickness), and for closed tanks, pressure controls, to assure that they do not collapse or rupture. Waste must not be incompatible with the tank material unless the tank is protected by a liner or by other means. Tanks must be provided with controls to prevent overfilling, and sufficient freeboard maintained in open tanks to prevent overtopping by wave action or precipitation.	RCRA hazardous waste listed or characteristic, held for temporary period before treatment, disposal, or storage elsewhere (40 CFR 264.10) in a tank.	40 CFR 264.190 40 CFR 264.191 40 CFR 264.194	"Applicable" to Alternatives C3 and C4 as it may pertain to on-site pretreatment of aqueous prior to off-site disposal, and "applicable" to Alternative D if on-site tank storage is used to contain excavated wastes prior to off-site disposal.

AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirement	Prerequisite(s)	Citation	Potential Applicability
Tank Storage (On-Site) cont.	Inspect the following: overfilling control, control equipment, monitoring data, waste level (for uncovered tanks), tank condition, above ground portions of tanks (to assess their structural integrity) and the area surrounding the tank (to identify signs of leakage). Repair corrosion, cracks, or leaks. At closure, remove all hazardous waste and hazardous waste residues from tanks, discharge control equipment, and discharge confinements structures. Stores ignitable and reactive waste so as to prevent the waste from igniting or reacting. Ignitable or reactive wastes in covered tanks must comply with buffer zone requirements in "Flammable" and Combustible Liquids Code," Tables 2-1 through 2-6 (National Fire Protection Association, 1976 or 1981).	See Previous Page	40 CFR 264.195 40 CFR 264.196 40 CFR 264.197 40 CFR 264.198	See Previous Page
	Use liner and leachate collection and removal system	RCRA hazardous waste, noncontainerized accumulation of solid, non-flammable hazardous waste that is used for treatment or storage.	40 CFR 264.251	"Applicable" to Alternative D if it is necessary for any reason to construct waste pile on site to contain excavated wastes prior to off-site disposal.

APPENDIX 3
ACTION SPECIFIC STATE ARARS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-HUC FEASIBILITY STUDY

Action	Requirement	Prerequisite(s)	Citation	Potential Applicability
Air Stripping	An air pollution control permit is required for any wastewater treatment equipment if the concentration of certain delineated toxic volatile organic substances exceed 100 ppb by weight and the total concentration of VOS exceed 3,500 ppb by weight. Must demonstrate that controlled emissions will not violate ambient air quality standards as defined in NJAC 7:27-13, Title 40 Part 52 CFR, or other department criteria. Must demonstrate that the control apparatus incorporates state-of-the-art air pollution control equipment, and is designed to operate without violating laws or regulations by presenting such information as: description of processes, raw materials, operating procedures, physical and chemical nature of air contaminants, volume of gas discharge, etc.	Action that includes water or wastewater treatment equipment which emits air contaminants including: air stripping equipment, aeration basins and lagoons.	NJAC Title 7, Chapter 27, Subchapter 8.	Although under CERCLA Section 121(e), on-site remedial response actions are exempt from having to obtain Federal, State, or local permits, the substantive requirements of this citation may be considered "applicable" to Alternative C3 and C4 as it pertains to possible on-site aqueous pretreatment (air stripping prior to off-site aqueous disposal).
Landfill Vents	An air pollution control permit is required. (See above discussion under air stripping.)	Action that includes equipment used for the purpose of venting a closed or operating dump or solid waste facility directly or indirectly into the outdoor atmosphere.	NJAC Title 7, Chapter 27, Subchapter 8.	Although under CERCLA Section 121(e), on-site remedial response actions are exempt from having to obtain Federal, State or local permits, this citation may be considered "relevant and appropriate" to Alternatives C3 and C4 as it pertains to landfill venting.

APPENDIX 3
ACTION SPECIFIC STATE ARARS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-HUC FEASIBILITY STUDY

Action	Requirement	Prerequisite(s)	Citation	Potential Applicability
Off-Site Transportation of Hazardous Waste	All vehicles containing hazardous waste must meet the placard requirements of USDOT transport of hazardous waste (i.e., 49 CFR 171 through 49 CFR 177). All containers shall be in conformance with the construction type and labeling requirements (manifest numbers, etc.) of USDOT containerization requirements (49 CFR 171 through 49 CFR 179). Special Hazardous Waste Manifest Form(s) Requirements (which depends upon State destination). Special recordkeeping requirements and prohibitions for the hazardous waste generator, hauler, receiving facility, etc.	On-site removal of hazardous waste for off-site treatment/disposal.	NJAC Title 7, Chapter 26, Sub-Chapter 7 (Labeling, Records, and Transportation Requirements). NJAC Title 7, Chapter 26, Sub-Chapter 8 (Hazardous Waste Criteria, Identification and Listing).	Directly "applicable" to Alternative D. Maybe partially applicable to Alternatives C3 and C4 as pertains to: • On-site pretreatment of aqueous for removal of PCB laden oil for off-site disposal/treatment, and c • Collection of on-site aqueous waste stream for off-site treatment/diposal (this would depend upon contaminant concentrations in the aqueous waste stream).
Direct Discharge of Treatment System Effluent	No person shall build, install, modify, or operate any facility for the collection, treatment or discharge of any pollutant except in conformance with the New Jersey Pollutant Discharge Elimination System (NJPDES) Program. The NJPDES Program requirements include, where applicable, permits or approvals for both on-site treatment with direct surface water discharge, as well as discharge to off-site municipal or privately owned treatment works.		NJAC 7:14A	"Applicable" to Alternatives C3 and C4 as it pertains to both: possible on-site aqueous pretreatment for off-site discharge to a POTW, as well as to possible on-site aqueous treatment with direct surface water discharge.

APPENDIX 3
ACTION SPECIFIC STATE ARARS
AND CRITERIA, ADVISORIES & GUIDANCE TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirements	Prerequisite(s)	Citation	Potential Applicability
Discharge to POTW or Other Aqueous Treatment Works Via Sewer	No persons shall cause, suffer, allow, or permit the discharge of any hazardous waste into a sewer system unless: • Final approval has been obtained from all appropriate State and local authorities; and • All conditions imposed prior to discharge are met	.	NJAC Title 7, Chapter 26 Sub-Chapter 9 (Requirements for Hazardous Waste Facilities) Section 2.	Directly "applicable" to Alternatives C3 and C4 as pertains to discharge of aqueous via sewer line to off-site POTW treatment facility.
Container Storage On-Site	Presents standards for use and management of on-site container storage of hazardous waste. Includes separation of incompatible waste materials, safety considerations, environmental protectiveness considerations, recordkeeping, monitoring, inspection, training, etc.	On-site removal of hazardous waste in preparation for off-site disposal/treatment.	NJAC Title 7, Chapter 26, Sub-Chapter 9 Requirements for Hazardous Waste Facilities), Section 4, and NJAC Title 7, Chapter 26, Subchapter 10 (Additional Operation and Design Standards), Section 4.	May be directly "applicable" to Alternative D and partially "applicable" to Alternative C3 and C4 as pertains to on-site pretreatment of aqueous for removal of PCB laden oil for off-site disposal/treatment.
Groundwater Monitoring	Must institute groundwater monitoring in accordance with NJAC 7:124 A-6 (Rule of the Division of Water Resources).		NJAC Title 7, Chapter 26, Sub-Chapter 9 (Requirements for Hazardous Waste Facilities) Section 5.	"Relevant and appropriate" to Alternatives A, C3 and C4.

ACTION SPECIFIC STATE ARARS
AND CRITERIA, ADVISORIES & GUIDANCES TO BE CONSIDERED
KIN-BUC FEASIBILITY STUDY

Action	Requirement	Prerequisite(s)	Citation	Potential Applicability
Safety	Facilities shall be designed, constructed, operated and maintained to prevent unplanned sudden events that threaten human health or the environment and contingency plans should be developed for emergencies.		NJAC Title 7, Chapter 26, Subchapter 9 (Requirements for Hazardous Waste Facilities), Sections 6 and 7	"Relevant and appropriate" to Alternatives C3 and C4 and Alternative D.
Closure with Waste In-Place (Capping)	Preparation of a closure plan that minimizes the need for further maintenance and controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the groundwater, surface water or atmosphere. Plan should include decontamination of facility equipment, scheduling, and closure procedures. Design standards for caps Post-closure care an ground-water monitoring (includes maintenance and monitoring and monitoring of wate containment systems, as applicable.		NJAC Title 7, Chapter 26, Subchapter 9, Sections 8 and 9 (Requirements for Harazardous Waste Facilities General Closure and Post Closure Requirements) NJAC Title 7,Chapter 26, Subchapter 10, Section 8(Additional Operational and Design Standards for Hazardous Waste Facilities Landfills)	"Relevant and apporiate" to Alternative 3 and C4.

APPENDIX 3
ACTION SPECIFICS STATE ARARS
KIN-BUC FEASIBILITY STUDY

ACTION	REQUIREMENT	PREREQUISITE(S)	CITATION	POTENTIAL APPLICABILITY
Closure with Waste In-Place(Capping)cont.	Drainage and erosion control standards. Gas venting and gas monitoring requirements.		See previous page	See previous page
Chemical, Physical, and Biological Treatment	General operating and inspection requirements		NJAC Title 7, Chapter Subchapter 9,(Additional Requirements for Hazardous Waste Facilities Operating under Existing Facility Status),Section 7	"Applicable" to Alternatives C3 and C4 as it pertains to possible on-site pretreatment of aqueous prior to removal for off-site treatment.

KBC 001 1084

APPENDIX 4

COMMUNITY RELATIONS HISTORY

Operational practices at the landfill in the early to mid-1970's resulted in a large number of citizens complaints, caused frequent on-site fires and a number of serious occupational injuries. The available information on community concerns indicates that these complaints began prior to 1976.

An article published in the Newark Star-Ledger on May 14, 1976, refers to a petition by "angry residents" who complained of air and water pollution and several chemical fires caused by the Kin-Buc Landfill. According to this article, several citizens have complained to Township regarding the local government's inability to stop both the noxious smoke that emanated from the site when it burned and the trucks that drove through residential areas at 4:00 a.m. on the way to the landfill.

Several articles published in local newspapers in the following year presented developments at the site, including the closure plan that DEP had accepted from Kin-Buc, the extension to the closure deadline that the site was issued by the Superior Court, and the June 1976 formation of a citizens' group known as "Citizens Committee to Close Kin-Buc". According to these articles, the Citizens Committee discovered that Kin-Buc had been issued an extension in March 1977 allowing it to remain open until June and promptly began a letter-writing campaign to high-ranking State officials. The leader of the group stated that the Township had not been given sufficient notice to fight the extension. The Township appealed the extension and the Superior Court Judge deciding the case initially revoked the extension, but reinstated it five weeks later.

Following the eventual closure of the site, public interest subsided and the citizens began to concentrate on getting the site cleaned up. In July 1981, a citizens' group called "Coalition to Contain Kin-Buc" wrote a letter to Senator Bill Bradley asking his help in forcing EPA to name the site as a priority. Senator Bradley forwarded the letter to the Acting Regional Administrator for EPA, Region II. The site was added to the National Priorities List of hazardous waste sites (NPL) in October 1981. At time of the NPL listing, EPA proposed an experimental hazardous waste incinerator as a possible remedial measure for the site. This proposal met with extensive public opposition and was subsequently dropped.

KBC
001
1085

The following year, 95 residents of the area surrounding the Kin-Buc site filed a lawsuit against the Township and 600 businesses that allegedly disposed of waste at Kin-Buc to collect damages caused by contamination from the landfill. The Township settled out of court and in 1985 citizens lobbied for a jury trial for the lawsuit against the remainder of the defendants. The right to a jury trial was eventually granted in 1986. The citizens and defendants reached a 2.7 million dollar settlement in May 1988.

Although the Kin-Buc site received much media and community attention during its years of operation, the frequency of complaints or spoken concerns on the part of the public declined dramatically following closure of the site. Of the few concerns that have arisen in the recent past, according to those interviewed, the most prevalent is the danger of adverse human health resulting from direct contact with the contaminants at the site. Concerned parties cite air, groundwater, and surface water as primary means for human contact with the hazardous materials.

APPENDIX 5

RATIONALE FOR OPERABLE UNIT II COMPONENTS

- Mound B

Although it is believed that the majority of hazardous waste disposal occurred in the Kin-Buc I mound; little is known about the contents of Mound B. It is believed that municipal trash extends beneath Mound B. However, Mound B was not a subject of the remedial investigation or previous investigatory work dating to the mid-1970's. In addition, Mound B is physically separated by the Edison Landfill access road. For these reasons, EPA determined that the need to evaluate the nature and extent of contamination in Mound B could be conducted as part of Operable Unit II.

- Raritan River/Mill Brook/Martins Creek/Edmonds Creek

Initial attempts to determine the nature and extent of surface water and sediment contamination date back to 1974 by analyzing samples from the Raritan River. Sampling and analysis of the Raritan River conducted to date has been sporadic and does not take into account potential seasonal variations in contaminant movement. Limited analytic data indicate the potential for surface water and sediment contamination in the Raritan River from groundwater discharges and surface run-off from the site.

However, the selected remedy for Operable Unit I would provide source control measures such that the Raritan River and sediments would no longer be a receptor of releases from the site. Remedy selection for source control measures at the site is considered the critical pathway in the overall site clean-up.

The Mill Brook and Martins Creek surface waters have not been the focus of any detailed investigatory work. Limited sampling and analysis of Martin Creek sediments indicate potential PCB contamination due to leachate from the site entering Martins Creek. Currently, control measures at the site prevent the release of leachate into Martins Creek. The selected remedy for Operable Unit I provides source control measures to prevent releases to Martins Creek from the site.

Edmonds Creek sediments were the focus of a sampling program conducted in 1983. Until installation of the Kin-Buc I cap in 1980 and on-going control measures, leachate was released into Edmonds Creek from Pool C via a connecting channel. Sampling and analysis to date indicate PCB contamination in Edmonds Creek. In addition, several fish and invertebrate species from Edmonds Creek were shown to have elevated levels of contaminants in their tissue. However, the nature and extent of contamination needs to be evaluated more extensively.

- adjacent wetlands

The wetlands adjacent to the Kin-Buc Landfill site have never been the focus of any previous investigations. Potential environmental effects of uncontrolled releases from the site exist. Various aquatic and terrestrial species utilize the adjacent wetlands as their habitat. Therefore, the need to fully evaluate the nature and extent of contamination and any environmental effects of such contamination exists.

- groundwater contamination emanating from the site

The hydrogeology of the site is complex and has not been fully characterized. Uncertainties exist, for example about the nature and extent of bedrock aquifer contamination and the possibility of a connection between the sand and gravel aquifer and the Raritan River. The extent of migration of contaminants in the groundwater has not been fully evaluated to date.

The evaluation of the components of Operable Unit II were deferred so as not to delay implementation of source control measures at the site.

RESPONSIVENESS SUMMARY

PROPOSED REMEDIAL ACTION PLAN FOR THE KIN-BUC LANDFILL SITE EDISON, NEW JERSEY

PUBLIC COMMENT PERIOD
July 28, 1988, to August 18, 1988

Sections I and II below present a summary of the questions and comments expressed by the public at the August 4, 1988, meeting on the Proposed Remedial Action Plan for the Kin-Buc Landfill Superfund site. The questions and comments are grouped into general categories or subjects. All questions or comments are followed by EPA's responses.

I. The Proposed Remedy

A. Construction

1. One community member asked whether construction would require removing the old cap.

Construction of the selected remedy does not include removal of the old cap (Kin-Buc I cap). The capping portion of the selected remedy involves placement of a cap that meets both the State of New Jersey Department of Environmental Protection Agency Resource Conservation and Recovery Act (RCRA) cap specifications and Federal RCRA guidelines on Kin-Buc II, portions of the low-lying area between Kin-Buc I and the Edison Landfill, and Pool C.

2. One resident asked who would assume the cost of processing leachate.

The owner/operators of the Kin-Buc Landfill are under Administrative Order to implement the selected remedy, which includes collection and treatment of leachate, and, therefore, assume all costs for design and construction of the selected remedy. In addition, the approximately 400 generators/transporters who utilized the site during the time it was active are potentially responsible parties and are liable in the event that the owner/operators fail to complete the remedy.

KBC 001 1089

3. One citizen asked where the incinerator will be located.

The selected remedy includes off-site incineration of oily-phase leachate. One of the operators of Kin-Buc owns an incineration facility in Illinois. This, or other incineration facilities, could be used, as long as they are in compliance with appropriate requirements.

4. Citizens expressed interest in knowing the timetable for the remedy and how long construction will take.

EPA plans to sign a Record of Decision in August/September 1988. The Remedial Design is scheduled to begin in early Fall 1988 and the Remedial Action would be initiated in Summer/Fall 1989. EPA anticipates that actual construction of the remedy will take six months to one year.

5. One attendee referred to the law suit concerning Kin-Buc, in which 30 people each received over \$50,000, and questioned whether this means that there is a health threat that will be aggravated by construction.

There has been a settlement for damages to residents of Edison stemming from operations (air releases, on-site chemical fires) at the site during the 1970s. Construction of the selected remedy will involve some excavation of waste material. A detailed health and safety plan for both on-site workers and nearby residents will, however, be prepared prior to implementation of the selected remedy. In addition, as part of the health and safety plan and the selected remedy, there will be routine air monitoring and use of techniques to minimize exposure during construction.

B. Air Monitoring

1. One gentleman asked whether there is a device he can buy for his property to monitor the quality of air.

Although instruments exist that can be used to monitor air on one's own property, EPA does not feel that residents need to purchase such instruments. An extensive air-monitoring program will be conducted during construction of the selected remedy and during the subsequent operation and maintenance period. EPA will return before construction starts to explain the air-monitoring program and other aspects of the selected remedy. Citizens will have the opportunity to review

analytic data generated as part of investigations at the site.

2. One gentleman who works across the street from the site asked if EPA would meet with his plant manager and if EPA planned to place air-monitoring equipment at the company's property line.

EPA will certainly agree to meet with your plant manager before construction starts. It is not certain that air-monitoring equipment will be located at adjacent fences but planned air monitoring for the site will take adjacent property into consideration.

C. Liquid Waste Removal and Treatment

1. Attendees asked how all the liquid waste will be removed from the landfill and what volume of water is expected to be pumped from the sump pumps.

The remedy calls for a gravity-fed system, with a series of trenches and sumps. Aqueous-phase (water-based) leachate will be separated from the oil and the aqueous-phase leachate will go through treatment. Initial projections estimate that the sumps will pump 80,000 gallons per day for the first five years and 62,000 gallons per day thereafter.

D. Ground-water Monitoring

1. One citizen mentioned that the Township of Edison is preparing to create a new canal and a new landfill and wondered whether the disturbance of the land will have any effect on the ground water.

EPA will coordinate with the Township in its efforts to evaluate the potential effects that any disturbance of land and the Edison Township Landfill will have on ground water.

2. An attendee referred to "periodic" ground-water monitoring discussed as part of the proposed remedy and asked what is meant by "periodic."

The existing monitoring dates back to the judicial order that called for semiannual monitoring. The second phase of studies at the site will include an extensive field investigation to determine the ultimate schedule for the monitoring that will continue for at least 30 years.

3. Citizens expressed concerns that the landfill contains many unknowns and questioned: how EPA plans to be prepared for what is going to be extracted; whether EPA will monitor on a daily basis; whether EPA will monitor for a selective array of chemicals; and whether there will be constant monitoring of the quality of discharge.

There is such a wide range of chemicals present at the site that testing for one representative compound is not sufficient. One solution, however, might be the measurement of total organic carbon to evaluate system performance. During the design of the selected remedy, the parameters to measure system performance will be determined. In addition, there will be routine monitoring of treated aqueous-phase leachate to ensure that the standards of the New Jersey Department of Environmental Protection and/or the Middlesex County Utilities Authority are met.

E. Operation and Maintenance

1. Councilwoman Dorothy Drwal voiced her concern that operation and maintenance will be permanent to protect the health of Edison residents.

The Order calls for operation and maintenance for a period of not less than 30 years. In addition, Congress requires EPA to return to the site at least once every five years to reevaluate the remedy and ensure that it is working as planned.

II. General Comments and Questions

A. Ground-water Contamination

1. One attendee wanted to know whether leachate from the site is moving into the nearby wetlands.

The leachate did move into the wetlands for many years, when the site was in operation, but migration has been controlled substantially by the existing leachate collection system. Some material does migrate, however, into Edmonds Creek and from there into the Raritan River and adjacent wetlands. This is a problem the remedy addresses.

KBC
4 001 1092

2. Another attendee questioned the possibility that the contaminated ground water will head up the Raritan River toward the Middlesex County College.

The College is the in opposite direction from the prevailing southeasterly flow that the ground water has exhibited.

3. One gentleman asked whether there are other layers of water about which people should be concerned.

The refuse layer contains highly-contaminated leachate and is being contained, collected, and treated as part of the selected remedy. Underlying the refuse layer is the sand and gravel aquifer, which is saline and not used for drinking purposes. The sand and gravel aquifer is contaminated and will be contained, collected, and treated as part of the selected remedy. The bedrock aquifer is beneath the sand and gravel aquifer and is used for drinking purposes approximately seven miles downgradient of the site. The available information does not indicate that any private wells are used close to the site. The nature and extent of bedrock aquifer contamination is to be the subject of further investigatory work.

B. The Responsible Parties

1. One woman asked whether EPA is certain that the Responsible Parties will be able to pay for the remedy and whether EPA will require bonds or insurance from these Responsible Parties before work begins.

The owner/operators are under Administrative Order to implement the selected remedy. EPA has evaluated the financial viability of the owner/operators and believes the owner/operators have the funds to implement the selected remedy. In addition, EPA has identified approximately 400 generators/transporters, many of which are large, financially viable companies, who could be required to implement the selected remedy, if necessary.

2. One attendee asked whether Scientific is still the owner of Kin-Buc.

Scientific, Inc., now known as Trans Tech Industries, Inc., is one of the eleven owner/operators of the Kin-Buc Landfill.

C. Other Comments

1. One gentleman stated that there are tanks from disposal trucks buried in the landfill that have never been removed.

It is possible that entire tanks were disposed of in the landfill. EPA has some evidence of this from drilling in the area.

2. One attendee expressed his concern about methane gas buildups that could lead to an explosion or a fire at the site. He asked whether EPA had taken any precaution against this possibility.

There are vents to release the methane gas, and EPA and NJDEP have plans to look into the venting of landfill gases and the potential treatment of those gases.

3. John Grun, Director of Edison Township Health and Human Resources, thanked EPA for undertaking this mammoth task and for being accessible throughout the work to date.

KIN-BUC, INC.

P.O. BOX 5296 • SOMERVILLE, N.J. 08876 • 25 CHAMBERS BROOK RD. • BRANCHBURG, N.J. • (201) 216-8500

Sanitary Landfill Located at
383 MEADOW ROAD
EDISON, NEW JERSEY

August 17, 1988

Mr. Perry Katz
Site Investigation and Compliance Branch
U.S.E.P.A. Region II - Room 727
26 Federal Plaza
New York, NY 10278

Re: Kin-Buc Landfill
Public Hearing
August 4, 1988

Dear Perry:

Attached are comments from Clement Associates regarding the Endangerment Assessment. Please include these with the public comments for the subject hearing.

Very truly yours,

KIN-BUC, INC.

Ralph E. Sundstrom, P.E.

Ralph E. Sundstrom, P.E.

RES/cm

KBC 001 1095



Environmental and Health Science

Clement Associates, Incorporated
9300 Lee Highway
Fairfax, VA 22031-1207 703-934-3500

August 15, 1988

Ralph Sundstrum
Kin-Buc Landfill
c/o Transtech Industries, Inc.
283 Snowball Drive
Leavittown, PA 19056

Dear Ralph:

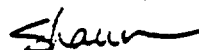
I have reviewed the sections of the Kin-Buc Landfill Endangerment Assessment that you sent me. I am concerned that EPA and its contractor are changing their conclusions based on the same modeling effort they have presented in the past. I believe that the inclusion of data that were collected prior to installation of the clay cap is not valid in the context of current or future risk assessment since evaluates a condition at the site that does not currently exist. My specific comments on the revised executive summary and conclusions are summarized below.

The conclusions presented on the air exposure route contradict themselves. The volatilization model that was used to estimate exposure does not consider conditions at the site. The PCBs are predominantly present in Pool C in the oil phase. This may act to retard volatilization of these compounds. Additionally, organic compounds which are more soluble in water will tend to partition into the water phase which is, in effect, covered by the oil phase. This will act to hinder volatilization of these compounds and hence reduce exposure. If this type of modeling is not performed, it should at least be discussed in the text and executive summary. The simple Gaussian dispersion model that is used to estimate exposure may also be inappropriate. The presence of the Kin-Buc I mound may influence the wind and hence migration of these volatiles off the site. This type of valley influence has never been discussed in the context of air dispersion modeling. A discussion of the difference in measured and modeled results should be discussed in the context of uncertainties. If the on-site air data show levels which are not a risk to the worker population but the air model does, the source of this discrepancy should be noted. It appears that some of the conclusions drawn with respect to off-site exposure are based upon limited monitoring data which do not indicate the direction or speed of the wind or atmospheric conditions when the samples are collected. The levels of vinyl chloride detected in the residential area a mile from Kin-Buc measured in 1975 may, in fact, not be due to emissions from the landfill but from another source.

Cadmium was detected in Edmonds Creek at an average concentration of 9 ug/liter and a maximum concentration of 21 ug/liter, according to Table 3-1. Table 1-6 indicates that the maximum concentrations in Edmonds Creek and the control Creek and 48 and 42 ug/liter, respectively. A review of the data in Appendix A indicates that a maximum of 21 ug/liter was detected in Edmonds Creek and that the maximum "background" concentration was 4.8 ug/liter. Thus, PRC is correct in stating that cadmium was detected in the surface waters. Their discussion of risk is based upon a comparison of acute exposure levels to these detected concentrations. It may be more appropriate to compare the detected concentrations to chronic levels. Additionally, any conclusions that are drawn in this analysis should be qualified since they are based on one sampling event and three samples collected.

If you have any questions or comments, or need further clarification on these points, please call me.

Sincerely,



Shawn L. Sager, Ph.D.
Senior Associate Chemist

cc: Paul Chrostowski, Clement Associates
Kevin Kohn, Waste Management of North America

RESPONSIVENESS SUMMARY
KIN-BUC LANDFILL SITE
EDISON, NEW JERSEY

PUBLIC COMMENT PERIOD
July 28, 1988 to August 16, 1988

This section of the responsiveness summary addresses written correspondence dated August 15, 1988 submitted to EPA by ICF/Clement on behalf of the owners/operators of the Kin-Buc Landfill.

EPA has reviewed the Kin-Buc Landfill Endangerment Assessment - Draft Final Report with respect to the concerns raised by ICF/Clement, on behalf of the owners/operators of the Kin-Buc Landfill site. It is EPA's position that discussion concerning air contamination, the exposure assessment through the air route and the risk characterization based on exposure to contaminated air have been caveated appropriately, where necessary.

The presentation of information on atmospheric contamination discusses the limitations of the air data collected over time. Specifically, the potential for other sources of contamination in addition to the site is mentioned. Limitations to the information gathered concerning wind speed and direction, sampling and quality assurance/quality control procedures is also mentioned. The time of the data collection (whether or not it was prior to installation of the cap over Kin-Buc I) is presented as well.

In terms of the exposure assessment through the air route; the assumptions for the model utilized were presented. The risk characterization for exposure to contaminated air discusses results from actual measurements of contaminants in air versus estimated concentrations of contaminants in air obtained by modelling.

Further details concerning risk associated with inhalation of air contaminants are provided on pages ES-4, pages 1-36 through 1-42, page 3-6, 3-15, pages 3-24 through 3-28, pages 5-7 through 5-10 and pages 6-1 and 6-2.



Waste Management of North America, Inc.
3003 Butterfield Road Oak Brook Illinois 60161

August 17, 1988

Mr. Perry Katz
Project Manager
United States Environmental
Protection Agency
Emergency and Remedial Response Division
26 Federal Plaza - Room 737
New York, NY 10278

Re: Kin-Buc

Dear Mr. Katz:

The following comments are submitted to address USEPA's August 1988 Proposed Plan for Kin-Buc Landfill. The comments are submitted on behalf of SCA Services, Inc. and its subsidiaries.

Notwithstanding the extensive investigation which has already been completed at Kin-Buc Landfill, a decision about a final (or even interim) remedy is premature. It now appears clear that Edison Township Landfill may have a significant effect on groundwater in this area. That conclusion is required reviewing a plot of groundwater quality data from all wells in the area of the Edison Township and Kin-Buc sites. Attached hereto as Exhibit 1 is a map showing water quality in the sand and gravel zone. Note that well DEP5 which is located between Kin-Buc I and Edison Township has consistently been clean. Well LF1, which is generally downgradient from well DEP5, reveals elevated levels of volatile aromatic compounds. These contaminants are the same as those found downgradient of the Edison Township Landfill. In the absence of additional data, the above suggests that contaminants have not migrated from Kin-Buc I in the sand and gravel but may be attributable to some other source.

Exhibit 1 generally suggests a relatively uncontaminated zone which lies between Kin-Buc I and the Edison Township facility. Slightly elevated levels of metals are inconclusive because of the absence of background data and the metal levels in the bedrock. There appears to be some evidence of hydrocarbons in the sand and gravel at the southeast and southwest corners of Kin-Buc. However, it is more likely that Mound B is responsible for the levels southwest of Kin-Buc I. It is by no means clear that Kin-Buc is the source of the hydrocarbons or that a slurry wall around Kin-Buc will have any positive effect on their concentration.

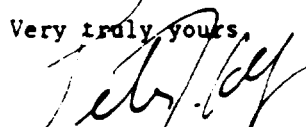
Given the uncertainty as to whether Kin-Buc I has affected the sand and gravel, selection of a slurry wall to bedrock with its attendant risks of dragging pollutants down through the meadow mat is premature. Once the wall is installed and groundwater is pumped, the resulting drawdown and flow reversal is likely to draw contaminants from Mound B and Edison Township Landfill into once clean sand and gravel. Of course, uncertainties about whether the bedrock is fractured make this a much riskier choice of remedy. Before considering any remedy, USEPA should consider the data generated by Edison Township in support of its expansion permit. Moreover, the slurry wall will have no impact whatsoever on the three potential risks identified in EPA's endangerment assessment:

- 1) The remote risk by the air route to onsite workers will be adequately addressed by the Health and Safety Plan;
- 2) Use of the bedrock for water wells is highly unlikely given the absence of suitable property for development in the vicinity; and
- 3) The Edison Township Landfill is a far more proximate threat to bedrock across the Raritan though this route is highly speculative and completely undocumented in EPA's risk assessment.

Finally, our review of the documents made available for public review at the Edison Township Library do not appear to constitute a complete record. For example, the two boxes of documents contain no evidence of an analysis of health effects by ATSDR or input by the State of New Jersey. Clearly, neither we nor the public have had a meaningful opportunity to review these important documents.

Please let me know if you would like to discuss any of the above.

Very truly yours,


PETER J. KELLY
Attorney for SCA Services, Inc.
and its subsidiaries

PJK:cp

RESPONSIVENESS SUMMARY

KIN-BUC LANDFILL SITE

EDISON TOWNSHIP, NEW JERSEY

This section of the responsiveness summary addresses written correspondence dated August 17, 1988 submitted on behalf of SCA Svcs., Inc. and its subsidiaries by Waste Management of North America, Inc.

EPA has reviewed the comments submitted and does not consider its selection of a remedy premature. EPA's selection of a remedy for Operable Unit I concerns source control measures that are necessary at the site to prevent release of contaminants into the surrounding environment, including adjacent surface waters. A Supplemental Remedial Investigation will be conducted to determine the nature and extent of contamination from the components of Operable Unit II and the feasibility study will evaluate alternatives to manage migration of contaminants from the site. The remedies selected for Operable Unit I and Operable Unit II are anticipated to constitute a total site remedy.

EPA has previously addressed the issue of whether or not site has affected the sand and gravel aquifer. Factors relevant to this issue include, but are not limited to, the integrity and continuity of the meadow marsh mat. A more detailed discussion of these and other factors is presented in two documents. They are as follows:

- 1) Kin-Buc Landfill Remedial Investigation - Addendum
Prepared by the U.S. Environmental Protection Agency and
- 2) Kin-Buc Landfill Feasibility Study - Addendum
Prepared by the U.S. Environmental Protection Agency.

EPA believes the information available to date indicates Kin-Buc Landfill is a source of contamination to the surrounding environment (including the sand and gravel aquifer). Installation of a circumferential slurry wall to bedrock, in addition to the other components of the selected remedy, will prevent the continued vertical and lateral migration of contaminants. The extent to which the slurry wall encompasses the low-lying area between Kin-Buc I and the Edison Landfill and the potential effects of the Edison Landfill and/or Mound B on groundwater are part of the Supplemental Remedial Investigation.

KBC 001 1101

Finally, the documents available in the information repository for public review and comment constitute EPA's administrative record. The administrative record consists of information upon which EPA bases its decision on the selection of a response action. It is a subset of information included in the site file. In response to the specific items referenced in your letter (analysis of health effects by ATSDR and input by the State of New Jersey) please be advised that to date, ATSDR has not completed its Health Assessment. The State of New Jersey Department of Environmental Protection (NJDEP) has routinely provided technical review and comment of deliverables. EPA comment letters on technical deliverables submitted incorporate NJDEP concerns.

This information serves to clarify the fact that both the public as well as SCA Svcs., Inc. and its subsidiaries have had a meaningful opportunity to provide input into EPA's remedy selection process.

KBC 001 1102

August 17, 1988

Mr. Perry Katz
Project Manager
U.S. Environmental Protection Agency
Emergency and Remedial Response Division
26 Federal Plaza, Room 737
New York, New York 10278

Re: Kin-Buc Landfill
Transmittal of Comments on EPA's Proposed
Remedial Action Plan, and Addendums to the RI/FS
(WE Project No. 06316 SR)

Dear Perry:

This letter, prepared by Wehran Engineering on behalf of the potentially responsible parties, is being submitted during the Operable Unit 1 RI/FS public comment period to provide written comment on the following documents:

- . USEPA. July 1988. Addendum to the Kin-Buc Landfill Remedial Investigation.
- . USEPA. July 1988. Addendum to the Kin-Buc Landfill Feasibility Study.
- . USEPA. July 1988. Proposed Remedial Action Plan
Kin-Buc Landfill Site - Operable Unit 1

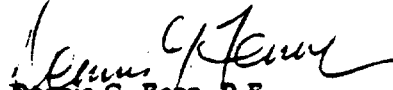
The comments pertaining to each of these documents are provided in Attachments A, B, and C, respectively. In addition, a fourth attachment, designated Attachment D, provides written comments specifically pertaining to the final cover design selected by the EPA as part of the preferred remedial alternative. For ease of reference, the comments presented in the attachments have been arranged to correspond to the page numbers as they appear in the EPA documents, as well as the paragraph(s) to which they apply.

August 17, 1988

We appreciate this opportunity to submit our comments, and trust you will give our concerns full consideration prior to finalizing any documentation pertaining to the remedial action selection process.

Very truly yours,

WEHRAN ENGINEERING CORPORATION



Dennis G. Fenn, P.E.
Senior Vice President

DGF:emk
Enclosures

cc: R. Sundstrom, Transtech
L. Bradshaw, Waste Management
J. Baker, Waste Management
D. Bartholomew, Wehran
R. Miller, Wehran

KBC 001 1104

ATTACHMENT A

TRANSMITTAL OF COMMENTS ON THE
JULY 1988, USEPA ADDENDUM TO THE
KIN-BUC REMEDIAL INVESTIGATION

PAGE 2

Bottom of Page 1

The EPA has included the Raritan River as part of the scope of remedial investigatory work to be performed during Operable Unit 2. While a potential exists for contamination from Kin-Buc to reach the Raritan River, without being able to distinguish and determine the potential contamination from other sources closer to the river, such as the Edison Landfill which is between the Raritan River and Kin-Buc, or the Edgeboro Landfill which is immediately across the river from the Edison Landfill, it would be impossible to determine the effect Kin-Buc might have on the overall water quality in the Raritan River.

PAGE 3

Paragraph 1

While EPA is correct in noting that no oily phase leachate has been found in the sand and gravel unit beneath Kin-Buc, it should be noted that the compounds identified at the referenced wells are also indicative of other organic solvents known to have been disposed of in the Kin-Buc I mound. Therefore, the listed compounds should not be just related to "hydrocarbon" contamination.

Last Paragraph

While EPA is correct in their statement that a single piezometer per monitoring well, located at the top of a formation does not characterize the formation at depth, they fail to state that since potential contamination must move downward to get to the bedrock, the first place to look for contamination is at the upper bedrock surface, where the contamination should be at its maximum concentration. Also, from the logs of the bedrock wells, GeoEngineering, Inc. concluded that the bedrock is confined by a decomposed mudstone layer which would retard any potential contamination movement to the bedrock, therefore the first place to look for potential contaminants would be at the upper bedrock surface.

PAGE 4

Paragraph 3

EPA contends that the water level contours presented in Figures 10 through 12 of the Remedial Investigation are "unsupported by actual water-level values". This is an incorrect statement. Each of these figures presents both well locations and recorded water level measurements. Furthermore, as stated in the Notes presented on each Figure, contours are based on water levels measured on April 3, 1988.

Last Paragraph

The EPA contends that an aerial reconnaissance of the Kin-Buc site in March 1988 indicates that ponding was observed on top of the Kin-Buc I mound and that this is indicative of infiltration of precipitation into the landfill. On the contrary, ponding during a heavy precipitation period is more indicative that the cap is functioning as designed, and that maintenance of the cap, by placement of additional soils may be required in certain areas to eliminate any depressions caused by landfill settlement.

PAGE 5

Paragraph 3

The EPA contends that GeoEngineering did not show a variable thickness of the meadow mat marsh deposit. A comparison of cross-sections A, B, and C with the structural contour maps of the top of the meadow mat and the sand and gravel, Figures 7 and 8 respectively, indicates that these cross-sections are drawn accurately to scale. EPA apparently averaged each value of reported meadow mat thickness from the well log data and did not take into consideration the areal distribution of the individual wells or the weighting effect this distribution has on an arithmetic average. Figure 1, attached, is an isopachous map of meadow mat marsh deposit thickness which is a more accurate indication of the continuity and thickness of the meadow mat deposits based on well log information.

PAGE 6

Next to Last Paragraph

The EPA indicates that the area surrounding Kin-Buc is a "high energy environment" in terms of sediment transport. A high energy environment for surface water flow requires significant topographic and stream bed gradients. These gradients are not found at the Kin-Buc site. Maximum topographic relief is between 5 to 20 feet above mean sea level.

PAGE 7

Paragraph 1

It should be noted that two wells, GV2 and GV3, drilled directly through the Kin-Buc I mound encountered the meadow mat deposit.

PAGE 9

Last Paragraph

It should be noted that the Endangerment Assessment prepared by EPA does not contain all the available data.

PAGE 10

Paragraph 1

It should be noted that KINWT-1A is not a sand and gravel well. As shown by GeoEngineering in the Appendix to the Remedial Investigation (Appendix J), KINWT-1A was completed partially in the overlying refuse and meadow mat.

Last Paragraph

If Mill Brook has been identified as being part of Operable Unit 2 remedial investigatory work, why does EPA criticize the Report for not studying it in the Operable Unit 1 Remedial Investigation?

PAGE 11

Paragraph 3

The sentence which reads "Air quality has been determined to be a potential health hazard (requiring Level B protection) in the vicinity of Pool C and near uncapped wells", should be revised to read:

Air quality in the Pool C vicinity has been determined to be a potential health hazard to unprotected site workers, therefore Level B safety protection is required for workers in this area of the site. Upon implementation of the proposed remedial controls for Operable Unit 1 the potential health hazard to unprotected site workers in the Pool C vicinity will be eliminated.

ATTACHMENT B
TRANSMITTAL OF COMMENTS ON THE
JULY 1988, USEPA ADDENDUM TO THE
KIN-BUC FEASIBILITY STUDY

PAGE 2

Paragraph 1, Entry 4

Concerning EPA's references to the continuity and effectiveness of the meadow mat, it should be noted that water quality data presented in the Remedial Investigation suggests that the meadow mat is acting as a "semi-confining sealing layer." The total effectiveness of the meadow mat will be more fully evaluated during the Operable Unit 2 Remedial Investigation.

Paragraph 3

Refer to Attachment D which discusses in detail the subject of cap compliance with RCRA regulations.

PAGE 3

Paragraph 2

The sentence which reads "Any portions not encompassed by the slurry wall would be excavated and moved within the slurry wall and capped," should be revised to read: "Any portions not enclosed by the slurry wall would be excavated and moved within the slurry wall; and upon completion of all construction activities, the entire area enclosed by the slurry wall will be under a cap."

PAGE 4

Last paragraph, 4th bullet

With regard to the final cover/cap components of the EPA's proposed remedial alternative, it should be clarified that a cap will be constructed on that portion of the lowland area and Pool C environs enclosed by the slurry wall.

PAGE 5

Paragraph 4

This paragraph should also state that the possible nature and extent of contamination of sand and gravel contamination is the subject of supplemental remedial investigatory work.

PAGE 5

Paragraph 5

Refer to Attachment D which discusses in detail the subject of cap compliance with ARARs.

B-2

10.8/88.06316

KBC 001 1109

ATTACHMENT C

TRANSMITTAL OF COMMENTS ON THE
JULY 1988, USEPA PROPOSED REMEDIAL ACTION PLAN FOR
THE KIN-BUC LANDFILL SITE - OPERABLE UNIT 1

PAGE 2

Paragraph 1

The first sentence of this paragraph implies that the landfill is a 220 acre site. This sentence should be reworded to reflect that the landfill consists of three refuse mounds designated Kin-Buc I, Kin-Buc II, and Mound B, each occupying approximately 30, 12, and 9 acres, respectively.

Paragraph 2

The words "black" and "oily" should be removed from the sentence describing the leachate present in Pits A, B, and C, or revised to reflect that two separate phases of leachate exist (i.e., aqueous and oil).

There is a typographical error in the next to the last sentence of this paragraph. The sentence should read "...partially filled in by Kin-Buc I".

Paragraph 3

The sentence "Partial compliance with the complaint was achieved in January 1980 by placing a synthetic membrane and clay cap on Kin-Buc I", should be revised to read: "In response to this complaint, corrective action was taken by the defendants in January 1980 and included placement of a synthetic membrane and clay cap on Kin-Buc I, and clay cover on Kin-Buc II."

The last sentence of this paragraph is not correct. Under the EPA's removal action the aqueous phase of leachate was pumped to Edmonds Creek.

PAGE 3

Last paragraph

The "extent" of contamination at the Kin-Buc site is yet to be determined, and will be the subject of Operable Unit 2 Remedial Investigatory work, therefore, statements like "the contamination at the Kin-Buc Landfill site is complex and extensive" are inappropriate.

PAGE 4

Last paragraph, Entry No. 1

The first entry regarding the findings and conclusions of the RI for Operable Unit 1 should be revised to reflect that the Kin-Buc II mound has never been documented to be a source of contamination of the immediate surrounding environment. Furthermore, disposal of hazardous waste in the Kin-Buc II mound has not been documented.

Entry No. 3

The third entry regarding the findings and conclusions of the RI should be revised to reflect that identification of Mill Brook, the marsh, and the Raritan River as major discharge points has not been documented.

PAGE 5

Entry No. 4

With regard to the last sentence of this entry, the potential for leachate migration to the Raritan River is unsubstantiated.

Entry No. 6

The sixth entry regarding the findings and conclusions of the RI should be revised to reflect that the highest PCB concentration found in the sediment sampling of Edmonds Creek was 68 ppm, which was detected at one test location, during one sampling event.

Entry No. 7

The seventh entry regarding the findings and conclusions of the RI should be revised to reflect that no pesticides were detected in the aqueous phase leachate.

Entry No. 8

The eighth entry regarding the findings and conclusions of the RI should be revised to reflect that the sand and gravel layer does not begin at the northern edge of Kin-Buc I, but instead lies beneath the southern two-thirds of the Kin-Buc I mound.

PAGE 6

Entry No. 9

The sentence "Analytic data revealed concentrations of PCBs..." should be revised to read "Analysis of the floating oil in these wells showed PCB concentrations ranging from 93 to 5,791 ppm."

PAGE 6

Entry No. 10

It should be noted that the parameter concentrations presented by the EPA are maximum values obtained at selected well locations. The data presented is not representative of all wells sampled in the sand and gravel unit during the period of 1976 through 1984.

The third bullet under Entry No. 10 regarding chloride and total dissolved solids concentrations, should be revised to state "... due primarily to the brackish nature of the water."

Entry No. 11

The EPA has incorrectly identified MW3 and MW4 as downgradient wells. These two wells are located upgradient of the Landfill.

PAGE 7

Entry No. 13

The second sentence of this entry is misleading, as it implies that the RI contains sediment data on the Raritan River. It does not.

PAGE 9

Paragraph 4

This paragraph states that Alternative C3a through C3d would not control releases from the refuse layer to the underlying sand and gravel aquifer (and potentially to the bedrock aquifer). As discussed in the Feasibility Study, the opposite is true. Containment, collection, and treatment of the leachate phase in the upper unconfined refuse layer offers a high degree of protection to the underlying aquifers by controlling the potential source of contamination.

Paragraph 5

See previous comment.

PAGE 10

Paragraph 5

The description of Alternative C4c should be revised to state "... includes the slurry wall installed to bedrock on all sides, a collection system, off-site incineration of oily-phase leachate combined with on-site aqueous phase leachate ...".

PAGE 10

Last paragraph

The last sentence of the last paragraph "...thereby removing the potential for continued uncontrolled releases of contaminants to both the bedrock aquifer and surrounding environment, including adjacent surface waters" is based on supposition.

PAGE 12

Paragraph 5

With reference to Alternatives C3a through C3d, as stated in the Feasibility Study, the possible extent of contamination of the lower aquifers is yet to be defined and will be the subject of additional investigatory work.

Paragraph 5

With regard to the last sentence of this paragraph, see comments presented in Attachment D which discusses in detail the subject of cap compliance with ARARs.

PAGE 13

Paragraph 1

Again, refer to Attachment D for a detailed discussion on the subject of cap compliance with ARARs.

ATTACHMENT D

TRANSMITTAL OF COMMENTS ON THE
PROPOSED FINAL COVER DESIGN

This attachment, prepared by Wehran Engineering on behalf of the potentially responsible parties, is being submitted during the Operable Unit 1 RI/PS public comment period to provide written comment on the final cover design incorporated into the EPA's preferred Remedial Action Alternative.

By way of summary, the Draft Feasibility Study carried through the detailed alternatives analysis two feasible alternative cap designs for upgrading the existing low permeability clay cover over the Kin-Buc II mound, and for capping the contaminated portion of the lowland area and the Pool C environs to be enclosed within the slurry wall containment controls; namely, a cap design such as is currently present on the Kin-Buc I mound, or alternatively, a cap design which follows the July 7, 1982 Draft USEPA guidance document entitled, DRAFT RCRA Guidance Document: Landfill Design, Liner Systems and Final Cover.

Based upon environmental protectiveness, cost-effectiveness, and ability to attain applicable, relevant and appropriate requirements (ARARs), pending any pre-construction verification results to the contrary, the Draft Feasibility Study recommended that the Kin-Buc I cap design be incorporated into the selected remedial alternatives for the Kin-Buc site. The EPA, in their Proposed Remedial Action Plan, has eliminated the Kin-Buc I design as a feasible alternative for capping those areas of the site described above on the basis that the Kin-Buc I cap design would not be in compliance with existing RCRA cap design standards. The following discussion summarizes the rationale for selection of the Kin-Buc I cap design, and contests the EPA's basis for elimination of the Kin-Buc I cap design from the preferred Remedial Action Alternative.

Both alternative cap designs presented in the Draft Feasibility Study include a multi-media final cover/capping system with a low permeability soil horizon (i.e., permeability less than or equal to 1.0×10^{-7} cm/sec), overlain by a 30 mil Flexible Membrane Liner (FML), a sand drainage layer, and soil suitable to support vegetation for areas of the site with slopes less than three horizontal to one vertical. The primary difference between the two cap designs lies in the thickness of the low permeability soil horizon and the thickness of the vegetated layer. The Kin-Buc I cap design includes a 12-inch layer of 1.0×10^{-7} cm/sec soils, and a 12-inch layer of soil suitable to support vegetation, while the alternative cap design which follows the RCRA final cover guidance document includes a 24-inch layer of low permeability soil, and a 24-inch layer of soil suitable to support vegetation.

As discussed in detail in the Draft Feasibility Study, both final cover designs will restrict infiltration to a similar degree as the design permeabilities for both the FML component, and the low permeability soil component are identical in both final cover cap designs. Enhancement of the Kin-Buc I cap design by construction of a thicker cover which follows the RCRA final cover guidance document would offer minor changes in infiltration with equally minor enhancement in environmental performance. Therefore, the Feasibility Study concluded that the Kin-Buc I cap design is feasible, especially if additional pre-construction verification testing proves the integrity of the Kin-Buc I cap design.

In addition, given that the costs for a thicker cap designed in accordance with the RCRA guidance document, is approximately twice that of the cost of the Kin-Buc I cap design (i.e., approximately \$200,000 per acre as compared to \$100,000 per acre) from a cost versus environmental benefit perspective, the Kin-Buc I cap design offers essentially the same environmental protection at half the cost.

Furthermore, some points of clarification are in order with respect to the final cover design requirements for compliance with Applicable, Relevant and Appropriate Requirements (ARARs), as follows:

- (1) 40 CFR Section 264.310(a) presents the Hazardous Waste Regulations governing closure and post-closure care of a RCRA site. These regulations specify performance requirements for the cap or final cover at a RCRA site. They do not specify design requirements. The performance requirements specified in 40 CFR Section 264.310(a) state that:

At final closure of the landfill or upon closure of any cell, the owner or operator must cover the landfill or cell with a final cover designed and constructed to:

- . Provide long-term minimization of migration of liquids through the closed landfill;
- . Function with minimum maintenance;
- . Promote drainage and minimize erosion or abrasion of the cover;
- . Accommodate settling and subsidence so that the cover's integrity is maintained; and
- . Have a permeability less than or equal to the permeability of any bottom liner system or natural sub-soils present.

- (2) Concerning the applicability of the RCRA regulation (i.e., 40 CFR Section 264.310(a)) to a CERCLA site, as defined in the EPA guidance memorandum entitled, Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements dated July 9, 1987:

"RCRA regulations are not applicable to closing undisturbed hazardous waste in-place;" however, "the RCRA regulation for closure by capping may be deemed relevant and appropriate." Furthermore, "A requirement that is judged to be relevant and appropriate must be complied with to the same degree as if it were applicable. However, there is more discretion in this determination: it is possible for only part of a requirement to be considered relevant and appropriate, the rest being dismissed if judged not to be relevant and appropriate in a given case."

- (3) Pending any pre-constructed verification results to the contrary, with proper maintenance, the Kin-Buc I cap design would be expected to comply with the RCRA final cover performance requirements of 40 CFR Section 264.310(a), both from a relevant and appropriate standpoint, as well as from an applicable standpoint, even though this ARAR is not directly "applicable."
- (4) With regard to the possible need for additional maintenance repairs of the existing Kin-Buc I cap, raised by the EPA, all final cover capping systems, regardless of design, require a certain amount of maintenance to repair any damage caused by settlement and heavy rainfall events. Repairs can include placement of additional soils where settlement has occurred to restore proper drainage, as well as vegetative repair. The need for, and extent of additional maintenance which may be required for the existing Kin-Buc I cap will be assessed during supplemental investigatory work, and incorporated into the remedial design for Operable Unit I.
- (5) Concerning the alternative cap design, which the EPA has selected as the preferred cap design alternative, it should be clarified that the alternative cap presented in the Feasibility Study was designed in accordance with a non-promulgated USEPA Draft Guidance document on final cover for RCRA sites entitled, DRAFT RCRA Guidance Document: Landfill Design, Liner System, and Final Cover, dated July 7, 1982. This draft guidance document, upon which the alternative cap design was based, presents landfill design specifications which the USEPA believes comply with the closure requirements of Section 264.310(a) of the RCRA landfill regulations. However, in the preface of this document, the USEPA states that "The Agency wishes to

emphasize that the specifications contained herein are guidance, not regulations." "The Agency is not requiring, and does not intend, that all landfills be built in this way." "On the contrary, the Agency believes that there are many designs which can be acceptably used, depending on waste characteristics and location."

- (6) Concerning the applicability of non-promulgated EPA RCRA Guidance Documents to a CERCLA site, memorandum by the EPA dated July 9, 1987, entitled Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements states that "Non-promulgated advisories or guidance documents issued by Federal or State governments do not have the status of potential ARARs." "However, they may be considered in determining the necessary levels of cleanup for protection of health or environment."
- (7) Therefore, one can conclude, that while a thicker alternative cap designed in accordance with non-promulgated draft guidance may be considered, a cap of this design is not mandatory for compliance with ARARs; and further, that elimination of the Kin-Buc I cap design as a feasible alternative on the basis of non-compliance with ARARs is not warranted.

In summary, it is recommended that the Kin-Buc I cap design be incorporated into the proposed remedial action plan for the Kin-Buc site for the following reasons:

- The Kin-Buc I cap design, pending any pre-construction verification results to the contrary, complies with the "relevant and appropriate" performance requirements of 40 CFR Section 264.310(a), and therefore attains ARARs.
- The Kin-Buc I cap design offers similar environmental performance and environmental protection to the alternative cap design at approximately half the cost.

The EPA criteria for remedy selection at a CERCLA site requires that the selected remedy be: 1) protective of human health and the environment; 2) be able to attain ARARs; and 3) be cost-effective. The Kin-Buc I cap design satisfies these criteria.

RESPONSIVENESS SUMMARY

KIN-BUC LANDFILL SITE

EDISON TOWNSHIP, NEW JERSEY

Public Comment Period
July 28, 1988

This section of the responsiveness summary addresses written correspondence dated August 17, 1988 prepared on behalf of the potentially responsible parties regarding the aforementioned EPA documents.

Following the format of the letter and attachments, EPA's response to comments are as follows:

Attachment A - EPA's Response to Comments on EPA's Addendum to the Remedial Investigation

Page 1

Bottom

It is EPA's intent to determine the nature and extent of contamination in the Raritan River that may be attributable to the Kin-Buc Landfill. To investigate this problem, an evaluation of other potential sources of contamination will be conducted. The specific sampling and analytic parameters will be determined during the project scoping phase of the Supplemental Remedial Investigation for Operable Unit II.

Page 3

Paragraph 1

This paragraph will be clarified to indicate that other chemical waste in addition to oily phase leachate may have contributed to contamination in the sand and gravel aquifer.

Last Paragraph

This paragraph will be clarified to indicate that the installation of monitoring wells in the bedrock aquifer and sampling and analysis of groundwater in the bedrock aquifer was in accordance with the requirements of the RI. However, in part, this paragraph was intended to point out that the nature and extent of contamination in the bedrock has not been fully characterized.

Page 4

Paragraph 3

EPA will revise this paragraph to indicate that Figures 10 through 12 have portions of contour lines which have been extrapolated from the available data and represent the responsible parties interpretation of the conditions. EPA maintains that water level measurements obtained on a more routine basis would provide a more accurate range of water levels; since seasonal variations can substantially impact the groundwater flow regime. The notes on each figure do not indicate contours are based on water levels measured on April 3, 1988.

Last Paragraph

Pending verification to the contrary, EPA maintains that ponding observed on the top of Kin-Buc I may result in infiltration into weak areas of the cap. The integrity of the Kin-Buc I cap will be verified during the Supplemental Remedial Investigation for Operable Unit II.

Page 5

Paragraph 3

EPA maintains that the meadow marsh mat has been depicted (see Figure 6) in the RI as a continuous unit underlying the majority of the refuse in Kin-Buc I and pinching out at a constant rate to the north. However, Figure 1 which you enclosed will be included in the responsiveness summary section of the ROD.

Page 6

Next to last Paragraph

Regardless of which hypothesis is correct concerning the deposition of a "sealing layer of sediment to form over any exposed sand and gravel in the channel" in the Martins Creek/Town Ditch area; the Martins Creek/Town Ditch area will be a subject of investigatory work as part of Operable Unit II.

Page 7

Paragraph 1

This paragraph will be revised to reflect that two wells, GV2 and GV3, drilled directly through the Kin-Buc I mound encountered the meadow marsh mat.

Page 9

Last Paragraph

The Endangerment Assessment prepared by EPA utilized data in its possession.

KBC 001 1119

Page 10

Paragraph 1

This paragraph will be revised to delete reference to KINWT 1A as a well installed in the sand and gravel aquifer.

Last Paragraph

The paragraph will be revised to reflect that Mill Brook is an Operable Unit II component.

Page 11

Paragraph 3

The paragraph will be revised utilizing language similar to that presented in your comment letter. However, inclusion of the second sentence suggested is inappropriate to the discussion of the results of the remedial investigation.

Attachment B - EPA Response to Comments on EPA's Addendum to the Feasibility Study

Page 2

Paragraph 1, Entry 4

Entry #1 indicates that the meadow marsh mat is a semi-confining layer. EPA will revise the paragraph to indicate that the total effectiveness of the meadow marsh mat will be more fully evaluated during the Supplemental Remedial Investigation for Operable Unit II.

Paragraph 3

Refer to EPA's comments on Attachment D.

Page 3

Paragraph 2

EPA will revise the second sentence utilizing similar language presented in your comment letter to address your concern.

Page 4

Last Paragraph, 4th Bullet

EPA believes that the language in the addendum makes it clear that cap construction will be on that portion of the low-lying area and Pool C enclosed by the slurry wall.

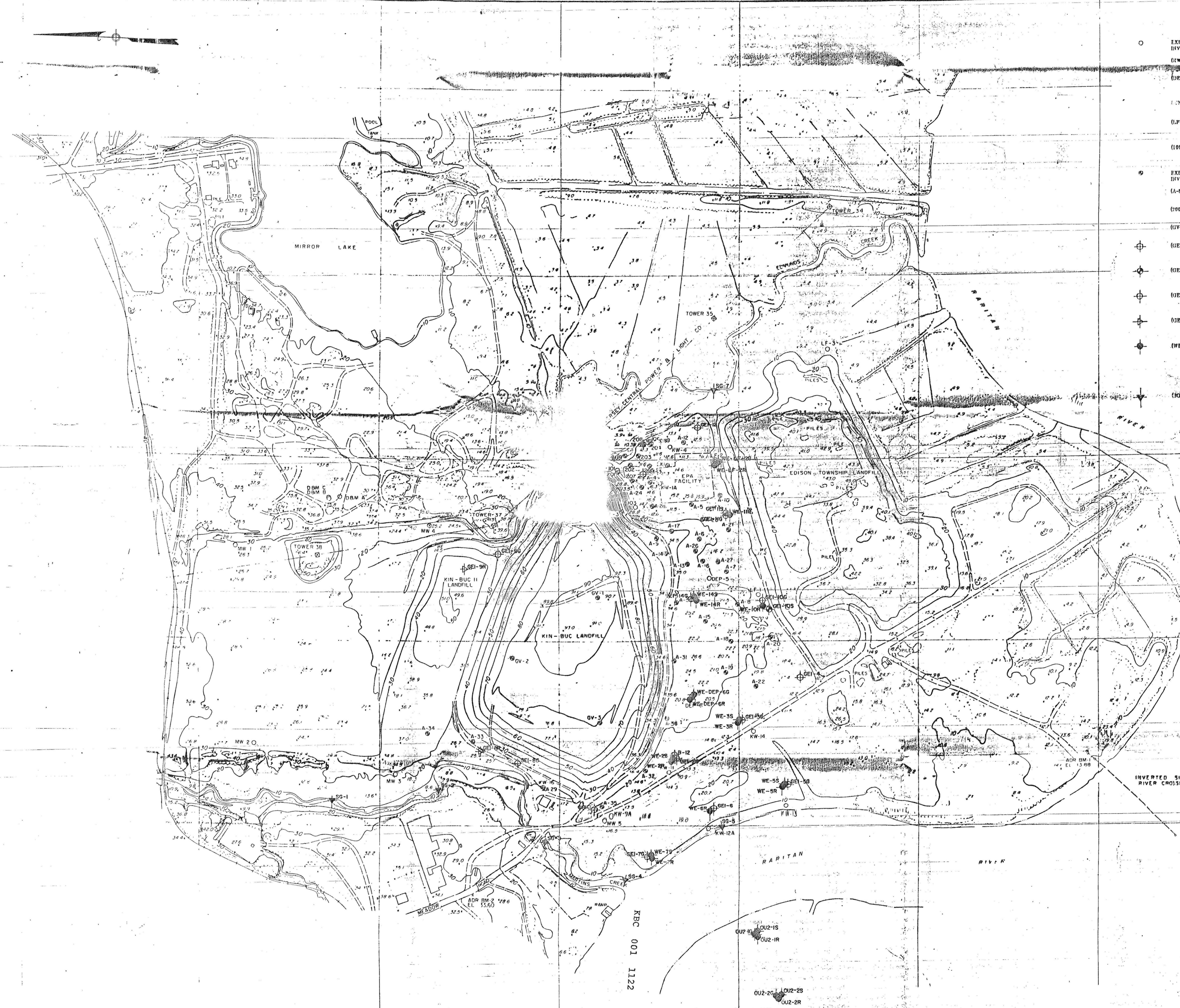
Page 5

Paragraph 4

EPA maintains that the analytic data has established that there is contamination in the sand and gravel aquifer. EPA's selected remedy will mitigate contamination in the sand and gravel aquifer. However, EPA will revise the paragraph to reflect that the nature and extent of contamination in the sand and gravel aquifer will be more fully evaluated during the Supplemental Remedial Investigation for Operable Unit II.

APPENDIX B
GENERAL SITE PLAN
WITH PROPOSED GROUNDWATER MONITORING WELL
AND SURFACE WATER GAUGE LOCATIONS

KBC 001 1121



- LEGEND**
- EXISTING MONITORING WELLS INSTALLED DURING PREVIOUS INVESTIGATIONS INCLUDE:
 - (I-W-Series) DEEP MONITORING WELLS INSTALLED BY WEHRAN AND WEHRAN ENGINEERING, 1979.
 - (DEP-Series) DEEP MONITORING WELLS INSTALLED BY NJDEP AND WEHRAN ENGINEERING, 1979.
 - (N-Series) MONITORING WELLS INSTALLED BY WEHRAN ENGINEERING, 1980.
 - (I-F-Series) MONITORING WELLS INSTALLED BY EDISON TOWNSHIP AND NJDEP, 1980 (?).
 - (100-Series) DEEP MONITORING WELLS INSTALLED BY F.C. HART, 1981.
 - EXISTING MONITORING WELLS INSTALLED DURING PREVIOUS INVESTIGATIONS INCLUDE:
 - (A-Series) SHALLOW MONITORING WELLS INSTALLED BY AGES, 1982.
 - (100-Series) SHALLOW MONITORING WELLS INSTALLED BY F.C. HART, 1981.
 - (IV-Series) SHALLOW MONITORING WELLS INSTALLED BY WEHRAN, 1983.
 - (GEI-Series) EXISTING MONITORING WELL CLUSTER INSTALLED BY GEOENGINEERING, 1984.
 - (GEI-Series) EXISTING SAND AND GRAVEL MONITORING WELL INSTALLED BY GEOENGINEERING, 1984.
 - (GEI-Series) EXISTING REFUSE MONITORING WELL INSTALLED BY GEOENGINEERING, 1984.
 - (GEI-Series) EXISTING BEDROCK MONITORING WELL INSTALLED BY GEOENGINEERING, 1984.
 - (WE & OU2 Series) PROPOSED MONITORING WELL LOCATION TO BE INSTALLED BY WEHRAN, 1989.
 - G - DESIGNATES REFUSE/FILL WELL
 - S - DESIGNATES SAND & GRAVEL WELL
 - R - DESIGNATES BEDROCK WELL
 - (SG-Series) SURFACE WATER GAUGE LOCATION

- NOTES**
1. THE SITE LOCATION, EXISTING WELL LOCATIONS (EXCLUDING GEOENGINEERING WELLS), AND TOPOGRAPHY TAKEN FROM THE GENERAL SITE PLAN AND TOPOGRAPHY MAP PREPARED BY APPLIED GEOTECHNICAL AND ENVIRONMENTAL SERVICE CORP. (AGES), DECEMBER, 1982.
 2. EXISTING GEOENGINEERING WELL LOCATIONS TAKEN FROM THE GENERAL SITE PLAN AND NEW MONITORING WELL LOCATIONS MAP PREPARED BY GEOENGINEERING, MAY, 1984.



DESIGN BY: *[Signature]*
DRAWN BY: *[Signature]*
CHECK BY: *[Signature]*
APP'D BY: *[Signature]*

DATE: 6-7-89

Scale: 1" = 200'

SCALE IN FEET

DENNIS G. FENN, P.E.
N.J.P.E. Lic. No. 21075

KIN-BUC, INC.
OPERABLE UNIT 2 - RI / FS.

NO.	DATE	BY	REVISION

GENERAL SITE PLAN WITH PROPOSED GROUNDWATER MONITORING WELL & SURFACE WATER GAUGE LOCATIONS

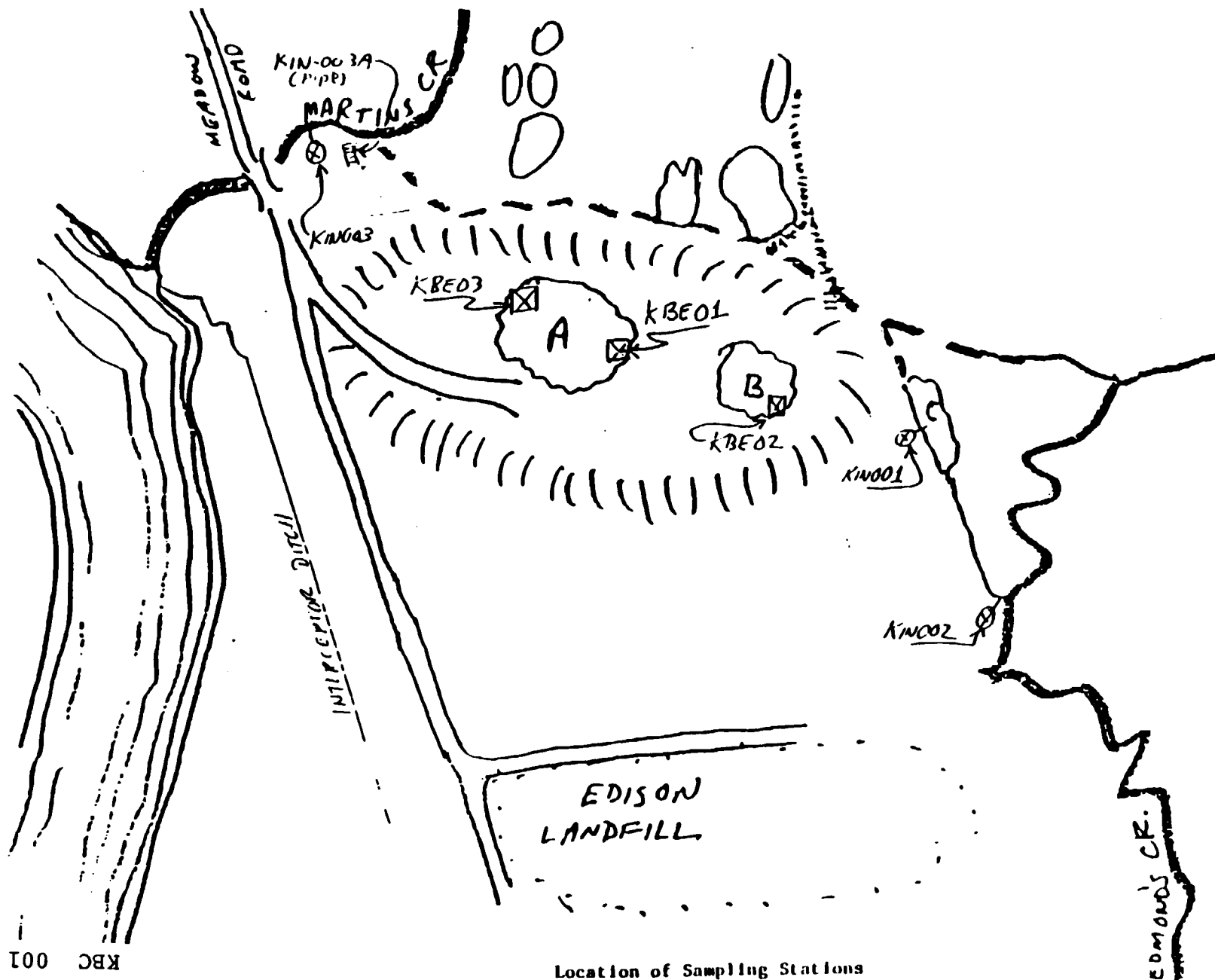
Sheet 1 of 1
Project No. 06316

REDUCED 65%

APPENDIX C
MILL BROOK/MARTINS CREEK
ANALYTICAL DATA

KBC 001 1123

KBC 001 1124



Location of Sampling Stations

Source: USEPA, Region II, Surveillance and Analysis Division, Kin-Buc

Station No.Sampling Station Descriptions *

KBE01	Eastern side of liquid waste pool "A" located at Northwest quadrant of landfill mound. This pool appeared to be receiving most of the liquid chemical waste.
KBE02	South side of liquid waste pool "B" located at Northeast quadrant of landfill mound. This pool appeared to be receiving only waste motor oil.
KBE03	Northwest side of liquid waste pool "A" located at Northeast quadrant of landfill mound.
KIN001	Located at base of landfill mound on Southeast side. Samples collected at point of exit for subterranean (leachate) stream. Effluent entered leachate pool "C". Flow at sampling point is estimated to be about 10 GPM. Flow estimate was done using bucket and stopwatch.
KIN002	Located in leachate drainage ditch just before confluence with Edmond's Creek. Drainage ditch drains area "C" leachate pool located at base of landfill on Southeast side.
KIN003	Northwest side of landfill located in Martins Creek about 75 feet upstream of main entrance gate bridge.
KIN003A	Northwest side of landfill twelve-inch metal pipe discharge into Martins Creek. Pipe located about 15 feet upstream of Station KIN003. Flow intermittent.

Source: USEPA, Region II, Surveillance and Analysis Division, Kin-Buc
Landfill Investigation 2/27/76 - 3/23/76.

MILL BROOK/MARTINS CREEK
LEACHATE AND SURFACE WATER ANALYTICAL DATA

KBC 001 1126

KIN-BUC, INC.
MARTINS CREEK - LEACHATE AND WATER QUALITY DATA
Samples Collected March 3, 1976

Parameter	Sample Station No.		
	KBE-01	KIN-003A	KIN-003
Dichlorodifluoromethane	x		
Methylene Chloride	x	x	x
Chloroform	x	x	x
Trichloroethane			x
Trichloroethylene	x	x	x
Tetrachloroethylene		x	
Chlorobenzene		x	x
Dichlorobenzene	x	x	
Trichlorobenzene	x	x	
Dichloroaniline	x		
Dimethylaniline	x		
Benzene	x	x	x
Toluene	x	x	x
Xylenes	x	x	x
C ₃ alkyl substituted benzenes	x		
C ₄ alkyl substituted benzenes	x		
Biphenyl	x		
Naphthalene	x		
Methylnaphthalenes	x		
Dimethylnaphthalenes	x		
Trimethylnaphthalenes	x		
PCBs	x		

Notes:

x = Present in the sample

- All samples were extracted with benzene and with hexadecane and analyzed for organics by computerized GC/EI and CI (methane) MS.
- KBE-01 is presented for comparative purposes. KBE-01 was a sample taken from a liquid waste pool atop the center of Kin-Buc I.
- KIN-003A is the leachate discharged from pipe into Martin's Creek.
- KIN-003 is a Martins Creek surface water sample, taken slightly downstream of KIN-003A

Source: USEPA, Surveillance and Analysis Division, Region 2, "Kin-Buc Landfill Investigation 2/27/76 - 3/23/76", June 30, 1976.

KIN-BUC, INC.
MARTINS CREEK - LEACHATE DATA

Samples Collected Approximately June 23, 1976

EPA Lab. Sample No.	Sample Source*
35213	Martins Creek leachate flowing to the Raritan River (sample collected by NJDEP)
35214	Martins Creek leachate flowing to the Raritan River (sample collected by NJDEP).

Notes: Identical chromatograms were received for both of the samples. The major component of both samples was dimethylaniline plus traces of xylenes, benzene, toluene, trichloroethane, camphor, methylene chloride, and methylisobutylketone (MIBK).

* It is not known if this sample is KIN-003A (the leachate discharge pipe), or from some other location.

Source: USEPA, Surveillance and Analysis Division, Region 2, 'Kin-Buc Landfill Investigation, 5/5/76 - 6/23/76, Supplemental Report', July 15, 1976.

Samples Collected in March 1976

Sample Station	Date Collected	BOD (mg/l)
KIN-003A	3/07/76	22,000
	3/09/76	65
	3/10/76	1,100

Source: USEPA, Surveillance and Analysis Division, Region 2, "Kin-Buc Landfill Investigation 2/27/76 - 3/23/76", June 30, 1976.

KBC 001 1128

KIN-BUC LANDFILL WATER QUALITY SUMMARY
SAMPLE DESIGNATION: KIN 003A

Parameter	Concentrations ¹		No. of Samples	Parameter	Concentrations ¹		No. of Samples
	Low	High			Low	High	
Aluminum	84,000	480,000	2	Benzene	—	—	—
Chromium	14,000	38,000	2	Ethylbenzene	—	—	—
Beryllium	—	—	—	Chlorobenzene	—	—	—
Barium	—	—	—	Chloroethane	—	—	—
Cobalt	3,600	9,000	2	1,1-Dichloroethane	—	—	—
Copper	8,400	68,000	2	1,1-Dichloroethylene	—	—	—
Iron	14,000	950,000	3	Trans,1,2-Dichloroethylene	—	—	—
Nickel	—	—	—	1,1,2-Trichloroethane	—	—	—
Manganese	2,800	30,000	3	1,1,1-Trichloroethane	—	—	—
Zinc	—	—	—	Trans,1,2-Dichloroethane	—	—	—
Boron	—	—	—	1,2-Dichloroethane	—	—	—
Vanadium	7,500	7,500	1	Trichloroethylene	—	—	—
Silver	—	—	—	Tetrachloroethylene	—	—	—
Arsenic	—	—	—	Methylene Chloride	—	—	—
Antimony	—	—	—	Vinyl Chloride	—	—	—
Selenium	—	—	—	Toluene	—	—	—
Thallium	—	—	—	Acrolein	—	—	—
Mercury	—	—	—	Xylene	—	—	—
Tin	15,000	15,000	1	1,2-Dichlorobenzene	—	—	—
Cadmium	—	—	—	Naphthalene	—	—	—
Lead	110,000	110,000	1	Bis(2-Ethylhexyl) Phthalate	—	—	—
Ammonia	—	—	—	Di-N-Butyl Phthalate	—	—	—
Cyanide	—	—	—	Diethyl Phthalate	—	—	—
Sulfide	—	—	—	Di-N-Octyl Phthalate	—	—	—
Calcium (mg/l)	0.51	1,400	3	Butyl Benzyl Phthalate	—	—	—
Magnesium (mg/l)	250	3,900	3	Bis(2-Chloroethyl) Ether	—	—	—
Silicon	8,000	950,000	3	N-Nitrosodiphenylamine	—	—	—
Sodium (mg/l)	770	1,800	2	Phenol	—	—	—
Titanium	12,000	380,000	2	Arochlor 1248	—	—	—
Zirconium	2,100	6,800	3	Arochlor 1260	—	—	—
				P-Chloro-M-Cresol	—	—	—

¹ units - ug/l unless otherwise noted

Source: NUS, Technical Support for Enforcement Negotiations: Evaluation of Final Remedial Alternatives, Kin-Buc Landfill, Edison, New Jersey, October 1983.

Note: Sample dates and original source unknown.

KIN-BUC LANDFILL SITE
SURFACE WATER SAMPLE ANALYSIS

Element / Compound	Raritan River @ Martin's Creek Mouth			Raritan River Upstream		
	1/4/78	1/5/78	1/6/78	1/4/78	1/5/78	1/6/78
	(S.S) (mg/L)	(S) (mg/L)	(S) (mg/L)	(S.S) (mg/L)	(S) (mg/L)	(S) (mg/L)
COD	--	--	--	--	--	--
Cyanide	--	--	--	--	--	--
Sulfate	--	--	--	--	--	--
Aluminum	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--
Barium	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--
Chromium	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--
Copper	--	--	--	--	--	--
Iron	--	--	--	--	--	--
Lead	--	--	--	--	--	--
Manganese	--	--	--	--	--	--
Mercury	--	--	--	--	--	--
Nickel	--	--	--	--	--	--
Selenium	--	--	--	--	--	--
Silver	--	--	--	--	--	--
Zinc	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--
Benzene	0.0005	0.0002	--	0.0002	--	--
Benz(a)pyrene	*	*	*	*	*	*
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	ND	ND	ND	ND	ND	ND
Ethylbenzene	*	*	*	*	*	*
Fluoranthene	*	*	*	*	*	*
PCB: Aroclor 1016/1242	0.0004	ND	ND	ND	ND	ND
Phenanthrene	--	--	--	--	--	--
Phenol	--	--	--	--	--	--
Tetrachloroethylene	ND	ND	ND	ND	ND	ND
Toluene	0.0012	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND
Xylenes	ND	ND	ND	ND	ND	ND

Notes:

The numbers listed below the dates refer to the sources provided below.

- ND = not detected
- PR = present but not quantified
- = test not performed
- * = test results not provided

Source: PRC Environmental Management, Inc., May 17, 1988. Kin-Buc Landfill Endangerment Assessment, Draft Final Report, Volume 2 of 2 (Appendices).

Original Sources:

Brezenski, F.T., 1978, Technical Support Branch, U.S. EPA Region II, Memorandum to Richard D. Spear, Surveillance and Monitoring Branch, U.S. EPA Region II, Re: Laboratory Results - Kin-Buc Landfill - (organics), dated January 24, 1978.

Brezenski, F.T., 1978, Technical Support Branch, U.S. EPA Region II, Memorandum to Richard D. Spear, Surveillance and Monitoring Branch, U.S. EPA Region II, Re: PCB Results - Kin-Buc Landfill, dated January 12, 1978.

**MILL BROOK/MARTINS CREEK
SEDIMENT ANALYTICAL DATA**

KBC 001 1131

KIN-BUC, INC.
MARTINS CREEK - SEDIMENT DATA
Samples Collected 1/5/78 and 1/6/78

Parameter	Martins Creek Mouth		Raritan River Upstream*	
	1/5/78 (mg/kg)	1/6/78 (mg/kg)	1/5/78 (mg/kg)	1/6/78 (mg/kg)
Alkanes	PR	PR	PR	ND
Alkenes	PR	PR	PR	ND
Chrysene	--	--	ND	PR
Di-n-butylphthalate	ND	PR	ND	PR
Di-n-octylphthalate	PR	ND	PR	ND
PCB: Aroclor 1016	--	--	ND	ND
PCB: Aroclor 1254	--	--	ND	ND
PCB: Aroclor 1260	11	23	12	0.42
PCB: Total	11	23	12	0.42
Pyrene	PR	ND	--	--
Toluene	--	--	--	ND
Cadmium	<0.4	--	<0.4	--
Chromium	21	--	56	--
Copper	20	--	90	--
Lead	47	--	155	--
Nickel	26	--	44	--
Zinc	83	--	230	--

Notes: ND Not detected
PR Present
TR Trace quantities detected
-- Test not performed
* "Raritan River Upstream" sample is used as a background control sample. The exact sample location is not known.

Source: PRC Environmental Management, Inc., Kin-Buc Landfill Endangerment Assessment, Draft Final Report, Volume 2 of 2, May 17, 1988 (cites original source of Brezenski, F. T., 1978, Technical Support Branch, U.S. EPA Region II, Memorandum to Richard D. Spear, Surveillance and Monitoring Branch, U.S. EPA Region II, Re: Sediment Chemistry Results - Kin-Buc Landfill, Edison, NJ, dated February 15, 1978.)

KBC 001 1132