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UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF CONNECTICUT

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CLERK
U.S. DISTRICT COURT
HARTFORD, CONN

UNITED STATES OF AMERICA,

Plaintiff,

v.

HAROLD MURTHA, TERRANCE MURTHA, MURTHA TRUCKING, INC., MURTHA ENTERPRISES, INC., MURTHA WASTE CONTROL CORPORATION, BEACON HEIGHTS, INC., and LAUREL PARK, INC.

Defendants.

CIVIL ACTION NO.

COMPLAINT

The United States of America ("United States"), at the request and on behalf of the Administrator of the United States Environmental Protection Agency, alleges as follows:

PRELIMINARY STATEMENT

1. This is a civil action under Section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9607 (as amended 1986), seeking recovery of response costs incurred or to be incurred by the United States in connection with the Beacon Heights Landfill Site ("Beacon Heights Site") in Beacon Falls, Connecticut, and the Laurel Park Landfill Site ("Laurel Park Site") in Naugatuck, Connecticut.

2. Because of reports that the assets of defendant Murtha Trucking, Inc. have been or are being transferred and may no longer be controlled by the defendants, this action further seeks a temporary restraining order and/or preliminary injunction barring the defendants from further transferring any of their assets.

JURISDICTION AND VENUE

3. This Court has jurisdiction over this action pursuant to 28 U.S.C. §§ 1331, 1345 and 42 U.S.C. § 9613(b).

4. Venue is proper in this district pursuant to 28 U.S.C. § 1391(b) and (c) and 42 U.S.C. § 9613(b), because the claims arose in this district, the defendant individuals reside in the district, and one or more of the defendant corporations is incorporated and licensed to do business in Connecticut.

5. Notice of the commencement of this action has been given to the State of Connecticut.

PARTIES

6. The United States Environmental Protection Agency ("EPA") is an agency of the United States.

7. Harold Murtha is an individual residing at 45 Sherman Street, Naugatuck, Connecticut.

8. Terrance Murtha is an individual residing in Naugatuck, Connecticut, and is the brother of Harold Murtha.

9. Beacon Heights, Inc. is a corporation organized and existing under the laws of the State of Connecticut, with its principal place of business in Beacon Falls, Connecticut.

10. Laurel Park, Inc. is a corporation organized and existing under the laws of the State of Connecticut, with its principal place of business in Naugatuck, Connecticut.

11. Murtha Trucking, Inc. is or was a corporation organized and existing under the laws of the State of Connecticut, and has or had its principal place of business in Naugatuck, Connecticut.

12. Murtha Enterprises, Inc. is a corporation organized and existing under the laws of the State of Connecticut, with its principal place of business in Naugatuck, Connecticut.

13. Murtha Waste Control Corporation is a corporation organized and existing under the laws of the State of Connecticut, with its principal place of business in Naugatuck, Connecticut.

GENERAL ALLEGATIONS

The Beacon Heights Site

14. The Beacon Heights Site consists of an approximately thirty-six acre landfill (the "Beacon Heights Landfill") and certain adjacent land in Beacon Falls, Connecticut, on which harardous substances, as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), are located. The Beacon Heights Site is listed as a hazardous substance site on the National Priorities List ("NPL") promulgated by EPA pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, and codified at 40 C.F.R. Part 300, App. B (site number 220).

15. Beacon Heights, Inc. is and has been since May 22, 1970, owner of the Beacon Heights Landfill. Beacon Heights, Inc. owned and operated the Beacon Heights Landfill during a period when hazardous substances were disposed of at the Landfill.

16. Harold Murtha and Terrance Murtha are and have been at all relevant times since May 22, 1970, directly or indirectly, between them, owners of all or a substantial majority of the shares of Beacon Heights, Inc. At all relevant times since May 22, 1970, Harold Murtha has served as President, and Terrance Murtha as Vice-President, of Beacon Heights, Inc. Throughout

this period, Harold Murtha and Terrance Murtha have, jointly or individually, exercised effective control over the day-to-day operations of Beacon Heights, Inc., and of the Beacon Heights Landfill.

17. Harold Murtha is and has been at all relevant times since May 22, 1970, operator of the Beacon Heights Landfill within the meaning of Section 101(20)(A) of CERCLA, 42 U.S.C. § 9601(20)(A). Harold Murtha operated the Beacon Heights Landfill during a period when hazardous substances were disposed of at the Landfill.

18. Terrance Murtha is and has been at all relevant times since May 22, 1970, operator of the Beacon Heights Landfill within the meaning of Section 101(20)(A) of CERCLA, 42 U.S.C. § 9601(20)(A). Terrance Murtha operated the Beacon Heights Landfill during a period when hazardous substances were disposed of at the Landfill.

19. Releases of hazardous substances have occurred at the Beacon Heights Site and have contaminated surface and subsurface soils and surface waters at the Site, and groundwater under the Site. The migration of some of these hazardous substances in surface water or groundwater has reached at least two domestic water supply wells and has contaminated a tributary of Hockanum Brook which receives runoff from the Site. Actual of threatened releases of hazardous substances into the environment from the Beacon Heights Site continue.

20. EPA has conducted a Remedial Investigation and Feasibility Study relating to the Beacon Heights Site and, by

Record of Decision ("ROD") signed on September 23, 1985, the Regional Administrator, Region I, EPA, determined that certain response actions should be taken to remedy the release or threatened release of hazardous substances at the Site and the resulting harm or threat of harm to the public health, welfare, or the environment. In the ROD (attached as Exhibit A to this Complaint), EPA estimated that the total cost of the selected response actions will be $19,613,000 (1985 dollars).

The Laurel Park Site

21. The Laurel Park Site consists of an approximately thirty-five acre landfill in Naugatuck, Connecticut, on which hazardous substances are located. The Laurel Park Site is listed as a hazardous substance site on the current NPL (site number 84).

22. Laurel Park, Inc. is and has been since 1969, owner of the Laurel Park Site. Laurel Park, Inc. owned and operated the Laurel Park Site during a time when hazardous substances were disposed of at the Site.

23. Harold Murtha and Terrance Murtha are and have been at all relevant times since 1969, directly or indirectly, between them, owners of all or a substantial majority of the shares of Laurel Park, Inc. Throughout this period, Harold Murtha and Terrance Murtha, jointly or individually, have exercised effective control over the day-to-day operations of Laurel Park, Inc., and of the Laurel Park Site.

24. Harold Murtha is and has been at all relevant times since 1969 operator of the Laurel Park Site within the meaning of Section 101(20)(A) of CERCLA, 42 U.S.C. § 9601(20)(A).

Harold Murtha operated the Laurel Park Site during a period when hazardous substances were disposed of at the site.

25. Terrance Murtha is and has been at all relevant times since 1969 operator of the Laurel Park Site within the meaning of Section 101(20)(A) of CERCLA, 42 U.S.C. § 9601(20)(A). Terrance Murtha operated the Laurel Park Site during a period when hazardous substances were disposed of at the site.

26. Releases of hazardous substances have occurred at the Laurel Park Site and have contaminated surface and subsurface soils and surface waters at the Site, and groundwater under the Site. The migration of some of these hazardous substances in surface water or groundwater has contaminated two streams near the Site and threatens to reach domestic water supply wells. Actual or threatened releases of hazardous substances into the environment from the Laurel Park Site continue.

27. Under an administrative consent order with EPA, Uniroyal, Inc. is conducting a Remedial Investigation and Feasibility Study to evaluate conditions at the Laurel Park Site and to identify alternative response actions that may be undertaken to remedy the release or threatened release of hazardous substances and any resulting harm or threat of harm to the public health, welfare, or the environment. Although no such remedial action has been selected, EPA anticipates, based on currently available information, that the remedial action at the Laurel Park Site will be similar in magnitude to the remedial action at the Beacon Heights Site and, therefore, will probably cost on the order of $20 million.

Murtha Trucking; Inc., and Related Entities

28. Murtha Trucking, Inc. is and has been, or was during all relevant times when it was in existence, engaged in the business of general hauling, including hauling and disposal of industrial wastes. Murtha Trucking, Inc. has on numerous occasions, both before and after May 22, 1970, accepted hazardous substances for transport to the Beacon Heights Landfill, a location which it selected. Murtha Trucking, Inc. has on numerous occasions since 1969 accepted hazardous substances for transport to the Laurel Park Site, a location which it selected.

29. Since before 1969 until at least December 29, 1986, Harold Murtha and Terrance Murtha owned all or substantially all of the stock of Murtha Trucking, Inc., and, jointly or individually, exercised effective control over its day-to-day operations. Throughout this time, Harold Murtha served as President, and Terrance Murtha as Vice President, of Murtha Trucking, Inc.

30. On numerous occasions, Harold Murtha has personally accepted or directed the acceptance of hazardous substances for transport by Murtha Trucking, Inc., and has selected or directed the selection of the Beacon Heights Landfill or the Laurel Park Site as the location for disposal of such hazardous substances.

31. On numerous occasions, Terrance Murtha has personally accepted or directed the acceptance of hazardous substances for transport by Murtha Trucking, Inc., and has selected or directed the selection of the Beacon Heights Landfill or the Laurel Park Site as the location for disposal of such hazardous substances.

32. At various times pertinent to this proceeding, Murtha Trucking, Inc. and Murtha Enterprises, Inc. have represented that they held ownership interests in the Beacon Heights Landfill. Harold Murtha is and has been during times relevant to this proceeding President of Murtha Enterprises, Inc.

33. On or about December 29, 1986, Murtha Waste Control Corporation merged with Murtha Trucking, Inc., and as of that date Murtha Waste Control Corporation was the successor, assign, and owner of Murtha Trucking, Inc.

34. Defendants Murtha Trucking, Inc., Murtha Enterprises, Inc., Murtha Waste Control Corporation, Beacon Heights, Inc., and Laurel Park, Inc. are or have been effectively controlled by Harold Murtha and Terrance Murtha, and all five defendant corporations have been operated by Harold Murtha and Terrance Murtha as parts of a common enterprise.

FIRST CLAIM FOR RELIEF: BEACON HEIGHTS SITE
(CERCLA § 107, 42 U.S.C. § 9607)

35. Paragraphs 1-20 and 28-34 are incorporated herein by reference.

36. The release or threatened release of hazardous substances from the Beacon Heights Site has caused the United States to incur response costs (as defined in 42 U.S.C. § 9601(25)) amounting to $1,117,788 as of February 20, 1987. The United States is currently incurring additional response costs and will continue to incur additional response costs at the Beacon Heights Site.

37. The costs incurred by the United States in connection with the Beacon Heights Site are not inconsistent with the National Contingency Plan, as set forth in 40 C.F.R. Part 300 (1985).

38. The United States has satisfied any condition precedent to the undertaking of response actions at the Beacon Heights Site, incurrence of response costs, and recovery of those costs under CERCLA § 107, 42 U.S.C. § 9607.

39. The defendants are liable jointly and severally to the United States pursuant to CERCLA § 107(a), 42 U.S.C. § 9607(a) for all response costs incurred or to be incurred by the United States in connection with the Beacon Heights Site.

SECOND CLAIM FOR RELIEF: LAUREL PARK SITE
(CERCLA § 107, 42 U.S.C. § 9607)

40. Paragraphs 1-13 and 21-34 are incorporated herein by reference.

41. The release or threatened release of hazardous substances from the Laurel Park Site has caused the United States to incur response costs (as defined in 42 U.S.C. § 9601(25)) amounting to $193,875 as of February 20, 1987. The United States is currently incurring additional response costs and will continue to incur additional response costs at the Laurel Park Site.

42. The costs incurred by the United States in connection with the Laurel Park Site are not inconsistent with the National Contingency Plan, as set forth in 40 C.F.R. Part 300 (1985).

43. The United States has satisfied any condition precedent to the undertaking of response actions at the Laurel Park Site, incurrence of response costs, and recovery of those costs under CERCLA § 107, 42 U.S.C. § 9607.

44. The defendants are liable jointly and severally to the United States, pursuant to CERCLA § 107(a), 42 U.S.C. § 9607(a), for all response costs incurred or to be incurred by the United States in connection with the Laurel Park Site.

THIRD CLAIM FOR RELIEF: TRO AND/OR PRELIMINARY INJUNCTION

45. Paragraphs 1-44 are incorporated herein by reference.

46. Based on the foregoing, there is a substantial likelihood that plaintiff will succeed in a trial on the merits.

47. On information and belief, defendants Harold Murtha, Terrance Murtha, and Murtha Waste Control Corporation have transferred or have agreed to transfer or are in the process of transferring the entire business and/or assets of Murtha Trucking, Inc. to a party whose identity is unknown to the United States.

48. The assets of Murtha Trucking, Inc. may no longer be available to satisfy a judgment on plaintiff's claims in this action.

49. On information and belief, the defendants have insufficient assets to satisfy a judgment for response costs incurred or to be incurred by plaintiffs at the Beacon Heights Site and/or the Laurel Park Site, and any further dissipation by defendants of their assets will substantially decrease defendants' ability to discharge such a judgment, thereby resulting in irreparable harm to the plaintiff for which plaintiff will have no adequate remedy at law.

50. To prevent such harm to the United States, and to effectuate the obligations imposed on the defendants by CERCLA, the defendants should be temporarily restrained and/or preliminarily enjoined from further disposing of their assets until defendants' liability hereunder is finally adjudicated. The defendants will not sustain any undue injury, loss or inconvenience as a result of the issuance of such orders.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays that this Court:

1. Issue a temporary restraining order and/or a preliminary injunction barring each of the defendants and their officers, directors, agents, representatives, licensees, employees, servants, successors and assigns from selling, transferring, encumbering or otherwise in any manner, directly or indirectly, conveying or diverting or directing the diversion, to any other person or entity, of any of the defendants' assets.

2. Enter judgment against the defendants, jointly and severally, for all response costs incurred and to be incurred by the United States in connection with the Beacon Heights Site and the Laurel Park Site, plus interest; and

3. Grant such other and further relief as the Court deems appropriate.

Respectfully submitted,

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Land and Natural Resources Division

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Trial Attorney
Environmental Enforcement Section
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Washington, D.C. 20530
(202) 633-2445

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays that this Court:

1. Issue a temporary restraining order and/or a preliminary injunction barring each of the defendants and their officers, directors, agents, representatives, licensees, employees, servants, successors and assigns from selling, transferring, encumbering or otherwise in any manner, directly or indirectly, conveying or diverting or directing the diversion, to any other person or entity, of any of the defendants' assets.

2. Enter judgment against the defendants, jointly and severally, for all response costs incurred and to be incurred by the United States in connection with the Beacon Heights Site and the Laurel Park Site, plus interest; and

3. Grant such other and further relief as the Court deems appropriate.

Respectfully submitted,

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COMPLAINT
EXHIBIT A

RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTIO

BHLEPA888427

SITE : Beacon Heights Landfill, Beacon Falls, Connecticut

DOCUMENTS REVIEWED :

I am basing my decision primarily on the following documents describing the analysis of cost-effectiveness of remedial alternatives for the Beacon Heights Landfill site:

1. Remedial Investigation for the Beacon Heights Landfill site, Beacon Falls, Connecticut, April 1985, prepared for U.S. EPA, Region 1, by NUS Corporation, Pittsburgh, Pennsylvania.

2. Feasibility Study for the Beacon Heights Landfill site, Beacon Falls, Connecticut, August 1985, prepareu for the U.S. EPA, Region 1, by NUS Corporation, Pittsburgh, Pennsylvania.

3. Summary of Remedial Alternative Selection (attached)

4. Community Relations Responsiveness Summary (attached)

5. Remedial Action Master Plan for the Beacon Heights Landfill site, Beacon Falls, Connecticut, June 1984, prepared for the U.S. EPA, Region 1, by Camp, Dresser and McKee, Inc., Boston, Massachusetts.

7. The National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300.

8. 40 C.F.R. Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

DESCRIPTION OF SELECTED REMEDY

REMEDY:

- Excavation of Betkoski's Dump and other contaminated soils for consolidation with the main landfill prior to closure.

- RCRA capping of the consolidated wastes, including gas venting (with air pollution controls if determined necessary during design), and stormwater management controls.

- Installation of a perimeter leachate collection system.

- Collection of leachate and transportation to a licensed waste water treatment facility or on-site treatment followed by discharge to a tributary of Hockanum Brook.

- Extension of a public water supply along Skokorat Road to the next municipal supply and along Blackberry Hill Road to the demographic limits.

- Enclosure of the site with security fencing.

- Installation of a more extensive groundwater monitoring system.

OPERATION AND MAINTENANCE:

Maintenance will include lawnmowing of the grass cover overlying the cap, inspection and repair of the cap, repair of damage to the security fence, removal of obstructions from the stormwater management and gas venting systems, and regrading as necessary. Monitoring will include sampling and analysis of upgradient and downgradient monitoring wells and surface waters and collected leachate. Operations will include collection of leachate and transport to an offsite facility or operation of an onsite treatment facility. (To be decided during design phase).

DECLARATIONS

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and the National Contingency Plan (40 C.F.R. Part 300), I have determined that at the Beacon Heights Site, a full RCRA-approved cap, leachate collection and treatment at an approved offsite facility or on-site treatment and discharge to an unnamed tributary of Hockanum Brook, extension of municipal water supply, long-term groundwater monitoring and institutional controls on groundwater usage, and other methods described above are the cost-effective remedies which provide adequate protection of public health, welfare, and the environment.

The State of Connecticut has been consulted and concurs with the selected remedy. In addition, the action will require future operation and maintenance activities to ensure the continued effectiveness of the remedy. Leachate treatment will be considered part of the approved action and eligible for Trust Fund monies for a period of up to two years from the completion of the cap and leachate collection system. All other operation and maintenance activities will be eligible for Trust Fund monies for one year after completion of the source control remedial action.

I have also determined that the action being taken is appropriate when balanced against the availability of Trust Fund monies for use at other sites.

EPA will utilize the post closure monitoring data to determine the need for an additional remedial investigation/feasibility study to evaluate offsite groundwater contaminant migration. If additional remedial actions are deemed necessary a Record of Decision will be prepared for approval of the future remedial action.

In addition, a Supplementary Decision Document will be prepared for the signature of the Regional Administrator during the design phase to justify the decisions reached on the manner and location of leachate treatment (onsite or offsite), the extent of excavation in the satellite areas, and the need for air pollution controls on the landfill gas vents.

9/23/85
Date

Regional Administrator

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APPENDICES

LIST OF FIGURES AND TABLES

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SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

SITE NAME

Beacon Heights Landfill site

SITE LOCATION AND DESCRIPTION

The Beacon Heights Landfill site is located two miles east of the intersection of Connecticut Routes 8 and 42 in Beacon Falls, Connecticut. Access to the landfill is from Blackberry Hill road about 3500 feet from this road's intersection with Route 42. The landfill occupies approximately 30 acres of an 83 acre property within the lower Naugatuck River valley. The site sits atop a ridge southeast of the intersection of Skokorat and Blackberry Hill roads. Approximately 21 homes border the site to the west along Skokorat road and 23 homes lie to the north along Blackberry Hill road in an area of low residential density. The closest residence is about 800 feet away on Blackberry Hill Road. The site is located within the Hockanum Brook drainage area. Hockanum Brook, which is 0.5 miles northwest of the landfill, flows down toward the Naugatuck river, which is two miles west of the site. Gravel pit operations also exist in this area, one northwest of the site, the other to the northeast. Both are approximately 0.5 miles from the landfill. Residences on Skokorat road as well as those above a recently installed water main on Blackberry Hill road have private water supplies. The site layout and location is further delineated on the maps presented in appendix A and figure 1.

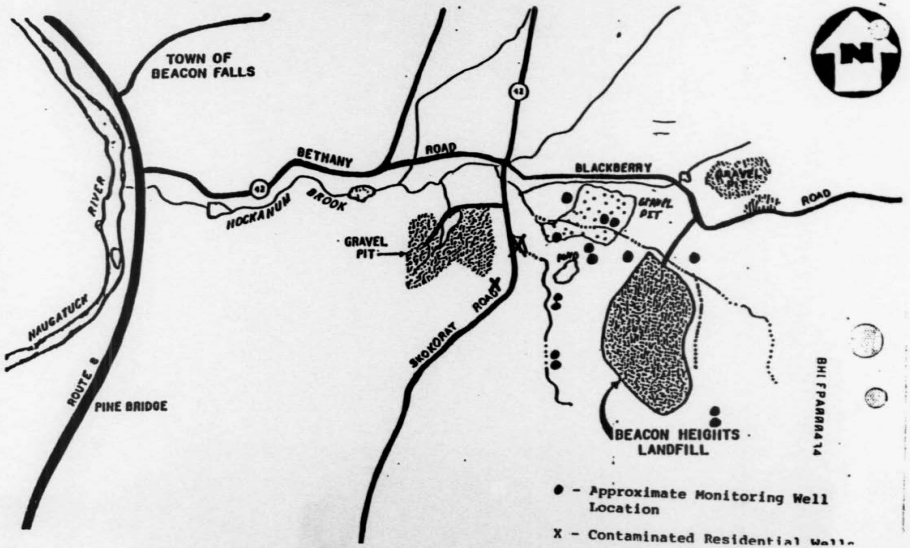
The entire site lies outside the 100 year floodplain of Hockanum Brook, and neither includes nor borders any wetland areas.

Groundwater in the region occurs in both the unconsolidated deposits, till and drift, and in the bedrock. Based on regional estimates of 47 inches of precipitation and 22 inches of evapotranspiration annually, approximately 25 inches of precipitate contact the landfill. Of this amount, 12 inches is discharged as surface runoff which allows 13 inches to percolate into the fill material. This percolate becomes contaminated from contacting the wastes prior to recharging the unconsolidated and bedrock aquifers and/or discharging as leachate at seeps at the base of the landfill, as illustrated in Figure 3.

Groundwater in the shallow unconsolidated aquifer contributes to the base flow of Hockanum Brook and to the flow of its two tributaries which flow north from the site and eventually join the Naugatuck River. The shallow unconsolidated aquifer also provides water for a number of residential wells in the area.

Site Location Map

Figure 1



SITE HISTORY

From the 1920's until 1970 the site was known as "Betkoski's Dump" and consisted of approximately 6 acres of active dumping in the northwest corner of the existing site. According to records at the Connecticut Department of Environmental Protection (CT DEP), the dump accepted a variety of waste including municipal refuse, rubber, plastics, and industrial chemicals and sludges. Operations consisted primarily of open burning along with burial of non-combustibles. Problems of wind blown litter and smoke from open burning were reported during this period. In 1970, the Betkoski property and adjacent properties totaling 83 acres were purchased by the Murtha Trucking Company, and the name was changed to Beacon Heights, Inc. Landfill. The landfill area was expanded to approximately 30 acres using excavated soils for daily cover material. Records of the CT DEP including a 1973 report by the landfill engineer listed rubber, plastics, oils, hydrocarbons, chemical liquids and sludges, and solvents as being disposed at the landfill. Site operations reportedly ceased in 1979 with two exceptions. Wastewater treatment plant sludge was spread over large areas of the site until 1983. Also a very small refuse transfer station for neighboring Bethany residents remains in operation immediately inside the access gate.

Several pools of liquid as well as evidence of open burning are visible on the site in aerial photographs taken in 1965. In addition, other aerial photographs taken in 1963, 1970, and 1975 visibly document the landfill expansion. An engineering geology study of the landfill completed in April, 1973 stated that leachate production was occuring. Another documented release of contaminants to the environment was a sampling of surface water near the site in 1979. The results from this sample were 30 parts per billion (ppb) chloroform, 110 ppb ethyl acetate, 400 ppb methyl acetate, and 30 ppb methyl ethyl ketone. Releases of contaminants to the air, groundwater, and surface water surrounding the Beacon Heights Landfill are further documented in the remedial investigation report prepared by NUS Corp., and are discussed further herein in the Current Site Status section.

During the period of operations from 1970 to 1979, both municipal wastes and industrial wastes and refuse were disposed of by landfilling. The Connecticut DEP monitored and permitted site operations during this period and issued a series of Administrative Orders to the owner/operator to perform engineering-geological studies to remedy alleged permit violations related to unauthorized acceptance of industrial wastes, disposal in unauthorized areas, surface water contamination from leachate migration, inadequate cover, and others.

These activities culminated in a Consent Order to close the facility by July 1, 1979. This Consent Order was signed by the president of Beacon Heights, Inc. on June 20, 1979 and entered as a final Order of the Connecticut Commissioner of Environmental Protection on July 24, 1979. The closure requirements of the Order, which included placement of final cover and implementation

of a groundwater monitoring system, were never implemented. On December 4, 1979 the CT DEP inspected the Beacon Heights Landfill and reported that landfill operations had ceased.

No response actions have been taken at the site by EPA or the CT DEP. However, the DEP has been providing bottled water to 2 homes on Skokorat Road since November, 1984 after their wells were found to be contaminated above levels considered acceptable for drinking water by the Connecticut Department of Health Services.

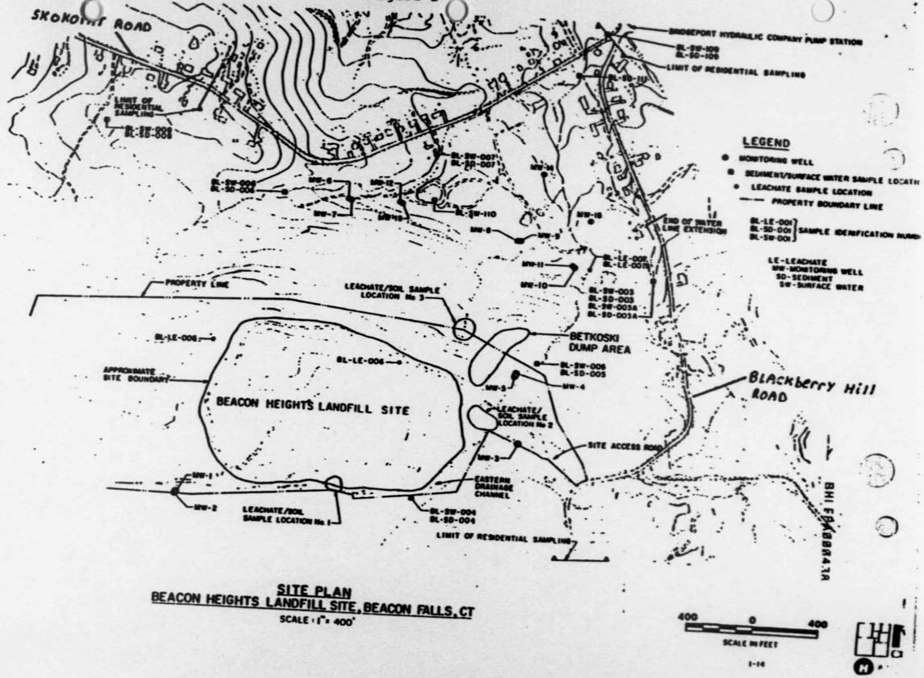
CURRENT SITE STATUS

The site consists of two overlapping waste management areas. The main area, formerly operated by Beacon Heights, Incorporated occupies approximately 30 acres of an 83 acre property. Visually it is a large mound with elevations ranging from 550 to 718 ft. above mean sea level. The depth of waste ranges from 0 feet at the toe to 40-60 feet near the top. Based on comparisons of current and old topographic maps it is estimated that 650,000 cubic yards of waste comprise the body of the landfill. Due to the random codisposal of municipal refuse and industrial wastes it is not possible to identify specific locations of hazardous materials within the landfill mass.

The second area of disposal is known as the former "Betkoski Dump". This smaller 6 acre area is located immediately adjacent to the landfill to the northwest of the site access road (see figure 2), although portions of it extend beneath the access road and beneath the Beacon Heights landfill area.

The following summary hydrologic profile of the landfill explains the surface water and groundwater migration pathways for contaminant migration from the site. Precipitation percolates into the fill materials and becomes contaminated from contact with the wastes. This contaminated water (leachate) flows through the permeable refuse until it contacts the less permeable bedrock. Some leachate then flows downward into the shallow bedrock system under the influence of gravity, while the rest flows at the interface of the fill and bedrock until it exits the landfill at one of the leachate seeps. Some leachate entering the bedrock flows downgradient in the upper fractured zone until the gradients are such that allow this leachate to discharge as seeps at the base of the landfill in local groundwater discharge areas. At two of the three major seep areas, the leachate is collected by a crude channel that runs along one side of the site until its juncture with a stream. The stream transports the leachate offsite through a former gravel pit operation where a portion of the stream percolates into the ground to recharge the shallow aquifer. The remainder of the leachate entering the bedrock flows along the most transmissive fractures to the regional discharge area, the Naugatuck River, located to the northwest of the site.

Figure 2



SITE PLAN
BEACON HEIGHTS LANDFILL SITE, BEACON FALLS, CT
SCALE: 1" = 400'

1-14

should onsite actions require breaking into the landfill or excavation of satellite areas, additional monitoring would be required.

Thus, the major exposure pathway to human receptors from the release of hazardous substances from the site is the ingestion of contaminated groundwater withdrawn from either the unconsolidated aquifer or the bedrock aquifer, both of which are contaminated with benzene, chlorobenzene, chloroethanes, bis (2-chloroethyl) ether, xylenes, and other hazardous compounds. These two aquifers provide water for 44 homes along Skokorat and Blackberry Hill Roads. Assuming 3.8 occupants per residence, approximately 167 people utilize private wells drawing water from these aquifers for drinking water and other domestic uses.

The aforementioned hydrologic setting of the landfill provides a pathway for contaminant releases from the site to reach these wells. As shown in Figure 3, the landfill is situated in a local recharge area for the unconsolidated aquifer which discharges to Hockanum Brook. The estimated groundwater velocity in this aquifer is approximately 52 feet per year. The residences are within approximately 1/2 mile (2640 feet) from the landfill; the closest is within 800 feet. Since significant contamination has already been found in the unconsolidated monitoring wells at distances of 400 and 1000 feet from the landfill, it is evident that the area residential wells which draw from the unconsolidated aquifer are threatened by continued offsite migration of contaminants from the site.

Contaminant flow in the fractured bedrock also threatens the nearby residential wells which draw from the bedrock aquifer. Again referring to Figure 3, the landfill is sited in an area which provides recharge to the bedrock aquifer which discharges locally to Hockanum Brook and regionally to the Naugatuck River. CT DEP records indicate that the unconsolidated deposits in the filled areas were removed prior to landfilling for use as daily cover material. Thus, the wastes were placed directly on the bedrock surface, thereby providing a pathway for leachate to enter the bedrock fractures. Outside the waste management areas, the unconsolidated aquifer recharges the bedrock aquifer, i.e. there is downward flow of water and contaminants from the unconsolidated deposits into the bedrock. Once contaminants enter the bedrock, by either means, local flow paths and velocities cannot be defined since they are governed by fracture spacing and directions, interconnections of the fractures, and local disturbances such as pumping. However, the regional flow direction is north-northwest toward Hockanum Brook and the Naugatuck River. The residences on both Skokorat and Blackberry Hill Roads are within the flow paths of contaminated groundwater and could be impacted at any time.

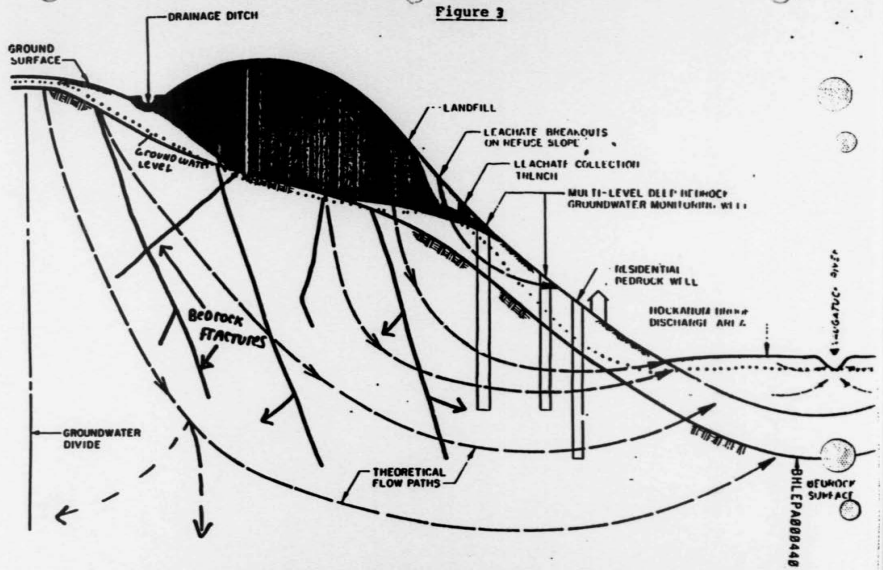
Two bedrock residential wells on Skokorat Road were found to be significantly contaminated with benzene, a human carcinogen, during the remedial investigation performed by NUS. In three separate sampling rounds in the summer and fall of 1984 and the

winter of 1985, benzene levels in the two wells were found to be 131 ppb, 22 and 98 ppb, and 42 and 89 ppb. No federal drinking water standard has been set for benzene; the EPA Office of Drinking Water has set a SNARL (Suggested No Adverse Response Level) of 70 ppb to protect against chronic systemic toxicity from long term ingestion. The SNARL does not consider carcinogenicity, however. The cancer risk associated with ingestion of benzene at 131 ppb is 1.98×10^{-4} lifetime excess cancers, i.e. 2 excess cancers above normal cancer rates for every 10,000 people ingesting this compound over a 70 year lifetime. Should the levels in the residential wells reach the 860 ppb measured in offsite monitoring wells, the cancer risk would increase proportionately. Benzene is ubiquitous at the site, having been found in groundwater, leachate, surface water, soils, and air, and the concentrations in offsite groundwater can be expected to increase over time as the plumes spread further out from the site.

The above findings prompted the Connecticut Department of Health Services to notify the occupants of the two residences that their well water was unfit for human consumption since the benzene levels were substantially in excess of that Department's guideline of 1 ppb. Subsequently, the CT DEP has provided bottled water to the two residences under the provisions of Connecticut Public Act 85 - 407.

Other contaminants detected in the residential wells by NUS include methylene chloride, 1,1 dichloroethane, bromodichloromethane, xylene, trichloroethene, chloroform, bis(2-ethylhexyl)phthalate, and di-n-octyl phthalate. Although current levels of these contaminants are below federal and state guidelines for drinking water, significant levels of many of these same contaminants have been found in both leachate and offsite groundwater and thus, the levels in the residential wells could increase over time as contaminant plumes migrate further from the landfill source. A complete listing of the critical contaminants and their associated threshold and nonthreshold effects is presented in Tables B-4 and B-5 of the Feasibility Study Report prepared by NUS. (See Appendix B of this document for additional information).

Leachate discharges and contaminated surface runoff from the site have also degraded the small tributary of Hochanum Brook which drains the site. Both the brook and its tributaries are classified by the CT DEP as B/A, meaning that the desired classification is A but that the current status approximates B due to the effects of waste discharges on stream quality. Samples taken from the tributary in the fall of 1984 at a location approximately 800 feet downstream of the leachate discharge point were contaminated with benzene (49 ppb), chlorobenzene (95 ppb), bis(2-chloroethyl)ether (420 ppb), and 1,2 dichlorobenzene (10 ppb), and the streambed is heavily discolored from the high iron content of the leachate.



THEORETICAL FLOW PATHS OF GROUNDWATER AND CONTAMINANTS
FROM THE BEACON HEIGHTS LANDFILL

Thus, the attainment of Class A standards is threatened by the leachate disharge. It is noted that the aforementioned contaminant levels were measured at a point 800 feet downstream of the actual disharge point. Sampling could not be conducted closer to the discharge point, because the stream enters an underground culvert immediately after the discharge point. Were this location accessible to sampling, the contaminant levels would be expected to be higher than at the downstream sampling location.

Finally, the presence of exposed leachate and contaminated soils, primarily at leachate seeps, presents a potential direct contact hazard from ingestion or dermal contact. Specific data on the compounds present in these areas can be found in Chapter 2 of the Feasibility Study Report and in Appendix B of this document.

ENFORCEMENT ANALYSIS

Included as an EPA enforcement confidential document in Appendix E.

ALTERNATIVES EVALUATION

The feasibility study has addressed both source control remedial actions and offsite remedial actions. Source control actions are appropriate since substantial concentrations of hazardous substances remain at or near the area where they were originally located and inadequate barriers exist to retard the migration of hazardous substances into the environment. (See 40 C.F.R. § 300.68 (e)(2) of the NCP) Offsite remedial actions were also evaluated, since contaminants have migrated beyond the area where they were originally located. Furthermore, source control actions may not, in and of themselves, mitigate and minimize damage to public health, welfare, and the environment. (See 40 C.F.R. § 300.68 (e)(3) of the NCP)

Objectives

The objectives of the remedial action are to reduce the generation of contaminated leachate and thereby mitigate future groundwater and surface water contamination; to minimize offsite migration of contaminants via surface runoff; to minimize direct human contact with contaminated soils on site; and to assure a safe drinking water supply for area residents. These objectives may be achieved by source control actions supplemented by offsite actions. To meet these broad objectives, the landfill wastes must be isolated to minimize contact with groundwater and surface water, and to prevent human and animal exposure.

Development of Alternatives

The remedial alternatives for the Beacon Heights Landfill were developed and evaluated using 40 C.F.R § 300.68 (g), (h), (i), and (j) of the NCP as guidance.

The first step in developing the remedial action alternatives was to consider the wide range of possible methods for remedying releases at any site and then to select those methods which were applicable to the stated objectives of remediation at the Beacon Heights Landfill site. Table 4-1 lists the general response methods considered appropriate for evaluation at this site. Table 4-2 listr those that were rejected as inappropriate. The methods listed in Table 4-1 were then combined to form the 13 remedial action alternatives listed in Figure 4. Alternatives 1 - 8 are source control actions; alternatives 9 - 13 are offsite actions.

Initial Screening

The thirteen alternatives were screened based on the criteria in 40 C.F.R. § 300.68 (h) of the NCP, i.e. cost, effects of the alternative, and acceptable engineering practices.

The following is a brief discussion of those alternatives that were eliminated from detailed evaluation and the reasons for the elimination. Please note alternatives are numbered as presented in Figure 4.

Alternative Number 1, Offsite Disposal in an Approved Facility. This alternative includes excavation of all contaminated materials, disposal in an offsite RCRA-approved landfill, backfilling and revegetation of the excavated areas, and installation of stormwater management controls. The total present worth cost of this alternative is $101,257,000 with an initial capital cost of $100,459,000. This alternative is roughly twice the cost of the next cheapest source control alternative. Although technically possible, this alternative is not a reliable means of addressing the site problems. Implementatior could require 3 to 7 years or more, depending on the availability of an approved landfill. Currently there are no approved facilities located in Connecticut, or New England. Furthermore, the excavated wastes may require extensive rehandling to meet the landfill site's requirements on free liquid content, solvent content, or some wastes may be encountered which would not be accepted even after rehandling.

Significant short term adverse impacts could also result from the implementation of this alternative. Excavation of 700,000 cubic yards of waste would result in substantial amounts of contaminated surface runoff and leachate migration which would be extremely difficult if not impossible to control. Additionally, increased volatilization of both hazardous organic compounds and methane from garbage decomposition could cause local air emission problems.

Selection of this alternative would also not comply with the

Figure 4

GORIZATION AND CLASSIFICATION OF REMEDIAL AC[illegible] ALTERNATIVES
BEACON HEIGHTS LANDFILL SITE

BHLFPARR0445

Remedial Action Alternative
Site Remediation Alternatives
1. Offsite Disposal in an Approved Landfill
2. Onsite Incineration
3. RCRA Closure with Cap, Leachate Collection, and Treatment to NPDES Standards
4. Onsite RCRA Landfill, Leachate Collection, and Treatment to NPDES Standards
5. Onsite RCRA Landfill, Leachate Collection, and Treatment to Drinking Water Quality Standards
6. Soil Cover, Leachate Collection, and Treatment to NPDES Standards
7. No-Action
8. Limited No-Action with Long-Term Monitoring
Water Supply Alternatives
9. Public water supply provided to extended area (Skokorat Road to next municipal supply, Blackberry Hill Road to demographic limits)
10. Public water supply provided to affected area (Partial coverage on Skokorat Road)
Groundwater Alternatives
11. Groundwater Extraction and Treatment to Drinking Water Quality Standards
12. Additional Groundwater Hydrogeologic Investigation
13. Limited No-Action with Monitoring

Table 4-1

GENERAL RESPONSE ACTIONS AND ASSOCIATED REMEDIAL TECHNOLOGIES
BEACON HEIGHTS LANDFILL SITE

BHLEPA000446

General Response Action	Applicable Remedial Technologies
No Action	Monitoring
Containment	Groundwater containment barrier Capping
Pumping	Onsite groundwater pumping - extraction Offsite groundwater pumping - extraction
Collection	Leachate collection Gas vents Gas collection systems Sedimentation basins French drains Pipe collection systems
Diversion	Regrading and revegetation Diversion channels
Complete Removal	Excavation of landfill waste material including soils, sediments, and liquid wastes
Onsite Treatment	Waste incineration - RCRA Leachate treatment - physical, chemical, biological Groundwater treatment - physical, chemical, biological
Offsite Treatment	Waste incineration - RCRA Leachate treatment - physical, chemical, biological Groundwater treatment - physical, chemical, biological
Offsite Disposal	RCRA Landfill
Onsite Disposal	RCRA Landfill
Alternative Water Supply	Municipal water system Individual treatment devices New wells

Table 4-2

ELIMINATED GENERAL RESPONSE ACTIONS AND ASSOCIATED REMEDIAL TECHNOLOGIES BEACON HEIGHTS LANDFILL SITE

General Response Action	Eliminated Remedial Technologies	Comments
Containment	Bulk heads	Not applicable to site characteristics and problems.
	Gas barriers	Data does not support the need for this technology.
Diversion	Stream diversion ditches	Site or remediation not affected by stream location.
	Terraces and benches	Surface water run-on not affecting site significantly.
	Chutes and downpipes	Surface water run-on can be controlled by other means
	Levees	Flood plains not applicable to site.
	Seepage basin	Site characteristics do not support this technology
Complete Removal	Contaminated structures	Not applicable to this site
	Sewers and water pipes	Not applicable to this site
Partial Removal	Excavation	The random codisposal of industrial wastes with the municipal refuse eliminates the feasibility of identifying specific locations of buried hazardous waste.
Onsite Treatment and Offsite Treatment	Solidification	The codisposal of industrial wastes with municipal waste has created a complex waste that cannot be treated with any effectiveness by these technologies
	Land treatment	
In-situ Treatment	Permeable treatment beds	The codisposal of industrial wastes with municipal wastes has created a complex waste that cannot be treated with any effectiveness by these technologies. The complex hydrogeology also adversely affects the ability to control implementation of these technologies.
	Bioreclamation	
	Soil flushing	
	Neutralization	
	Landfarming	

BHLF/AR/060187

statutory restrictions on offsite disposal under CERCLA §121 (24). It is not the cost effective alternative, it is not necessary to protect public health, welfare, and the environment, and it would not create additional disposal capacity. Based on the uncertain feasibility of securing an approved disposal site, the potential adverse environmental impacts of unearthing, transporting, and redisposing of such a large amount of waste, the extended timeframe for implementation, and the excessive cost relative to the other alternatives without corresponding benefit, this alternative was eliminated from detailed evaluation.

Alternative Number 2, Onsite Incineration. This remedial action involves the excavation of all contaminated materials including the main landfill, the Betkoski Dump, and peripheral contaminated soils. Following excavation the waste would be burned in four portable incinerators. After incineration, all ash and non combustibles (estimated at 200,000 cubic yards) would be disposed in an onsite RCRA landfill. This is the most complex of all 13 alternatives to implement.

The reliability and thus engineering feasibility of this alternative is highly questionable due to the heterogenous nature of the waste material and its mixture with large quantities of soil and debris. This would hinder the ability of the incinerators to effectively destroy the hazardous constituents and would likely result in a high incidence of malfunctions and downtime. Short term adverse impacts to air quality from malfunctions and poor destruction efficiency could also be expected and could pose a potential threat to public health. In addition, a minimum of 3 to 4 years would be required for implementation.

The total capital cost of this alternative is $51,201,000 with a total present worth cost of $64,055,000. Based on the engineering infeasibility of burning the contents of the entire 30 acre, 650,000 cubic yard landfill in a safe, effective, and timely manner, and the possibility of short term adverse impacts to public health, this alternative was eliminated from detailed evaluation.

Alternative 3A, RCRA Closure with a Cap, No Leachate Collection or Treatment, Postclosure Monitoring. This alternative is identical to Alternative 3 except the perimeter leachate collection is omitted. Initial capital cost is $ 14,326,000 and total present worth cost is $ 15,193,000. (See Table C-3 for cost comparison with other options under Alternative 3). The CT DEP requested an evaluation of this alternative based on their opinion that a RCRA cap would so dramatically curb leachate production that a collection system would not be needed. Based on water balance calculations, it is expected that leachate would be produced, at least initially, at a rate of approximately 5000 gallons per day. This rate of leachate production will most likely decline after capping once the presently saturated wastes within the landfill have dewatered. However, the degree to which leachate

production will drop and the time required to do so cannot be accurately predicted. Since no cap may be engineered to be completely impermeable and since waste will remain beneath the cap, leachate will continue to be produced in some amount. If not collected, this leachate will be a continuing source of contamination to groundwater and surface waters. Thus, this alternative does not provide adequate control of source material as required by 40 C.F.R. § 300.68 (h)(2) of the NCP and therefore has been dropped from consideration.

Alternative Number 6, Soil Cover, Leachate Collection, and Treatment to Drinking Water Quality Standards, Postclosure Monitoring. In this alternative the entire site will be covered with a soil cap, leachate collection and treatment will be provided, and gas venting and storm water management systems will be installed. The soil cover will consist of two feet of till material and a six inch loam layer to maintain vegetation. The purpose of the soil cover is to reduce contaminated surface water runoff and to reduce some of the infiltration that subsequently generates leachate. The amount of leachate reduction will depend on the impermeability of the cap. Even though leachate production would be reduced, this soil cap would permit a substantial amount (10,000 to 20,000 gallons per day) of leachate to be produced as a result of the infiltrated precipitation. This alternative would control the discharge of leachate and contaminated runoff into surrounding surface waters but would allow continued releases of contaminants to groundwater. The initial capital cost of this alternative is $6,175,000 with a total present worth cost of $8,277,000.

Continued leachate production under this alternative poses an ongoing threat to the environment and to the public health and therefore does not meet the site objectives. Due to inadequate control of leachate production, this action does not constitute adequate control of source material as required by 40 C.F.R. § 300.68 (h)(2) of the NCP and therefore has been dropped from further consideration.

Alternative Number 7, No Action. This alternative represents the baseline against which all other alternatives are to be compared. The objectives for site remediation, described earlier, are based on the conclusion that the current and future potential risks to public health, welfare, and the environment are unacceptable. These risks were identified in the Feasibility Study Report and in the Current Site Status section of this document. The No Action alternative provides no source control measures and no measures to minimize and mitigate the offsite migration of contaminants. As such it will not reduce leachate generation and subsequent migration of contaminants into groundwater and local surface water and therefore will not reduce the public health threat from ingestion of

contaminated groundwater or the public health and environmental threats from continued surface water contamination. It also will not reduce the potential health threat associated with direct contact with contaminated soils and water at leachate breakouts (seeps).

In summary, the no action alternative would not achieve adequate control of source material and would not minimize nor mitigate the the threat of harm to human health, welfare, or the environment as required under 40 C.F.R. § 300.68 (h)(2) of the NCP. Therefore, this alternative was eliminated from detailed evaluation.

Alternative Number 8, Monitoring. This alternative is a form of the no action alternative. As such it does not include construction activities to remediate site contamination but instead provides for developing and maintaining a long-term monitoring program. The results of the monitoring program would be evaluated to track any adverse impacts to the public health and/or environment, and to identify a point at which remedial activities may be required. Monitoring includes the sampling and analysis of several newly installed wells, as well as sampling the residential, groundwater, and surface waters on a quarterly basis over a 30 year period. The initial capital cost for this alternative is $272,000 with a total present worth cost of $1,969,000. This monitoring alternative does not provide for more immediate actions to remedy contaminant migration or adverse impacts to public health and the environment. It does not minimize continued release of contaminants to the groundwater, nor does it provide a long term solution for adequate source control. Again, based on 40 C.F.R § 300.68 (h)(2) of the NCP this alternative does not constitute adequate control of source material. Based on this reason as well as those outlined in alternative 7 above, this alternative has been dropped from further consideration in the detailed analysis.

Alternative Number 11, Groundwater Extraction and Treatment to Drinking Water Quality Standards. A groundwater extraction system was developed to mitigate the threat to human health caused by the offsite migration of contaminants into drinking water aquifers. This alternative includes the installation of approximately 70 bedrock extraction wells. Each well would have its own pumping system. These pumps will discharge to a main line that leads to a treatment unit. The treatment unit would use a combination of air stripping and carbon adsorption to process the flow. This process would operate for at least a 30 year period, or until remedial cleanup goals are met (background, Maximum Concentration Limits - MCL's, or Alternate Concentration Limits - ACL's as required under RCRA).

Extraction of contaminated groundwater from deep fractured bedrock is not a proven practice. In addition, site specific geologic and hydrologic conditions complicate the design and implementation of an extraction system. The bedrock fractures in the area have predominant vertical dips. This is readily visible on the abundant bedrock outcrops surrounding the site. This fact severely complicates the siting of extraction wells. With a vertical fracture system, the probability of intersecting the fractures with vertical extraction wells is remote, and near misses will render the well useless since unfractured impermeable rock prevents water flow. Pumping wells that do intercept fractures would only draw water from those particular fractures and any interconnected fractures. To circumvent this problem, an enormous number of wells would be required. However, the probability of intercepting all fractures carrying contaminants from the site would still be remote, and any fractures that were missed would continue to provide a conduit for contaminant migration from the site, thereby rendering the entire system ineffective. (See Table C-2 for estimated costs).

Removal of contaminated groundwater from the thin glacial till material is technically feasible, although very difficult. Even if removal of groundwater contamination from the till material could be achieved, leachate would continue to enter the fractured bedrock beneath the landfill for subsequent migration offsite. Thus, the threat to the environment and public health would not be adequately mitigated.

Due to the technical infeasibility of groundwater extraction from deep, fractured bedrock and the inadequate mitigation of the public health threat provided by extraction and treatment of contaminants from the unconsolidated aquifer, this alternative was eliminated from further evaluation.

Alternative Number 12, Additional Groundwater Hydrogeologic Study. This additional hydrogeologic study alternative was developed to collect additional data to better design an effective groundwater extraction and treatment system. An additional hydrogeologic study would provide more information on bedrock conditions. However, the existing data are adequate to conclude that the hydrogeologic setting of the landfill precludes effective interception and extraction of contaminated groundwater. Therefore, this alternative cannot provide for minimization or mitigation of threats to public health and the environment from the offsite migration of contaminated groundwater, and it was eliminated from further consideration.

DETAILED EVALUATION OF ALTERNATIVES -A- RHIFPAHRRA51

The alternatives remaining for detailed evaluation are discussed below. A detailed analysis of these alternatives was performed in accordance with 40 C.F.R. § 300.68 (i) of the National Contingency Plan (NCP), which requires consideration of technical feasibility, detailed cost estimation including distribution of costs over time, constructibility, effectiveness in addressing environmental, welfare, and public health concerns, and adverse environmental impacts and measures for mitigating those impacts.

In response to comments received by the CT DEP, the PRP's, and others on the draft Feasibility Study Report, three modifications to Alternative 3 were developed. These options relate to whether or not leachate is collected, and, if collected, whether to treat onsite or offsite. As indicated in the attached Figure 10, the range in total project costs among the options is small enough that it does not affect the choice of a recommended source control alternative from among the remaining Alternatives 3, 4, and 5.

The remaining offsite remedial alternatives include Alternatives 9 and 10, which would extend the municipal water supply to a limited (10) or an extended (9) area. Alternative 13 would deal with offsite groundwater contamination via long term monitoring coupled with institutional controls. Costs for all alternatives including long term costs are included in Appendix C of this document.

Alternative Number 3, RCRA Cap, Leachate Collection and Onsite Treatment, Postclosure Monitoring. This alternative involves closure of the landfill with a RCRA capping system, along with the implementation of postclosure monitoring requirements. The Betkoski Dump wastes and contaminated soils and sludges around the site will be excavated, consolidated and placed on top of the landfill prior to closure. These "satellite" areas are shallow in depth (approximately 3 to 15 feet), and lie directly over bedrock. Wastes in these areas will be excavated to background or to alternate levels protective of human health, welfare, and the environment. Predesign/design sampling will be necessary to define the excavation criteria. A Decision Document will be prepared at that time to document the cost-effectiveness of the selected approach. The steep sideslopes on the north side of Betkoski's Dump preclude the ability to effectively cap this area and provide leachate collection, thus necessitating consolidation. Leachate will be treated onsite and discharged to a tributary of Hockanum Brook. The site will be enclosed with a fence, and new monitoring wells will be installed to monitor the effectiveness of the cap as required by 40 C.F.R. § 264 Subparts (F), (G), and (N).

A landfill gas venting system will also be installed to prevent the buildup of gasses under the cap. The need for air pollution controls on the vented gasses would be evaluated during design. The initial capital cost for this alternative is $15,439,000 with a 30 year total present worth cost of $17,155,000. The proposed area of capping and the extent of the leachate collection system are shown in Figure 5. The quantities of materials for construction of a multimedia cap are outlined in Figure 6. A cross section of the proposed cap is shown in Figure 7. A cost summary of all leachate collection and treatment options included under Alternatives 3, 3A, 3B, and 3C can be found in Figure 6a and in Appendix C Table C-3 of this document.

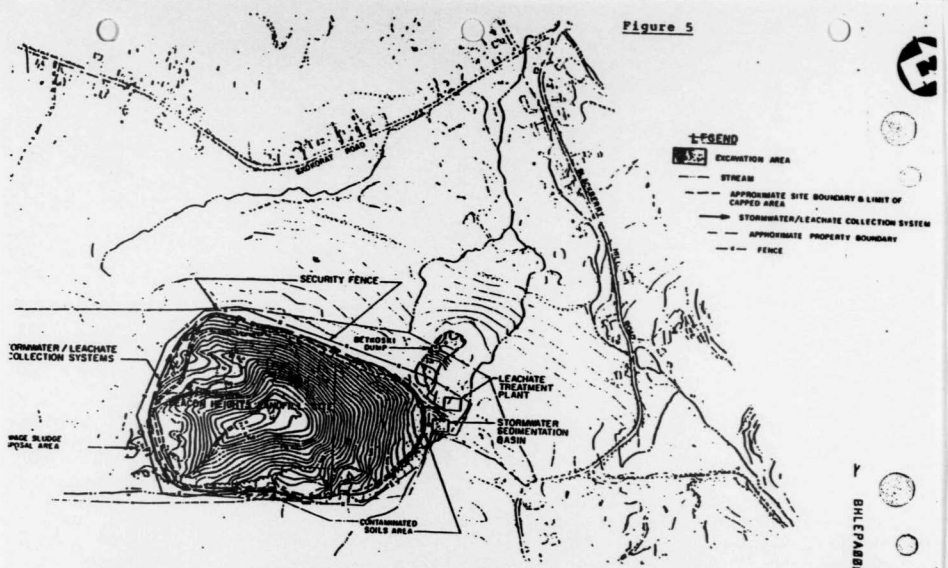
This alternative satisfies all of the objectives for source control. Consolidation of the outlying contaminated soils with the main landfill followed by capping that landfill will eliminate the direct contact threat and the offsite migration of contaminants via surface runoff. Installation of a cap which meets the requirements of RCRA will minimize the future production of leachate which, in turn, will minimize future groundwater contamination and surface water contamination. The provision of a perimeter leachate collection and treatment system will ensure adequate source control of the majority of the leachate which will be generated after capping, during the period of time required for the presently saturated wastes to dewater, and the small amount of leachate which will be generated by leakage through the cap.

Alternative 3B, RCRA Cap, Leachate Collection, Offsite Treatment. This alternative is identical to Alternative 3 with the exception that the leachate collected onsite would be transported to an offsite treatment facility. The PRP committee requested an evaluation of this alternative based on their opinion that onsite treatment and discharge to Hockanum Brook (Alternative 3) would not be allowed under Connecticut Water Quality Standards and that treatment at the Naugatuck or Beacon Falls POTW would be more cost effective.

Under this alternative, the perimeter leachate collection system would drain by gravity to a holding tank. An estimated 5000 gallons per day (GPD) would initially be removed off site by two tank trucks per day and transported to the nearest available wastewater treatment facility. Prior to removal, leachate would be pretreated onsite with an alkaline metal precipitation process. Preliminary scoping has shown that the Naugatuck wastewater treatment facility may be able to accept and process this leachate load. This facility is about four miles from the site. The initial capital cost of this alternative is $15,216,000 with a total 30 year present worth of $18,610,000.

The Beacon Falls POTW was eliminated from consideration for technical reasons; only domestic wastes are presently treated at the facility, and the system is presently experiencing problems due to infiltration/inflow.

Figure 5



SCHEMATIC OF RCRA TYPE CLOSURE-ALTERNATIVE 3
BEACON HEIGHTS LANDFILL SITE, BEACON FALLS, CT
SCALE: 1" = 400'

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NUS CORPORATION
A Halliburton Company

Figure 6

BHLEPA000456

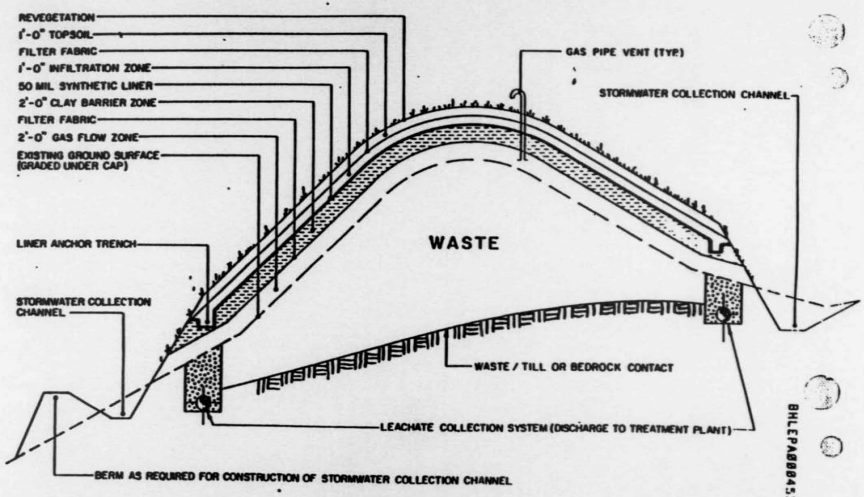
QUANTITY ESTIMATES
REMEDIAL ACTION ALTERNATIVE 3
BEACON HEIGHTS LANDFILL SITE

Remedial Action	Estimated Quantity
• Excavation	
Betkoski Dump	25,000 CY
Sewage Sludge and Soils	18,000 CY
• Leachate Collection System	
Perimeter Drain	
Trench Excavation	16,700 CY
Synthetic Liner (50 mil)	157,000 SF
Gravel Backfill ($K>10^{-3}$ cm/sec)	16,700 CY
8 in. perforated pipe	4,500 LF
Filter Fabric	7,500 SY
• Stormwater Management System	
Channel Excavation and Grading	11,000 CY
Berm Construction	10,000 CY
Site Revegetation	40 AC
• Leachate Treatment System	
Package Treatment Plant	5,000 GPD
• Multimedia Cap	
Gas Flow Zone	
2 ft. sand & gravel $K>10^{-3}$ cm/sec	106,500 CY
Impervious Zone	
2 ft. clay $K<10^{-7}$ cm/sec	106,500 CY
50 mil synthetic liner	1,437,500 SF
Filter fabric	159,700 SY
Infiltration Zone	
1 ft. sand & gravel $K>10^{-3}$ cm/sec	53,200 CY
Soil Zone	
Filter Fabric	159,700 SY
1 ft. topsoil	53,200 CY

CY:Cubic Yards
LF: Lineal Feet
AC:Acres
GPD: Gallons Per Day

SF: Square Feet
SY: Square Yard
K: Permeability
cm/sec: Centimeters Per Second

Figure 7



CONCEPTUAL CROSS SECTION OF RCRA-TYPE CAP CLOSURE - ALTERNATIVE 3
BEACON HEIGHTS LANDFILL SITE, BEACON FALLS, CT
NOT TO SCALE

CERCLA, Section 101 (24), defines "remedial action" as including the use of offsite transport of hazardous substances only if it is necessary to protect public health, welfare, and the environment, creates additional disposal capacity, or is more cost effective than onsite remedies. The first two criteria are not satisfied by this alternative. However, the present worth cost is very close to that of Alternative 3 (onsite treatment). Since the degree of source control provided is identical to that provided by Alternative 3, a final decision on the leachate treatment aspect of Alternative 3 would be deferred to the design phase of the project, during which time additional data would be collected and analyzed and the cost effectiveness analysis refined to better compare the leachate treatment options within Alternative 3. A Decision Memorandum signed by the Regional Administrator would then be prepared to justify the selected option.

Alternative 3C, RCRA Cap, Leachate collection and treatment onsite with a temporary mobile system, Postclosure monitoring. This alternative is identical to Alternative 3 with the exception that a temporary, mobile treatment system from a commercial vendor would be used instead of building a permanent installation. This unit will most likely consist of an air stripper, to remove volatile organics, combined with carbon adsorption for removal of non-volatile organics. The unit would remain on-site until either leachate production drops to non-processable levels or leachate production does not drop as expected, at which point additional leachate handling techniques would be evaluated. The primary advantage of this option is that a permanent on-site facility need not be built if leachate production is only to continue for a few short years, and in the meantime a less costly treatment option can be pursued. However, this alternative has disadvantages in that commercially available mobile systems may not have all necessary unit processes to adequately process leachate to discharge standards. It has been assumed for costing purposes that this treatment will continue for five years after completion of the source control remedy. The total 30 year present worth cost of this alternative, assuming that leachate collection and treatment is needed for only 5 years, is $16,409,000. Again, costing data are included within Appendix C, Table C-3. If design or predesign work confirms that leachate production may drop to non processable levels within a short time and that a mobile unit can adequately treat the leachate, this option is the most cost effective of all the leachate treatment options that provide adequate protection of public health, welfare and the environment. Based on this possibility, if Alternative 3 is selected this option would be further investigated during the design phase of the project and a Decision Document would be prepared were this option to be selected over options 3 or 3B.

Alternative Number 4, Onsite RCRA Landfill, Leachate Collection and Treatment to NPDES Standards. This remedial alternative involves the phased construction of an onsite landfill meeting the technical requirements of RCRA, and the placement of all contaminated material within the new landfill. The leachate from the new landfill (double lined bottom) would be treated to NPDES standards and discharged to the tributary of Hockanum Brook. This alternative includes a gas venting system and fencing around the entire site. The phased construction process requires constructing sections of the new landfill while excavating portions of the old landfill. The project would require extremely high quality control during construction to maintain the integrity of the bottom, double lined layer, since large earth moving equipment will be moving on top of it. Free liquids found within the existing landfill would also require stabilization before disposal in the new landfill.

This alternative satisfies all source control objectives for site remediation and would provide a slightly increased degree of protection beyond that afforded by Alternative 3 since all leachate would be collected. Nonetheless, an offsite remedy would still be required to mitigate the groundwater contamination which already exists.

The implementability and therefore feasibility of this alternative is questionable. Construction of this landfill would require significant quantities of both fill and impermeable cover and liner materials to be delivered to the site and consequently may take 4 or more years to implement. In addition, the siting would have to take place partly on adjacent property since Beacon Heights, Inc., does not own enough suitable land on which to build a new landfill. This would require purchasing or taking land by eminent domain to construct the new landfill and could also add to the estimated time required for implementation. Excluding the costs to purchase this additional land, the initial capital cost of this alternative is $38,240,000 with a 30 year total present worth cost of $40,040,000.

Implementation of this alternative may also cause short term adverse impacts to human health and the environment which may not be totally controllable by the use of mitigative measures. The excavation and rehandling of such a huge mass of waste may result in releases to the air of both hazardous organic chemicals and methane from garbage decomposition in sufficient quantities to pose a threat to the health of area residents. The control of contaminated leachate and surface runoff during this operation, particularly during storm events, would be extremely difficult if not impossible with the result that both surface waters and groundwater would be adversely affected.

Thus, on the basis of high costs and adverse environmental impacts of the alternative, this alternative has been eliminated.

Alternative Number 5, Onsite RCRA Landfill, Leachate Collection and Treatment to Drinking Water Quality Standards. This alternative is the same as alternative number 4 except that the leachate will be treated to a more stringent discharge standard, the drinking water quality standards rather than the NPDES standards. This option was eliminated for the same reasons as number 4 above.

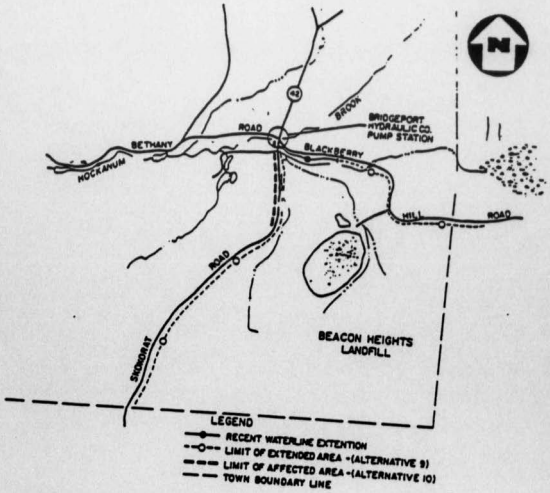
Alternative Number 9, Public Water Supply Provided to Extended Area. This alternative includes extending the municipal water supply approximately 7,000 feet along Skokorat Road to the next town's existing water main, and extending the public water supply along Blackberry Hill Road approximately 5,200 feet to the demographic limits. The limits of the waterline extension are shown in Figures 8 and 9. All present and potential human receptors along Skokorat Roa and Blackberry Hill Road will be provided with an alternate water supply.

The area of coverage for the water line was initially based on the hydrogeologic setting of the landfill which was described earlier. The indeterminate nature of local contaminant flow in anisotropic, fractured bedrock mandates that coverage extend beyond both the presently impacted area and the area of impact inferred from consideration of surface topography to account for local disturbances in flow patterns due to pumping of private wells or quirks in stratigraphy. These influences may cause contaminants to flow toward deep bedrock receptor wells upgradient of the landfill. Under this alternative, the water line would be extended to the limits of residential development on Blackberry Hill Road to encompass these more distant potential receptors. The next possible receptor is 3000 feet from the proposed limit of the waterline. Homes in this area would require extremely deep wells to penetrate the bedrock formation that may carry groundwater from the landfill, and such homes are far enough away to avoid influences of pumping or other disturbances on local contaminant flow patterns. The Skokorat Road waterline would be extended to the next town's service limits for the same reasons.

This waterline extension will also require upgrading of a pumping station and installation of individual tap-ins to all residences (approximately 54). Construction and engineering requirements needed to complete this alternative are very common.

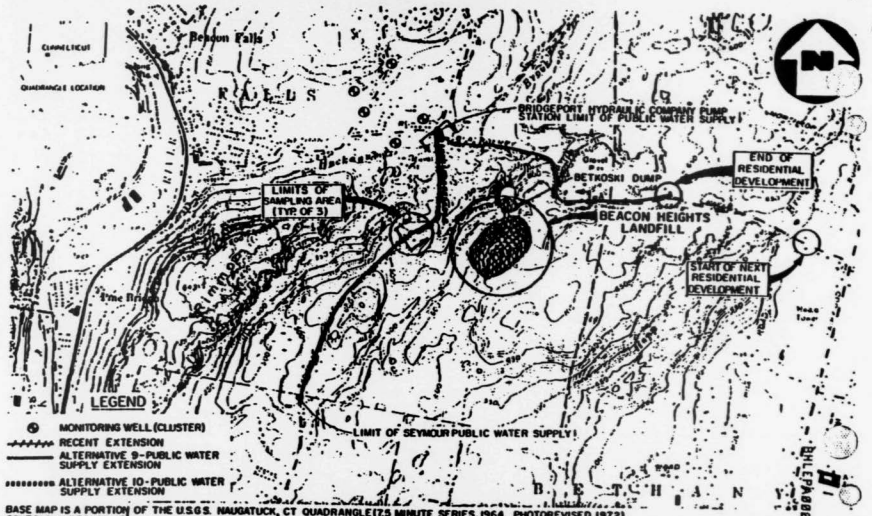
Since none of the source control remedies will mitigate the existing groundwater contamination and all will allow some leachate to enter the groundwater, this alternative would serve as a supplement to a source control remedy to mitigate and minimize the risk from groundwater contamination. The initial capital cost of this alternative is $1,958,000 with a long term present worth cost of $2,458,000. The quality of water from a municipal source is predictable and costs are reasonable for the extent, degree, and quality of remediation achieved.

Figure 8



Remedial Action Alternatives 9 and 10

Figure 9



BASE MAP IS A PORTION OF THE U.S.G.S. NAUGATUCK, CT QUADRANGLE (7.5 MINUTE SERIES, 1964. PHOTOREVISED 1972). CONTOUR INTERVAL 10'.

PUBLIC WATER SUPPLY-ALTERNATIVES 9 & 10
BEACON HEIGHTS LANDFILL SITE, BEACON FALLS, CT

SCALE: 1"=2000'

NUS CORPORATION
A Halliburton Company

Alternative Number 10, Public Water Supply to Affected Area. Remedial action alternative number 10 addresses the area that has been shown to be impacted by contamination above current acceptable standards. The impacted area includes a section of Skokorat Road approximately 2,000 feet long. The limit of this water line extension is shown on Figure 8, along with Alternative 9. This alternative would require the installation of tap-ins to affected residences (approximately 18) along the proposed extension. The connection of a new public water supply to the affected residences along Skokorat Road will eliminate exposure where site contaminants have already been identified in residential wells in excess of recommended federal and state guidelines. However, no mitigation or minimization of the public health threat to those current residents and/or future residents outside the proposed service area would be provided. Given the aforementioned hydrologic setting of the site, these residents may be exposed to higher levels of contaminants in groundwater at some future time. Already, residential wells outside this affected area have been shown to be contaminated with trace levels of organic chemicals below current health advisory levels. The total capital cost of this alternative is $370,000 with a long term present worth cost of $870,000. This alternative, in conjunction with a source control alternative, will eliminate exposure to residences along Skokorat Road only. Due to the lack of adequate protection provided to residents outside the proposed service limits (Blackberry Hill Road and the top of Skokorat road), this alternative has been eliminated since it does not adequately mitigate or minimize the threat to public health posed by offsite migration of contaminants from the site.

Alternative Number 13, Long Term Monitoring with Institutional Controls. This alternative assumes that, due to the specific technical constraints posed by the site hydrogeology, an effective groundwater extraction and treatment system cannot be implemented. Approximately 10 to 15 varying depth groundwater monitoring wells will be installed adjacent to and downgradient of the site to monitor the effectiveness of the cap and to track any further spread of groundwater contamination. Several of these wells will be located below the junction of Skokorat Road and Blackberry Hill Road to assess the potential for future groundwater contaminant migration to this area, which contains several streets which lack municipal water service and thus where private wells provide drinking water supply. Monitoring will be performed for a period of 30 years, or until determined unnecessary by the Agency after thorough review of the data. The long term monitoring data to be provided from these wells may form the basis for establishment of ACL's (Alternate Concentration Limits), if needed to protect other groundwater users beyond the current limits of groundwater contamination emanating from the site.

It is expected that after a source control remedy is implemented (cap) the groundwater contamination will attenuate and dilute to insignificant levels. In the unlikely event that contamination in these monitoring wells does not reduce after the cap is completed, the Agency reserves the right to perform further testing or studies on the extent of contamination in the bedrock aquifer.

In order to ensure the long term protection of public health in the area surrounding the site, strict institutional control over the extraction and use of groundwater within the area of influence of the landfill can be carried out under State institutional controls, which are authorized by sections 2532 and 2533 of the Connecticut General Statutes. For public supplies the Connecticut Department of Health Services (DOHS) must approve the well site prior to drilling. Prior to use of the well(s), extensive testing is required, and the data reviewed and approved by DOHS before use of the well is allowed. For private water supplies no site approval is needed, but a permit for use is required from the local health department. In addition, the Connecticut state building codes require new homes to connect to a municipal water supply if it is available within 200 feet from the residence.

This alternative, in and of itself, does not provide adequate mitigation of the public health threat posed by groundwater contamination emanating from the site, but may be a necessary adjunct to whatever source control and offsite remedies are selected.

The initial capital cost of this alternative is $272,000 with a 30 year total present worth cost of $998,000.

COMMUNITY RELATIONS

The public comment period for the Beacon Heights landfill site began on May 20, 1985 with a press release announcing the availability of the draft feasibility study for public comment. During the comment period, a public meeting was held (June 5, 1985), to present results of the RI/FS and answer questions from the public concerning the cleanup alternatives. On June 11, 1985 a formal public hearing was held to record comments on the cleanup alternatives for the Beacon Heights landfill. The public comment period closed on June 14, 1985.

The overriding concern of many residents was to be provided with a new water supply first, cleanup later. Getting clean water to affected and potentially affected residents was priority number one for the residents themselves and local officials. Alternative number 9, water supply to an extended area was the only water supply option that residents would accept. The State of Connecticut agreed with the residents on this point.

Another major concern expressed by several citizens was that alternatives 2, 4, and 5, onsite incineration, and RCRA approved landfill with leachate collection and treatment to NPDES or drinking water standards, could lead to other wastes from other

areas being brought onsite for incineration or disposal since no other RCRA permitted landfills are available in Connecticut the fear of other wastes being brought to the Beacon Heights landfill was brought up. In addition, a group of potentially responsible parties, the Connecticut DEP, and others submitted comments during the public comment period. These comments along with those of the citizens are addressed in the responsiveness summary. Further information on community relations concerns can be found in the Beacon Heights responsiveness summary in appendix D of this document.

CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

Environmental laws which may be applicable or relevant to the Beacon Heights remedial action are as follows;

- Resource Conservation and Recovery Act (RCRA)
- Clean Water Act
- Safe Drinking Water Act
- Clean Air Act

Based on written comments from EPA's Planning and Standards Section there are no wetlands on site and no potential wetland impacts as a result of remedial activities at the site. The Connecticut Historic Preservation office concludes that this project will have no effect on historical, architectural, or archaeological resources listed on or eligible for the National Register of Historic Places. Flood Plain maps provided by the U.S. Department of Housing and Urban Development do not list the site as lying within a 100 year flood plain. Gary King of the Connecticut office of Policy and Management, the Designated Single Point of Contact for intergovernmental review of federal financial assistance and direct federal development recommended federal agency funding of this project and further concluded that funding is not inconsistent with the Connecticut Conservation and Development Policies Plan.

The primary environmental law of concern at the Beacon Heights site is the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901, et seq. The proposed alternatives were reviewed for consistency with applicable RCRA technical standards, Closure and Post Closure Care, and 40 C.F.R. § 264 Subpart F entitled Ground Water Protection. The first area addressed is the capping, followed by the leachate collection and treatment, and lastly, the alternate water supply and the groundwater remediation strategy. The RCRA cap will be designed in accordance with 40 C.F.R. § 264.310 (a) to achieve the following:

1) Provide long term minimization of migration of liquids through the closed landfill.

2) Function with minimum maintenance.

3) Promote drainage and minimize erosion or abrasion of the cover.

4) Accomodate settling and subsidence so that the cover integrity is maintained.

5) Have a permeability less than or equal to the permeability of the underlying soils.

The cap installation and inspection will be performed as specified in § 264.303. The landfill will be surveyed and notice will be filed with the deed and given to the local land authority as specified in § 264.119 and § 264.120. The applicable closure requirements in § 264 Subpart G will be addressed. (Decontamination/ Disposal of Equipment, Certification by Professional Engineer, and Site Security will be provided as specified in § 264.117(b)). Post Closure Care and groundwater monitoring will be performed in accordance with 40 C.F.R. § 264 Subparts F and G and Subpart N § 264.310 (b).

If offsite leachate disposal is chosen as the most cost effective remedial action for source control, then leachate collection, transportation, and disposal will be performed in accordance with the applicable RCRA regulations at 40 C.F.R. § 262, Standards Applicable to Generators of Hazardous Waste and with 40 C.F.R. § 263, Standards Applicable to Transporters of Hazardous Waste. Leachate collection will be in compliance with 40 C.F.R. Part 262.34, Accumulation of Hazardous Waste on-site for 90 days or less, and will not require a RCRA permit. Even if treatment occurs onsite, a RCRA permit will not be required. Offsite facilities used for the treatment and disposal of the leachate will be approved facilities which have a permit or interim status and are in compliance with the RCRA regulations. Proper manifesting of the wastes will be conducted.

The source control alternatives that satisfy all applicable or relevant environmental laws (primarily RCRA) are alternatives 1, 2, 3, 3B, 3C, 4, and 5. Alternatives 3A, 6, 7, and 8 do not provide adequate control of source material as required by 40 C.F.R. § 300.68 (h)(2) of the NCP.

Extension of a municipal water supply to area residents (Alternatives 9 and 10) is consistent with the appropriate extent of remedial action as defined in 40 C.F.R. § 300.68 (e)(3) of the NCP. Contamination has migrated beyond the area where the hazardous substances were originally located, and the installation of an alternate water supply is necessary to provide long term protection of public health and welfare by preventing ingestion of contaminated groundwater.

Since existing data are adequate to conclude that the hydrogeologic setting of the landfill precludes the ability to effectively intercept and extract contaminated groundwater, neither alternative 11 or 12 is technically practicable. In addition, since they provide little assurance of reducing offsite groundwater contamination, they are not cost effective in comparison to the level of remediation

they provide. Under RCRA 40 C.F.R. Part 264, Subpart F Groundwater Protection, contaminated groundwater leaving the waste management area must be remediated to background levels, to MCL's (Maximum Concentration Limits, which are enforcible), or to ACL's (Alternate Concentration Limits). The long term monitoring data to be provided by implementation of alternative 13 may form the basis for future establishment of ACL's. This determination will be made by the Regional Administrator in a future Decision Document if necessary.

RECOMMENDED ALTERNATIVE

Section 300.68 (j) of the National Contingency Plan (NCP) states that the appropriate extent of remedy shall be determined by the lead agency's (in this case EPA) selection of the alternative that is cost effective, i.e. the lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare, and the environment.

In order to meet the stated objectives of site remediation, both a source control remedy and an offsite remedy are necessary since neither can provide adequate protection of public health, welfare, and the environment without the other.

Based on the evaluation provided in the Feasibility Study Report, and after consideration of the comments expressed by the public, local officials, potentially responsible parties, and the State of Connecticut, EPA has determined that the following combination of source control and offsite remedies meets the aforementioned NCP criteria:

SOURCE CONTROL REMEDY :

- Excavation of outlying contaminated soils including the Betkoski's Dump area, leachate seep areas, and sludge disposal areas
- Consolidation of this material with the main landfill
- Capping of the landfill area in conformance with the technical requirements of RCRA
- Gas venting (with air pollution controls if determined to to be necessary during design phase)
- Perimeter leachate collection system
- Treatment of collected leachate either onsite or offsite, (discussed later)

- Enclosure of the site with security fencing
- Stormwater management controls
- Construction of a more extensive groundwater monitoring network to enable future evaluation of the effectiveness of the cap

OFFSITE REMEDY :

- Extension of municipal waterline to supply water to residents along Skokorat and Blackberry Hill Roads
- Long term monitoring of groundwater contaminant migration
- State and local institutional controls on groundwater use in the impacted area

The source control remedy is Alternative 3, described in the Feasibility Study Report and in the Detailed Evaluation section of this document. Source control Alternatives 1 (Offsite disposal) and 2 (Incineration) were eliminated during the initial screening on the basis of cost, engineering feasibility, and potential adverse environmental effects. Alternatives 3A (RCRA cap with no leachate collection/treatment), 6 (Soil cap), 7 (No action), and 8 (Monitoring) were also eliminated during the initial screening, since they would not achieve adequate source control.

The remaining source control alternatives, 3 and its options B and C (RCRA cap, leachate collection/treatment, post-closure monitoring), 4 (RCRA landfill, leachate collection/treatment to N.P.D.E.S. standards), and 5 (RCRA landfill, leachate collection/treatment to drinking water standards) all provide adequate source control. A comparison of the present worth costs for these alternatives clearly shows Alternative 3 to be cost effective since it is the lowest cost source control alternative that is technologically feasible and reliable and provides adequate control of source material. As indicated previously, a reconsideration of the option for leachate treatment will be made during the design phase of the project. Further data gathering and analysis is needed to refine the costs for treatment onsite with a permanent installation (Alternative 3), treatment onsite with a temporary installation (Alternative 3C), or offsite treatment (Alternative 3B). The present worth costs for 3 and 3B are virtually identical based on the level of analysis provided in the Feasibility Study (+50%, -30%). The refinement of stream discharge requirements, timeframes for landfill dewatering, offsite facility costs and requirements, and onsite treatment capabilities during the design phase will

allow costs to be estimated to the ± 10% level. This would in turn verify or refute the existing analysis which shows that the onsite treatment Alternative 3 is the cost effective alternative. This design phase analysis will also provide the data to determine if a temporary (Alternative 3C) or a permanent (Alternative 3) installation is necessary. A Decision Memorandum will be prepared for the signature of the Regional Administrator to document the cost effectiveness of the recommended option. This memorandum will also detail the extent of excavation in those areas to be consolidated with the main landfill prior to capping.

The recommended offsite remedy is a combination of Alternatives 9 and 13 described earlier. Offsite alternative 11 (Groundwater extraction /treatment) was eliminated during the initial screening on the basis of engineering infeasibility . Alternatives 12 (Additional Study), 7 (No action), and 8 (Monitoring) were also screened out since they do not provide minimization or mitigation of the offsite migration threat.

The limited waterline extension (Alternative 10) was eliminated during the detailed evaluation because it would provide no protection to those residents beyond the extension limits who are threatened by offsite groundwater contaminant migration from the site. Thus, this alternative does not meet the requirements of 40 C.F.R. § 300.68 (h)(2) of the NCP.

The combination of municipal water supply extension to the present and inferred area of impact, long term groundwater monitoring, and state institutional controls over the withdrawal and use of groundwater in the area will provides minimization and mitigation of the threat posed by offsite contamination.

The estimated capital and present worth costs for the recommended alternatives are as follows:

Capital cost : $ 17,397,000

Present worth cost : $ 19,613,000

(These costs are less than the additive costs of Alternatives 3, 9, and 13 presented in the Feasibility Study and in this document because the well installation and monitoring costs of Alternative 13 duplicate those included in Alternatives 3 and 9).

OPERATION AND MAINTENANCE

Operation and maintenance costs (O & M) are those required to operate and maintain the remedial action throughout its lifetime. This activity ensures the lifetime effectiveness of the remedial alternative. A present worth analysis was done on the O & M costs for all remedial alternatives and is presented in appendix D. This present worth analysis represents

expenditures that will occur in the future in terms of present dollar value. Unless otherwise specified, a 30 year project life was assumed for the O & M analysis for all alternatives.

The alternatives chosen for the cleanup of the Beacon Heights site are alternatives number 3, 9, and 13. These alternatives implement technologies to control the source of contaminant releases and to mitigate offsite migration. A complete breakdown of project costs, including both capital and O & M for the selected remedy is presented in figure 10.

Under source control alternative 3 a RCRA cap will be placed over the entire landfill to reduce the degree of leachate generation and migration. Maintenance of the source control alternative 3 will include lawnmowing of the grass cover overlying the cap, repair of damage to the security fence, removal of obstructions from the stormwater management and gas venting systems, and regrading as necessary. Monitoring will include sampling and analysis of upgradient and downgradient monitoring wells, surface waters, and collected leachate.

Alternative number 3 also provides for the collection and treatment of leachate. The different options for treatment of the leachate provided the basis for development of alternatives 3B and 3C. Since both these offshoots of alternative 3 provide the same degree of source control as alternative 3 itself, the final decision on the leachate treatment aspect of source control is being deferred to the design phase of this project. During this time additional data will be collected and analyzed and the cost effectiveness analysis refined to better compare the leachate treatment options. A Decision Memorandum will then be prepared to justify the selected option.

Annual O & M costs for leachate treatment will include labor for operation of the leachate collection system and materials and labor for operation of the onsite treatment system. If data gathered during design shows alternatives 3B or 3C are more cost effective than onsite treatment (alternative 3) O & M costs will include transportation of the leachate to a licensed hazardous waste treatment facility, or costs for rental of a temporary treatment system. Again, this decision will be documented in a Supplemental Decision Memorandum.

Leachate collection and treatment will be considered part of the approved action (not an operation and maintenance cost) and will be eligible for Trust Fund monies for a period of up to two years from completion of the source control remedial action. This action is considered part of the source control remedy since it may be a temporary action and control of leachate production is considered to be a vital component of adequate source control.

Water balance calculations indicate that a RCRA cap over the entire landfill will drastically reduce the amount of infiltration allowed to reach the waste material, and will therefore reduce leachate generation. However, in the interim, before the water level within the waste drops due to the influence

Figure 10

RECOMMENDED ALTERNATIVE COST SUMMARY

Remedial Action Alternative 3 - RCRA Cap Closure

INITIAL CAPITAL COSTS	
Excavation of adjacent wastes - 43,000 CY	$ 1,010,000
Multimedia Capping System (Includes Fence)	$11,514,000
Leachate Collection System	$ 850,000
Leachate Treatment System	$ 263,000
Methane Venting System	$ 340,000
Stormwater Management System	$ 489,000
Monitoring Well Installation	$ 272,000
Upgrade Access Road	$ 540,000
Redesign Boring Program	$ 161,000
TOTAL, INITIAL CAPITAL COST (ALTERNATIVE 3)	$ 15,439,000
Operation and Maintenance (O&M) Cost	
Leachate Treatment System	$ 90,000
Site Maintenance	$ 23,000
Monitoring and Analysis (without residential wells)	$ 69,000
TOTAL O&M COSTS	$ 182,000
PRESENT WORTH O&M COSTS	$ 1,716,000
TOTAL ALTERNATIVE 3 COST	$ 17,155,000

Remedial Action Alternative 9 - Extended Waterline

INITIAL CAPITAL COSTS	
Alternate Drinking Water System	$ 1,844,488
Monitoring Well Installation	$ 113,438
TOTAL, INITIAL CAPITAL COST (ALTERNATIVE 9)	$ 1,958,000
Operation and Maintenance Cost	
Inspection and Maintenance	$ 8,760
Monitoring and Analysis*	$ 43,800
TOTAL O&M COSTS	$ 53,000
PRESENT WORTH O&M COSTS	$ 500,000
TOTAL ALTERNATIVE 9 COST	$ 2,458,000

TOTAL PROJECT INITIAL CAPITAL COST	$ 17,397,000
TOTAL O&M COST	$ 235,000
TOTAL PRESENT WORTH O&M COST	$ 2,216,000
TOTAL PROJECT COST	$ 19,613,000

* Note Alternative 13 costs not included because costs (well installation and monitoring) duplicate those included in Alternatives 3 and 9 above.

Figure 10A

COST SUMMARY FOR
LEACHATE COLLECTION AND TREATMENT OPTIONS
BEACON HEIGHTS LANDFILL SITE

Alternative/Option		Initial Capital Cost	Annual(1) O&M Cost	Present Worth(2) O&M Cost	Total Project Cost
Alternative 3:	RCRA Cap with Leachate Collection and Treatment (30 year O & M)	$15,439,000	$182,000	$1,716,000	$17,155,000
Option A:	RCRA Cap without Leachate Collection and Treatment	14,326,000	92,000	867,000	15,193,000
Option B:	RCRA Cap with use of POTW (30 years leachate treatment)	15,216,000	360,000 (275,000)(3)	3,394,000 (2,592,000)	18,610,000 (17,808,000)
Option B:	RCRA Cap with Use of POTW (5 years leachate treatment)	15,216,000	360,000 (275,000)	1,883,000 (1,561,000)	17,099,000 (16,777,000)
Option C:	RCRA Cap with Use of Mobile Units (5 years leachate treatment)	15,238,000	172,000	1,171,000	16,409,000

(1) O&M Costs include site maintenance at $23,000 per year and sampling and analysis of monitoring wells (no residential wells) at $69,000 per year, a total of $92,000.
(2) Includes 30 years of O&M for site maintenance and monitoring for all present worth calculations.
(3) These costs assume leachate treatment for $.06 per gallon, an average cost quoted by the treatment plant.

BHLEPA000422

of the cap, leachate will continue to be produced. During this period the leachate production must be controlled. In the two years following completion of onsite construction the flowrate of leachate and the water level within the fill material will be monitored to see if a steady state has been reached. After the two years a decision will be made to either continue collection and treatment of leachate as an operation and maintenance activity or to terminate onsite treatment and pursue other treatment methods due to very low levels of production. These actions will be documented in a Decision Memorandum.

STATE ROLE

The state's role in this federal lead site is multiple. The state reviews documents to determine if they are in compliance with applicable state laws, and provides comments on all EPA funded studies at the site. The state of Connecticut, as represented by the Connecticut Department of Environmental Protection (DEP), concurs with EPA's chosen remedy for the cleanup of the Beacon Heights site located in Beacon Falls, Connecticut. The state will provide 10 percent of the initial capital costs of the chosen remedy and will assume responsibility for all O & M costs following completion of onsite construction activities.

SCHEDULE *.

- Approve Remedial Action (sign ROD)	- September 20, 1985
- Complete Enforcement Negotiations	- November 20, 1985

Phase I - Alternate Water Supply, Water Main Extension

- Award Superfund Contract for Design	- November 21, 1985
- Start Design	- January 1, 1986
- Start Construction	- May 1, 1986
- Complete Construction	- September 1, 1986

Phase II - Source Control, Cap and Leachate Collection

- Send Interagency Agreement (IAG) to the Army Core of Engineers for Design	- November 21, 1985
- Start Design	- January 1, 1986
- Start Construction	- October 1, 1986
- Complete Construction	- March 1, 1988

* Pending availability of funds

FUTURE ACTIONS

Some additional field investigation work will be necessay during the design phase of this project to delineate the exact extent of coverage of the RCRA cap on the landfill and the areal extent and depth of the satellite areas (Betkoski's Dump, sludge disposal area, and leachate seep areas) to be excavated and consolidated on the main landfill. Requirements for handling these contaminated areas to meet RCRA requirements on free liquids content must also be determined. This contingency has been addressed within the cost sensitivity analysis in the Feasibility Study. Costing data included in Figure 10 and Appendix C assume highest cost, and hence, largest cap and largest excavation expected.

Future actions include monitoring the cap's effectiveness, as well as assuring the future effectiveness of the selected remedy through operation and maintenance. Monitoring for cap effectiveness is required under Post Closure Care and Groundwater Monitoring as defined in accordance with 40 C.F.R. Part 264 Subparts F and G and Subpart N § 264.310(b).

An additional possible future action may be a re-evaluation of offsite groundwater contamination. Contingent on monitoring results for the cap effectiveness and groundwater tracking, a decision to revisit the feasibility of groundwater extraction and treatment may be made by the Regional Administrator. This decision may include additional remedial actions to ensure adequate protection of public health welfare or the environment.

JS 44 (Rev. 07/89)

CIVIL COVER SHEET

The JS 44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. (SEE INSTRUCTIONS ON THE REVERSE OF THE FORM.)

I (a) PLAINTIFFS

United States of America

DEFENDANTS

Harold Murtha, Terrance Murtha, Murtha Trucking, Inc., Murtha Enterprises, Inc., Murtha Waste Control Corporation, Beacon Heights, Inc., and Laural Park, Inc.

(b) COUNTY OF RESIDENCE OF FIRST LISTED PLAINTIFF _____ (EXCEPT IN U.S. PLAINTIFF CASES)

COUNTY OF RESIDENCE OF FIRST LISTED DEFENDANT New Haven Coun (IN U.S. PLAINTIFF CASES ONLY)

NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED

(c) ATTORNEYS (FIRM NAME, ADDRESS, AND TELEPHONE NUMBER)

Frank H. Santoro, Asst. U.S. Attorney
Office of the U.S. Attorney
P.O. Box 1824
New Haven, CT 06508
(also see attachment)

ATTORNEYS (IF KNOWN)

Updike, Kelly and Spellacy, P.C.
One State Street
P.O. Box 31277
Hartford, CT 06103

II. BASIS OF JURISDICTION (PLACE AN x IN ONE BOX ONLY)

- X 1 U.S. Government Plaintiff
- 2 U.S. Government Defendant
- 3 Federal Question (U.S. Government Not a Party)
- 4 Diversity (Indicate Citizenship of Parties in Item III)

III. CITIZENSHIP OF PRINCIPAL PARTIES (PLACE AN x IN ONE BOX FOR PLAINTIFF AND ONE BOX FOR DEFENDANT) (For Diversity Cases Only)

	PTF	DEF		PTF	DEF
Citizen of This State	☐1	☐1	Incorporated or Principal Place of Business in This State	☐4	☐4
Citizen of Another State	☐2	☐2	Incorporated and Principal Place of Business in Another State	☐5	☐5
Citizen or Subject of a Foreign Country	☐3	☐3	Foreign Nation	☐6	☐6

IV. CAUSE OF ACTION (CITE THE U.S. CIVIL STATUTE UNDER WHICH YOU ARE FILING AND WRITE A BRIEF STATEMENT OF CAUSE DO NOT CITE JURISDICTIONAL STATUTES UNLESS DIVERSITY)

CERCLA, 42 U.S.C. Section 9607. Action for injunctive relief and response costs in connection at two landfills.

V. NATURE OF SUIT (PLACE AN x IN ONE BOX ONLY)

CONTRACT	TORTS		FORFEITURE/PENALTY	BANKRUPTCY	OTHER STATUTES
☐ 110 Insurance	PERSONAL INJURY	PERSONAL INJURY	☐ 610 Agriculture	☐ 422 Appeal 28 USC 158	☐ 400 State Reapportionment
☐ 120 Marine	☐ 310 Airplane	☐ 362 Personal Injury – Med. Malpractice	☐ 620 Food & Drug	☐ 423 Withdrawal 28 USC 157	☐ 410 Antitrust
☐ 130 Miller Act	☐ 315 Airplane Product Liability	☐ 365 Personal Injury – Product Liability	☐ 625 Drug Related Seizure of Property 21 USC 881		☐ 430 Banks and Banking
☐ 140 Negotiable Instrument	☐ 320 Assault, Libel & Slander	☐ 368 Asbestos Personal Injury Product Liability	☐ 630 Liquor Laws	PROPERTY RIGHTS	☐ 450 Commerce/ICC Rates, etc.
☐ 150 Recovery of Overpayment & Enforcement of Judgment	☐ 330 Federal Employers Liability		☐ 640 R.R. & Truck	☐ 820 Copyrights	☐ 460 Deportation
☐ 151 Medicare Act	☐ 340 Marine		☐ 650 Airline Regs	☐ 830 Patent	☐ 470 Racketeer Influenced and Corrupt Organizations
☐ 152 Recovery of Defaulted Student Loans (Excl. Veterans)	☐ 345 Marine Product Liability		☐ 660 Occupational Safety/Health	☐ 840 Trademark	☐ 810 Selective Service
☐ 153 Recovery of Overpayment of Veteran's Benefits	☐ 350 Motor Vehicle	PERSONAL PROPERTY	☐ 690 Other		☐ 850 Securities/Commodities Exchange
☐ 160 Stockholders' Suits	☐ 355 Motor Vehicle Product Liability	☐ 370 Other Fraud	LABOR	SOCIAL SECURITY	☐ 875 Customer Challenge 12 USC 3410
☐ 190 Other Contract	☐ 360 Other Personal Injury	☐ 371 Truth in Lending	☐ 710 Fair Labor Standards Act	☐ 861 HIA (1395ff)	☐ 891 Agricultural Acts
☐ 195 Contract Product Liability		☐ 380 Other Personal Property Damage	☐ 720 Labor/Mgmt. Relations	☐ 862 Black Lung (923)	☐ 892 Economic Stabilization Act
REAL PROPERTY	CIVIL RIGHTS	☐ 385 Property Damage Product Liability	☐ 730 Labor/Mgmt. Reporting & Disclosure Act	☐ 863 DIWC (405(g))	☐ 893 Environmental Matters
☐ 210 Land Condemnation	☐ 441 Voting	PRISONER PETITIONS	☐ 740 Railway Labor Act	☐ 863 DIWW (405(g))	☐ 894 Energy Allocation Act
☐ 220 Foreclosure	☐ 442 Employment	☐ 510 Motions to Vacate Sentence	☐ 790 Other Labor Litigation	☐ 864 SSID Title XVI	☐ 895 Freedom of Information Act
☐ 230 Rent Lease & Ejectment	☐ 443 Housing/ Accommodations	☐ 530 Habeas Corpus	☐ 791 Empl. Ret. Inc. Security Act	☐ 865 RSI (405(g))	☐ 900 Appeal of Fee Determination Under Equal Access to Justice
☐ 240 Torts to Land	☐ 444 Welfare	☐ 540 Mandamus & Other		FEDERAL TAX SUITS	☐ 950 Constitutionality of State Statutes
☐ 245 Tort Product Liability	☐ 440 Other Civil Rights	☐ 550 Civil Rights		☐ 870 Taxes (U.S. Plaintiff or Defendant)	☐ 890 Other Statutory Actions
☐ 290 All Other Real Property				☐ 871 IRS – Third Party 26 USC 7609	

VI. ORIGIN (PLACE AN x IN ONE BOX ONLY)

- X 1 Original Proceeding
- 2 Removed from State Court
- 3 Remanded from Appellate Court
- 4 Reinstated or Reopened
- 5 Transferred from another district (specify)
- 6 Multidistrict Litigation
- 7 Appeal to District Judge from Magistrate Judgment

VII. REQUESTED IN COMPLAINT: ☐ CHECK IF THIS IS A CLASS ACTION UNDER F.R.C.P. 23 **DEMAND $** Check YES only if demanded in complaint **JURY DEMAND:** X YES ☐ NO

VIII. RELATED CASE(S) IF ANY (See instructions): JUDGE Dorsey DOCKET NUMBER N-87-052 (PCD)

There is also another related case (Uniroyal, Inc. v. Murtha, et al - number unknown) assigned to Peter C. Dorsey

DATE 3/3/87

SIGNATURE OF ATTORNEY OF RECORD FRANK H. SANTORO, ASST. U.S. ATTORNEY

UNITED STATES DISTRICT COURT

Attachment to Civil Cover Sheet

Additional counsel for the Plaintiff

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