COKER'S SANITATION SERVICES SUPERFUND SITE PROPOSED PLAN

Introduction

The Environmental Protection Agency (EPA), the lead agency for site activities, in consultation with the Delaware Department of Natural Resources and Environmental Control (DNREC), the support agency, is issuing this proposed plan for the Coker's Sanitation Services Superfund Site (Site) located near Cheswold in Kent County, Delaware. The proposed plan describes the remedial alternatives analyzed for the Site, identifies the preferred alternative for remedial action at the Site, and explains the reasons for the preference. EPA and DNREC are seeking public comments on these alternatives and will select a final remedy for the Site only after the public comment period has ended and the information submitted during the comment period has been reviewed and considered.

EPA is issuing this proposed plan as part of its public participation responsibilities under Sections 113(k)(2)(B), 117(a), and 121(f)(1)(G) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, (CERCLA), 42 U.S.C. §§ 9613(k)(2)(B), 9617(a), and 9621(f)(1)(G). This document highlights information that can be found in greater detail in the Remedial Investigation and Feasibility Study (RI/FS) reports and other documents contained in the Administrative Record file for the Site. EPA and DNREC encourage the public to review these documents in order to gain a more comprehensive understanding of the Site and Superfund activities that have been conducted there.

The Administrative Record file, which contains the information upon which the selection of the response action will be based, is available at the following locations:

U.S. EPA Docket Room
Ms. Margaret Leva
Region III
841 Chestnut Building, 6th floor
Philadelphia, PA 19107
215-597-3037

Clayton Post Office
Rail Road Avenue
Clayton, DE 19938
302-653-7376
Hours: M-F 7:00 am - 5:00 pm
Sat. 7:00 am - 12:15 pm

EPA encourages comments from the public on all alternatives and on the information that supports the alternatives. Although EPA has proposed a preferred alternative, no final decision has

been made. Public comments can influence EPA's choice. As a result, the final remedial action plan, as presented in the Record of Decision (ROD), may be different from the preferred alternative presented here. All comments received within the comment period will be considered and addressed by EPA.

Site Background

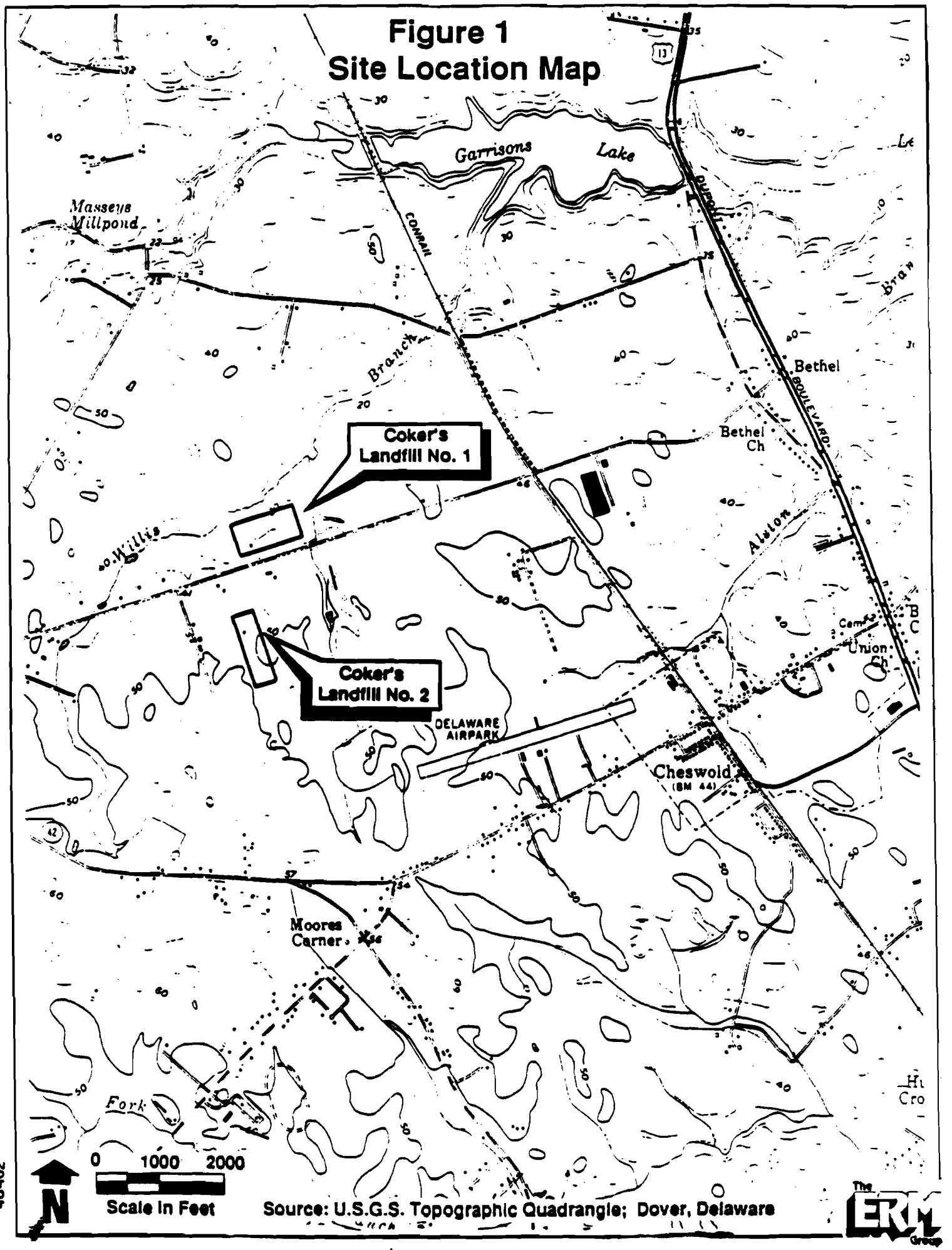
The Coker's Sanitation Services Site consists of two landfills located on opposite sides of Route 152 near Cheswold, Kent County, Delaware (see Figure 1). Landfill #1 is a ten acre tract of land located several hundred feet north of Route 152. This landfill is surrounded on all sides by woods and is bordered on the northern side by the Willis Branch of the Leipsic River (Willis Branch). Landfill #2 is located on the south side of Route 152, approximately one-half mile south-southwest of landfill #1. This landfill is approximately 15 acres in size and is also surrounded by woods.

Both landfills were used for disposal of latex rubber waste sludge from what is now the Reichold Chemicals, Inc. Cheswold Plant. Landfill #1 was operated between 1968 and 1976 pursuant to general state disposal permits. Latex waste sludge was discharged into 12 foot wide, 6 to 8 foot deep, unlined trenches. The waste was allowed to stand in the trenches until solids had settled and liquids had drained. The trenches were used until the solid level was several feet below land surface, at which time they were capped with local soil. The landfill was closed in accordance with DNREC requirements in 1977. Along the northern boundary of the landfill, the land surface slopes downward toward a marshy area which borders the Willis Branch. Leachate seeps located along the slope were sampled by EPA in 1983 and found to contain very low levels of volatile organic compounds (VOCs), including 28 parts per million (ppm) bis(2-chloroethyl)ether.

Landfill #2 was operated under state permit from 1976 until 1980. The permit requirements included synthetic liners and leachate collection systems for each cell, leachate treatment and monitoring, and ground water monitoring. All of the 51 trenches were capped with two feet of soil. Leachate collection was phased out in the early 1980's as the waste material settled and no longer generated leachate. Sampling conducted by EPA in 1980 detected 1300 ppm acrolein in an on-Site well and 2100 ppm acrolein and 4000 ppm ethylbenzene in one leachate collection pipe. In 1983, 17 ppm ethylbenzene (but no acrolein) was detected in the same monitoring well.

The Site was proposed for inclusion on the National Priorities List (NPL) in April 1985 and was finalized on the NPL in July 1987. In 1987, several potentially responsible parties (PRPs) entered into a consent order with EPA to conduct a RI/FS

Figure 1
Site Location Map



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at the Site under EPA oversight. The purpose of a RI/FS is to determine the nature and extent of contamination at a site, and to develop, evaluate, and screen potential clean-up options. The Coker's Remedial Investigation (RI) included soil, ground water, waste, and leachate sampling. Test pits were dug at both landfills to determine the condition of the waste material. Magnetic surveys were conducted at landfill #1 in an attempt to delineate the waste cell boundaries. Biological tests were run on landfill #1 leachate to evaluate its toxicity to aquatic organisms. The Feasibility Study (FS) developed, evaluated and screened a total of seventeen alternatives for both landfills.

Magnetic surveys conducted at landfill #1 detected buried metallic objects in two locations. Approximately 80 drums and two roll-off bins (dumpsters) containing various quantities of latex waste were removed from the Site in 1989 by the PRPs under the terms of a removal consent order. Styrene (11 ppm) and ethylbenzene (77 ppm) were detected in leachate seeps but not in soil or surface water (the Willis Branch). One on-Site shallow monitoring well contained less than 10 ppm benzene, ethylbenzene, and total xylenes, and 20-70 ppm of several semivolatiles. This well was screened in the water table of the Columbia Aquifer, which generally is not considered a drinking water source due to low potential well yield and objectionably high (but naturally occurring) concentrations of iron and manganese. Locally, drinking water supplies are drawn from the Cheswold Aquifer, which lies below the Columbia. The two are separated by several feet of fine sandy silt intermixed with clay which impedes the vertical flow of water. No contaminants were detected in the Cheswold Aquifer. Biological tests run on leachate from the seeps showed some evidence of toxicity to test organisms; however, it was not possible to determine which constituent of the leachate caused the toxicity. Further testing revealed the leachate has no adverse effects on the Willis Branch.

Leachate samples taken from the leachate collection system at landfill #2 contained 2300 ppm (estimated) styrene and 1100 - 23,000 ppm (estimated) ethylbenzene. Toluene (7 ppm), ethylbenzene (5 ppm), and total xylenes (44 ppm) were detected in one on-Site monitoring well. This well was screened in the Columbia Aquifer, as described above. No elevated levels of contaminants were found in any other medium at landfill #2.

Scope and Role of the Response Action

The principal threats posed by conditions at the Site are summarized below. The preferred alternative will address these principal threats by reducing the potential for human exposure to wastes remaining at the Site and by ensuring that future land and ground water use are consistent with this approach.

Summary of Site Risks

Landfill #1

The human health risks associated with exposure to the wastes found at the Site are fully evaluated in the Endangerment Assessment (EA) (volume III of the RI report). The two primary contaminants of concern associated with landfill #1 are styrene, a class B2 (probable human) carcinogen, and ethylbenzene. These compounds were found in the waste cells of the landfill and in leachate seeps along the northwestern side of the landfill. Local residents, including children, and hunters could potentially be exposed to contaminants through contact with, inhalation of vapors from, and incidental ingestion of contaminated water from the leachate seeps. The average lifetime weighted cancer risk and the upper bound, worst case cancer risk for all exposed populations are shown in Table 1. Remedial action is generally warranted at a site when the calculated carcinogenic risk level exceeds 1×10^{-4}, meaning that one additional person out of 10,000 is at risk of developing cancer caused by a lifetime (70 years) of exposure to contaminants at the site.

The potential health effects resulting from exposure to noncarcinogenic compounds is estimated by comparing an estimated dose to an acceptable level. If this ratio exceeds 1.0, a potential health risk associated with exposure to that chemical may exist. The ratios can be added for exposures to multiple contaminants. The sum, known as the Hazard Index, is not a mathematical prediction of the severity of toxic effects, but rather a numerical indicator of the transition from acceptable to unacceptable levels. The weighted chronic and upper bound hazard index scores for exposure to noncarcinogenic compounds at landfill #1 are shown in Table 1.

Biological tests conducted during the RI indicated landfill #1 leachate was toxic to aquatic test organisms. However, chemical data indicates the leachate has no quantifiable impact on the receiving stream (the Willis Branch), and additional biological tests conducted on the stream showed no increase in toxicity in surface water adjacent to or downstream of landfill #1.

Landfill #2

Because landfill #2 waste is contained in lined pits, the potential exposure scenarios are different from those for landfill #1, although the primary contaminants of concern (styrene and ethylbenzene) and pathways of exposure (dermal contact, incidental ingestion, and inhalation) are the same. The potentially exposed population includes local residents, including children, who would be exposed to the leachate in the

TABLE 1

Risks to adults and children associated with contact with leachate seeps at landfill #1.

Lifetime weighted cancer risk	1×10^{-7}
Upper bound cancer risk	4×10^{-6}
Weighted chronic hazard index	0.02
Upper bound hazard index	0.09

TABLE 2

Risks to adults and children associated with ground water use and exposure to leachate in collection system at landfill #2 under 100% liner failure scenario.

Lifetime weighted cancer risk	1×10^{-5}
Upper bound cancer risk	1×10^{-4}
Weighted chronic hazard index	0.2
Upper bound hazard index	0.5*
	0.9*

*Potential for effects to the same organs grouped.

TABLE 3

Upper bound risk for adults and children associated with a residential development scenario at landfills #1 and #2.

Landfill #1

Carcinogenic risk - child	1×10^{-4}
Carcinogenic risk - adult	7×10^{-5}
Hazard index - child	3.26
Hazard index - adult	0.38

Landfill #2

Carcinogenic risk - child	5×10^{-3}
Carcinogenic risk - adult	6×10^{-3}
Hazard index - child	156
Hazard index - adult	48.3

collection pipes or who would use ground water contaminated by leachate released from the lined cells.

During the RI, it was determined that the landfill is not currently affecting ground water in its immediate vicinity. However, over the long term, it can reasonably be expected that landfill #2's synthetic liners will fail (i.e., as a result of tears, leaky seams, etc.). The EA (volume III of the RI report) evaluated the effects of 100% liner failure over the course of four years. During the FS, the liner failure scenario was revised to include information gathered after the completion of the EA. (This data is presented in the appendices of the FS report.) The upper bound cancer risk and lifetime weighted cancer risk associated with use of local ground water under the 100% liner failure scenario are shown in Table 2. The hazard index scores for landfill #2 under this scenario are also shown in Table 2.

Both landfills were closed under the 1974 Delaware Solid Waste Disposal Regulations. Section 7.04 of the regulations states: "Any person owning or controlling the reuse of any ... completed industrial landfill shall obtain the approval of the Department [of Natural Resources and Environmental Control] prior to such reuse." The EA and the FS were written with the assumption that this closure requirement would allow the state to minimize disturbance of the landfills in the future. However, because the regulations do not require deed restrictions, it is theoretically possible that in the future the landfills could unknowingly be used for residential development. The RI activities did not collect data sufficient to properly evaluate a residential use scenario because such a scenario was not considered possible given the assumption stated above. Without the benefit of such data, EPA has prepared an extremely conservative assessment of risk for both landfills under a residential use scenario. Thus, the carcinogenic risk and hazard indices (associated with a residential development scenario at landfills #1 and #2) listed in Table 3 are almost certainly overestimates.

Summary of Alternatives

Seven alternatives were evaluated to deal with the risks posed by current and future exposure to contaminants at the landfills. The following is a brief summary of each of the alternatives. The cost summaries presented with each alternative are estimates and should be used for comparative purposes only.

Alternative 1: No action

Under Section 300.430(e)(6) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 55 Fed. Reg. 8,849 (1990) (to be codified at 40 C.F.R. § 300.430(e)(6)),

EPA requires that the "no action" alternative be evaluated at every site to establish a baseline for comparison to other alternatives. Under this alternative, no action would be taken to address current or future exposure to contaminants remaining at the Site.

Capital Cost:	$0
O & M Costs:	$0
Present worth:	$0

Alternative 2: Monitoring

This alternative includes periodic Site inspection and ground water (both landfills) and leachate (landfill #1 only) monitoring to detect any deterioration of Site conditions. The ground water monitoring wells used during the RI would be used to detect any changes in local ground water conditions caused by the waste remaining on-Site. Should significant changes in Site conditions be detected, additional action may be necessary.

Capital Cost:	$ 0
O & M Costs:	$653,000
Present worth:	$653,000

Alternative 3: Limited Action

This alternative calls for installation of a cover over any leachate seeps present at landfill #1, closure of the landfill #2 leachate collection system with grout, regrading (backfilling and seeding) depressed areas on the surface of landfill #2, and deed restrictions on both landfills. This alternative includes Site inspections, ground water monitoring at both landfills, and surface water monitoring at landfill #1. Should ground water monitoring detect any developing plume in the Cheswold Aquifer, the state could develop a Ground Water Management Zone (an area of restricted ground water use established under state authority) in the vicinity of the Site to control use of local ground water. If surface water monitoring detects any changes in the water quality of the Willis Branch, in depth biological testing of surface water and leachate would be performed.

Capital Cost:	$ 555,000
O & M Costs:	$ 685,000
Present worth:	$1,240,000

Alternative 4: Soil cap

This alternative includes regrading the surface of each landfill to establish drainage patterns, placement of imported topsoil over each landfill surface followed by reseeding, construction of drainage swales for erosion control, and regrading the northern slope of landfill #1 to facilitate

placement of the leachate cover. This alternative also includes all aspects of Alternative 3.

Capital Cost:	$1,706,000
O & M Costs:	$ 778,000
Present worth:	$2,484,000

Alternative 5: Multilayer cap (both landfills) and subdrain (landfill #1 only)

This alternative includes a multilayer cap over each landfill area and diversion of ground water around landfill #1 by an upgradient subdrain. The multilayer cap would reduce infiltration of precipitation into the waste. Because the water table is often above the bottom of the cells at landfill #1, a subdrain would lower the water table below the bottom of the cells and thereby reduce ground water contact with the waste. Because landfill #2's cells are lined, waste is not in direct contact with ground water and therefore a subdrain is not required. This alternative would reduce the quantity of leachate generated at each landfill, decreasing the potential for ground water contamination. Additional components of this remedy include implementation of surface water control features, a Site maintenance program, deed restrictions, and ground water and leachate monitoring as described in Alternative 3.

Capital Cost:	$4,343,000
O & M Costs:	$ 921,000
Present worth:	$5,264,000

Alternative 6: VOC stripping by aeration

Volatile organic compound (VOC) stripping by aeration involves VOC removal by aerating the waste, consolidation of treated waste at landfill #1, backfilling empty cells at landfill #2, and closure of landfill #1 with the treated waste in place. This alternative would include construction at landfill #1 of an enclosed space with air exchange features to remove VOCs from discharged air, excavation of waste at each landfill, transportation of waste from landfill #2 to landfill #1, aeration of waste from both landfills in the enclosed space, agitation of waste to accelerate the aeration process, further aeration of waste outside the shelter, and disposal of treated waste on-Site. Although the latex rubber waste sludges are not considered to be hazardous waste, treated waste would be subject to reclassification based upon the Toxicity Characteristic Leaching Procedure (TCLP) test as required by the Toxicity Characteristics Rule, 55 Fed. Reg. 11,798 (1990), prior to disposal. The results of this test would determine whether the treated waste would be disposed of under Delaware Solid Waste Disposal Regulations or, if it becomes a hazardous waste as a result of treatment, under the Resource Conservation and Recovery Act, as amended, (RCRA)

Subtitle C. The VOC emissions from the VOC stripping operation are not expected to violate any ARARs because current state and federal air quality standards do not address the primary contaminants of concern. A Site specific air quality monitoring program would have to be developed prior to remedial action, however, in order to protect Site workers and the public. In addition, Site maintenance, deed restrictions, and ground water and leachate monitoring would be implemented.

Capital Cost:	$16,281,000
O & M Costs:	$ 427,000
Present worth:	$16,708,000

Alternative 7: On-site incineration

On-Site incineration includes destruction of all organic contaminants in the waste by incineration, consolidation of treated waste at landfill #1, backfilling empty cells at landfill #2, and closure of landfill #1 with the stabilized ash in place. This alternative calls for installation of a mobile incinerator at landfill #1, excavation of 180,000 yds^3 of material from both landfills, transportation of excavated waste from landfill #2 to landfill #1, separation of sludges and soil, incineration of 110,000 yds^3 of material, stabilization of incinerator ash and air scrubber sludge, and disposal of stabilized material in landfill #1. The incinerator would be operated, monitored, and inspected in accordance with RCRA incinerator regulations (40 C.F.R. Part 264, Subpart O). Wastewater collected from the air pollution control system would be subject to state and federal National Pollutant Discharge Elimination System (NPDES) rules. All treated waste (ash) would have to meet TCLP leachate criteria prior to disposal on-Site. National Ambient Air Quality Standards (NAAQS) for particulate matter (40 C.F.R. Part 50) would also need to be met during remedial action. Because disturbance of the waste would result in the release of VOCs, a Site specific air quality monitoring program would have to be developed prior to remedial action. In addition, landfill #1 would be closed in accordance with the applicable provisions of the Delaware Solid Waste Disposal Regulations.

Capital Cost:	$82,571,000
O & M Costs:	$ 427,000
Present worth:	$82,998,000

<u>Preferred Alternative</u>

The EPA preferred alternative for minimizing the potential for exposure to Site contaminants is Alternative 3, Limited Action. Based on current information, this alternative appears to provide the best balance of trade-offs with respect to the nine criteria that EPA uses to evaluate alternatives pursuant to NCP regulations at 55 Fed. Reg. 8,849 (1990) (to be codified at

40 C.F.R. §300.430(e)(9)). EPA believes the preferred alternative will satisfy the statutory requirements of Section 121(b) of CERCLA, 42 U.S.C. § 9621(b), which provides that the selected alternative be protective of human health and the environment, comply with Applicable or Relevant and Appropriate Requirements (ARARs), be cost effective, and utilize permanent solutions and treatment to the maximum extent practicable. The selection of Alternative 3 is preliminary and could change in response to public comments.

The following summary profiles the performance of the preferred alternative in terms of the nine evaluation criteria, noting how it compares to the other alternatives under consideration. A description of the nine evaluation criteria can be found in the glossary of this document.

Overall protection of human health and the environment: By covering landfill #1 leachate seeps, grouting landfill #2 leachate collection pipes, implementing deed restrictions, and inspecting and monitoring the landfills, the preferred alternative eliminates all risk for exposure to waste remaining at the Site under all exposure scenarios. The long-term risks from both landfills under the preferred alternative are below 1×10^{-6}, the lower boundary of EPA's acceptable risk range. Both the no action and the monitoring alternatives would allow exposure to waste above health based levels; Alternatives 4, 5, 6, and 7 are not significantly more protective than the preferred alternative.

Compliance with ARARs: Currently, the Site does not violate any chemical or location specific ARARs. Site activities for all alternatives (other than the no action alternative) will be conducted in accordance with Occupational Safety and Health Administration regulations applicable to activities at hazardous waste sites (29 C.F.R. § 1910.120). The preferred alternative does not trigger any additional action specific ARARs; nor do Alternatives 1, 2, 4, and 5. Alternatives 6 and 7 require compliance with operation and disposal ARARs that are not applicable to the other alternatives, including Delaware Solid Waste Disposal Regulations and RCRA land disposal regulations. In addition, Alternative 7 may require compliance with incinerator regulations, NPDES regulations, and NAAQS for particulate matter in air emissions.

Long-term effectiveness and permanence: By implementing deed restrictions that limit future property use, this alternative is more effective than the no action or monitoring alternatives in that it prevents future development of the Site and eliminates the potential for residential exposure to waste. Alternatives 4, 5, 6, and 7 would also provide effective long-term protection, but at much greater cost.

Reduction of toxicity, mobility, or volume: The preferred alternative achieves no reduction of toxicity, mobility, or volume through treatment because treatment is not employed as a principal element of the remedy. Only alternatives 6 and 7 would achieve any reduction in toxicity, mobility, or volume of waste. Although EPA expects that treatment will be the preferred means by which to address the principal threats posed by a site wherever practicable, it is EPA's expectation that treatment is less likely to be practicable when a site contains large volumes of low concentrations of toxic waste (such as the Coker's landfills), and that such sites will be managed without treatment. See 55 Fed. Reg. 8,703 (1990)and 55 Fed. Reg. 8,846 (1990) (to be codified at 40 C.F.R. § 300.430(a)(1)(iii).

Short-term effectiveness: Implementation of the preferred alternative will result in slight potential for exposure to workers during placement of the leachate cover and grouting of leachate collection pipes. Alternatives 1 and 2 involve no short-term risk because the landfills would not be disturbed in any way. Alternatives 4 and 5 include some disturbance of the landfill caps during construction and would result in slight short-term risk. Alternatives 6 and 7 involve disturbance of the waste during excavation and treatment, which would result in the release of VOCs into the atmosphere, significantly elevating short-term risks to site workers and local residents.

Implementability: Placement of the leachate cover, closure of the leachate collection pipes, and Site monitoring activities under the preferred alternative would be easily accomplished using conventional methods and materials. The monitoring portion of this alternative is easily implemented using the ground water monitoring wells installed during the RI/FS. Alternatives 4 and 5 would also be relatively easy to implement using conventional construction practices and materials. Alternatives 6 and 7 involve substantial excavation of the waste and treatment. Controls required to minimize VOC exposure to workers during excavation and treatment would make Alternatives 6 and 7 considerably more difficult to implement than the other alternatives.

Cost: The preferred alternative is more costly (but also more protective) than the no action and monitoring alternatives. Alternatives 4, 5, 6, and 7 are more costly than the preferred alternative but do not result in a significant reduction of risk below that achieved by the preferred alternative.

State acceptance: The State of Delaware supports the preferred alternative, but will take comments received during the public comment period into account before finalizing its position on the proposed remedy.

Community acceptance: Community acceptance of the preferred

alternative will be evaluated after the public comment period ends and will be described in the ROD for the Site.

Community Participation

EPA has identified Alternative 3 as the preferred alternative for the Site. EPA relies on public input to make sure that the alternative selected for each Superfund site is not only effective but meets the needs of the local community. For this reason, EPA is providing a public comment period on the proposed plan. This comment period will allow the public to comment on the alternatives in the FS and on the preferred alternative in particular. EPA will select a remedy based on the findings of the FS and on public comments. The remedy selected will be documented in a Record of Decision that summarizes the EPA's decision process and responds to comments received from the public.

Copies of the FS and other Site-related documents are available for public review in the Administrative Record file identified in the introduction section of the proposed plan.

Public Comment Invited

EPA will hold a public meeting at 7:00 p.m., September 5, 1990, at the Cheswold Fire Hall, East Main Street, Cheswold, Delaware, (302) 736-1516, to present a summary of the RI/FS and the preferred alternative. Interested citizens also will have an opportunity to ask questions and provide comments. The public comment period begins on August 22, 1990, and concludes on September 21, 1990. EPA encourages citizens to review Site-related documents and submit written comments to one of the following people:

Francesca DiCosmo (3EA21)
Public Affairs Specialist
U.S. EPA Region III
841 Chestnut Building
Philadelphia, PA 19107
(215) 597-6924

Lesley Brunker (3HW25)
Remedial Project Manager
U.S. EPA Region III
841 Chestnut Building
Philadelphia, PA 19107
(215) 597-0985

GLOSSARY

The nine criteria for the evaluation of remedial alternatives are summarized below.

Overall Protection of Human Health and the Environment: whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced or controlled through treatment, engineering controls, or institutional controls.

Compliance with ARARs: whether each alternative will meet all of the Applicable or Relevant and Appropriate Requirements (ARARs) of Federal and State environmental laws and/or justifies invoking a waiver; whether a remedy complies with advisories, criteria and guidance that EPA and PADER have agreed to follow.

Long-term Effectiveness and Permanence: the ability of a remedy to maintain reliable protection of human health and the environment over time, once clean-up goals have been met.

Reduction of Toxicity, Mobility, or Volume through Treatment: addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce the toxicity, mobility or volume of hazardous substances.

Short-term Effectiveness: 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.

Implementability: the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

Cost: estimated capital, operation & maintenance (O&M), and net present worth costs.

State/Support Agency Acceptance: whether the state concurs with, opposes, or has no comment regarding the preferred alternative.

Community Acceptance: the public's general response to the alternatives which will be assessed in the Record of Decision following a review of the public comments received on the administrative record and the proposed plan.