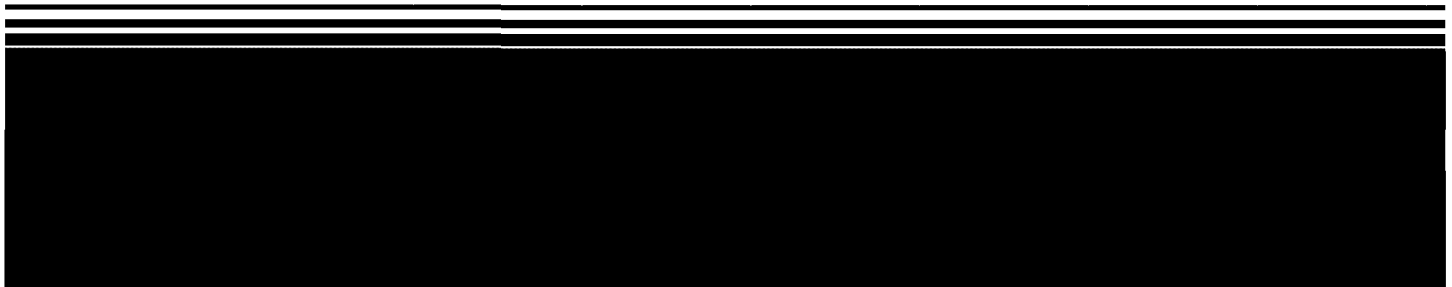




**EPA**

# **Superfund Record of Decision:**

## **Wrigley Charcoal, TN**



<b>REPORT DOCUMENTATION PAGE</b>	1. REPORT NO. EPA/ROD/R04-91/087	2.	3. Recipient's Accession No.				
4. Title and Subtitle SUPERFUND RECORD OF DECISION Wrigley Charcoal, TN First Remedial Action	5. Report Date 09/30/91		6.				
	8. Performing Organization Rept. No.		10. Project/Task/Work Unit No.				
7. Author(s)							
9. Performing Organization Name and Address	11. Contract(C) or Grant(G) No.		(C)				
	(G)		13. Type of Report & Period Covered  800/000				
12. Sponsoring Organization Name and Address U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460	14.						
15. Supplementary Notes							
16. Abstract (Limit: 200 words) <p>The 81-acre Wrigley Charcoal site is a former multi-use industrial operations area in the town of Wrigley, Hickman County, Tennessee. Land use in the area is industrial and residential, with approximately 1,000 people residing within a one-mile radius of the site. From 1881 to 1985, the site has been used mainly for pig iron and wood retorting/wood distillation by-product manufacturing. Additional activities conducted between 1978 and 1985 included usage of several remaining onsite buildings for metals machining, copper recovery, and storage of drummed industrial wastes. Remaining Primary Site buildings used for these later activities include a warehouse; a dryer building; a maintenance building; and a storage shed. Improper disposal procedures have resulted in soil, sediment, and debris contamination by semi-volatile organic compounds in coal-tars (mainly PAHs &amp; phenols), VOCs, metals, and asbestos. EPA investigations have identified four major areas of onsite contamination. These four areas are as follows: the 35-acre Primary Site containing coal-tar contaminants; the 3-acre Storage Basin area, that also contains coal tar contaminants; the 40-acre Irrigation Field (including an abandoned wastewater lagoon) that was used for spray irrigation (disposal) and degradation of PAH and phenolic wastewaters; and the 3.5-acre</p> <p>(See Attached Page)</p>							
17. Document Analysis a. Descriptors Record of Decision - Wrigley Charcoal, TN First Remedial Action Contaminated Medium: soil Key Contaminants: VOCs, other organics (PAHs, phenols), metals (arsenic, chromium, lead), inorganics (asbestos) b. Identifiers/Open-Ended Terms  c. COSATI Field/Group							
18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 149					
	20. Security Class (This Page) None	22. Price					

Abstract (Continued)

Athletic Field, a field used by local residents, which is filled with blast furnace slag and soil derived from the Primary Site from 1938-1950. The Primary Site, which includes a warehouse, a dryer building, a maintenance building, and a storage shed, was an industrial production facility for iron, charcoal, and wood distillation products from 1888 to 1966. The Primary Site was later used for metals machining, storage of waste products, and recovery of copper from transformers. The Storage Basin and Irrigation Field were built in the late 1950s to receive wastewater from the Primary Site. In 1988, EPA performed a removal activity, which stabilized the site by installing clay backfilled culverts covered with erosion control fabric; installing sheet piling to stabilize the banks; retaining the tar pits; removing 8 cubic yards of asbestos material; solidifying approximately 130 cubic yards of tar pit wastes, followed by offsite incineration of the solidified material; establishing a vegetative cover for the tar pit cover; constructing a spillway; and offsite landfilling of debris. This Record of Decision (ROD) addresses interim remediation of remaining contaminated soil, sediment, and debris, and will reduce the risks at the Primary Site and Storage Basin by eliminating the most imminent and substantial threats while permanent solutions are developed for the entire site. Future RODs may address remediation of the contaminated Primary Site soil, tar pits and tar cubes, as well as Storage Basin; coal-tar wastes, friable asbestos corrugated roofing material (ACM), and any onsite ground water problems. The primary contaminants of concern affecting the soil are VOCs; other organics including PAHs, and phenols; metals including arsenic, chromium, and lead; and asbestos, an inorganic.

The selected remedial action for this site includes excavating, stabilizing, and disposing of offsite approximately 15 cubic yards of metallic wastes from the burn pit; consolidating and securing onsite approximately 120 drums of transformers; excavating, incinerating, stabilizing, and disposing of offsite 14 waste drums, 29 cubic yards of process tank sludge, and 122.5 cubic yards of black coal tar wastes located in three separate areas; decontaminating the tanks; excavating and disposing of visibly friable asbestos material in the soil and buildings within the Primary Site; re-engineering of the spillway to accommodate flood waters; sorting and disposing of site surface wastes and debris piles (including tar-cubes; pieces of ACM, crushed drums and metallic debris) offsite, or temporarily consolidating these onsite for future remediation; conducting soil investigations and continued sampling and analysis; and implementing institutional controls including deed restrictions, and site access restriction such as fencing. The estimated present worth cost for this remedial action is \$984,998. O&M costs were not provided.

PERFORMANCE STANDARDS OR GOALS: The remedy will attempt to meet RCRA LDR best demonstrated available technology (BDAT) requirements for coal-tar wastes using incineration and stabilization; and burn-pit wastes using stabilization. Chemical-specific clean-up criteria include chromium 0.5-6 mg/kg, lead 0.1-3 mg/kg, arsenic 0.3-1 mg/kg, and PAHs 0.5-20 mg/kg.

**RECORD OF DECISION**  
**Remedial Alternative Selection**

**SITE NAME AND LOCATION**

Wrigley Charcoal Site  
Wrigley, Hickman County, Tennessee

**STATEMENT OF BASIS AND PURPOSE**

This decision document presents the selected early final action and interim remedial action for the Wrigley Charcoal Site in Wrigley, Tennessee developed in accordance with CERCLA, as amended by SARA, and to the extent practicable, the National Contingency Plan (NCP).

This decision for remedial action is based upon the contents of the Administrative Record file for the Wrigley Charcoal Site.

The State of Tennessee concurs with the United States Environmental Protection Agency on the selected early final action and interim remedial actions.

**ASSESSMENT OF THE SITE**

The Wrigley Charcoal Site (Figures 1-2) is located approximately forty-five miles southwest of Nashville in the town of Wrigley, Hickman County, Tennessee. Investigations identified four (4) individual Site areas (Figures 3-6) where previous industrial operations or related activities occurred intermittently from 1881 to approximately 1985. Since 1985, trespassers have occasionally vandalized the Primary Wrigley Site. These locations are the: 1) Primary Site; 2) Storage Basin; 3) Irrigation Field; and 4) Athletic Field. At present, only the Primary Site and the Storage Basin were found to contain hazardous materials and significant contamination. Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

**DESCRIPTION OF THE SELECTED REMEDY**

Based on the Remedial Investigation and Feasibility Study (RI/FS) and supplemental sampling and analysis, the U.S. EPA has identified Alternative 3 (as described in the July 1991 Feasibility Study) as the best course of action for the first step of cleanup activities to be taken at the Wrigley Charcoal Site. The major goal of these early final and interim activities is to address the most serious threats at the Wrigley Charcoal Site by removing or consolidating contaminated media at the Primary Site, and restricting access at the

Primary Site and the Storage Basin. The interim activities will achieve significant risk reduction while a final remedial solution is developed. Additional goals of these early final and interim actions are designed to prepare the Wrigley Site for future remedial activities.

The components of the EPA selected early final action and interim action include:

- 1) Metallic wastes in the maintenance buildings' burn-pit will be excavated, transported, stabilized and disposed of in an EPA approved RCRA facility. Transformers found in the maintenance building will be staged with other transformers found at the Primary Site in an on-site consolidation area;
- 2) Potential risks through dermal contact will be reduced at the Storage Basin by fencing the area. This will discourage and possibly prevent entry and disturbance of this area until wastes can be appropriately eliminated during later remedial activities;
- 3) Process tank waste sludges will be excavated, transported, incinerated, stabilized and disposed of in an EPA approved facility. The metallic tanks will be decontaminated, and sold as scrap;
- 4) Black coal-tar sludge wastes on the ground from the process tanks down to the North Fork of Mill Creek will be excavated, transported off-site, incinerated, stabilized and disposed of in an EPA approved facility;
- 5) Black coal-tar sludge wastes at the northeast corner of the previous still house location will be excavated, transported off-site, incinerated, stabilized and disposed in an EPA approved facility;
- 6) Friable asbestos corrugated roofing material (ACM) will be removed for disposal in an approved asbestos landfill. Wastes are on the small building in front of the maintenance building and broken ACM on the ground near the dryer building, maintenance building, area near the previous location of the still house, and in the old tank battery. Also, ACM contaminated soils adjacent to these wastes will be removed to an approved asbestos disposal facility;
- 7) Exposed black coal-tar wastes in the spillway will be excavated transported, incinerated, stabilized and disposed in an EPA approved facility;

- 8) Twelve staged drums located near the maintenance building and two drums in the storage shed, will be transported, with contents incinerated, stabilized and disposed of in an EPA approved facility;
- 9) The spillway will be repaired and re-engineered to accommodate the significant flood waters that frequent this area. This may involve straightening and further excavating the spillway down to the existing creek grade;
- 10) Site surface waste/debris piles that include tar-cubes, pieces of ACM, transformer materials, crushed drums, and other miscellaneous metallic debris and tar waste will be sorted. Pieces of ACM will be disposed of with other ACM previously described in item 6. Metallic scrap will be transported off-site and disposed in an EPA approved facility. [If during the Remedial Design (RD), it is determined that metals debris is to remain on-site, this waste will be placed in the on-site consolidation area.] Materials such as tar-cubes and wastes that may be remediated during later remedial activities will be stored in an on-site consolidation area;
- 11) A limited investigative effort will be performed at the Irrigation Field's three-quarter acre abandoned lagoon. This activity will include a limited number of borings/excavations near the previous location of the feed pipe outflow;
- 12) EPA will negotiate with local municipalities to implement deed restrictions. Also Site access controls (fencing & placards) will be implemented at the Primary Site and Storage Basin;
- 13) Sampling and Analyses:
  - Resampling of six monitoring wells and twelve piezometers at the Primary Site will provide an assessment of the groundwater quality;
  - Soil sampling and analyses will be required to assess the need for any future remedial activities behind the Athletic Field to the garden area;
  - Following the EPA early final and interim action activities, one round of residential well and spring sampling and analyses will be required to insure that water quality has not been affected.

Activities in items 1, 3, and 8 are considered to be early final action activities. Burn-pit remediation will be an early final action (however, the consolidation of transformers in activity 1 is an interim action). This pit will be cleaned up to acceptable soil concentrations (except for lead which will be cleaned up to 1000 ppm), then backfilled with clean fill. Elimination of process tank waste sludges is an early final action. Tank sludges will be remediated and will meet criteria provided on page 42 of this document. The process tanks will be decontaminated to background levels. Elimination of the staged drums and contaminants is also as early final action.

The EPA estimates that it will take 6 months to implement the recommended alternative once the Remedial Design is complete. These actions are estimated to have a total present worth cost of \$984,998.

#### STATUTORY DETERMINATIONS: DECLARATION

These early final and interim actions are protective of human health and the environment, comply with Federal and State applicable or relevant and appropriate requirements (ARARs) for this limited-scope action, and are cost-effective. Portions of this action are interim and are not intended to utilize permanent solutions for any of the four Wrigley Charcoal Site areas. Other portions of this action are considered to be early final actions and utilize permanent solutions, and alternative treatment (or resource recovery) technologies to the maximum extent practicable given the limited scope of the action.

Because this action does not constitute the final remedy for the Wrigley Charcoal Site, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element will be addressed by the final response action. Subsequent actions are planned to address fully the threats posed by the conditions at this Site.

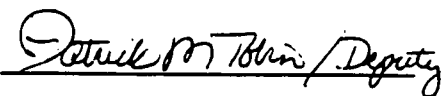
Since this action will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of the remedial action as EPA continues to develop final remedial alternatives for the Wrigley Charcoal Site. The review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment. Because this is an interim action ROD, review of this Site and of this remedy will be continuing as part

of the development of the final remedy for the Wrigley Charcoal Site.

SEP 30 1991

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Date

  
for Greer C. Tidwell  
Regional Administrator



INTERIM REMEDIAL ACTION  
RECORD OF DECISION  
SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

WRIGLEY CHARCOAL SITE  
WRIGLEY, HICKMAN COUNTY, TENNESSEE

PREPARED BY:  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
REGION IV  
ATLANTA, GEORGIA

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INTERIM ACTION RECORD OF DECISION  
OPERABLE UNIT 1  
SUMMARY OF REMEDIAL ALTERNATIVE SELECTION  
WRIGLEY CHARCOAL SITE  
WRIGLEY, TENNESSEE

1.0 INTRODUCTION

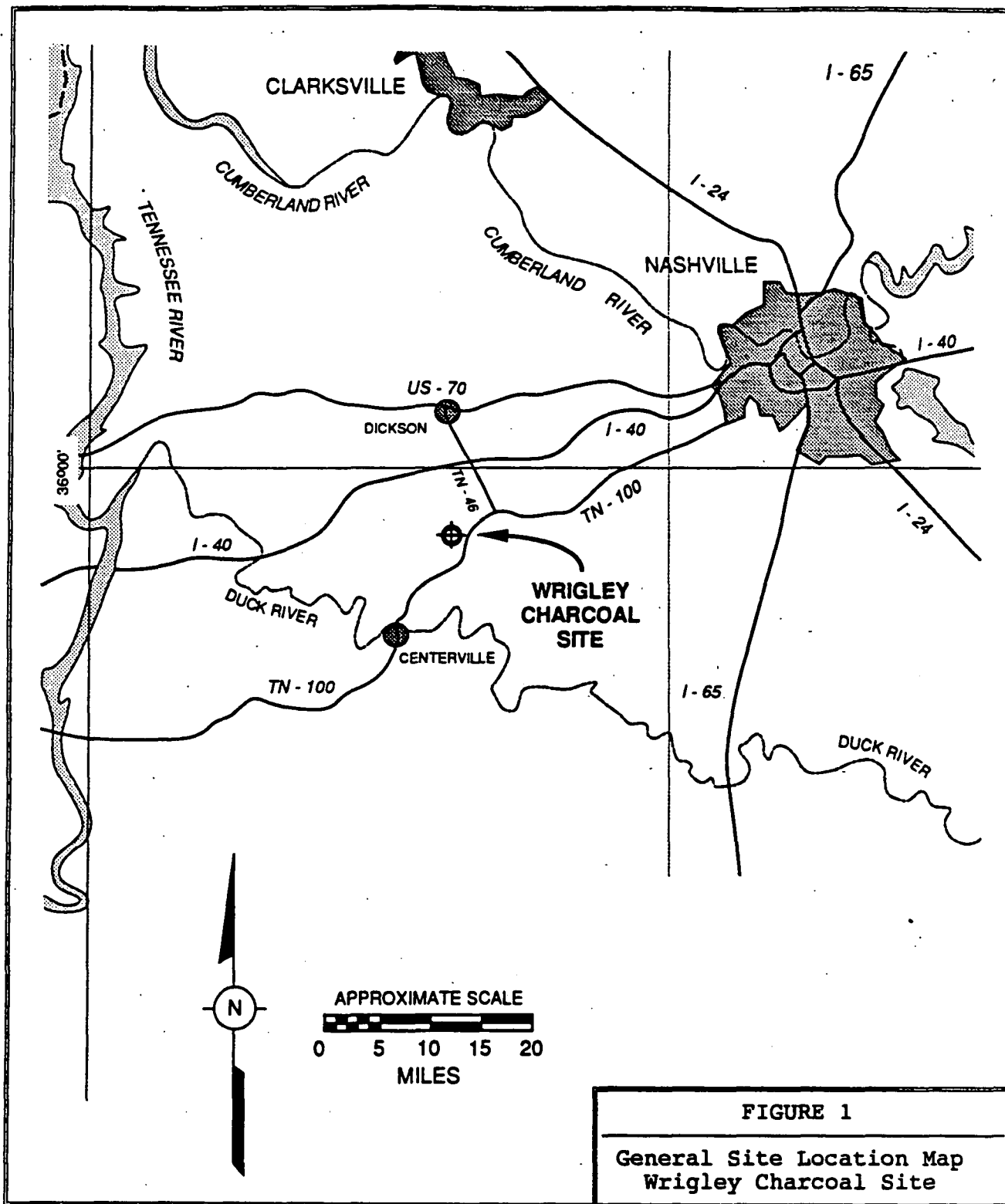
The Wrigley Charcoal Site was included on the National Priorities List (NPL) in March of 1989 with a Hazard Ranking Score (HRS) of 36.14. This HRS score was developed after EPA's Region IV Field Investigation Team (FIT) collected samples at the Site in 1986.

Approximately 81 acres at the Wrigley Charcoal Site were utilized intermittently from 1881 to 1985 for a variety of industrial operations. The majority of these operations consisted of pig iron and wood retorting/wood distillation by-product manufacturing. Remedial Investigation/Feasibility Study (RI/FS) activities were initiated in August 1989 in response to the Site being listed on the NPL. The RI report which examines contaminated media at the four Site locations was finalized in July of 1991. The FS report which examines alternatives for the early final and interim action was submitted to the public information repository also in July of 1991. The final report will become part of the final administrative record.

This interim action Record of Decision has been prepared to summarize the remedial alternative selection process and to present the selected remedial alternative, in accordance with Section 113(k)(2)(B)(v) and Section 117(b) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA-P.L. 99-499). The Administrative Record file for the Wrigley Charcoal Site forms the basis for the Record of Decision contained herein.

2.0 SITE NAME, LOCATION AND DESCRIPTION

The Wrigley Charcoal Superfund Site (the "Site") is located approximately 45 miles southwest of Nashville, Tennessee (Figures 1-2). Based on available data, the Site contains four major areas of contamination: the Primary Site; the Storage Basin; the Irrigation Field; and the Athletic Field (Figures 3-6). The Primary Site is located within a steep-walled valley while the Storage Basin is located southwest of the Primary Site on top of a palisade adjacent to the North Fork of Mill Creek valley. The Irrigation Field is located on relatively flat lying property approximately 3/4 mile northeast of the Primary Site and the Athletic Field resides within the east neighborhood of Wrigley approximately 1/5 mile east of the Primary Site. The Site's four contaminated areas as depicted in (Figure 2) are summarized below:



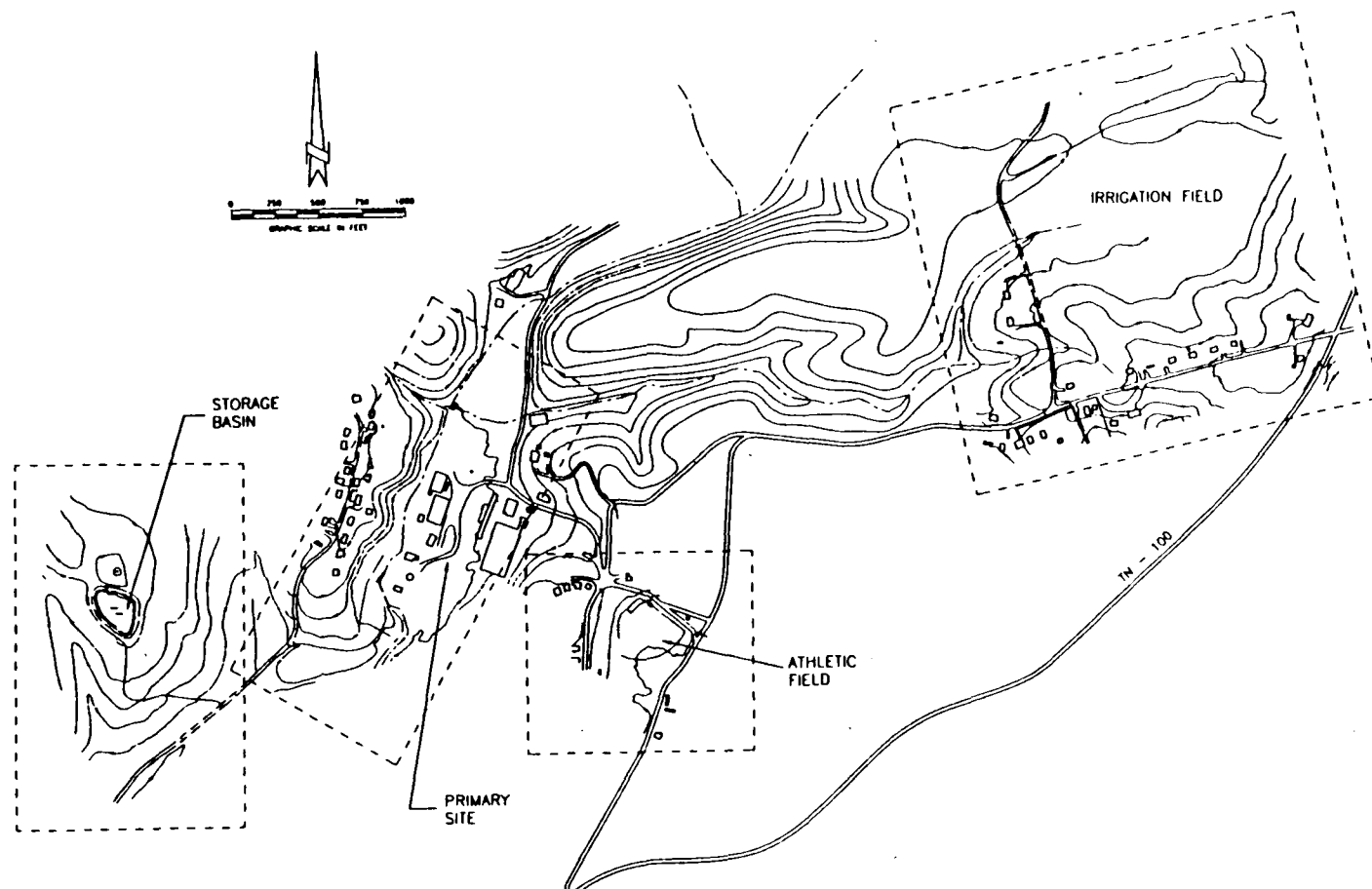


FIGURE 2

Facility Site Location Areas  
Wrigley Charcoal Site

- o 1) Primary Site (thirty-five acres represents the extent of industrial activities in the valley);
- o 2) Storage Basin and Overflow Basin (three acres);
- o 3) Irrigation Field (forty acres) including the abandoned wastewater holding area referred to as the lagoon;
- o 4) Athletic Field (Also called L.A. Miller Park-three and one-half acres).

### 3.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

#### 3.1 History

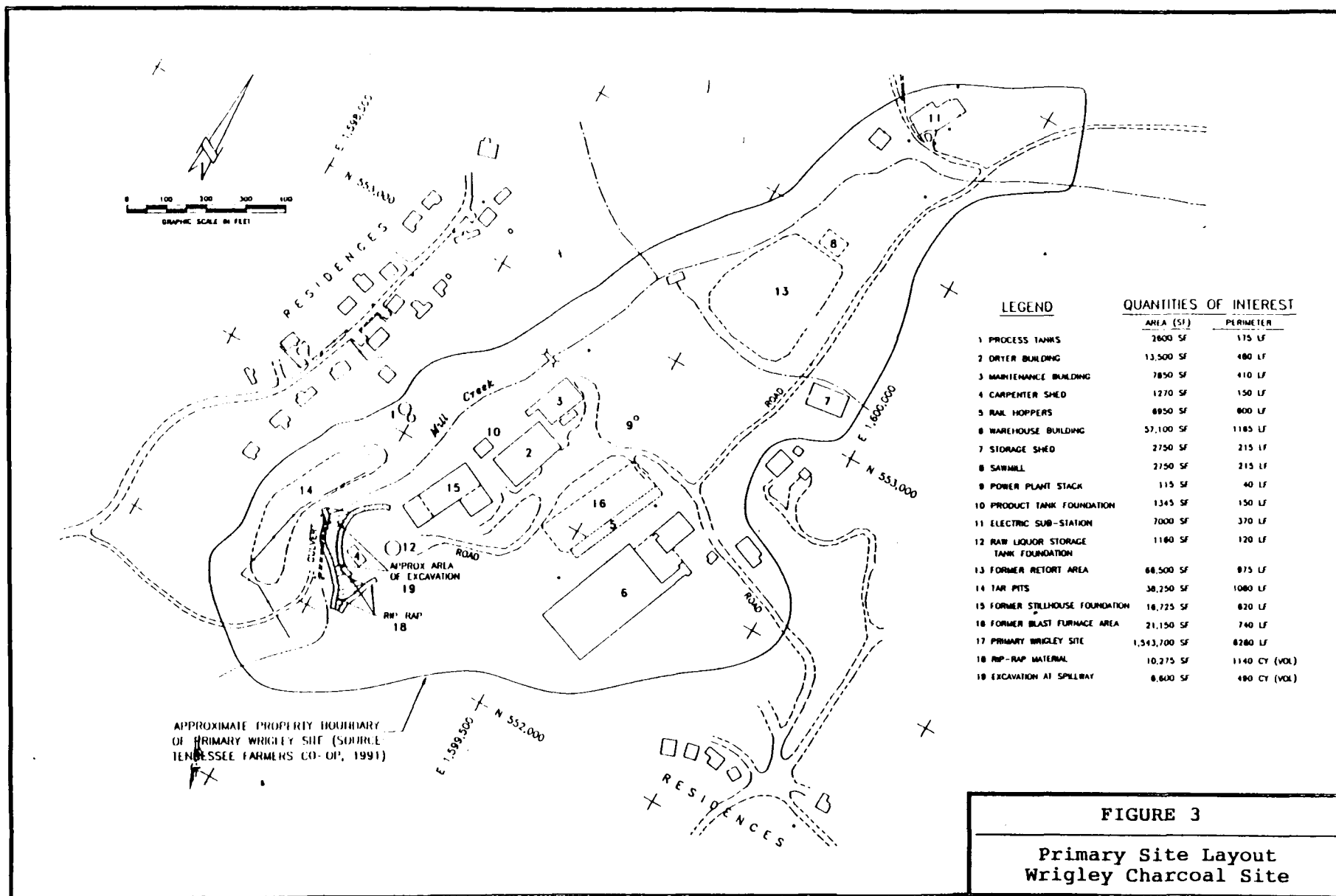
The Primary Site (Figure 3) was used for industrial operations such as producing iron, charcoal, and wood distillation products intermittently from 1881 to 1966. The businesses or individuals involved in the industrial operations during this time period may no longer exist and investigations are continuing to determine whether or not there are Potentially Responsible Parties (PRPs) from this time period to fund cleanup operations. The Site was purchased in 1966 by the Tennessee Farmers Cooperative (TFC) who are the present owners of the major portion of the Primary Site. Also, according to the TFC property boundary map (received July, 1991) they own the Storage Basin and Athletic Field. The Irrigation Field is apparently owned by a Ronald L. Bishop of Columbia, Tennessee. Portions of the Primary Site were also utilized from 1978 to 1983 (possibly as late as 1985) by R.T. Rivers for metals machining, storage of waste products obtained from other local industries, and recovery of copper from transformers. These additional operations were conducted primarily in three of the remaining on-site buildings; namely, the dryer building, the maintenance building, and the storage shed.

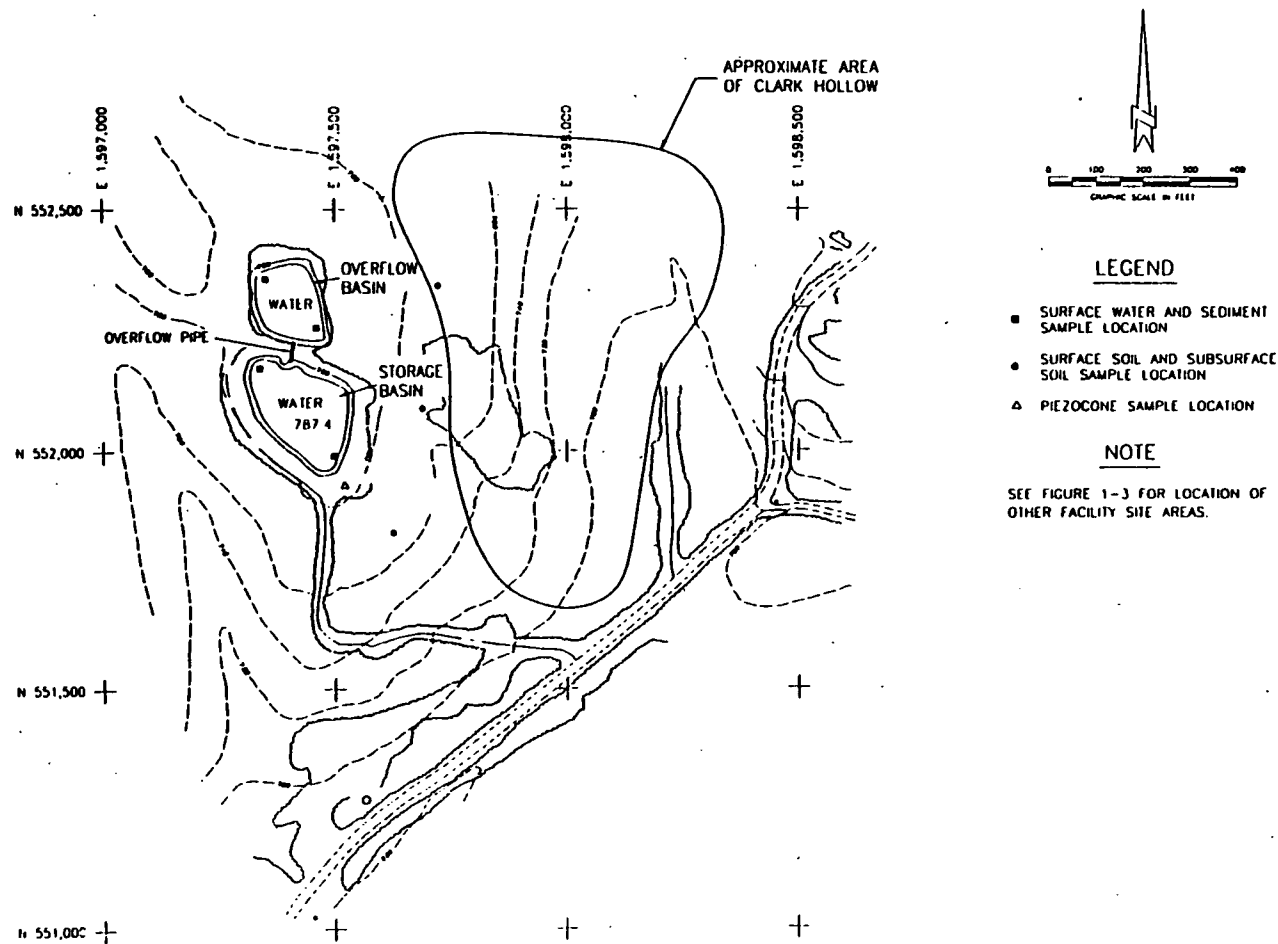
The Storage Basin (Figure 4) located 1400 feet west of the Primary Site was built in the mid to late 1950's to receive wastewaters from the Primary Sites' industrial operations. The Storage Basin, similar to the Primary Site contains coal-tar contaminants.

The Irrigation Field (Figure 5) including the abandoned lagoon is located 3500 feet northeast of the Primary Site. This location was constructed in the late 1950's and also received wastewaters for disposal from the Primary Site. Wastewaters were sprayed over the field to biologically degrade phenolic and organic compounds.

The Athletic Field (Figure 6) is located 800 feet southeast of the Primary Site in the eastern portion of the Wrigley community. The section of property where the field now resides was filled in with blast furnace slag and associated materials from 1938 to approximately 1950. The field has been in use since the early 1950's and is still regularly used by local residents.







# LEGEND

- SURFACE WATER AND SEDIMENT SAMPLE LOCATION
- SURFACE SOIL AND SUBSURFACE SOIL SAMPLE LOCATION
- ▲ PIEZOCONE SAMPLE LOCATION

# NOTE

SEE FIGURE 1-3 FOR LOCATION OF OTHER FACILITY SITE AREAS.

FIGURE 4

Map of the Storage Basin  
Wrigley Charcoal Site

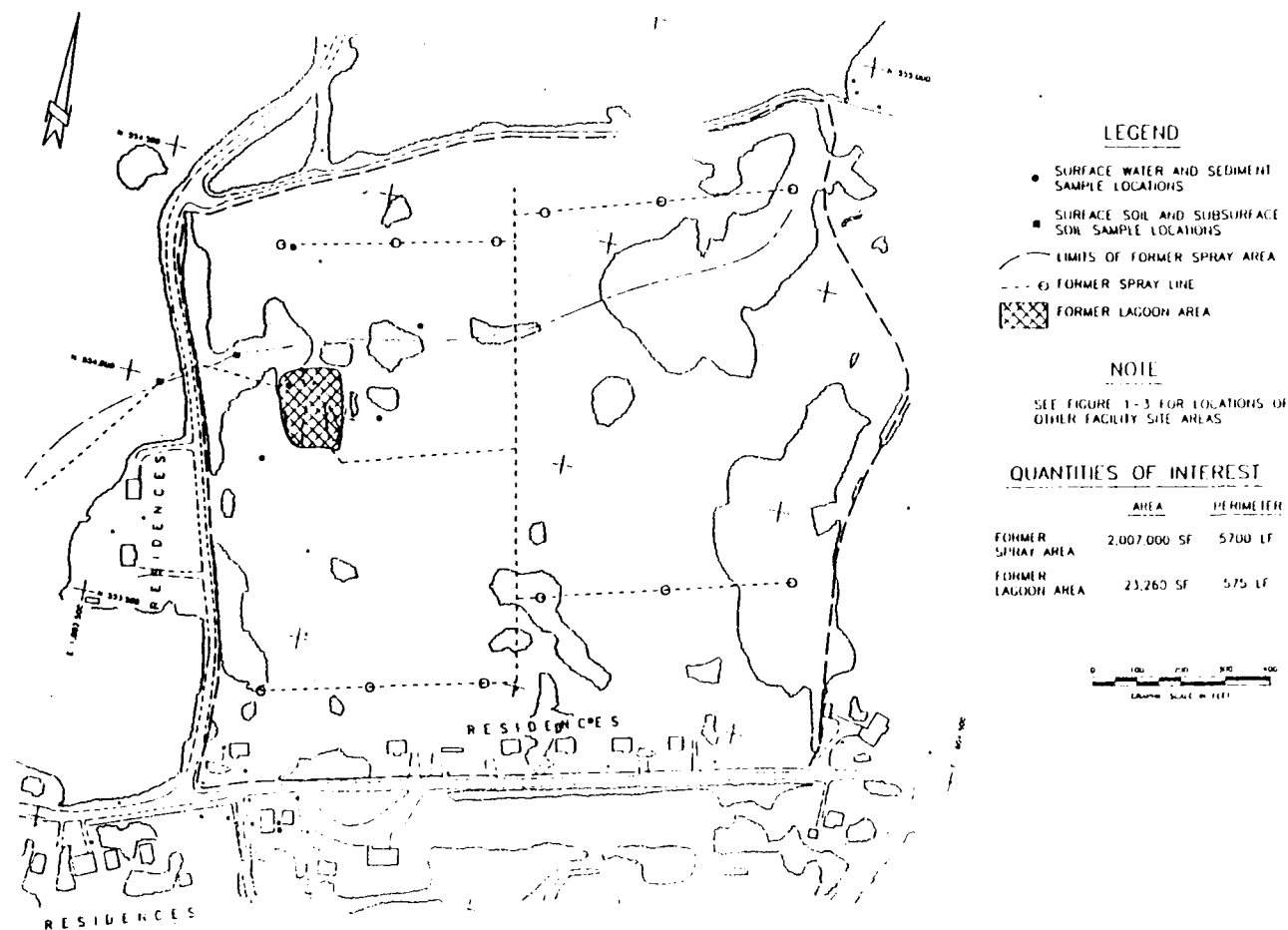


FIGURE 5

Map of the Irrigation Field  
Wrigley Charcoal Site

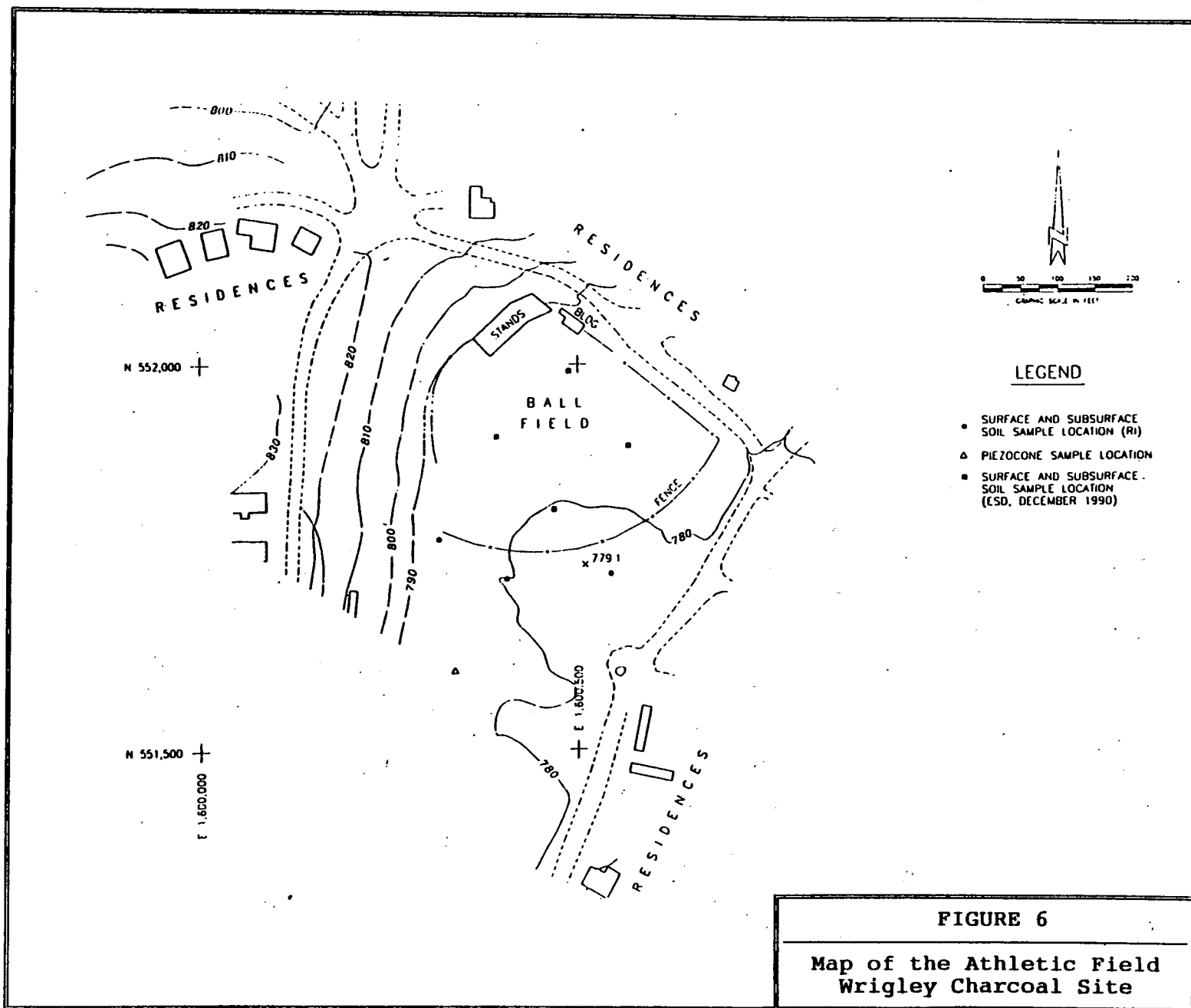


FIGURE 6

Map of the Athletic Field  
Wrigley Charcoal Site

### 3.2 EPA Involvement

EPA became involved with the Wrigley Site as a result of the submittal in December of 1985 of a preliminary Hazard Ranking System score and request for emergency action by the Division of Superfund in Tennessee. EPA personnel visited the Site in January 1986, to assess the need for emergency action. EPA later recommended that the raw water intake at the Bon Aqua-Lyles Water District be relocated to avoid potential site affects. In addition, EPA recommended additional sampling to better define the extent and degree of contamination at the Site, including collection of water samples at the Bon Aqua-Lyles Water District intake. In April of 1986, EPA subsequently performed a Site sampling effort which confirmed the presence of coal-tar contaminants at the Primary Site in leachate, stream sediments and tar-pits. Highest levels of contaminants reported during this sampling effort were: benzene (38 ppb), toluene (308 ppb), phenol (10,600 ppm), and 2,4-dimethylphenol (177 ppm) in tars located on the Site. Contaminants were also identified at the Storage Basin in shallow sediments. These contaminants consisted of: benzene (20 ppb), toluene (179 ppb), ethylbenzene (66 ppb), 2-4 dimethylphenol (330 ppm). Contaminants identified in the stream sediment included: benzene (12 ppb), toluene (79 ppb), and 2-4 dimethylphenol (177 ppm). The Wrigley Charcoal Site was then ranked utilizing the Hazard Ranking System (HRS) and generated a HRS score of 36.14.

#### 3.2.1 EPA Removal Activities

EPA's Removal Program initiated stabilization measures on the Site in the summer and fall of 1988. Measures undertaken included:

- o Installation of two 48-inch culverts in the North Fork of Mill Creek stream bed. Culverts were backfilled with clay to prevent further erosion;
- o Three hundred feet of clean sheet piling removed from the Peak Oil Site (Hillsborough County, Florida) was transported to the Wrigley Site. Sheet piling was installed to stabilize the banks retaining the tar-pits;
- o Seven samples were collected from the tar-pits, the exploratory pit, and the dryer building;
- o Erosion control fabric and riprap were spread over the edges of the culverts backfilled with clay;
- o Tar-pit wastes were solidified by mixing with sawdust;

- o Materials such as mulch and later seed were spread to establish a vegetative cover on the tar-pit cover and near the culverts;
- o Reconstruction of the fencing (around the tar-pit area) previously removed to facilitate Site work;
- o Suspected ACM was sampled at a building materials stockpile near the still house. Eight yd<sup>3</sup> of this material was removed and disposed off-site at the James Brinkley Landfill in Bedford County, Tennessee. Based on sampling results, the ACM contained 60% chrysotile asbestos.
- o In October of 1988, 130 yds<sup>3</sup> of tar pit waste (excavated during tar-pit solidification) material was transported to the Allied-Signal Facility in Detroit, Michigan for incineration.
- o In 1989, the spillway was constructed at the southern portion of the Primary Site adjacent to the culverts to accommodate flood waters;
- o Approximately \$2,000,000 was spent from the Federal Superfund Program for these tar-pit solidification, removal, disposal, and construction activities.

Following the EPA tar-pit stabilization activity and spillway construction in 1988-1989, the Bon Aqua-Lyles Water District primary water intake was moved. This work, performed in 1989 by the Utility District and the State of Tennessee, moved the intake from about 1.25 miles downstream of the Wrigley Charcoal Site on Mill Creek (approximately 1000 feet below the confluence with the North Fork of Mill Creek), to about one half mile upstream on Mill Creek, above the confluence of Mill Creek and the North Fork. This activity eliminated the possible threat of tar-pit contamination affecting the public water supply via the raw water intake.

### 3.2.2 RI/FS Activities

In 1989, EPA contracted Ebasco Services Incorporated to perform the RI/FS at the Wrigley Charcoal Site. Both the RI and FS were totally funded out of the federal Superfund Program. The following list presents the major events during the RI/FS:

- o August 1989: The initial Field Investigation began
- o September 1989 - September 1990: Ongoing sampling and analysis for the RI;
- o November 1990: FS activities are initiated;

- o December 1990: EPA collected additional samples at the Athletic Field and in the yards of private residences that flank the Primary Site and Athletic Field (in the east and west neighborhoods of Wrigley). Initial RI sampling and analysis indicated elevated concentrations of metals, VOCs, and dibenzofuran at the Athletic Field in isolated locations outside the ballfield fence. Since dibenzofuran was identified during the initial sampling, EPA took precautions by taking additional samples in the town of Wrigley and analyzed samples specifically for dioxin (no hazardous dioxins were found in the town or neighborhoods of Wrigley). All samples were taken to confirm and further determine the extent of contamination.
- o April 1991: EPA collected additional samples at the Primary Site and Storage Basin. Samples at the Primary Site were of transformer waste in several buildings, waste samples at the far southern portion of the Primary Site, and soil samples were collected from the southern lawn of the old Bon Air Chemical Company office adjacent to the Primary Site. Additional samples were taken at the Storage Basin to further evaluate contamination. These samples were taken at the waterline and in the deeper sediments within the Basin.
- o June 1991: The Revised Final RI is completed
- o July 1991: The Revised Draft Final FS is completed.
- o September 1991: The Final FS is completed.

#### 4.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

The first public meeting was held on October 24, 1988 at the East Elementary School near Wrigley, to provide information and also to answer citizens' questions concerning removal activities at the Wrigley Site. Representatives from EPA and the State of Tennessee provided details of activities taken to date, pertinent analytical results and proposed activities to be completed in the future.

The second public meeting was held on October 29, 1989 at the East Elementary School. The purpose of this meeting was to inform citizens and other interested parties of the beginning of the RI/FS.

The third public meeting to present the Proposed Plan for interim action (including early final action activities) activities concerning the Wrigley Charcoal Site was also held at the East Elementary School on July 25, 1991. The notice of the public meeting including information on availability of Proposed Plan and RI/FS appeared in the Hickman County Times on July 15, 1991. An

additional article appeared in the Hickman County Times on July 22, 1991 reiterating the previously published information. The Community Relations Plan for the FS (approved in 1990) lists contacts and interested parties throughout government and the local community that establish communication pathways to ensure timely dissemination of pertinent information. The RI/FS and the Proposed Plan were released to the public in July 1991. All of these documents were made available in both the Administrative Record at the information repository maintained at the Hickman County Memorial Library. A public comment period was held from July 15, 1991 to August 15, 1991. The Tennessee Farmers Cooperative requested an extension to the public comment period. A 30 day extension to the public comment period was granted, which extended the comment period to September 16, 1991. All comments which were received by EPA prior to the end of the public comment period, including those expressed verbally at the public meeting are addressed in the Responsiveness Summary (Section 12).

#### 5.0 SCOPE AND ROLE OF RESPONSE ACTION WITHIN SITE STRATEGY

The major goals of these early final and interim actions are to reduce risks at the Primary Site by eliminating, or containing the most imminent and substantial threats to human health and the environment while permanent solutions are developed for the entire Site. Additional goals of this action are to reduce the risk of dermal contact with wastes at the Storage Basin by restricting access through fencing, and to perform confirmatory sampling and analyses behind the Athletic Field to better define a small "hot spot", and at the Irrigation Field to determine if compounds of concern are present in the deeper soils of the abandoned Irrigation Field lagoon.

The cleanup objectives for this interim action ROD are to remove, treat or contain wastes at the Wrigley Charcoal Primary Site and Storage Basin and to determine if further remediation is required at the Athletic Field and/or Irrigation Field lagoon. These objectives are also intended to reduce the risks from dermal contact with coal-tar sludges and wastes, burn-pit wastes, drummed wastes, and tar-cubes. The threat of exposure via inhalation or incidental ingestion of contaminants such as asbestos, phenols, or VOCs from exposed coal-tar wastes will be reduced. These early final and interim actions are expected to reduce risks associated with current as well as future exposure to the contaminants.

This is not the final action planned for the Site. These early final and interim actions will be consistent with any planned future actions, to the extent possible. Subsequent actions are planned to define and address fully, additional significant threats posed by the conditions at the Site. Later remedial activities are tentatively intended to remediate the Primary Site



tar-pits, contaminated Primary Site soils, tar-cubes, Storage Basin coal-tar wastes, any additional coal-tar wastes identified at any of the Wrigley Charcoal Site areas, any ACM determined to be friable, and any groundwater problems at the Wrigley Charcoal Site.

## 6.0 SUMMARY OF SITE CHARACTERIZATIONS

This section reviews topics discussed in recent Site characterizations that may influence early final and interim action activities. A full description of contaminants at the Wrigley Charcoal Site is presented in Section 7.0 (Summary of Site Risks).

### 6.1 Physiography and Topography

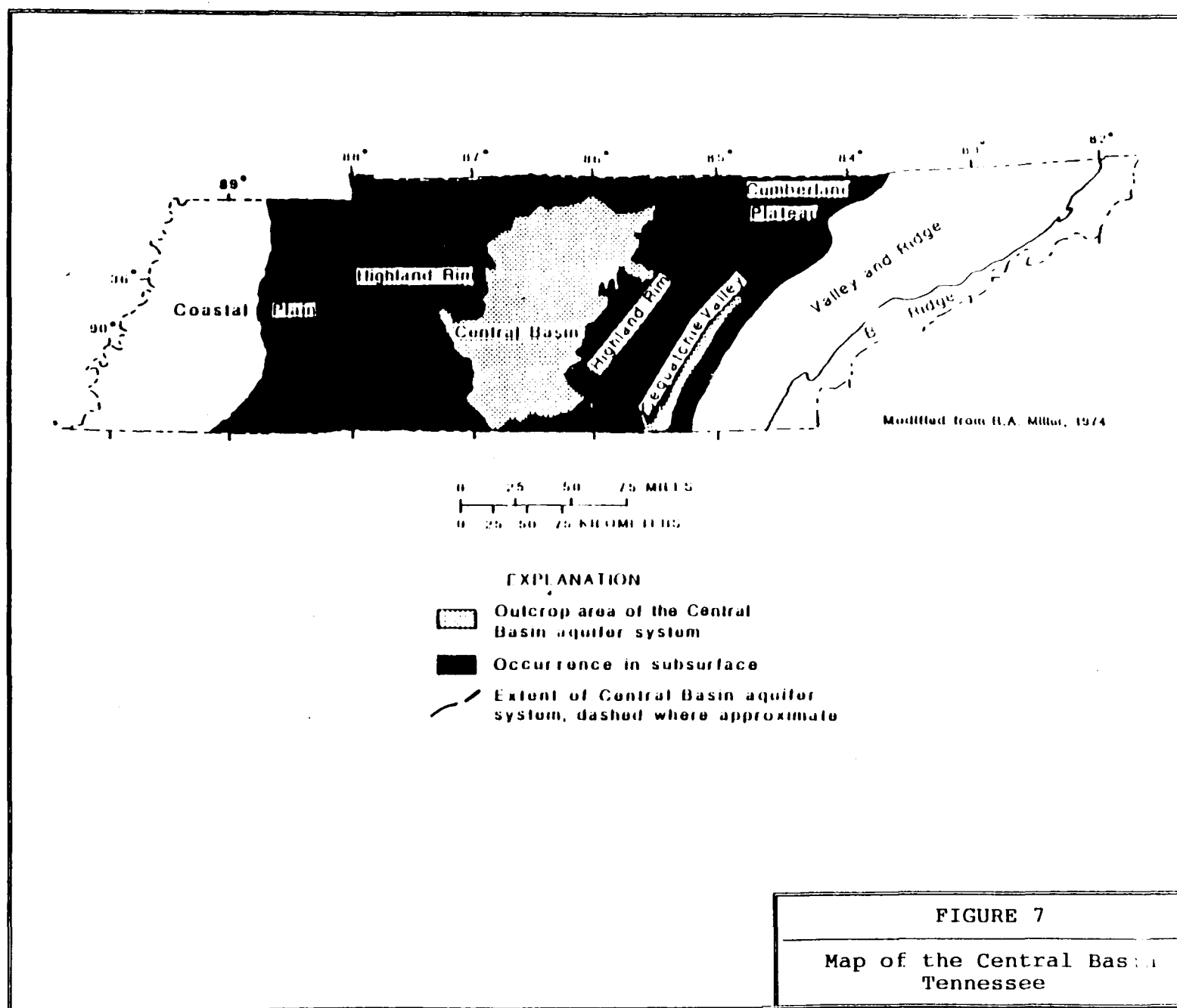
The Wrigley Charcoal Site lies within the Western Highland Rim (Figure 7) physiographic province, a rolling upland plateau typically having from 200 to 300 feet of vertical relief. The structure of the Western Highland Rim is controlled by the Nashville Dome, which is the southern extension of the Cincinnati Arch. Regional dips are to the west at less than 20 feet per mile. A few minor folds as well as a number of high-angle gravity faults have been documented.

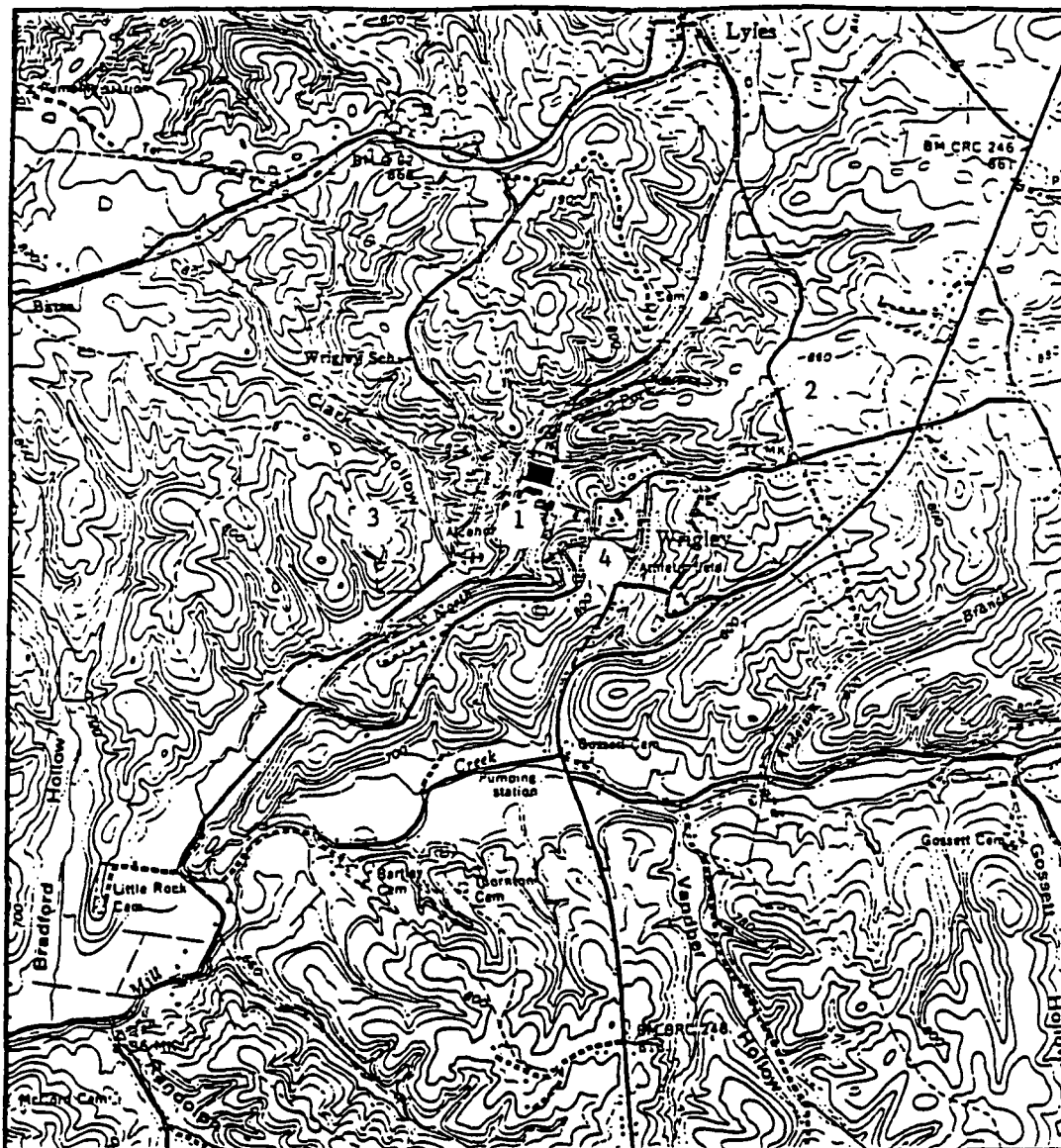
The local setting and topography within approximately a 1 mile radius of the site is shown in Figure 8. The main area of the Site lies at elevations between 680 and 730 feet above mean sea level (MSL).

### 6.2 Surface Water and Drainage

A well developed dendritic drainage system has formed throughout the area of Hickman County and the Site, with drainage following synformal valleys. The Wrigley Charcoal Site is located in the valley of the North Fork of Mill Creek (also called the Warner Branch and Blackwater Branch), which is in part supported by surface drainage from the Primary Site and flows from northeast to southwest along the western edge of the Site. The North Fork of Mill Creek flows into Mill Creek about a mile downstream from the Site. Mill Creek is a tributary of the Piney River (Figure 9) which flows to the Duck River. The majority of the county is drained by the Duck River, which is a tributary of the Tennessee River.

The North Fork of Mill Creek has its headwaters approximately 1.8 miles north of the site near the town of Lyles. It flows about 1.1 miles from the site to its confluence with Mill Creek (Figure 9). Mill Creek has its headwaters about 5 miles east-northeast of its confluence with the North Fork, and about 1.5 miles southwest of Bon Aqua Junction. It is fed by several perennial and wet weather springs. Springs are common in the Mill Creek drainage basin, and several are located in the immediate area of the Wrigley Charcoal Site. There are two main sources for springs in this area, the first being the highly permeable residual soils covering most of the area, and the second being solution channels in limestone-rich areas of the bedrock.





SOURCE: LYLES QUADRANGLE, TENNESSEE,  
7.5 MINUTE SERIES (TOPOGRAPHIC) 40-4F, USGS,  
PHOTOGRAPHED 1956

#### LEGEND

- 1) PRIMARY WRIGLEY SITE
- 2) IRRIGATION FIELD
- 3) STORAGE BASIN
- 4) ATHLETIC FIELD

0 2000'

SCALE 1 : 24,000

CONTOUR INTERVAL 20 FEET



FIGURE 8

Site Topographic Setting  
Wrigley Charcoal Site

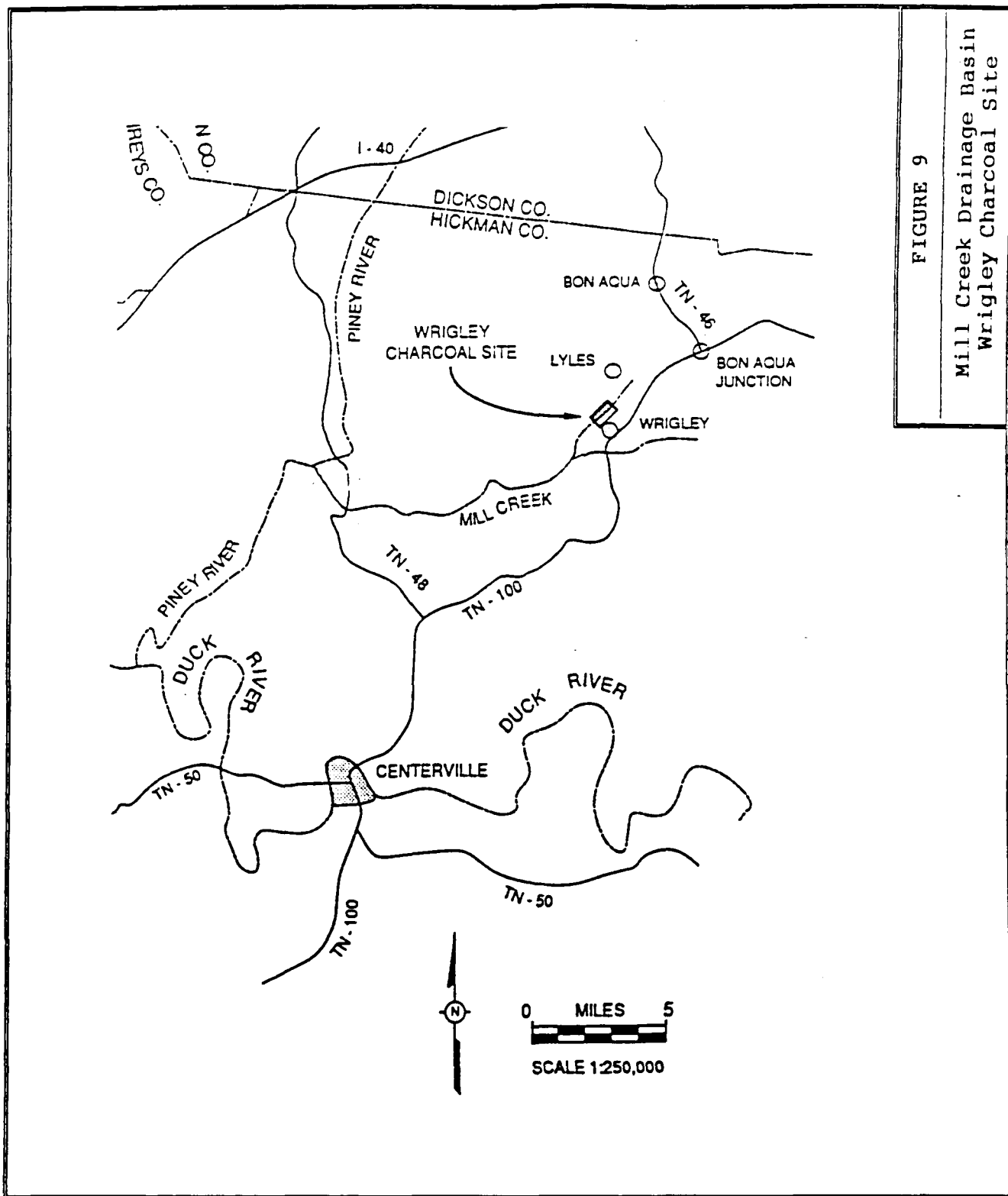


FIGURE 9  
Mill Creek Drainage Basin  
Wrigley Charcoal Site

### 6.3 Climatology

There is no climatological reporting station in the town of Wrigley so the majority of the data presented in this section is from the Dickson station approximately 15 miles northwest. The wind direction information was acquired from the Nashville station approximately 45 miles north-northeast of Wrigley Site. The annual mean temperature for the area is 59.9 degrees F., with January being the coldest month with a mean temperature of 40.8 degrees F. July is the warmest month with a mean temperature of 79.1 degrees F. The average rainfall is 51.6 inches with the greatest precipitation generally occurring during winter and spring. The average snowfall for the location is 10.9 inches. Winds within the Dickson-Wrigley area are generally southerly (40 percent south, 30 percent north, 14 percent west, and 8 percent east, and 8 percent calm). The mean number of cloudy days reported from the Nashville station is 125 days/year with January being the month with the most cloud cover with the mean of 16 days/month. The summer months June through September have the least cloud cover and average 7 days/month. At the Dickson, Tennessee station the mean date for the last spring occurrence of frost is 4/10 and the mean date for the first Fall occurrence is 10/23. The mean number of days the temperature does not rise above 32 degrees is 9 days/year.

### 6.4 Demography and Water Use

The town of Wrigley is the nearest community to the Wrigley Charcoal Site. There are approximately 1000 people living within a one-mile radius of the Site. Twenty-three residences are located along the western ridge paralleling the Primary Site and approximately 18 residences are located along the eastern edge of the Primary Site.

There are approximately 25 homes adjacent to the Irrigation Field and 15 homes adjacent to the Athletic Field. Almost all of the residences are connected to the Bon Aqua-Lyles water utility and do not require private wells for drinking water. In Hickman County, approximately 5,500 residences are served by this water utility. However, there are 9 residential wells within an approximate 1 mile radius of the Site and it is likely that 3 of the wells are utilized for drinking water.

### 6.5 Land Use and Site Access

The Wrigley Charcoal Primary Site area is not currently in use but it is conceivable that future industrial activities could take place here. Many of the larger buildings including the warehouse, dryer and maintenance buildings are intact. Although it would be expensive, these structures could be restored and utilized for future industrial activities. The Site is readily accessed by anyone that

ignores the warning signs and walks around the gates on the east entrance or at the gate on the southwest entrance. There is no gate on the road at the north entrance up the valley along the North Fork of Mill Creek but access is difficult due to the excessive vegetation and a 15 foot deep wash-out in the road. Access is needed to this Site by the electric utility (Tennessee Valley Authority) that maintains an electric sub-station at the north end of the Site, and by the gas utility (East Tennessee Natural Gas Co.) that maintains a natural gas pipeline located adjacent to the sub-station. The natural gas pipeline runs east-west across this portion of the Primary Site. The utility companies have previously contacted the TFC to acquire a key for access of the east entrance. These utility companies currently use the east road for access.

The Storage Basin is located in an isolated area southwest of the Primary Site and has not been utilized for any waste water disposal activities since 1966. At present, the Storage Basin is full of water and is approximately 3-5 feet deep. An overflow tube connects the Storage Basin to the Overflow Basin so that during heavy rainfall events, excess waters flow into the Overflow Basin. Within the Overflow Basin is another overflow tube that relieves the Overflow Basin of excess waters. This tube most likely discharges excess waters into Clark Hollow north of the Overflow Basin. Within the Storage Basin a thin drape of sediment covers coal-tar wastes in the deeper sediments thereby isolating these deeper sediments. This natural isolation of the contaminants gives the pond a very clean appearance. The casual visitors which include walkers, motorcyclists, hunters, and possibly fisherman are likely to use the storage basin and overflow basin for recreational purposes.

The area is readily accessible by foot but vehicular traffic is restricted by the steep grade of the small overgrown road that connects the valley road with the Storage Basin.

At present, it is unlikely for this area to be used for residential or farming applications due to its isolated location and rough terrain.

The Irrigation Field has not been utilized for waste water disposal since 1966. The Field is a relatively flat lying area that is presently vegetated with small trees and weeds. The abandoned lagoon at the western edge of the Field is presently a swampy area that contains some larger trees and abundant vegetation. At the southern portion of the field are a line of homes that have been built since the 1960's according to the Environmental Photographic Interpretation Center (EPIC) photos.

It is possible that future uses of this location include residential. Due to the Site being flanked by homes (south) and churches (northeast), it is possible that the property could also be

developed similarly. It also is possible this property could be used for farming.

Although this area is readily accessible, thick underbrush, weeds and small trees make access difficult. At present a small road is used at the northern boundary of the Field for dumping of trash.

Prior to 1938 the Athletic Field (L.A. Miller Park) was the likely location of a small dump for the town of Wrigley. From 1938-1950 slag and soils from the Primary Site were transported to this location to construct what later became the Athletic Field. This location is presently a baseball field flanked by two roads and surrounded by homes. At the far southern edge of the Field is a plot being used for a garden. The plot is approximately 35 x 80 feet and is located approximately 50 feet away from the location of the samples collected during the RI which showed elevated lead levels or "hot-spots". The field is used daily by children and others for various activities. This location is also used for the Wrigley Day event which is held on an annual basis on the last weekend of June. As many as 800 people have been reported to attend this function held at the Field.

Future uses of this property are likely to remain the same since this is the only location in Wrigley that could be used as an Athletic Field. However, it is possible that the plot used for growing vegetables behind the Field could be expanded to encroach on the "hot spot" identified during the RI.

## 6.6 Geology

Three geologic formations, all of Mississippian age, occur in the area of the Site. From youngest to oldest, the formations are:

- 1) The St. Louis Limestone
- 2) The Warsaw Limestone
- 3) The Fort Payne Chert

A stratigraphic column for the area is shown in Figure 10. In addition, a cross-sectional layout map depicting Primary Site cross-sections as presented in the RI are presented in Figure 11. A representative cross-section of the Primary Site north to south is presented in Figure 12. Brief descriptions of the occurrence and characteristics of these formations are presented below.

### 6.6.1 St. Louis Limestone

The St. Louis Limestone occupies the tops of the highest ridges surrounding the Wrigley Charcoal Site. It consists of pale to dark yellowish brown, fine to coarse-grained, thick-bedded, fossiliferous



SYSTEM	GROUP	FORMATION	THICKNESS	LITHOLOGY
MISSISSIPPIAN	MERAMEC	ST. LOUIS FORMATION	80' - 175'	DARK GRAY TO GRAY, COARSE GRAINED GENERALLY MASSIVE-BEDDED HETEROGENEOUS LIMESTONE, CONDUCTIVE TO SINKHOLES AND CAVES ON THE WESTERN HIGHLAND RIM, RED OVERBURDEN
		WARSAW LIMESTONE	100'	GRAY MASSIVE-BEDDED LIMESTONE, CROSSBEDDED IN PLACES, SILICEOUS, GRAY TO RED OVERBURDEN
	OSAGE	FORT PAYNE CHERT	100' - 250'	GRAY TO BLuish GRAY, SILICEOUS LIMESTONE AND SHALE CONTAINING CHERT STRINGERS
	KINDERHOOK	MAURY FORMATION	0' - 5'	GREEN TO GREENISH GRAY SILTSTONE AND CLAY STONE
DEVONIAN	UPPER	CHATTANOOGA SHALE		
		GASSAWAY MEMBER	10' - 40'	BLACK FISSILE SHALE, COMPACT, WITH PHOSPHATE NODULES, DARK GRAY SILTSTONE PARTINGS
		DOWELLTON MEMBER	10' - 20'	BLACK FISSILE SHALE, DARK GRAY, INTERBEDDED CLAYSTONE
		HARDIN SANDSTONE MEMBER	1' - 15'	MASSIVE FINE GRAINED SANDSTONE, LOCALLY PHOSPHATIC IN WESTERN HIGHLAND REGION

(MODIFIED AFTER SMITH, 1963)

FIGURE 10

Generalized Stratigraphic Column  
Wrigley Charcoal Site

### Cross-Section Layout Map Wrigley Charcoal Site

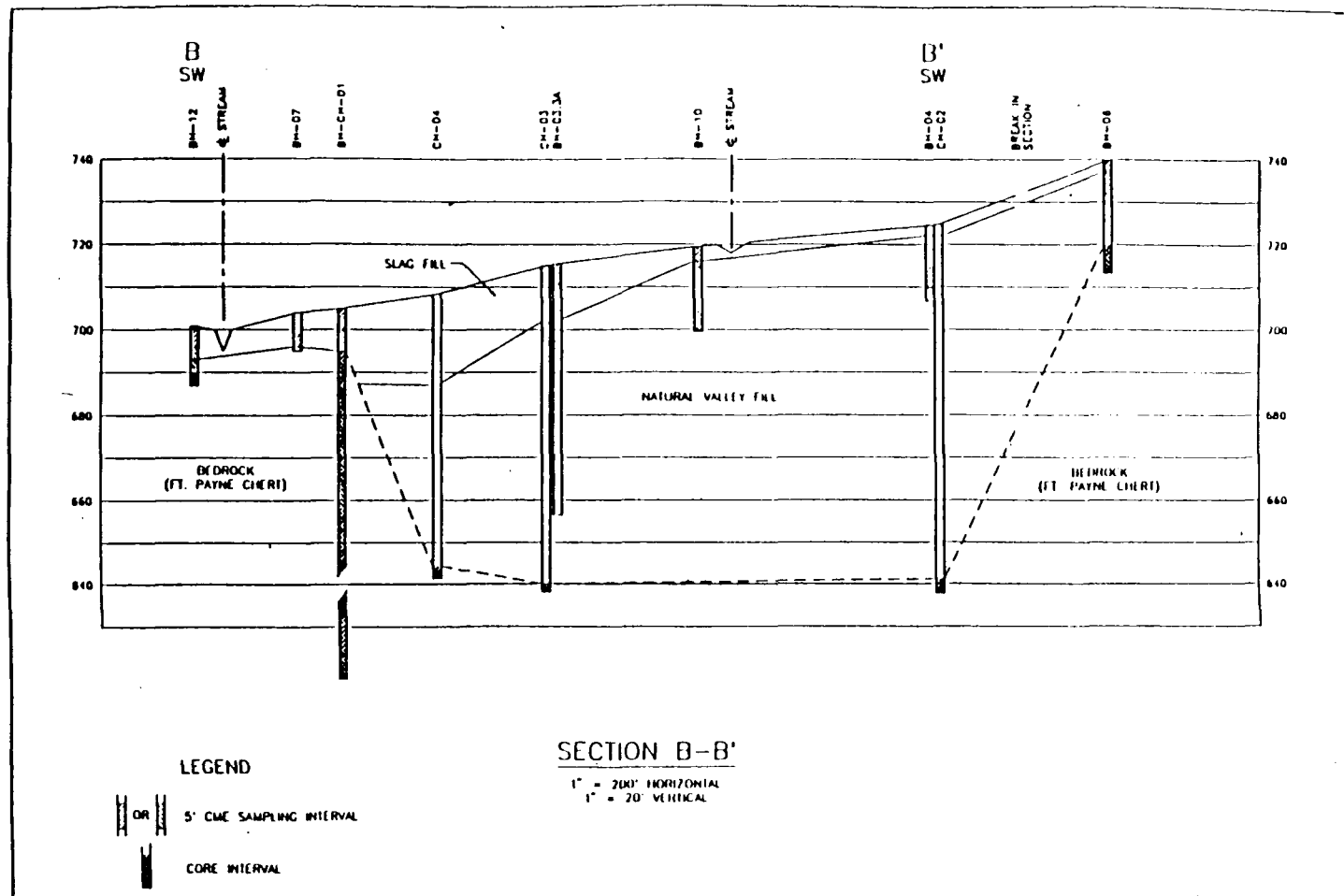


FIGURE 12  
 Cross-Section B-B'  
 Wrigley Charcoal Site

limestone that is locally silty and cherty. It weathers to a residual soil of reddish sandy clay containing blocks up to 10 inches in diameter of variably colored, dense and partly fossiliferous dense, brittle, chert.

#### 6.6.2 Warsaw Limestone

The Warsaw Limestone makes up the slopes of the ridges and some of the lower ridge crests surrounding the Wrigley Site. The Warsaw consists of light olive-gray to pale yellowish-brown, medium to very coarse-grained, cross-bedded, styalitic, fossiliferous limestone. The Warsaw weathers to a residual soil consisting of blocks of porous to dense fossiliferous chert, embedded in reddish sandy clay with sandstone cobbles and boulders. A sandstone outcrop, tentatively ascribed to the Warsaw, has been described in the literature at Wrigley near the mansion (previous Bon Air Company office).

#### 6.6.3 Fort Payne Chert

The Fort Payne Chert is the primary bedrock unit under the Wrigley Site. There are two facies of the Fort Payne Chert in the area. The upper unit, which is from 40 to 160 feet in thickness, consists of brown chert plates and particles in a calcareous siltstone matrix, locally mixed with fossil-fragmental limestone. The lower unit, which is from 40 to 80 feet in thickness, consists of brown or gray siltstone with scattered chert beds. The total combined thickness of the Fort Payne in this area is approximately 300 feet.

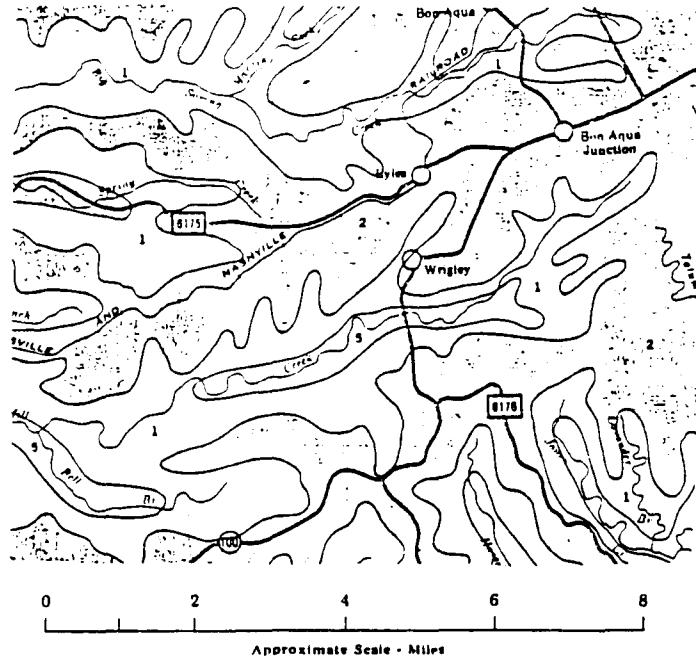
The ground surface at the Primary Site averages about 30 to 40 feet below the contact of the Fort Payne with the overlying Warsaw Formation. This location suggests that the Site lies on the residuum of the upper cherty facies of the Fort Payne. Because of placement of fill and waste (slag and tar) on much of the Site, the native soils have not been observed at or near the surface in the southern portion of the Site. In the northern portion of the Site, the soils are very cherty and silty and contain variable amounts of sandstone cobbles weathered from the overlying Warsaw.

#### 6.7 Soils

A general map provided by the U.S. Soil Conservation Service (SCS, 1977) is presented for Hickman County. The map does not reveal a great deal of detail but general unit boundaries are clearly defined. As depicted in Figure 13, the soils in and around the Wrigley Charcoal Site consist of the Bodine-Baxter-Ennis Association (1), the Montview-Dickson-Bodine Association (2), and Humphreys-Ennis-Lobelville Association (5). The valley where the Primary Site resides in the Bodine-Baxter-Ennis soils. Further down the valley southwest soils change at the confluence of Mill Creek to

# GENERAL SOIL MAP HICKMAN COUNTY, TENNESSEE

SOIL CONSERVATION SERVICE  
IN COOPERATION WITH THE  
SOIL CONSERVATION DISTRICT



Compiled from Tennessee General Highway Map,  
Polyconic Projection.

Grid ticks base on Tennessee coordinate system.

## LEGEND

- 1 BODINE-BAXTER-ENNIS association: Hilly and steep, deep well drained cherry soils; on highly dissected uplands.
- 2 MOUNTVIEW-DICKSON-BODINE association: Gently rolling and rolling, deep well drained soils that are chert-free on the hilltops and cherty of the hillsides; on broad tops and plateau-like areas of high winding ridges.
- 3 PICKWICK-PADEN-ETOWAH association: Gently rolling to hilly, deep well drained soils some of which are gravelly; on intermediate and high terraces.
- 4 ENNIS-LOBELVILLE-HUMPHREYS association: Level and gently rolling, well drained and moderately well drained silt loams and cherty silt loams; on first bottoms and low terraces of Duck River.
- 5 HUMPHREYS-ENNIS-LOBELVILLE association: Gently rolling and level, well drained and moderately well drained silt loam and cherty silt loams; on first bottoms and low terraces of creeks.

FIGURE 13  
General Soil Map  
Wrigley Charcoal Site

Humphreys-Ennis-Lobelville. The higher flat lands and hills that surround the Primary Site where the Storage Basin, Athletic Field, and likely the Irrigation Field reside consist of Mountview-Dickson-Bodine soils. Other soils units may be present to lesser degrees and unpublished soils information obtained from the SCS indicates that soils of as many as six series may be present at the Site or in surrounding areas. Brief soil descriptions are presented below with some overlap of soil associations. Therefore, this information will not be repeated for each association. Additional information is presented in Appendix A.

#### 6.7.1 Bodine-Baxter-Ennis Association

The Bodine Series consists of deep, somewhat excessively drained, cherty soils on uplands. These soils have pale brown, cherty silt loam A horizons, and yellowish brown and strong brown, cherty silt loam and cherty silty clay loam B horizons which become increasingly cherty with depth.

The Baxter Series consists of deep, well drained cherty soils on uplands. They formed in material weathered from cherty limestone. Typically these soils have a brown cherty silt loam surface layer nine inches thick.

The Ennis Series consists of deep, well drained, cherty moderately rapid permeable soils that formed in alluvial sediments derived from limestone, shale, sandstone, and loess. These soils are on bottom lands, in narrow strips along drainways and in depressions.

#### 6.7.2 Mountview-Dixon-Bodine Association

The Mountview Series consists of very deep, well drained soils that formed in a 2 to 3 foot thick silty mantle, presumably loess, underlain by residuum of cherty or clayey limestone or by old alluvium.

The Dickson Series consists of moderately well drained soils that in a representative profile have a 7 inch brown silt loam layer. The subsoil down to the fragipan at 25 inches is yellowish brown friable silt loam. The fragipan which extends from 25 to 45 inches is yellowish mottled and brittle silty clay loam. Below the fragipan is yellowish red firm clay.

#### 6.7.3 Humphreys-Ennis-Lobelville Association

The Humphreys Series consists of deep, well drained soils on terraces. They formed in alluvium from cherty limestone, loess, and shale.

No additional information is available for this association in the vicinity of the Site.

Other series present in this area include the Biffle and Sengtown series. These series are briefly described below. However, these soils series are less likely to be found at the Site but are found throughout Hickman County.

The Biffle Series consists of moderately deep, somewhat excessively drained, cherty soils on uplands. They have formed in residuum from cherty limestone.

The Sengtown Series consists of deep, well drained, moderately permeable soils. They formed in residuum weathered from cherty limestone. They occur on sloping to steep uplands.

## 7.0 SUMMARY OF SITE RISKS

CERCLA directs that the Agency must protect human health and the environment from current and potential exposure to hazardous substances at Superfund sites. In order to assess the current and potential risks for the Wrigley Charcoal Site, a risk assessment that comprises Volume III of the RI Report has been conducted.

The results of the RI/FS (including risk assessment) indicated that there are a wide range of hazardous materials and contaminants at the Primary Site and Storage Basin. Additional information obtained during 1991 for the Primary Site and Storage Basin supports limited (early final and interim) actions at these two locations. However, the information generated from these studies was inconclusive concerning the extent of contamination for the Irrigation and Athletic Fields. Additional information will be needed in order to fully assess risks at the Irrigation Field and to identify the extent of the "hot spot" behind the Athletic Field and the associated risks. Results of this sampling will form the basis for future actions to be taken at the Athletic Field and/or Irrigation Field.

The following summary lists specific early final and interim action items (previously discussed on page 2) and associated contaminants that may pose a potential threat. Long-term human health risk calculations and environmental risks will be discussed during future response actions. Early final actions concerning sludges and wastes will be cleaned up to Acceptable Soil Concentration (ASC) levels as presented in Appendix F.

- 1) Hazardous substances in the maintenance buildings' burn-pit wastes at the Primary Site contain: 1) lead (1,600 ppm); 2) chromium (270 ppm); 3) copper (7,900 ppm); 4) zinc (2,300 ppm); 5) nickel (160 ppm); 6) cadmium (36 ppm); and 7) barium (120 ppm). The ASC for lead reported in the RI for the Primary Site (light industrial use) is 121 ppm (the ASC for

copper is 3,200 ppm). On September 7, 1989, EPA established an Interim Guidance for soil lead cleanup levels at Superfund Sites (Directive 9355.4-02). This directive set soil lead cleanup levels from 500-1000 ppm depending on the land use. EPA is considering 1000 ppm as a cleanup goal for the burn-pit area since the Site is presently zoned, and expected to remain in the future, a light industrial site. The amount of lead noted in the burn-pit is significantly above the recommended cleanup value of 1000 ppm, (and the amount of copper is significantly above the ASC for copper). Therefore, EPA has determined that a potential risk to human health exists due to potential for dermal contact and/or incidental ingestion of these wastes, and potential risks which exist to the environment from migration of these wastes to the North Fork of Mill Creek via groundwater.

- 2) Contaminants at the Storage Basin in the deep sediments were identified during the April 1991 sampling event conducted as a removal action. Samples of the deep sediments identified 20 organic compounds and 9 metals. Contaminants in these sediments consisted of the following: 1) semi-volatile compounds (74,032 ppm including phenols at 26,700 ppm); 2) metals (6025 ppm), and 3) VOCs (610 ppm). Since the ASC for carcinogenic PAHs as reported in the RI is 8.17 ppm, for non-carcinogenic PAHs is 34,600 ppm, and for phenols is 100, the Storage Basin area poses a potential threat to anyone that may come into contact with wastes through dermal contact or incidental ingestion. Therefore, due to the high level of PAHs and phenols in the Storage Basin sediments, and open access, EPA has determined that this location also poses a risk to human health and the environment.
- 3) The process tank coal-tar wastes (mixed with soil and debris) across the North Fork of Mill Creek at the Primary Site were sampled and elevated levels of contaminants identified. A total of 16 organic and 5 inorganic constituents were identified. Contaminants consisted of the following: 1) phenols (20,000 ppm); 2) total PAHs (737 ppm)-including carcinogenic PAHs (359 ppm); 3) VOCs (1750 ppm); 4) copper (2,400 ppm); 5) lead (340 ppm); 6) nickel (110 ppm); 7) zinc (110 ppm); and 8) and barium (50 ppm). The high levels of phenols, carcinogenic PAHs, and VOCs make the process tank wastes a potential risk to human health by way of dermal contact, incidental ingestion, or inhalation. Wastes are potential risks to the environment since they are adjacent to the North Fork of Mill Creek and periodically leak from the process tanks and can migrate into the creek. Also, if these tanks were to rupture and release into the environment the presently contained wastes, the potential for significant health risks to workers and the environment would be significant. These wastes contain various carcinogenic chemicals such as: PAHs, VOCs, lead, and nickel.



- 4) Periodically, black coal-tar wastes leak out of the process tanks. These wastes, once on the ground, migrate down the steep hill approximately 50 feet to the North Fork of Mill Creek. Contaminant types are the same as the process tanks but concentrations of VOCs in this contaminated media are likely to be less due to volatilization. Risks associated with these wastes are similar to process tank wastes. Therefore, these also pose a potential threat to anyone that may come in contact with the wastes. Also, wastes are a potential threat to the North Fork of Mill Creek due to the migration pathway from the tanks down the steep hill to the creek.
- 5) At the previous location of the still house, black coal-tars periodically bubble to the surface during the summer. This has been noted to occur at the northeast corner of the old foundation. Soil samples in the vicinity of the foundation contain carcinogenic PAHs (24 ppm). Samples and analyses of the coal-tars that bubbled to the surface in the summer of 1991 have not been acquired, however, it is likely that levels of PAHs and other contaminants are substantially higher in these wastes than in the adjacent soils. Since the level of carcinogenic PAHs is 3 times that of the ASC (8.17) in the vicinity of these coal-tar seeps, EPA also considers this location to be a potential threat to human health due to the potential for dermal contact. Also, wastes are a potential environmental threat since they are adjacent to the North Fork of Mill Creek and could readily migrate via surface waters.
- 6) Roofing materials at the Primary Site were analyzed and found to contain 60% chrysotile asbestos, 30% non-fibrous binder, and 10% cellulose. Asbestos is a known carcinogen for which a safe exposure level cannot be established and studies have documented asbestos related diseases with minimal exposure. The EPA Region IV Asbestos Unit has reviewed the FS for the Wrigley Site and has determined that the friable material on the small building in front of the maintenance building and any ACM on the ground poses a potential risk to human health due to the potential for inhalation of asbestos fibers. These materials also pose a potential threat to the environment since broken ACM sheets may migrate via surface waters into the North Fork of Mill Creek. Once ACMs get into the creek they can become incorporated into adjacent (surficial) sediments, then during dry conditions the materials may become airborne if agitated.
- 7) During the spring floods of 1961, black coal-tar wastes were exposed in the spillway. No sampling or analysis has

been attempted on these newly exposed materials. It is likely these are similar coal-tar derivatives that have been identified elsewhere at the Wrigley Site. At every location analyzed for coal-tar wastes, the levels were found to be above ASCs. There is no present reason to assume that these coal-tar waste concentrations are below ASCs. Risks associated with these contaminated media likely pose a potential threat to human health through dermal contact since wastes are exposed. Wastes also pose a potential threat to the environment since they are in the middle of the spillway and directly in contact with waters of the North Fork of Mill Creek after significant rainfall events.

- 8) Twelve staged drums are located near the maintenance building and two drums are located in the storage shed. A composite sample of solid waste (a waste characterization for disposal) identified the following hazardous substances (i.e.- contaminants) in the drums near the maintenance building: 1) acetone (5.2 ppm); 2) benzene (100 ppm); 3) toluene (1.9 ppm); 4) phenol (360 ppm); and 5) chromium (23 ppm). A composite sample of liquid wastes in drums in the above location yielded: 1) naphthalene (500 ppm); 2) tentatively identified hydrocarbons (35,900 ppm); 3) ethylmethyl benzene isomer (7,000 ppm); 4) tentatively identified aromatics (9,200 ppm); 5) (1-methylpropyl)-cyclohexane (4,500 ppm); 6) methylpropyl benzene isomer (4,200 ppm); 7) methyl-methylethyl benzene isomer (7,000 ppm); 8) tetramethyl benzene isomer (3,400 ppm); 9) undecane (22,000 ppm); 10) chromium (214 ppm); 11) copper (35,700 ppm); 12) arsenic (37 ppm); 13) lead (544 ppm); 14) manganese (5,197 ppm); 15) nickel (3,429 ppm); 16) selenium (64 ppm); and 17) zinc (755 ppm). Based on the above analyses, these materials if left on-site, pose a threat to public health due to potential exposure from dermal contact, incidental ingestion, or inhalation. Also, the potential exists for these contaminants to adversely affect the environment. Contaminants may migrate into the groundwater or surface waters if any of the drums develop leaks. Also, if these drums were to rupture and release the presently contained wastes to the environment, the potential for significant health risks to workers and the environment would result. These wastes contain various carcinogenic chemicals such as benzene, PAHs, chromium, lead, nickel, and arsenic.
- 9) Continued erosion by the North Fork of Mill Creek, adjacent to the culverts in the spillway, increases the probability that additional coal-tar wastes may be exposed. Wastes in this area likely pose a potential threat to human health and the environment due to dermal exposure or inhalation. It will be necessary to reconstruct the spillway to prevent further exposure of coal-tar wastes.

- 10) Primary Site waste/debris piles contain variable quantities of potentially hazardous materials: a) ACM; b) tar-cubes; c) crushed drums (contents unknown); and d) transformer materials.
- a) The ACM, as previously described, is of concern.
- b) The tar-cubes are derivatives of the coal-tars generated at the Primary Site. Due to waste characterization for disposal analyses having extremely high detection limits and high levels of organic carbon causing matrix interference, PAH compounds were not definitively identified. However, a cumulative total of 10 tentatively identified compounds (TICs) yielded 920 ppm. It is likely that these TICs are PAH compounds. Although the tar-cubes appear to vary in composition from the raw coal-tar wastes, the cubes pose a potential risk since they are composed of pure coal-tar which is primarily PAH constituents. On the 7/26/91 Site tour with representatives from the State of Tennessee, it was noted that melted tar from cubes was oozing from the base of several waste piles adjacent to the raw liquor storage tank foundation. These materials likely pose a potential threat to human health and the environment since contaminants are mobilized in summer and could potentially be transported by surface waters to the North Fork of Mill Creek.
- c) Crushed drums pose a potential threat at the Primary Site if found to contain hazardous compounds.
- d) At present, little is known about the variety of small transformers found at the Primary Site. On 4/26/91 several were sampled, however, waste characterization data minimum detection limits were too high to detect any compounds. These transformers may contain hazardous materials and may pose a potential threat at the Wrigley Site since they are scattered throughout the Primary Site and readily accessible to anyone that may contact them.
- 11) The Irrigation Fields' abandoned lagoon was found to contain the following contaminants in sediments down to approximately three feet: 1) phenol (13 ppb); 2) toluene (11 ppb); 3) methylene chloride (120 ppb); 4) tetrachloroethene (5 ppb); 5) lead (91 ppm); 6) arsenic (31 ppm); and 7) copper (1,200 ppm). These levels of contaminants are not presently of concern. However, aerial photos taken between 1958 and 1963 show similarities between the Irrigation Fields' lagoon and the Storage Basin where high levels of contaminants were identified. Similarities between these two areas are: 1) size and shape of containment area; 2) segregation of suspended particulates

(in basin and lagoon waters) away from the feed pipe outflow as noted in the EPIC photos; and 3) historical information that describes similar wastewater disposal activities at both locations. Based on this information, the deeper sediments at the Irrigation Fields' abandoned lagoon may pose a potential threat to human health and the environment.

- 12) Site access controls at the Primary Site and Storage Basin will reduce the risks associated with dermal contact or other exposures to trespassers.
- 13) Eleven surface and subsurface soil composite samples were obtained at the Athletic Field (inside the outfield fence) in December of 1990. Although hazardous substances were found, these were all below levels of concern. However, risks may be elevated behind the Athletic Fields' outfield fence. One soil sample out of 6 samples obtained during the RI at this location revealed: 1) lead (1,000 ppm); 2) copper (69,000 ppm); 3) manganese (3,100 ppm); 4) zinc (42,000 ppm); 5) cobalt (81 ppm); 6) chromium (56 ppm); 7) barium (640); and 8) aluminum (9,400 ppm). Therefore, EPA has determined that confirmatory sampling and analyses are justified at this location to determine the extent and associated risks of this "hot spot".

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment. These early final and interim actions are necessary to achieve significant risk reduction while developing a final remedial solution for the Wrigley Charcoal Site.

## 8.0 SUMMARY OF ALTERNATIVES

### 8.1 Alternative 1: No Action

- o CERCLA requires that the "No Action" alternative be considered at every site. This alternative must be considered to serve as a basis for comparison of other alternatives. Under this alternative, no sludge, soil, sediment, groundwater, or debris cleanup, consolidation or treatment would take place. The only reduction of contaminant levels would occur via natural processes such as dispersion or attenuation. The only costs associated with the alternative pertain to institutional controls and fees.

Present Worth (PW) Cost: \$36,000

PW Capital Cost: \$30,000

Time to Implement: 1 month

### 8.2 ALTERNATIVE 2: Limited Action

- o Deed Restrictions and Site Access Restrictions (Institutional Controls) including: a 10-foot high chain-link fence topped with barbed wire will be installed around the Primary Site and the Storage Basin including the Overflow Basin. Prior to installation, the areas of fencing will be cleared for access as required for proper installation. The fence would be equipped with a gate for controlled access.
- o Warning signs and placards would be added and posted at 100-foot intervals along the fence. The areas to be fenced are as follows: 1) Primary Site (6,280 feet), and 2) Storage Basin (1,230 feet - including the Overflow Basin). The total amount of fencing proposed for the two Wrigley Site areas is 7,510 linear feet.

Present Worth Cost: \$169,004

PW Capital Cost: \$146,960 (fencing)

Time to implement: 3 months

This alternative will insure that Site access is limited through installation of a security fence while also attempting to establish controls that ensure proper maintenance of the Site through deed restrictions. This alternative does not improve residual risks above baseline conditions nor does it reduce toxicity, mobility, or volume.

### 8.3 ALTERNATIVE 3: Early Final and Interim Action

- 1) Metallic wastes in the maintenance buildings' burn-pit will be excavated, stabilized and disposed of in an EPA approved RCRA facility. This activity will be a early final action. The approximate volume of this material is 15 yd<sup>3</sup>. Transformers found in the maintenance building will be secured with other transformers found at the Primary Site in an on-site containment area for future action. The total amount of transformers estimated at 120 drums. This is an interim activity;
- 2) Risks will be reduced at the Storage Basin by fencing the area. This will discourage and possibly prevent entry and disturbance of this area until wastes can be appropriately eliminated during later remedial activities. Installation of the fence is considered to be an interim action (OSWER Directive 93355.3-02);
- 3) Process tank waste sludges (29 yd<sup>3</sup>) will be removed , transported, incinerated, stabilized and disposed of in an EPA approved RCRA incinerator/landfill for disposal. The metallic tanks will be decontaminated and sold as scrap. This is a minor modification from the proposed plan which stated the tanks would be disposed of in an EPA approved RCRA facility. Elimination of the process tanks and sludges is an early final action;
- 4) Black coal-tar wastes on the ground from the process tanks down to the North Fork of Mill Creek will be excavated, transported, incinerated, stabilized and disposed of in an EPA approved facility. The area has been visually estimated at approximately 50 x 10 feet with an average thickness of 1.0 foot (approximately 19 yd<sup>3</sup>). Removal of this waste is considered to be an interim activity;
- 5) Black coal-tar wastes at the northeast corner of the previous still house location will be excavated, transported, incinerated, stabilized, and disposed of in an EPA approved facility. The approximate visual estimate of the area is 10 x 10 feet. This small area should be excavated to approximately a one-foot depth, then backfilled with clean fill. The estimated volume of this material is 3.5 yd<sup>3</sup>. Removal of these wastes is considered to be an interim activity;
- 6) Visibly friable ACM will be removed, transported and disposed of in an approved asbestos landfill. Most of the

intact ACM on building roofs appears to be in fair condition. However, the visibly friable ACM on the small building in front of the maintenance building should be removed together with broken sheets of ACM on the ground near the dryer building, tank battery, and previous location of the still house (approximately 20 yd<sup>3</sup> or 0.5 tons). Visible ACM on soils associated with broken, crushed, or sheet ACM that reveal light grey-white coloration (representative of the ACM at the Wrigley Site) will be removed. An estimate of ACM contaminated soils that need to be removed is 20 yd<sup>3</sup>. Removal of the ACM is considered to be an interim activity;

- 7) Exposed black coal-tar waste visible in the spillway should be excavated, transported, incinerated, stabilized and disposed of in an approved off-site facility. Wastes should only be excavated until a reasonable margin (for construction purposes) is established for the rebuilt spillway. Approximate estimates for this waste are 100 yd<sup>3</sup>. This is considered to be an interim activity;
- 8) Twelve drums are located near the maintenance building and two drums in the storage shed. Drummed wastes should be transported, incinerated, stabilized, and disposed of in an EPA approved facility. This is a modification from the Proposed Plan and is considered to be an early final action;
- 9) The spillway should be repaired and re-engineered to accommodate the significant flood waters that frequent this area. This may involve straightening and further excavating the spillway down to the existing creek grade (additional information concerning the spillway is presented on p. 47). This is considered to be an interim activity;
- 10) Site surface waste/debris piles that include tar-cubes, pieces of ACM, transformer materials, crushed drums, and other miscellaneous metallic debris and tar waste will be sorted. Pieces of ACM will be removed and disposed of with the ACM as previously described in item 6. Metallic scrap would be transported and disposed in an approved EPA facility. Materials such as tar-cubes and wastes that may be remediated with later remedial activities would be stored in an on-site consolidation area. This is considered to be an interim activity. Volume estimates for Site debris are presented in table 1;

- 11) A limited investigation will be performed at the Irrigation Fields' abandoned 3/4 acre lagoon. This activity will include several soil borings/excavations (to approximately 10 feet) and several additional soil samples at the previous location of the feed pipe outflow. This activity will determine whether wastes similar to those at the Storage Basin are present in the deeper soils. This is a modification from the Proposed Plan and considered to be an interim activity;
- 12) EPA will negotiate with local municipalities to impose deed restrictions at the Primary Site and Storage Basin. Site access controls will be implemented (fencing & placards) at the Primary Site and Storage Basin. This is an interim activity;
- 13) Sampling and Analyses:
  - Resampling and analyses of six monitoring wells and twelve piezometers at the Primary Site will provide an assessment of the groundwater quality;
  - Soil sampling and analyses will be required behind the Athletic Field to the garden area. This will assess the need any future activities in this area;
  - Following EPA activities concerning these early final and interim actions, one round of residential well and spring sampling and analyses will be required to insure these activities have not affected water quality.

Present Worth Cost: . . . . \$984,998  
 PW Capital Cost: . . . . \$787,810  
 Time to Implement: 6 months

At the end of the five-year period following this interim action, a review will be conducted. If subsequent remedial activities are initiated prior to the close of the five-year period following interim action, a review will be conducted prior to any initiation of additional work at the Wrigley Charcoal Site. The review will be conducted to insure that early final activities are functioning as designed and that the interim activities are, and have been effective in reducing the threat to human health and the environment.



This alternative includes the institutional controls previously described and also reduces the risks associated with various contaminants at the Primary Site. These early final and interim action remedial measures are designed to reduce and eliminate some of the most imminent and substantial dangers that reside at the Primary Site and reduce risks associated with dermal contact at the Storage Basin through access restrictions.

A breakdown of estimated volumes of on-site materials and the removal/disposal costs are presented in Table 1.

This alternative retains the institutional controls discussed for Alternative 2 and adds additional remedial measures that are designed to reduce risks associated with some of the most imminent and substantial dangers that reside at the Primary Site. Risk reduction at the Storage Basin consists mainly of access restrictions. The efforts included in this action specifically for the Primary Site will achieve significant risk reduction early in the Superfund process.

#### 9.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

This section provides the basis for determining which alternative 1) meets the threshold criteria for overall protection of human health and the environment and compliance with ARARs, 2) provides the "best balance" between effectiveness and reduction of toxicity, mobility, or volume through treatment, implementability, and cost, and 3) demonstrates state and community acceptance. A glossary of the evaluation criteria is provided in Table 2.

##### 9.1 Overall Protection of Human Health and the Environment

The only alternative that would sufficiently be protective of human health and the environment would be Alternative 3. Alternatives 1 and 2 are not protective because they do not address the most significant threats to human health and the environment at the Wrigley Charcoal Primary Site or Storage Basin. Therefore, the "No Action" alternative and Alternative 2 will not be considered further in this analysis as options for the Site. Alternative 3 is protective of human health and the environment since reduces or controls significant, immediate, and potential threats from direct exposure to hazardous contaminants at the Wrigley Charcoal Site. Institutional controls will limit access to the Primary Site and the Storage Basin which will reduce risks associated with these contaminated areas. This alternative also provides the basis for future actions.

##### 9.2 Compliance with Applicable or Relevant and Appropriate Requirements

Alternative 3 meets ARARs as applicable to excavation, transportation, treatment, stabilization and disposal of contaminated media such as coal-tar waste and sludge.

TABLE 1		
INTERIM REMEDIAL ACTION ACTIVITY QUANTITY/COST BREAKDOWN		
Primary Site Surface & Building Wastes		
Material	Quantity	Cost
1) ACM (small building)	0.5 tons	\$2,550
2) ACM Contam. Soils	20 yd <sup>3</sup>	\$8,350
3) Burn Pit Wastes	15 yd <sup>3</sup>	\$31,790
4) Empty Drums	200 drums	\$10,750
5) Staged Drums (Partially Full Drums)	14 drums	\$7,825
6) Metallic Debris (if off-site disposal is elected)	100 tons	\$33,500
Process Tank Waste		
1) Tank Wastes	29 yd <sup>3</sup>	\$29,750
3) Contaminated soils	19 yd <sup>3</sup>	\$36,540
2) Tank Removal, Disposal	17 tons	\$5,500
Spillway Activities		
1) Spillway wastes	100 yd <sup>3</sup> (approx. 160 tons)	\$164,540
2) Construction		\$200,889
Consolidation Area		
1) Construct & move contaminated materials into consolidation area		\$21,272
2) Materials stored in consolidation area:		
a) 2 Ft. Tar Cubes	50 yd <sup>3</sup>	\$17,825
b) Transformers	120 drums	\$14,625
c) Metallic Debris (if off-site disposal is not elected)	176 yd <sup>3</sup>	\$8,625
Other Costs		
1) Investigative Activity		\$55,325
2) Fencing & Institutional Controls		\$146,960
3) Fees/Contingency: (metals on-site)		\$190,779
(metals off-site)		\$196,998
<b>Total Costs:</b>		
\$953,894 (metals debris placed in on-site consolidation area)		
\$984,998 (metals debris disposed off-site)		

TABLE 2

GLOSSARY OF EVALUATION CRITERIA

Overall Protection of Human Health and Environment - addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment engineering controls or institutional controls.

Compliance with ARARs - addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes and/or provide grounds for invoking a waiver.

Long-Term Effectiveness and Permanence - refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

Reduction of Toxicity, Mobility, or Volume Through Treatment - is the anticipated performance of the treatment technologies that may be employed in a remedy.

Short-Term Effectiveness - refers to the speed with which the remedy achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

Implementability - is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Cost - includes capital and operation and maintenance costs.

State Acceptance - indicates whether the State concurs with, opposes, or has no comment on the Proposed Plan.

Community Acceptance - the Responsiveness Summary in the appendix of the Record of Decision reviews the public comments received from the Proposed Plan public meeting.

TABLE 2

Glossary of Evaluation Criteria  
Wrigley Charcoal Site

For materials such as tar-cubes, transformers and non-corroded metallic material that may pose a threat to human health or the environment, these wastes will be stored in an on-site consolidation area. The storage of these wastes at the Wrigley Site is occurring because remediation for these materials will be investigated and accomplished as part of later remedial activities.

Wastes such as tar-cubes will be moved within the area of contamination and will not invoke the Resource Conservation and Recovery Act (RCRA) Land Disposal Restrictions (LDRs). However, consolidation (i.e. - storage) of these materials on-site will require that the RCRA storage ARARs be waived (See Section 9.2).

RCRA Subtitle C requirements are applicable when excavating and transporting the soil. Safety precautions specified in RCRA must be followed which include standards and requirements for owners and operators of treatment, storage, and disposal (TSD) facilities.

A list of major ARARs that pertain to the Wrigley Charcoal Site interim and early final actions is presented below while a more thorough description and explanation of major ARARs is presented in Appendix E.

#### 9.2.1 Action Specific ARARs

- o RCRA Subtitle C: 40 CFR 260.1, 40 CFR Part 262, 40 CFR Part 462, 40 CFR Part 262, 40 CFR 264, 40 CFR Part 265.
- o Standards Applicable to Transporters of Hazardous Waste: 40 CFR Part 263.
- o Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDFs): 40 CFR Part 264.
- o DOT Rules for Hazardous Materials Transport: 40 CFR Part 107, 40 CFR Part 171-179.

#### 9.2.2 Location Specific ARARs

- o Federal Protection of Wetlands Executive Order: E.O. 11990, 40 CFR Part 6, Appendix C.
- o Clean Water Act (CWA): 40 CFR Part 230, 33 CFR Parts 320-330.
- o The Fish and Wildlife Coordination Act: 16 USC 661, Section 404.

- o The Fish and Wildlife Improvement Act of 1978: 16 USC 742a, and the Fish and Wildlife Conservation Act of 1980: 16 USC 2901.
- o RCRA Location Standards: 40 CFR 264.18.

#### 9.2.3 Contaminant Specific ARARs:

- o Reference Dose (RFD): as defined by IRIS (EPA Integrated Risk Information System). TBCs for this interim action.
- o Carcinogenic Potency Factors (CPFs): TBCs for this interim action.
- o EPA Health Advisories: TBCs for this interim action.
- o Clean Air Act (CAA): National Ambient Air Quality Standards (NESHAPs) 40 CFR Part 50, National Emissions Standards for Hazardous Air Pollutants (NESHAPs) 40 CFR Part 61, New Source Performance Standards (NSPS) 40 CFR Part 60. These are TBCs for the Wrigley interim action.
- o Clean Air Act (CAA): NESHAP standards 40 CFR Part 61 Subpart M pertains to any renovation or demolition activities concerning asbestos at the Wrigley Site. This may pertain to removal of ACM from the small building adjacent to the Maintenance Building. These are TBCs for the Wrigley interim action.

EPA will attempt to meet "best demonstrated available technology (BDAT) requirements (as described in RCRA LDR guidance, 9347.3-06FS, 9/90) for coal-tar wastes and burn-pit wastes at the Wrigley Charcoal Site. If during remedial design, these requirements can not be attained, EPA will obtain a treatability variance, and will attempt to meet the treatability variance levels. Table 3 presents cleanup criteria for the BDAT, and treatability variance levels.

The final cleanup levels for the interim activities are not addressed in this ROD because such goals are beyond the limited scope of this action. The final cleanup levels for interim activities will be addressed by the final remedial action ROD for the Site.

TABLE 3				
BURN-PIT WASTES				
	Contam. Level	TCLP	Criteria <sup>(1,2)</sup>	Treatment
Lead	1600 PPM	<300 PPM >300 PPM	0.1-3.0 PPM 99-99.9%	Stabilization " "
Chromium	270 PPM	<120 PPM >120 PPM	0.5-6.0 PPM 95-99.9%	Stabilization " "
Nickel	160 PPM	<20 PPM >20 PPM	0.5-1.0 PPM 95-99.9%	Stabilization " "
Arsenic	40 PPM	<10 PPM >10 PPM	0.3-1.0 PPM 90-99.9%	Stabilization " "
PROCESS TANK SLUDGE AND SURFICIAL COAL-TAR WASTES;				
	Contam. Level	TCLP	Criteria <sup>(1,2)</sup>	Treatment
PAHs	737 PPM	<400 PPM >400 PPM	0.5-20 PPM 95-99.0%	Incineration + Stabilization
Phenols	20,000 PPM	<400 PPM >400 PPM	0.4-40 PPM 90-99.9%	Incineration + Stabilization
Lead	340 PPM	<300 PPM >300 PPM	0.1-3.0 PPM 99-99.9%	* * * *
Nickel	110 PPM	<20 PPM >20 PPM	0.5-1.0 PPM 95-99.9%	Stabilization " "
1) PPM of TCLP extract 2) Percent reduction of TCLP extract  * * Lead contained in the residual ash following coal-tar incineration will be stabilized.				

#### 9.2.4 CERCLA Waiver Criteria For ARARs

CERCLA Section 121(d) provides that under certain circumstances an otherwise applicable or relevant and appropriate requirement may be waived. These waivers apply only to meeting ARARs with respect to remedial actions on-site; other statutory requirements, such as that remedies must be protective of human health and the environment, cannot be waived.

##### 1) Interim Measures

The remedial action selected is only part of a total remedial action that will attain such level or standard of control when completed. [CERCLA Section 121 (d)(4)(A).]

- 2) Under measures set forth by the interim waiver, the RCRA Subtitle C, 40 CFR Part 264 ARARs pertaining to permanent storage facilities will be waived. Pursuant to the remedial action selected, the tar-cubes and metallic materials will be moved to the temporary consolidation area for future remediation. Metallic debris will only be stored in the on-site consolidation area if off-site disposal is not selected during the RD. These materials will be consolidated within the area of contamination (AOC), wastes and materials such as tar-cubes were generated prior to 1980, and wastes are not RCRA listed wastes. The final action will be in compliance with all ARARs.

#### 9.3 Long-Term Effectiveness

Excavation, transportation, incineration, stabilization, and disposal for coal-tar wastes and sludges will achieve significant reduction in the contamination and provide long-term effectiveness at the process tanks. Also, excavation, transportation, stabilization, and disposal of burn-pit wastes will provide long-term effectiveness at the burn-pit. However, all the interim measures will not provide any degree of long term effectiveness at the Wrigley Site. The EPA will continue to evaluate long-term effectiveness and permanence as part of the development of the final action for the Site.

#### 9.4 Reduction of Toxicity, Mobility or Volume

Alternative 3 does reduce toxicity, mobility, and volume of previously described wastes at the Primary Site. Also, as these wastes are removed, eliminated, or contained the potential for dermal contact, migration, or bioaccumulation is greatly reduced. Proposed activities for this interim action are intended to reduce present risks associated with the most imminent and substantial dangers to human health and the environment while preparing several of the Site waste locations for future remedial activities that will eliminate the wastes.

## 9.5 Short-Term Effectiveness

Significant short-term effectiveness will result of the previously mentioned activities. The interim action is effective in the short-term because it would significantly reduce the potential threats from contaminants at all of the activity locations previously described. No adverse affects are expected during interim remedial activities that could impact human health or the environment. Any short-term risk to workers involved in excavation, transportation or construction activities would be reduced through implementation of a health and safety plan. Short-term risks will be slightly elevated during excavation of the spillway, however, this area will be further isolated from the waters of the North Fork of Mill Creek until excavation and construction activities are completed. Protective measures outlined in a health and safety plan will insure impacts from these activities are minimized.

## 9.6 Implementability

The implementability of an alternative is based on technical feasibility, administrative feasibility and availability of services and materials. There are no expected difficulties associated with the implementation of Alternative 3 since only standard construction techniques will be utilized.

## 9.7 Cost

Alternative 3 has a present worth cost of \$984,998. Additional areas of contamination that are not addressed during this interim action are proposed for later remedial activities and the costs of these activities will be determined after additional information is obtained.

## 9.8 State Acceptance

The State of Tennessee has assisted EPA in the review of reports and Site evaluations concerning the interim action activities. The State has reviewed the Record of Decision and concurs with the selection of these early final and interim actions.

## 9.9 Community Acceptance

Community response to the alternatives is presented in the responsiveness summary (Section 12) which addresses comments received during the public meeting and the public comment period.

## 10.0 SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternative, and public comments, EPA has determined that the activities as described in Alternative 3 (Section 8.3, p. 34) constitute an appropriate early final and interim action until a



final action for the Site is determined.

The major goal of this interim action is to reduce risks at the Primary Site by eliminating, or controlling the most imminent and substantial threats to human health and the environment. Additional goals of this action are to reduce the risk of dermal contact with wastes at the Storage Basin restricting access through fencing, and to perform additional sampling and analyses behind the Athletic Field to better define a small "hot spot", and at the Irrigation Field to determine if compounds of concern are present in the deeper soils of the abandoned Irrigation Field lagoon.

It should be noted that some of the actions may be modified during the RD/RA. These changes may reflect modifications resulting from the engineering design process.

#### 11.0 Statutory Requirements

The U.S. EPA and TDEC believe that the activities included in the interim action satisfy the statutory requirements of providing protection of human health and the environment, attain ARARs directly associated with this action and will be cost-effective. Sections 11.1 thru 11.6 summarize the statutory requirements for the Site.

#### 11.1 Protection of Human Health and the Environment

The activities previously described concerning this interim action will provide protection of human health and the environment by removing, treating, and disposing of coal-tar wastes and sludges, and burn-pit wastes that contain significant levels of contaminants. Additional protectiveness is provided by the removal and disposal of the ACM, and drummed wastes, and through Site access and deed restrictions. Implementation of the interim action activities will not pose unacceptable short-term risks or cross media impacts.

#### 11.2 Attainment of the Applicable or Relevant and Appropriate Requirements (ARARs)

The final cleanup levels for the Site areas where interim activities are planned are not addressed in this ROD because such goals are beyond the limited scope of this action. The final cleanup levels will be addressed by the final remedial action ROD for the Site which takes into account the potential migration of subsurface contaminants to groundwater. ARARs for Site areas that will be addressed will be met as previously discussed in Section 9.2 and Appendix E.

#### 11.3 Cost Effectiveness

This early final and interim action remedy employs proven technologies that will be applied to coal-tar wastes, burn-pit wastes, and drummed wastes.

The selected remedy affords overall effectiveness proportional to its costs. The selected remedy provides a sufficient margin of protection, and is cost effective when the overall relationship between cost and effectiveness is compared to other alternatives.

#### 11.4 Utilization of Permanent Solutions and Alternative Treatment Technology or Resource Recovery technologies to the Maximum Extent Practicable

Portions of this action are interim and are not intended to utilize permanent solutions for any of the four Wrigley Charcoal Site areas. The objectives of this interim action are to reduce and/or prevent current or future exposure from exposed contaminants at the Primary Site and Storage Basin that pose the most imminent and substantial threats to human health and the environment. Excavation, off-site treatment and disposal of coal-tar and burn-pit wastes will achieve some reduction in the contamination at the Primary Site. Early final actions for coal-tar and burn-pit wastes intend to utilize permanent solutions on a very limited basis for the Primary Wrigley Site. These activities will also serve to reduce potential complications these wastes may have on future remedial activities.

The EPA will continue to evaluate long-term effectiveness and permanence as part of the development of the final action for the Site. Subsequent actions will provide a final resolution to Site conditions which will be controlled through the selected interim action. Utilization of permanent solution will be addressed in the final decision document for the Site. Portions of this interim action are not designed or expected to be final, but represent the best balance of tradeoffs among alternatives with respect to pertinent criteria, given the limited scope of this action.

#### 11.5 Preference for Treatment

The CERCLA statutory preference for treatment requires that waste treatment be thoroughly evaluated and if possible, treated to reduce or eliminate the threats from hazardous wastes or materials. The preference for treatment beyond the scope of these limited actions will be discussed in subsequent decision documents for the Site.

This interim action will not definitively address all of the principal threats posed by the Site. Additional threats at the Wrigley Charcoal Site will be addressed during subsequent remedial activities. Tentatively, these subsequent actions have been described to remediate the Primary Site tar-pits, contaminated Primary Site soils, tar-cubes, Storage Basin coal-tar wastes, any additional coal-tar wastes identified at any of the Wrigley Charcoal Site areas, any ACM determined to be friable, and any groundwater problems at the Wrigley Charcoal Site.

#### 11.6 Documentation of Significant Changes

Comments pertaining to the Proposed Plan by the State of Tennessee have lead to significant changes in the Interim Action selected for the Wrigley Charcoal Site. The changes have been incorporated into the discussion of the selected alternative (Alternative 3) in Section 8.3 of this document. These significant changes include:

- 1) Reduction in the amount of ACM to be removed from the Primary Site;
- 2) Modifications to the spillway reconstruction at the Primary Site;
- 3) Modifications to the removal and/or disposal of waste/debris piles at the Primary Site;
- 4) Modifications to the activities to be performed at the Storage Basin;
- 5) Additional coal-tar wastes near the still house foundation have been added to the list of interim action activities.

The State of Tennessee has indicated that the friability of the ACM has not been consistently determined. Since no analyses have been conducted to determine the friability of the ACM, only the visibly friable/broken ACM will be removed from the Primary Site. This material consists of the broken sheets on the ground, soils adjacent to these broken sheets, and the ACM on the small building in front of the maintenance building. In the event that data suggests there are additional risks with the remaining materials, appropriate measures will be taken at that time.

Concerning the spillway at the southern end of the Primary Site, the State of Tennessee has recommended that the spillway be further excavated to bring it to the existing North Fork of Mill Creek grade to reduce the threat of future erosion. The State has also recommended that the two 48-inch culverts be removed. It appears that the excavation of the spillway is more feasible than culvert removal at this time. Excavation of the spillway is preferred since the culverts are presently backing up sediment near the tar-pits and deflecting waters of the North Fork of Mill Creek away from the tar-pits and into the spillway. However, during the RD, all of the options (including all of the State of Tennessee requests) previously mentioned will be critically evaluated and an appropriate option will be selected and implemented.

The waste/debris pile remediation at the Primary Site will also be modified. Instead of removing all of the tar-cubes and disposing off-site, these wastes will be stored in an on-site consolidation

area for elimination during a later remedial activities. ARARs that pertain to the treatment, storage, and disposal facilities (RCRA Subtitle C, 40 CFR Part 264) are an ARAR. However, these materials that were generated prior to 1980 will only be consolidated within the area of contamination (AOC). Based on this information, these ARARs will be waived for this activity because the storage will be temporary and does not require measures designed to provide long-term effectiveness and permanence. Additionally, all other hazardous substances found within these piles such as partially full drums, and ACM will be disposed of off-site. Recyclable will also be removed. Substances that are identified as non-hazardous such as equipment, etc., will be moved into one of the on-site buildings, or stockpiled on-site.

Additional concerns about the Storage Basin were also submitted by Tennessee. They have suggested the the wastes be left in-situ for later remediation instead of stabilizing the wastes and thereby increasing the volumes of materials to be eliminated. EPA will comply with this request until subsequent remedial activities are implemented at the Site.

Additional coal-tar wastes (approximately 3.5 yd<sup>3</sup>) will be removed from the northeast corner of the old still house foundation. This item is being added to the list of interim action activities at the request of the State of Tennessee. Coal-tar wastes at this location are noted to be above safe levels for carcinogenic PAHs. A small area will be excavated [10x10x1 (ft)] and backfilled with clean fill.

Concerning the process tanks, instead of disposing of the tanks in a EPA approved RCRA facility, these tanks will be sold as scrap metal. This information is is presented in this section as a clarification, although this is not considered to be a significant change.

## 12.0 RESPONSIVENESS SUMMARY

The U.S. Environmental Protection Agency (EPA) established a public comment period from July 15, 1991 to August 15, 1991 for interested parties to comment on EPA's Proposed Plan for Interim Action activities at the Wrigley Charcoal Site. The Tennessee Farmers Cooperative (TFC) requested a 30 day extension to the Public Comment period. A 30 day extension was granted, and the extended Public Comment period ended on September 16, 1991. A public meeting was held on July 25, 1991, conducted by EPA at the East Elementary School near Wrigley, Tennessee. The meeting presented the results of the RI/FS undertaken at the Wrigley Site and proposed activities to be performed during the interim action.

A responsiveness summary is required by Superfund law and regulations to provide a summary of citizen comments and concerns about the Site, as raised during the public comment period, and the responses to those concerns. All comments summarized in this document have been factored into the final decision of the interim action for the Wrigley Charcoal Site.

This responsiveness summary for the Wrigley Charcoal Site is divided into the following sections:

- 12.1     Overview: This section discusses the recommended interim action for the Site and the public reaction to this alternative;
- 12.2.    Background on Community Involvement and Concerns: This section provides a brief history of community interest and concerns regarding the Wrigley Charcoal Site;
- 12.3     Summary of Major Questions Raised During the Public Meeting Held on July 25, 1991, and EPA Responses: This section presents both oral and/or written comments submitted during the public meeting and provides the responses to those comments;
- 12.4     Comments During Meeting With Local Officials at City Hall, Centerville, Tennessee, July 25, 1991 This section presents comments raised during the meeting with City Officials in Centerville, Tennessee and EPA responses to those comments.
- 12.5     Written Comments Received during the Public Comment Period and EPA's Responses to These Comments: This section presents letters or comments submitted during the Public Comment Period and EPA's response letters.

Appendix B: Contains the Proposed Plan that was presented to the public on July 25, 1991. This document was also placed in the information repository and mailed to those on the mailing list.

Appendix C: Includes the sign in sheets from the public meeting held on July 25, 1991 at the East Elementary School near Wrigley, Tennessee.

Appendix D: Includes the name, address and phone number of the information repository designated for the Wrigley Charcoal Site.

#### 12.1. Overview

The proposed plan for interim action activities at the Wrigley Charcoal Site was presented to the public in a fact sheet released on July 11, 1991 and at a public meeting held on July 25, 1991.

The major goal of this interim action is to remove or contain contaminated media at the Primary Site, and to restrict access at the Primary Site and the Storage Basin.

The major components of the interim action remedy include:

- 1) Metallic wastes in the maintenance buildings' burn-pit will be excavated, stabilized and disposed of in an EPA approved RCRA facility. The approximate volume of this material is 15 yd<sup>3</sup>. Transformers found in the maintenance building will be secured with other transformers found at the Primary Site in a on-site consolidation area (total amount of transformers estimated at 130 drums);
- 2) Risks will be reduced at the Storage Basin by fencing the area. This will discourage and possibly prevent entry and disturbance of this area until wastes can be appropriately eliminated during later remedial activities;
- 3) Process tank waste sludges (29 yd<sup>3</sup>) will be removed, transported, incinerated, stabilized and disposed of in an EPA approved RCRA incinerator/landfill for disposal. The metallic tanks will be decontaminated, and sold as scrap;
- 4) Black coal-tar wastes on the ground from the process tanks down to the North Fork of Mill Creek will be excavated, transported, incinerated, stabilized and disposed of in an EPA approved facility. The area has been visually estimated at approximately 50 x 10 feet with an average thickness of 1.0 foot (approximately 19 yd<sup>3</sup>);
- 5) Black coal-tar wastes visible at the northeast corner of the previous still house location will be excavated, transported, incinerated, stabilized, and disposed of in an EPA approved facility. The estimated volume of this material is 3.5 yd<sup>3</sup>;

- 6) Removal of the friable (ACM) for disposal in an approved asbestos landfill. Most of the intact ACM on building roofs appears to be in fair condition. However, the visibly friable ACM on the small building in front of the maintenance building should be removed as well as broken sheets of ACM on the ground near the dryer building, tank battery, and previous location of the still house (approximately 0.5 tons or 20 yd<sup>3</sup>). Visible ACM on soils associated with broken, crushed or sheet ACM that reveal light grey-white coloration (representative of the ACM at the Wrigley Site) will be removed. An approximate estimate of ACM contaminated soils that need to be removed is 20 yd<sup>3</sup>.
- 7) Exposed black coal-tar wastes visible in the spillway should be excavated and disposed of in an approved off-site facility. Wastes should only be excavated until a reasonable margin is established for the rebuilt spillway. Approximate estimates for this waste are 100 yd<sup>3</sup>.
- 8) Twelve staged drums are located near the maintenance building and two drums in the storage shed. Drums wastes should be transported, incinerated and/or stabilized and disposed of in an EPA approved facility.
- 9) The spillway should be repaired and re-engineered to accommodate the significant flood waters that frequent this area. This may involve straightening and further excavating the spillway down to the existing creek grade;
- 10) Site surface wastes/debris piles that include tar-cubes, pieces of corrugated asbestos roofing, transformer materials, crushed drums, and other miscellaneous metallic debris and tar waste will be sorted. Materials such as tar-cubes and wastes that may be remediated with later remedial activities will be stored in an on-site consolidation area. Volume estimates for Site debris are presented in table 1;
- 11) A limited investigation will be performed at the Irrigation Fields' abandoned 3/4 acre lagoon. This activity will include several soil borings/excavations (to approximately 10 feet) and several additional soil samples at the previous location of the feed pipe outflow. This activity will determine whether wastes similar to the Storage Basin are present in the deeper soils;
- 12) EPA will negotiate with local municipalities to impose deed restrictions. Site access controls (fencing & placards) will also be implemented at the Primary Site and Storage Basin;
- 13) Sampling and Analyses:

- Resampling of the six monitoring wells and twelve piezometers at the Primary Site will provide an assessment of the groundwater quality;
- Soil sampling and analyses will be required behind the Athletic Field to the garden area, and will assess the need any future activities in this area;
- Following EPA activities concerning this interim action, one round of residential well and spring sampling and analyses will be required to insure the interim action activities have not affected water quality.

The estimated cost for the interim action remedy is \$984,998. It is presently estimated that it will take 6 months to complete this work.

At the end of the five-year period following this interim action, a review will be conducted. If subsequent remedial activities are initiated prior to the close of the five-year period following interim action, a review will be conducted prior to any initiation of additional work at the Wrigley Charcoal Site. The review will be conducted to insure that early final activities are functioning as designed and that the interim activities are, and have been effective in reducing the threat to human health and the environment.

The community, in general favors taking interim action for the Primary Site and the Storage Basin.

## **12.2 Background on Community Involvement and Concern**

The community of Wrigley is aware of activities that were conducted at the Wrigley Charcoal Site beginning in 1881 and continuing intermittently until the mid-1980's.

The first public meeting was held on October 24, 1988 at the East Elementary School near Wrigley, to provide information and also to answer citizens' questions concerning removal activities at the Wrigley Site. Representatives from EPA and the State of Tennessee provided details of activities taken to date, pertinent analytical results and proposed activities to be completed in the future.

EPA distributed a fact sheet in August of 1989 prior to having the second public meeting held on October 29, 1989 at the East Elementary School. The purpose of this meeting was to inform citizens and other interested parties of the beginning of the RI/FS.

In December of 1990, another fact sheet was distributed prior to sampling conducted at the Athletic Field and in the town of Wrigley.



In July of 1991, the Proposed Plan fact sheet was distributed explaining interim action activities. Availability of the Proposed Plan was published in the the Hickman County Times on July 15, 1991 and again on July 22, 1991. The third public meeting to present the Proposed Plan for interim action activities concerning the Wrigley Charcoal Site was also held at the East Elementary School on July 25, 1991. At this meeting, concerns and issues were raised concerning the contamination at the Wrigley Charcoal Site.

12.3 Summary of Major Questions Raised During the Public Meeting Held on July 25, 1991, and EPA Responses

Comment 1: A private citizen wanted to know if there was going to be any provision for monitoring the groundwater, before, during, or after the cleanup?

Response: The activities planned for this interim action are surficial and it is not likely that these activities will adversely impact groundwater downstream of the Site. However, as an added protective measure, after interim remedial activities are completed all monitoring wells on Site, all springs, and all residential wells within a one mile radius of the Site will be sampled and analyzed (a single sampling and analysis event).

Comment 2: A private citizen asked if Bob Powell (State of Tennessee Superfund Representative) remembered that he said they were expecting significant groundwater contamination? (The citizen was unsure of the phase that Bob may have been referring to or at what meeting it was stated).

Response: Bob Powell did not recall saying that he expected significant groundwater contamination. Bob further explained that the contaminated groundwater he believes he was referring to was in an exploratory pit and was surficial water or shallow perched groundwater. He did not recall ever saying that there was a risk to the groundwater.

Comment 3: Harold Taylor further summarized comments 1 & 2 by stating, "I think your question is, how are you going to be assured on a routine basis that your drinking water is safe"?

Response: We cannot say at this time whether wells will be sampled on a regular basis. The EPA will perform well

sampling on a scientific and technical basis that will assure that there is no off-site problems. One of our biggest concerns was the potential for off-site contamination and at present, EPA does not believe there is a significant threat of off-site contamination of groundwater.

Comment 4: A private citizen pointed out that if you start to disturb the waste, it may leak into the cracks in rocks and a year later show up in private wells.

Response: As a protective measure, EPA will perform a round of sampling as previously stated in the response for comment 1.

Comment 5: A private citizen mentioned that they read in the proposed plan that the fish in the creek had some contamination. Is it safe to eat the fish in the creek?

Response: Glenn Adams (EPA, Toxicologist) mentioned that no contamination was found in the surface waters of the North Fork of Mill Creek but the fish were sampled in order to determine if any contaminants were in them. Trace levels of mercury, lead, and dioxin were identified in the fish. Risk scenario calculations were done to evaluate what the lifetime risk would be from eating a half pound of fish per meal. The level detected in the fish was 0.0002 ppb and the EPA regulatory level was 0.0007 ppb. So we have 3.5 times less in the fish than the regulatory level. This is approximately equivalent to a one in one million risk level and we do not feel that there is any danger or cause for concern from eating the fish.

Comment 6: A private citizen asked if Alternative 3 was definitely what EPA is going to do?

Response: EPA responded that comments to the Proposed Plan will be accepted during the Public Comment Period. We are going to meet with the State and discuss their concerns. If we get significant comments that indicates that any part of our proposed activities need to be changed, and we find a valid and rational reason, we then will change the alternative. If for example, we make any significant changes such as changing remedial technologies from fencing to on-site incineration, then we would come back to the public and explain why the plans have been changed and get your

comments prior to actually finalizing our activities.

The private citizen that offered comment 6 further stated that they thought that Alternative 3 was the best solution.

Comment 7: A private citizen asked if the Bon Aqua-Lyles utilities where we get most of the water, is that water safe?

Response: The water intake was moved to above the confluence of the North Fork of Mill Creek and Mill Creek. EPA and the State of Tennessee have sampled the waters and found no contaminants in either stream or at the old water intake. The water intake was moved as a precautionary measure since there was potential for materials from the tar-pits to enter the North Fork. However, since the tar-pit solidification effort in 1988, the potential for tar-pit failure has been greatly reduced and possibly eliminated.

Comment 8: A private citizen asked if flooding had anything to do with the decision to move the water intake?

Response: No. Flooding did not affect the decision to move the water intake. We presently have no reason to believe that flooding would create any more contamination at the previous water intake location.

Comment 9: Do you have any idea as to what the depth of contamination may be?

Response: The drilling data indicates that at the Primary Site there is approximately ten to fifteen feet of slag, and another ten feet of soil mixed with slag below that. There also is a great deal of variation of depth of these contaminants due to the geology and the extent of the industrial activities. At the northern part of the Site the bedrock is encountered at a depth more than 100 ft, even more in places. At the southern portion of the Site the bedrock is very shallow and can be encountered as little as five feet below the surface.

Comment 10: A PRP asked if the contaminants identified at the Wrigley Site will decompose or anything? Or is it here to stay?

Response: There is no question that since the plant has closed the North Fork of Mill Creek, Mill Creek, and all the

way down to the Piney River, appears to be cleaning up slowly but surely on a natural basis. But there are some peculiar problems at the Primary Site. It appears that the geology controls to a large extent what flows in and out of the Primary Site. It appears that geologically the North Fork valley (where the Primary Site is located) is a small basin. This basin has trapped a lot of these contaminants both in the shallow groundwater and the soils. Some of the samples taken after the plant had been closed for twenty-five years showed levels of contamination very similar to the original composition of the raw liquors produced at the plant. After twenty-five years these contaminants have not deteriorated very much at all. As for the metals, these are very persistent in soils and they will be there for an even longer period of time.

Comment 11: A PRP stated, "Initially when it was discovered that this material was seeping into the creek there, you know, it was actually going into the water, could be detected going into the water, but downstream ten feet or twenty feet, there was more detection of it. Does that mean that the levels of it going in were so small that it distributed itself and dissipated before it went very far? In that event, if it got down through the ten or fifteen feet of debris that's in the ground and got into the water table, is it likely that it would take a tremendous concentration of it, just a gusher of it go in to contaminate a well? Or could little by little enough build-up seep through and go down and contaminate the water table level out there? There's all these springs in the area where the water is just under the soil. At certain times of the year you think it's a spring right there in the ground, so there's a lot of water working, surface water, I assume, or coming out of that hill or somewhere. But if that ever finds its way down into the water table and gets into the wells -- you mentioned you tested twelve wells. I wonder if that is the total number of known wells that are being used out of that are subject to this, and whether or not those people at one time would have to give up those wells and go to our city water for their water supply" ?

Response: What we have determined thus far is that the contamination that is getting into or that is migrating on the Primary Site to Mill Creek is being dispersed and diluted to the point where it is not detectable in Mill Creek. That's good news for anybody below the

Site. But, as was stated previously, the peculiar problems at the Primary Site stem from the geology. This type of geology is referred to as karst and is representative of all of the areas that encompass the Wrigley Charcoal Site. The limestone that underlies the Site areas has been corroded by the acidic waters (rain water and surface water) which further enlarge fractures and produces solution cavities. When these enlarged fractures and solution cavities intersect, the waters can then be transported down different migration pathways many times at faster rates. This type of scenario is very complicated.

Another problem with the karst geology at the Wrigley Site includes the possibility of pulse flow. This hypothesis basically suggests that waters and accompanying contaminants may build-up or accumulate until a heavy rainfall event mobilizes the contaminants in pulses. EPA does not have all of the data they need to support this hypothesis, so it will have to be investigated further. However, it is possible that this scenario applies to the Wrigley Charcoal Site. Information pertaining to this issue will have to be obtained at a later date to answer some of these questions.

Comment 12: A PRP mentioned, "Let's get above the ground, get up on the ground, you mentioned that the people trespassing across the property or people that have a right to be on the property, people that are in there picking blackberries or hunting rabbits or deer, would they in any slight way expose themselves to a health hazard? I've been down there picking blackberries. Is this the type material that could get into vegetation and precipitate into -- suppose you had an apple orchard down there, suppose there's an apple orchard in some of that area, and there's fruit bearing trees. If you went in and picked them, does this type of stuff leach into something other than water, or fish that would take enough food out of the stream to get into their system, is this something that gets into the vegetation and gets in a person's body" ?

Response: EPA stated, "Yes, that was one of the things that we looked at. When you have levels of contaminants in soils, metals and these organics, that is one of the pathways that they can get -- say if you have a vegetable garden. And that was what we looked at. We didn't look at blackberries, because we don't have any

good scientific data on how these metals are taken up in blackberries. But we do as to some garden vegetables and different things. That was one of the pathways we looked at.

And it did show that if you plant a garden out there in these soils, and there again the seventy year lifetime is an average number and not for everybody. But, yes, it would be a concern. It's not a great concern compared to the other things, but that is -- was a concern. It was also looked at if hunters were coming on the Site, the thing with deer or even rabbits, is they seem to forage over a lot of acres. They don't always get their food in the same spot, but get it each day from -- I think the average forage for one year is about three miles, square mile area a day. And it was deemed that the majority of the time they're on other Site or other areas. So they wouldn't be obtaining enough levels to be a problem if someone were hunting out there. Now, the most likely thing with animals where organics or these metals collect is if an animal was to eat something contaminated is just like humans, it's going to go to the organs as in the liver, kidneys, the heart, things like that. So if there was going to be a problem, that's where it would be. It wouldn't be in the meat of those animals".

Comment 13: A PRP asked, "The people that would hash through the property there, there's a path that goes across it. Even though you have eighteen locks on that gate down there and I can't get in, there's still a good beaten path down there that there's traffic, foot traffic across there day in and day out. I assume that the asbestos that may be on the ground, on the buildings could get airborne. Is this a threat to them or the fumes or vapors that might come off of this if they did it day in and day out"?

Response: The broken pieces of asbestos roofing on the ground and the roofing on the building in front of the maintenance building that has been exposed to fire are a problem. These materials are visibly friable and when they are agitated by foot traffic, vehicular traffic, or by the wind, it is likely that fibers are becoming airborne.

Information from the Asbestos Unit of the EPA indicates that even minimal exposure of asbestos can cause health problems or increased risks. So from a health standpoint, the friable ACM appears to be a problem

in the short-term. It presently has not been determined whether the non-friable ACM contributes to problems or health effects associated with long-term exposures. This will have to be investigated in the future.

Comment 14: A PRP asked, "Not a likelihood of the vapors off that would drift up and get up into the residential area, ever I don't suppose"?

Response: The air sampling that was conducted did detect some contaminants but not at very high levels. These were well within the EPA risk range. But based on the lifetime exposure, for someone living in a residence near the Site, the risks could be slightly elevated.

Comment 15: A PRP asked, "Do you have any idea as to how it (the Wrigley Charcoal Site) ranks with like Waynesboro or Lewisburg? Is this the type of toxicants that are there, are they less serious or more serious? Are you dealing with the State of Tennessee with like problems that are far more greater than this, or is this in the range of being one of the serious ones also?"

Response: EPA stated that this question comes up at every meeting and it is very hard to qualify an answer. But each site on the NPL is different. For example, the Lewisburg Dump Site is approximately five acres and the boundaries are pretty well established and EPA can rationalize fairly easily what the remedies are. So a site like that would be relatively low on the scale as far as being a difficult site. The Wrigley Site is much larger. It has a wide variety of contaminants ranging from coal-tar wastes and metals to volatile organic compounds and building material wastes. Also the volume of contaminated material is much greater at the Wrigley Site. Relatively speaking, the Site is not nearly the health threat that it was years ago when people were actually drinking or using contaminated waters. Also years ago the North Fork of Mill Creek, and Mill Creek all the way to the Piney River were severely affected. So the way the Site was (when it was in operation) from the EPA perspective, was one of the worst sites perhaps that we had.

So to sum all of this up, of the twelve sites, based upon a number of factors, Wrigley is probably somewhere in the middle.

Comment 16: A PRP stated, "The cost of different remedies that have

been proposed, the lady that spoke said she was in favor of number 3. Evidently EPA is in favor of number 3 because of their experience. Basically I am in favor of number 1 because of the potential disturbance. This thing goes on and on. The cost to the government -- I know that I'm going to get a bill for my part, you know. But the cost to somebody, if the government pays for it, I still pay for it. If I'm liable for some portion, then I'm obligated in some way.

The disturbance of this material, there must be a mammoth amount of highly contaminated materials to slightly contaminated materials. I suppose there's a cut-off point somewhere that you say, well, this is the hot spot, we've got to concentrate on this, and if we don't do anything else, we've got to do a good job of this, and may leave some gray areas that will never require anything other than letting nature take its course or take care of it. But I'm wondering, you're talking about spending very little to just have a restricted deed. I've been notified that the deed is already restricted. I could not sell my property there. No one in their right mind would need to buy it because it's a liability rather than an asset. But the thought that the property may -- if you go into your stage 3, that you've opened up something that you're going to be the need to remove some stuff out of there at another stage and another stage. And if I didn't misread all of the misprints in the news paper, that two million dollars had been spent to haul away some tar, a hundred and thirty cubic yards of tar to be burned equates about fifteen thousand dollars for a cubic yard. And that is just the tip of the iceberg as to what might have to eventually be removed and disposed of.

I assume that the concentration of that tar necessitated incineration, was very expensive to dispose of that where if you were getting rid of something of less concentration, you might be carrying it away and burying it in an approved landfill and might not have millions and millions of dollars worth of cost to remedy the thing. I suppose I've predicated my preference of always knowing where you're at. These fellows that are concerned about the well water, they are desperate to make sure they don't start drinking something that gets in their liver, you know.

And when this thing starts stirring, when you begin to move that soil, if one of them gets sick, he's going to



be knocking on EPA's door and saying, now, come and check my water. So you may set up an everlasting water testing situation if it comes to that. But I'm sure there's enough history of what you're doing in these areas, you've had sites like this before -- and I guess the American Creosote Site is the top of the list because of probably some of the same types of materials there. I understand it is very, very expensive project. I don't know whether it's completed or not, but I'm familiar with the site".

**Response:** EPA mentioned that they were right in mentioning that there is a lot of material at Wrigley. EPA cannot clean up every ounce of material that is there because it will not be cost effective. What we are having to do with sites just like Wrigley is make a risk management type decision that tries to segregate the most toxic, the most mobile waste, and treat those wastes, and do the less toxic, the less mobile waste, just cap those and leave them on-site and monitor them, basically make institutional controls and make sure the property is not used in a way to disturb that in the future. We have not made these decisions yet, however, these types of decisions will be made in a prompt fashion at the Wrigley Site.

**Comment 17:** A PRP indicated that they had received a few phone calls about wanting to bid on the fence that EPA plans to put up. The PRP also mentioned that these local people would like to be considered and claims that they are in the fencing business. The PRP did not know how the contractors are selected.

**Response:** EPA mentioned that when it is time to pick out a contractor, the prime contractor will be chosen using all the federal guidelines to placing contractors. EPA is really the contracting agent that works getting the bids, and we select, of course, generally the lowest bidder that satisfies all of our requirements. That bidder or prime contractor, of course, will usually go out and solicit bids from subcontractors. If those subcontractors who submit the best bids are in the local area, then obviously they will do the work.

Also, in response to the statement concerning spending taxpayers' dollars, we all are taxpayers, and I know every time we spend anything in the country somebody ends up paying for it. Superfund is not a direct tax on private citizens. It's a tax on chemical manufacturers and other things that don't come directly

out of your pocketbook. Naturally you go out and buy those things that the chemical manufacturers make and in turn they charge a certain percentage, and of course, they charge whatever they think to the consumer. It's certainly not a tax on the private citizens directly.

Concerning the amount you mentioned for the removal effort in 1988. The amount of two million dollars you mentioned was correct but there were a great deal of other activities that were also part of this effort. One hundred and thirty cubic yards of coal-tar wastes were taken off-site and incinerated but it did not cost fifteen thousand dollars per cubic yard to eliminate these wastes. Other activities that were performed during this effort include: tar-pits were solidified and metal sheet pilings were utilized to reinforce the bank of the pits; the North Fork of Mill Creek was re-routed; two, forty-eight inch culverts were emplaced in the North Fork of Mill Creek Channel; and a spillway was built for a flood water overflow.

Comment 18: A PRP commented, "Am I correct in stating that those buildings sooner or later will have the roofs removed from them, that they will never be permitted to be used as an industrial building, ever again, as we see it right now? Will the time come that the buildings could be taken down? Could they be removed from the Site? Would this be a disadvantage or would this be an advantage, to have the buildings removed? When the asbestos, if it's eventually -- if that's a route that's taken, when the asbestos and other contaminants around the building areas are disposed of, would it ever be permitted to -- for the buildings to be demolished. As the owner of those buildings, it's conceivable that they will deteriorate and one day someone will trespass, and they will be injured, and I will be responsible. I've had some offers for the brick on those buildings. I think they're the most valuable thing down there that could be taken out. Do you anticipate that in the future that those buildings could be removed from the Site?"

Response: EPA has identified hazardous substances inside and on the Primary Site buildings. Hazardous materials contained inside these buildings will be cleaned up during the interim action. The visibly friable ACM will be removed from the small building in front of the maintenance building, however, additional information will be obtained and a determination made later concerning the ACM on all of the other Site buildings. EPA presently has not identified the need to demolish

the buildings but are presently remediating hazardous substances contained inside or on these buildings. EPA cannot determine at this time whether the Primary Site buildings will be demolished at a later date.

Comment 19: A PRP commented that they were informed in 1985 or 1986 not to disturb soil near the Primary Site buildings and that they have honored that request.

Response: Thank you for honoring the EPA request. Any disturbance of these materials could potentially mobilize contaminants in the Primary Site soils. Then heavy rains could potentially transport contaminants into the North Fork of Mill Creek.

Comment 20: A private citizen commented that all of their family worked at the Wrigley Plant for years and years. Their father came into contact with these materials at the Site frequently for years and he lived to nearly ninety. Most of the people that worked there are in their seventies and eighties and, "we are not afraid of the Wrigley Plant, maybe we should be but we are not. I feel that the danger has already washed away from there. These people are talking about their wells and stuff coming into their wells. If anything was going to come off of that plant into well water, it would have already gone into their wells. That's the way I feel about it. I know y'all are not too interested in what I'm going to say, and what I am saying. But that's the way I feel about it. I am not afraid of it, and I live right in the middle of it. But what ever you decide to do, we'll go along with anything that you want to do down there".

Response: EPA is very interested in peoples comments and opinions concerning our proposed cleanup activities at the Wrigley Charcoal Site. This is why the Public Comment Period is provided, to allow time for anyone to comment on these proposed activities. The contamination at the Wrigley Charcoal Site is a result of many years of industrial activities that left a very wide variety of contaminants at the Site. Many of the contaminants are toxic and/or carcinogenic, above safe levels, and pose unacceptable risks. According to the law (CERCLA) these wastes must be remediated. This is why EPA is presently cleaning up the Wrigley Site.

Comment 21: A PRP mentioned that they owned the Irrigation Field. They mentioned that from what they heard the EPA was going to select Alternative 3. Is Superfund going to

pay for the expense of putting up a fence, sampling and analyses? How much am I supposed to participate as a property owner?

**Response:** The Superfund is a fund that is set up by Congress for the EPA to utilize in the clean up of hazardous waste sites. The EPA enforcement program solicits or encourages PRPs to either participate or to take action in lieu of the federal government. These PRPs include people that own or operated the site that caused the release, people that generated material that is stored on the site or is causing a release, or people that transported material to the site, and that material is causing a release.

The Agency is not after individuals who did not participate in or had no knowledge of waste material being on their property. It is recommended that you talk with the EPA attorney about what you need to do as far as an individual property owner.

**Comment 22:** What will the EPA do if contaminants begin to show up in the wells after work is begun on Alternative 3?

**Response** EPA does not believe that the activities concerning Alternative 3 will cause any off-site contamination in private wells. As was stated previously, no off-site contamination in wells has been identified thus far and the activities suggested as part of the interim action are mainly surficial. However, EPA will include a single round of sampling and analyses to be performed on the six monitoring wells and twelve piezometers at the Primary Site, residential wells, and springs following these interim remedial actions. This is intended to insure that water quality has not been affected.

**Comment 23:** What level did you work in?

**Response:** They worked in level C but did get to a modified level B when sampling the Burn-Pit.

**Comment 24:** Were the people contracted for previous work all from Georgia?

**Response:** For the RI, EPA used Ebasco Services Incorporated. The contract was issued at headquarters. The contractors bid for these contracts across the nation. Ebasco was selected and conducted the work under the REM III and ARCS IV contracts, but their contract has expired and they will not be used for future work at our Site.

COMMENTS ON BEHALF OF THE TENNESSEE FARMERS  
COOPERATIVE (TFC), A POTENTIALLY RESPONSIBLE PARTY (PRP)

Comment 1. USEPA's proposed interim remedial action for Operable Unit 1 does not consider that the TSD will require appropriate characterization of wastes prior to acceptance. The remedial alternative should consider selection of an appropriate management outlet (e.g., resource recovery, land disposal, incineration, etc.) once appropriate characterizations are completed. The FS does not support the selection of incineration as an interim response for Operable Unit 1. Any remedial action should be conducted only after the target areas have been characterized for remediation in their entirety, and at such time a single remedial program has been developed.

Response: We have evaluated and responded to the need for appropriate characterization of wastes in order to meet any requirements for TSD facilities. According to interim action guidance (9355.3-02FS-3, March 1991), "interim actions may be taken early to mitigate the more immediate threats". Also stated is that, "An RI/FS report is not required for an interim action, for the purpose of fulfilling the NCP's Administrative Record requirements, there must be documentation that supports the rationale for the action". Although the EPA is not required to have an RI/FS for this action, we have a recently completed a lengthy RI/FS for the Wrigley Site.

In addition, a great deal of quantitative documentation of contaminants at the Wrigley Site has been obtained in a variety of studies since 1985 (reports such as the 1987 Weston Site Investigation and Tar-Pit Reports, and site assessments conducted by the State of Tennessee, 1985-1986). Contaminants of concern have been identified at levels well above safe levels at the Primary Site and the Storage Basin, while contaminants of concern have been identified at the Athletic Field and Irrigation Field in lesser amounts. EPA has only suggested taking action at the Primary Site and Storage Basin and taking some additional samples behind the Athletic Field and at the Irrigation Field in order to evaluate the need for any future activities at these locations.

EPA believes that the target areas have been sufficiently characterized to initiate the proposed interim action. Section 7.0 in the ROD (Summary of

Site Risks) clearly indicates that levels of contaminants that account for potential risks, and contaminant levels are very high for coal-tar related wastes at the Primary Site and Storage Basin (Samples from the Storage Basin on 4/26/91 indicated very high levels of contaminants). Also, the revised FS (Final FS) has been revised to take factors such as incineration and stabilization of wastes into account.

Comment 2:

The Risk Assessment, though erred on the high side, contains abundant uncertainties. Frequencies of exposure are uncertain and were therefore unrealistically maximized. For example, it was stated that "the risk estimates of exposure to contaminants at the Primary Wrigley Site appear to be reasonable, realistic estimates." This statement pertains to the absorption of dust on a windy day and is based on assumptions containing significant uncertainties. The USEPA did not document any problems with dust at this site and did not sample air for particulates. No actual release was observed. The USEPA should be required to provide a reasoned explanation for the conclusion that the identified constituents would be transported via the air route.

Response:

It is the general rule in risk assessments to estimate frequencies of exposures and uncertainties. These parameters that are estimated are utilized as constants for single calculations, while several calculations can be made using estimates to present a risk range. Given the nature of the voluminous wastes at the Wrigley Site, and the high levels of PAH, metals, and VOC contaminants in coal-tar wastes, and elevated levels of metals in burn-pit wastes, EPA believes that the data is relevant to conditions at the Wrigley Charcoal Site.

Exposure assumptions which are used in baseline risk assessments (BRAs) are default values unless there is more appropriate site specific information available. The exposure assumptions used in the Wrigley BRA were not "unrealistically maximized". Anytime assumptions are made concerning the risk there is a degree of uncertainty related. This does not mean that the assumptions are therefore unrealistic.

The exposure assumption to which this comment refers is amount of soil ingested (100 mg/day) through the oral pathway during recreational visits to the Site. This soil ingestion rate is based on a 1989 EPA Directive (9850.4). This rate accounts for incidental ingestion

(i.e. hand-to-mouth contact after exposure to soils). This incidental soil ingestion rate is further supported in EPA's Standard Default Exposure Factors guidance (Directive 9285.6-03) which was released on March 25, 1991.

Comment 3: In nearly every case, the USEPA states that there are "major uncertainties" in the risk analysis.

Response: Although there are uncertainties in the risk analysis, the high levels of contamination at the Primary Site and the Storage Basin are clearly stated within the RI/FS. Due to several uncertainties, EPA chose to perform an interim action ROD. EPA Guidance (OSWER Directive 9355.3-02 and 9355.3-02FS-3) indicates that an RI/FS or Risk Assessment is not required to perform an interim action. However, these documents also indicate that sufficient documentation (in our case analytical data) should be presented to support our actions. EPA has presented overwhelming analytical data on the high levels of contaminants at the Site, and indicated which contaminants are above Acceptable Soil Concentrations (ASCs) or above safe levels. These data are sufficient to support any interim action activities or early final activities at the Wrigley Site.

Comment :4 The most significant risk identified by the USEPA would be posed to workers during site remediation. It would seem logical to conclude that security fencing would provide necessary protection for the site until Operable Unit 2 can be investigated. In this manner, a single remedial action (interim or otherwise) for the site as a whole can be defined. This methodology would be equally protective of human health and the environment and would certainly be a more cost effective use of Superfund expenditures.

Response: Installing a fence at the Primary Site will not reduce the risks from exposed contaminants in coal-tars, the burn-pit, or from contaminants contained in waste piles that are readily accessible to trespassers (casual visitors, etc.). Alternative 2 will do nothing to prevent ACM materials from becoming airborne or getting into the North Fork of Mill Creek. The ACM corrugated roofing sheets that have been torn from the buildings by storm activity (see response to comment 10) are now on the ground and have been crushed from hitting the ground and by other adverse weather conditions. Off-road vehicles that have been observed

on the Primary Site run over these materials periodically. Also trespassers that go around the front gate and ignore EPA placards and get on to the southern portion of the Primary Site can agitate these materials. Installing a security fence will not reduce risks associated with these materials.

#### SPECIFIC COMMENTS to the PIRAP

Comment 5: USEPA's proposed off-site incineration/stabilization of the wastes in the Burn Pit (Grease Pit) would be an inappropriate remedy during Operable Unit 1 activities since these wastes have not been thoroughly characterized, their corresponding USEPA waste codes have not been determined, and since the exposure risks from these materials should be quite low. While the USEPA/ESD Region IV sampling and analysis did not detect the presence of the 2,3,7,8 TCDD isomer(s) above the detection limit in this material, other dioxin isomers were detected. Dioxin treatment standards for the listed dioxin waste codes F020 - F023 and F026 - F028 are based on incineration that achieves a 99.9999% destruction and removal efficiency (40 CFR 268.41). Although the Burn Pit wastes do not appear to fit these listed waste code categories, a possibility exists of a potential lack of available incinerators or that these wastes may not be accepted by any permitted TSCA incineration facility.

Response: EPA disagrees with the statement that these small amount of wastes (approximately 15 yd<sup>3</sup>) have not been thoroughly characterized. Early in the RI, Ebasco took a sample for metals/dioxin analyses. The metals analyses generated high values for metals that were not found to be anomalous since the burn-pit contains abundant metals shavings. The initial dioxin values did appear to be anomalous since these were the only dioxin values found to be above trace concentrations at the Wrigley Site. EPA decided to resample the pit and took 4 composite samples each containing 4 individual samples on 4/26/91. The pit is small (75x5x3.5) so this sampling effort evaluated the entire pit top to bottom. This extensive analytical effort indicated that only trace amounts of dioxin reside in the burn-pit (0.14-12 ppt TEQ, with 0.5-2.0 ppt 2,3,7,8 TCDD dioxin identified).

EPA agrees with the statement that the burn-pit wastes do not fit the RCRA waste code categories for this



industrial facility, and at present, EPA intends to excavate, transport, stabilize, and dispose of these wastes in an approved facility. According to information requested from Ebasco, it presently appears that EPA will not have any difficulty in remediating or disposing of these wastes in an approved facility (such as a TSCA facility).

Comment 6: In light of the findings that current risks of exposure to these materials in the Burn Pit are apparently considered quite low or non-existent, it does not seem appropriate to target these for removal during the Operable Unit 1 interim activities. It would be equally protective of human health and the environment and be more cost effective to incorporate the remediation of these materials into a one-time remediation event that could theoretically be conducted for the entire Primary Site in the future. There has been no evidence provided that constituents contained in the Burn Pit will migrate from this area. Any risk of exposure can be removed through institutional controls such as barricades and a rigid protective covering and would be a more appropriate use of Superfund expenditures during the Operable Unit 1 interim activities, until characterization is performed. This would be an equally protective and cost-effective alternative which also would alleviate the risk identified.

Response: EPA does not believe that it would be more cost effective to deal with all of these wastes in a single event. Burn-Pit wastes are dissimilar from any other wastes at the Wrigley Site and would require separate remedial procedures to eliminate the wastes regardless of whether these actions are taken now or during the next operable unit. It appears more stringent regulations combined with escalating costs would indicate it would be less cost effective with time. Further, any potential (redundant) future investigative costs would add significant costs to a very small remedial effort on 15 yd<sup>3</sup> of wastes.

Contrary to the statement that, "there is no evidence that these materials do not migrate from the pit", analytical data from the RI show elevated levels of contaminants directly behind the maintenance building. This is not surprising since trespassers and vandals frequently get into the maintenance building and get into the pit. On several occasions during Site visits, the RPM, OSC, and Tennessee Division of Superfund

Representative noted recently dumped Site equipment in the pit and materials thrown from inside the pit onto the concrete floor in the maintenance building.

Barricades and placards will not keep anyone out of this area. Presently trespassers ignore the placards on the Site gates and the buildings, including the maintenance building. EPA believes that given the previously stated Site conditions, there is presently ample justification to remove these small amount of wastes.

**Comment 7:** USEPA has not adequately established that risks to human health or the environment are currently posed by the Storage Basin (see page 1-61 of the Ebasco Feasibility Study) because "risk-based calculations contain appreciable uncertainty and should only be used for qualitative assessments". The FS goes on to state that "migration of these contaminants into the ground water, surface water, and air should be evaluated prior to quantification of risks associated with these contaminants."

**Response:** EPA determined in early 1991 that the preliminary data and associated risk calculations based on these data, as acquired and generated respectively by Ebasco did not sufficiently characterize this area. Therefore, EPA conducted a sampling effort at this location to locate and characterize coal-tar contaminants that were suspected to reside in the deeper sediments of the Storage Basin. Although risk assessment data can be important, exceedingly high contaminant levels cannot be ignored. The very high levels of contaminants found in the sludge samples taken in the deeper sediments are above ASCs for many contaminants of concern.

Samples of the deep sediments identified 20 organic compounds and 9 metals. Contaminants in these sediments consisted of: semi-volatile compounds (74,032 ppm including phenols at 26,700 ppm), metals (6025 ppm), VOCs (610 ppm). The ASC for carcinogenic PAHs as reported in the RI is 8.17 ppm, for non-carcinogenic PAHs is 34,600 ppm, and for phenols is 100. Due to the high level of PAHs and phenols in the Storage Basin sediments, EPA has determined that this location also poses a risk to human health and the environment.

There is no doubt that the coal-tar sludges located in the Storage Basin sediments are so far, the most highly concentrated (contaminant-rich) wastes at the Wrigley

Charcoal Site. Therefore, these wastes will be left undisturbed in this remote location until future investigative work can fully evaluate this area. EPA's planned investigative work is consistent with comments of the PRP as mentioned in comment 7.

Comment 8: It is not specified in the USEPA Proposed Interim Remedial Action Plan (PIRAP) how USEPA intends to stabilize the materials in the Storage Basin without compromising future remedial actions. The soil mixing stabilization method identified as appropriate by Ebasco in the FS (pages 4-19 and 4-20) does not account for the potential lateral flow of perched ground water or leachate through the disturbed sediments. This potential migration process could cause degradation of ground-water quality if the sediments are disturbed in this manner thereby compromising the effectiveness of this proposed interim remedy. Based on the minimal findings presented in the RI and FS, it does not appear to be technically appropriate or cost effective to include the proposed invasive/intrusive activities for the Storage Basin as an Operable Unit 1 interim remedial action item. Also as stated in the FS, the Storage Basin sediments are to be capped after stabilization. There has been no indication that constituents are leaching from the Storage Basin based on ground-water sampling. A more technically appropriate and cost-effective interim remedy would be to utilize institutional controls - such as fencing rather than the proposed stabilization and capping.

Response: Activities identified in the Proposed Plan for the Storage Basin have been changed. At present, disturbing these wastes may cause additional problems at this location. For example, building a road to this location (up the steep hill above the North Fork of Mill Creek) will be costly, and provide easier access to this location. In affect this would attract more attention in this area. Stabilization of Storage Basin wastes is justified, but only if this stabilization effort can be accomplished without adversely affecting the Storage Basin area. EPA has further evaluated this activity and determined that the area should be fenced and future investigative efforts initiated to determine exact volume of contaminants and their impact on the subsurface and adjacent Clark Hollow. EPA agrees with the PRP concerning Storage Basin activities and are reassured that the PRP will support future investigative efforts necessary to completely characterize the Site.

The comment incorrectly states that findings at the Storage Basin set forth in the RI/FS are minimal. As stated in the response to comment 7, the sampling data obtained on 4/26/91 reveals very high levels of PAHs, metals, and VOCs in the deeper sediments of the Storage Basin.

Comment 9: Risks associated with the surface wastes/debris pile have not been defined, with the possible exception of asbestos. Most, if not all, of these materials have not been characterized for removal/disposal. Much of the material may be recyclable or reclaimable. The tar cubes and transformer materials are either uncharacterized or not fully characterized for disposal. All of the asbestos-containing materials appear to be non-friable corrugated transite or sheet transite based on the description in the FS on page 1-27 and should pose no risk to workers or the surrounding population. USEPA's recommendation of these ACMs is based on presumed risk. It would appear that the waste/debris piles were included within the proposed Operable Unit 1 interim activities purely for aesthetic reasons. Screening and segregation of the surficial waste and debris piles would be a more technically appropriate and cost-effective use of Superfund expenditures during the Operable Unit 1 interim activities until the appropriate characterizations have been made.

Response: Information pertaining to the exact contents of the wastes/debris piles has not been obtained. In order for EPA to obtain this information, it will be necessary to sort through these large waste piles and identify all contents. For materials such as the ACM and the tar-cubes, we have sufficient information to warrant interim action activities. The ACM will be removed from the piles, transported, and disposed of in an asbestos landfill. The tar-cube waste characterization for disposal data obtained in April of 1991, identified elevated levels of compounds in the tar-cubes (coal-tar derivatives). This information did register a cumulative total of 10 tentatively identified compounds that yielded 920 ppm. It is likely that these are PAH compounds. Although the tar-cubes appear to vary in composition from the coal-tar, the cubes pose a potential risk since they are composed of pure tar which is primarily PAH constituents. Also, these cubes melt in the summer and potentially can migrate into the North Fork of Mill Creek.

Elimination of the waste/debris piles at the southern portion of the Primary Site is not for esthetic reasons. Some of the more significant levels of contaminants of concern have been identified between the still house foundation and the raw liquor storage tank foundation. It is in this area that the majority of the large waste/debris piles are located. It would be impossible to take representative samples in the subsurface if wastes from piles are migrating towards EPA wellbores. Also, no future wells can be installed at several strategic locations at the southern portion of the Primary Site as long as the large waste piles remain.

EPA will sort the wastes/pile constituents and consolidate materials such as tar-cubes and metallic debris in an on-site consolidation area. These actions are cost effective use of Superfund expenditures and will serve to alleviate the waste/debris problems at the southern portion of the Primary Site.

Comment 10: There is no justification (technical, regulatory or otherwise) for the removal and disposal of non-friable asbestos from the site buildings or elsewhere from the site. It is generally accepted by the technical community that little or no risk is posed to a population by such non-friable ACMs. Based on review of the RI and FS for the site and the proposed interim remedy for Operable Unit 1, the determination has not been made as to whether the asbestos is friable vs. non-friable. Any interim remedial action for the remaining ACMs is based on presumed risk and would be performed for aesthetic reasons. It should be noted, based on two recent court decisions, that, under circumstances, asbestos abatement costs may not be recoverable under Section 107 of CERCLA even when the asbestos has fallen from the building structure and no longer serves its intended use (3550 Stevens Creek Associates vs. Barclays Bank of California and California Dept. of General Services vs. Blech). In both the Stevens Creek and Calif. Dept of General Services cases the courts found that Congress never intended CERCLA to create a cause of action for asbestos removal from commercial buildings. It is not appropriate to include these ACMs as an interim remedial action item during Operable Unit 1.

Response: We have eliminated any remedial activities concerning

ACM that presently appears to be non-friable. Subsequent investigative activity and analyses will determine the exact state of this material. However, broken sheets of ACM that have been previously torn from the buildings by storm activity are friable. Pieces of this material are scattered throughout the southern portion of the Primary Site. There is no technical or logical basis to call this material non-friable since these once large roofing sheets of asbestos have been crushed by weathering processes and vehicular traffic (off-road vehicles, etc., as witnessed by the the RPM and OSC during the April 26, 1991 sampling event). Further, trespassers that may walk on-site may easily agitate this material as it is loose throughout the southern portion of the Primary Site. It is relevant to point out that if storm activity can lift these roofing sheets of ACM from the buildings and it is highly probable that occasional windy conditions mobilize crushed ACM particulates. Also, heavy rainfall events mobilize ACM which flow by way of surface waters to the North Fork of Mill Creek. Based on this information, EPA believes that the broken sheets of ACM on the ground at the southern portion of the Primary Site pose a significant threat to human health and the environment and recommend that all friable ACM on the ground, as well as the visibly friable ACM on the small building in front of the maintenance building be removed to an asbestos landfill for disposal.

Comment 11: Process Tank contents on the Primary Site have not been adequately characterized for USEPA's proposed disposal. The indicated presence of dioxins in these wastes may prevent off-site incineration. It would be more appropriate to secure the tank and make the necessary characterizations for disposal. Also, after the tanks have been decontaminated, the steel should be reclaimed as steel scrap, not disposed in a landfill. The language in Section 121(b)1 of CERCLA makes clear that "the President shall select a remedial action... that utilizes resource recovery technologies to the maximum extent possible."

Response: Samples have been taken from the process tanks with the following information generated. A total of 16 organic and 5 inorganic constituents were identified. Contaminants consisted of: phenols (20,000 ppm), total PAHs (737 ppm)-including carcinogenic PAHs (359 ppm), VOCs (1750 ppm), copper (2,400 ppm), lead (340 ppm), nickel (110 ppm), zinc (110 ppm), and barium (50 ppm).

Only trace amounts of dioxin were noted (0.31-46 ppt TEQ with no 2,3,7,8 TCDD dioxin detected). These trace levels of dioxin were extremely low, nowhere near the 1000 ppt dioxin Toxicity Equivalent (TEQ) required to take any action on this waste. However, the high levels of phenols, carcinogenic PAHs, and VOCs make the process tank wastes a potential risk by way of dermal contact or inhalation to human health. Wastes are potential risks to the environment since they are adjacent to the North Fork of Mill Creek and periodically leak from the process tanks. EPA believes that these wastes have been characterized sufficiently to support the selected remedial alternative and initiate remedial action.

Instead of disposing of the tanks in an EPA approved RCRA facility, EPA will reclaim the steel tanks as scrap in accordance with CERCLA 121(b)(1) and the President.

Comment 12: The discolored soils adjacent to the Process Tank (page 1-25 of the Ebasco FS) have not been adequately characterized with respect to health risks or for disposal options. In light of these inadequacies, site institutional controls, such as barricades or fencing, would be a more technically appropriate Operable Unit 1 interim activity until characterization could be conducted. In doing so, it would allow for a more cost effective, one-time remedy of the site, which would appear to be equally as protective of human health and the environment.

Response: Given the composition of the process tank wastes, and that these wastes have been observed by EPA (4/26/91) leaking from the tanks, it is highly improbable that the wastes become non-hazardous as they drop to the ground and migrate down the hill approximately 50 feet into the North Fork of Mill Creek. EPA guidance (OSWER Directive 9355.3-02 and 9355.3-02FS-3) clearly states that EPA may, "take quick action to protect human health and the environment from an imminent threat in the short-term while a final remedial solution is being developed; or institute temporary measures to stabilize the site or operable unit and/or prevent further migration or degradation."

In order to be protective of human health and the environment, it is necessary to remove the tanks, associated waste sludges in the tanks, and associated wastes on the ground. Implementing barricades or

fencing would not remove or lessen the threat from these wastes. In addition, it would not be cost effective to perform more investigative work on surficial wastes at this location due to the direct (visually observed) correlation of the wastes in the tank to the wastes on the ground. We agree that additional investigative work (subsurface investigations) should be initiated at the Site, however, it is likely that between now and the future remedial action takes place, these wastes will be accessible to anyone that walks the steep hill adjacent to the North Fork of Mill Creek, and wastes will continue to migrate into the Creek.

**Comment 13:** The recent failure of the Storage Basin spillway (constructed in 1988 by USEPA during an earlier removal action) may have been the result of improper engineering design. Recent precipitation events caused washout of the spillway area and have presumably exposed site-related constituents in the older, underlying sediments. The replacement of the rip-rap in the spillway may not be the best engineering control at this time in light of this recent earth failure. It was stated inconclusively in the FS that these constituents originated from the Tar Pit area based on aerial photographs. When considering the lack of characterization of these materials and sketchy information regarding their nature, USEPA's proposed interim remedy of excavation and incineration is unsupported and would not be appropriate for an interim remedial action item for Operable Unit 1.

**Response:** According to Brad Martin (Hickman County, Times), the Memorial Day flooding event was the largest single rainfall event in decades. Approximately 14 inches of rain fell in a 24 hour period. Not only did EPA's spillway encounter damage, but roads both above and below the Primary Site were washed out. The location of the spillway is particularly bad since several smaller unnamed tributaries intersect close to this location. Given these conditions, and comments from the State of Tennessee's Division of Superfund, EPA intends to re-engineer this spillway to accommodate the significant floodwaters that frequent this area (also, much larger riprap will be utilized). In order to accommodate these waters, the spillway will need to be excavated to the creek grade with coal-tar contaminants excavated, transported, incinerated, and disposed of in an approved EPA facility.



The wastes in the spillway are presently adjacent to tar-pits. Regardless of the Ebasco statement in the FS concerning the EPIC photos, EPA thoroughly examined the 1990 EPIC photos as well as photos from other sources such as the 1987 Weston Report conducted for the State of Tennessee. It is EPA's determination that the tar-pit extended out (northeast) past the present position of the North Fork of Mill Creek. According to previous photos and historical information, this corresponds to the present location of the spillway. The large tar-pits were not the only industrial waste area in this vicinity, there were also neutralization pits that likely received raw coal-tar contaminated wastes prior to dumping directly into the North Fork of Mill Creek or pumping to either the tar-pits, Storage Basin, or Irrigation Field. EPA has sufficient data on coal-tar wastes in the vicinity of the tar-pits to warrant remedial action. As stated previously, interim remedial measures are intended to take quick action to protect human health and the environment from an imminent threat in the short-term and/or to stabilize conditions to prevent further migration or degradation. If interim remedial actions are not taken in the spillway, more of these coal-tar wastes will become exposed. The threat from dermal contact, incidental ingestion, or inhalation of waste particulates or vapors could present an increasingly significant threat if action is not initiated.

#### PRP CONCLUSIONS

The most applicable interim action items for operable Unit 1 (Primary Site, Storage Basin, and Irrigation Field Lagoon) are deed restrictions and institutional controls, such as fencing, barricades, protective coverings and placarding. The USEPA appears to have misapplied criteria and data in arriving at conclusions and in calculating the immediate and/or long term risks associated with the site. This resulted in exaggerated immediate health risks and potential environmental impacts associated with exposure to the constituents at the site. Furthermore, based on these apparent incorrect conclusions, the USEPA has proposed an inappropriate interim remedy which is unsupported by the data compiled at the site. To elect to conduct significant remedial action when the risk associated with the site is either uncertain or non-existent is illogical and technically incorrect. Therefore, USEPA Alternative 2 would be the most appropriate selection for interim remedy at the Wrigley Charcoal Site.

In conclusion, any remedial action that would be conceivably conducted should be conducted only after the site has been characterized in its entirety, and at such time a single remedial program is developed. An interim remedial action for a single Operable Unit should only respond to imminent risks to human health and the environment and not propose excessive actions for inconclusively defined risks.

**Response:**

EPA disagrees with the conclusions submitted in behalf of the Tennessee Farmers Cooperative. EPA has applied interim criteria accordingly and activities presented are intended to be protective of human health and the environment. Institutional controls and Site access controls do not reduce the threats from readily accessible, high levels of phenols, PAHs, VOCs, and metals, in contaminated materials identified for cleanup as part of this interim action and does not meet ARARs. Also Alternative 2 does not remediate broken, crushed, or friable ACM that becomes airborne.

Given the abundant information on coal-tar wastes at the Wrigley Charcoal Site, EPA believes that conclusions drawn in the interim action ROD are realistic and reasonably supported. EPA believes that the conclusions drawn in behalf of the Tennessee Farmers Cooperative are not reasonable, and their recommended alternative (Alternative 2) will fail to meet ARARs. Alternative 2 will not reduce toxicity, mobility, or volume of readily accessible on-site contaminants and will not be protective of human health and the environment. It is therefore, illogical and technically incorrect for Alternative 2 to be selected.

EPA has elected to implement Alternative 3 which will meet all ARARs and will be protective of human health and the environment. Contaminant level information required to support interim actions or early final actions on coal-tar wastes, burn-pit wastes, and ACM is presented in the RI/FS. Interim action guidance previously referenced indicates that a baseline risk assessment does not have to support these interim activities, and that more specific findings should be included as part of subsequent investigations or actions. However, it should be noted that the baseline risk assessment for the Wrigley Charcoal Site does indicate that coal-tar associated wastes and burn-pit wastes contain contaminants of concern that are above acceptable levels. It is therefore appropriate to

select Alternative 3 since it best satisfies the CERCLA requirements (nine criteria).

12.4 Comments During Meeting With Local Officials at City Hall, Centerville, Tennessee, July 25, 1991

In attendance:

- 1) Kenneth Wright (Mayor of Centerville)
- 2) James Coates (County Executive)
- 3) Harold Taylor (Chief, Kentucky/Tennessee Section, EPA)
- 4) Douglas Bell (Remedial Project Manager, KY/TN Section, EPA)
- 5) Suzanne Durham (Community Rel. Coord., KY/TN Section, EPA)

Comment 1: There was not much public interest in the Site but Brad Martin of the Hickman County Times had run several articles which is keeping the citizens informed.

Response: Brad Martin has contacted the EPA and has been kept up-to-date with EPA investigations and activities.

Comment 2: Was the groundwater monitored at the Site?

Response: Both monitoring wells and piezometers were installed at the Primary Site. Also, off-site residential wells and springs were sampled within a one mile radius of the Site.

Comment 3: Does EPA have any idea how much it will cost to clean up the Wrigley Charcoal Site?

Response: At present, EPA does not know how much the final cleanup cost will be for the Wrigley Charcoal Site. It is presently estimated that the initial cleanup phase (interim action) will cost approximately \$1,000,000. This action will address surficial wastes and the most imminent and substantial threats to human health and the environment at the Site. Subsequent investigations will likely be required to further characterize other areas of coal-tar wastes (such as the Storage Basin) that will be remediated during as part of later remedial activities. It is likely that these future remedial activities will be costly since they will eliminate large amounts of coal-tar wastes and contaminated soils.

Comment 4: Are there any drums at the Site? Where are they?

Response: We at present, have identified fourteen drums at the Primary Site that contain hazardous substances. The remediation of these drums and the elimination of

drummed wastes has been included as part of the interim action ROD.

Comment 5: Does EPA have a list of dangerous chemicals and does EPA know whether or not these chemicals will affect the people down there?

Response: The EPA has just completed an RI/FS for the Wrigley Site and the state of Tennessee finished a study in 1987 that identified a wide variety of contaminants contained at the four separate Wrigley Charcoal Site areas. The contaminants are mainly: polycyclic aromatic hydrocarbons (PAHs), metals, volatile organic compounds (VOCs), and asbestos containing material (ACM) as roofing on Primary Site buildings.

At present, no adverse health effects have been documented at the Wrigley Site, however, toxicological data for these substances suggests that many are carcinogenic and pose long-term risks for casual visitors such as trespassers.

Comment 6: Is the water intake above or below the Site?

Response: The Bon Aqua-Lyles water intake has been moved upstream on Mill Creek. This location is above the confluence of the North Fork of Mill Creek and Mill Creek and will not be affected from any adverse conditions from the Primary Site.

Comment 7: What did EPA find at the ballfield?

Response: The infield area of the ballfield was sampled in 1990 and the area behind the outfield fence was sampled in 1989. This data suggests that contaminants occur below levels of concern in the surface soils in the infield. However, one sample behind the outfield fence did show elevated levels of metals such as lead. These levels were just below the threshold level of concern. Additional samples will be taken at this area to the garden (approximately 100 feet southeast) to evaluate the need for remedial activities at this location.

Comment 8: Can kids play at the ballfield?

Response: At the present time, EPA does not feel that the ballfield poses a significant health risk.

Comment 9: Who owns the ballfield?

Response: At the present time, information EPA has received from the TFC suggests that they own the ballfield.

Comment 10: Did the Co-op. donate the ballfield to the recreation association?

Response: The EPA does not have any information that suggests that this is true. This will have to be investigated further.

Comment 11: How did we notify the public of the Public Meeting?

Response: The public was notified by a public notice that was published in the Hickman County Times on July 15, 1991 and also by the article by Brad Martin that appeared in the Hickman County Times on July 22, 1991.

Comment 12: Could any of the materials at the Wrigley Charcoal Site be sold for fuel?

Response: Although much of the coal-tar wastes could potentially be used as a fuel, it presently appears that it would not be worth the risk for individuals or companies to acquire these wastes and assume the risks and liabilities associated with transporting, storing, and incinerating hazardous substances from this EPA Superfund site.

Comment 13: What were the tar-pits used for?

Response: Wastes that resulted from the retorting of hardwoods for charcoal production were further refined in the still house. The coal-tar fractions with the highest amounts of impurities that could not be made into tar-cubes, ended up in the large tar-pits adjacent to the Primary Site. Later (after the mid-1950's) the coal-tar wastes (still bottoms) were pumped to the Storage Basin for containment and subsequent spraying of wastes over slag piles, and also to the Irrigation Field for storage in the lagoon and subsequent spraying over the field to biologically degrade contaminants. Tar-pit wastes have also been identified in the Storage Basin but have yet to be identified in the Irrigation Field lagoon.

Comment 14: If these materials were ignited, would they continue to burn?

Response: The tar-pit materials have been stabilized (solidified) with sawdust but would likely burn. The coal-tar

wastes at the Storage Basin are more likely to burn since they have not been stabilized. However, the Storage Basin coal-tars are under 1-5 feet of water and are well protected from ignition sources, and the tar-pits are under a thin cap of clay which serves to isolate the wastes.

Comment 15: Does vegetation grow on the Irrigation Field?

Response: At the present time, the Irrigation Field is covered with vegetation. The majority of the Field is covered with brush and small trees while the abandoned lagoon has larger trees.

**12.5. Written Comments Received During the Public Comment Period  
and EPA's Responses to These Comments:**

It should be noted that there were no written comments from private citizens concerning the EPA proposed interim remedial activities at the Wrigley Charcoal Site. Comment letters included in this section are from: 1) the State of Tennessee; 2) the Tennessee Historical Commission; and 3) and the U.S. Department of the Interior (Fish and Wildlife Service). Response Letters from the EPA are also included in this section.



STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

July 31, 1991

Mr. Harold Taylor  
U.S. EPA Region IV  
345 Courtland Street, N.E.  
Atlanta, Georgia 30365

RE: Wrigley Charcoal Superfund Site 41-504

Dear Mr. Taylor,

The following comments concerning the draft ROD are being submitted following review by personnel from the Tennessee Division of Superfund (Division). The main thrust of these comments is to focus only on those areas where defined hazardous substances exist and are deemed to require proper remediation. We have eliminated concern from those items that are considered more "housekeeping" in nature. These comments are presented on an item by item basis:

1. The Burn Pit. The Division is not in agreement with EPA concerning this area. The latest round of analytical results indicates that no significant contamination exists, therefore expending funds for remediation is not justified. It is suggested that from a standpoint of usability and any direct contact concerns that might exist, the burned and unburned transformers in any locality on the site could be deposited in the pit and then capped with concrete to the existing floor level. This would mitigate the direct contact potential and prevent infiltration into the pit potentially impacting groundwater with metals or other residual organics that might exist.
2. The Storage Basin. The Division is not in agreement concerning the proposal for this area. EPA has suggested a stabilization measure involving mixing the coal tar derivatives on the bottom of the pond with saw dust and then capping. The Division does not consider the known conditions in this area significant enough to warrant this type of action. There are several reasons as follows:
  - A. The underlying geology is not very well understood. Therefore it is not certain if disturbing the pond sediments would exacerbate the problem or not. The area is known to be karst and could potentially be destabilized.



- B. Presently, it is not believed that the storage basin is causing significant groundwater problems, based on several rounds of residential well sampling. Disturbing the area could potentially alter this.
- C. Currently, the area is not a high traffic area due to difficult access conditions. Creating a new road to access the area could potentially generate interest in the area by local citizens causing greater potential for direct contact exposure.
- D. Since stabilization was to only be a temporary measure followed up with removal, treatment or incineration within two years, this expensive stabilization measure seems unwarranted particularly since the waste has been in it's present locality for 40 or so years.
- E. The stabilization could potentially double the quantity of waste to be dealt with in the future making remediation more expensive.

The Division is in agreement that the storage basin and/or the overflow basin should be fenced to discourage direct contact with the ponds and left until other coal tar derivatives are remediated on the site. It is also suggested that the storage pond be dewatered lowering the head and reducing the potential of groundwater migration.

- 3. The Site Surface Waste/Debris Piles. The Division is in agreement with EPA that aspects of this material need to be addressed in an interim measure. However, our concern is primarily with the hazardous materials in these localities. Such items as the tar cubes, friable asbestos materials, and metals that are potentially leachable. It is our contention that some of the debris/waste could be staged in a more organized/controlled manner without expensive disposal offsite.
- 4. The Asbestos Corrugated Roofing Material. The Division is not in agreement with EPA concerning removal of this material. There are several items of concern that support this opinion which are as follows:
  - A. The definition of friable is not consistent between the two agencies. To the Division most of the material is not considered friable due to the concrete content which makes it very durable. EPA needs to define friable.
  - B. Most of the asbestos roofing material is still very much intact on the buildings and not releasing fibers to the atmosphere. This is particularly true with the limited amount of traffic through the site.

- C. The cost is prohibitive considering the impact that it is currently considered to be having.
- D. With the roofing intact the buildings have potential value as work zones during future remedial activities at the site. It is suggested that PRP's should be involved in funding activities such as this.

The Division is in agreement that any roofing material that is known to be releasing fibers to the air on the ground should be removed.

- 5. The Process Tanks. The Division is in agreement with EPA that the process tanks and any residual tar stained soils should be removed.
- 6. The Spillway Area. The Division does not completely agree with EPA concerning this area. Although we do agree that any contaminated tars, charcoal fragments, and lifts of slag etc. that generate leachate should be excavated, we propose further excavation of the spillway to bring it to the existing creek grade reducing the threat of future erosion. It is recommended that the original creek channel be opened (ie. remove the two 48-inch culverts that are not able to channel the creek flow at flood stage). The spillway could then be excavated down to the existing creek grade thus widening the channel. This is supported by the fact that the sheet pilings are sufficient to retain the bank holding up the tar pits and thus if the culverts were removed the creek would not be as erosive. There appears to be sufficient material (ie. rip-rap) that has washed down the creek that could be used to reline the altered creek channel and with removal of contaminated material the greatest cost would probably be labor and equipment and not materials.
- 7. Deed Restrictions and Institutional Controls. The Division agrees with this proposal. This is particularly true since several surrounding property owners are trying to sell their properties.
- 8. Irrigation Field. The Division does not agree with EPA about putting a fence around the small pond in this area. The pond is very overgrown at present and not very accessible. It is thought that if cleared out to install a fence then it would be subsequently more accessible and draw attention to the area creating a greater potential for direct contact exposure.

The Division is recommending the above comments with respect to the cost share that the State of Tennessee is required to make. The Division would prefer to allocate funds to actual source removal measures. Funding for such a project as the clean up of the Wrigley Charcoal site has been planned for, however, these funds are limited and the Division therefore wants to prioritize funding for actual site clean up.

The Division is in agreement with EPA that further sampling and groundwater investigation is warranted at the site. This should include some residential well sampling at some point during the remediation. Also it was noticed that in the foundation of the old Dryer building there were several areas where tar was oozing up to the surface during very hot days. These areas should be considered for interim action as well.

The above comments are being offered for consideration in altering the Draft ROD. If necessary we are willing to meet with you and discuss any differences that may exist. If you have any questions concerning this response please call me at (615) 741-6287.

Sincerely yours,

*Ralph M. Sinclair*

Ralph M Sinclair, Ph.D  
Director, Division of Superfund



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.  
ATLANTA, GEORGIA 30365

August 19, 1991

Ralph M. Sinclair, Ph.D., Director  
Division of Superfund  
Tennessee Dept. of Environment and Conservation  
706 Church Street, Suite 200  
Nashville, Tennessee 37243-1358

RE: Response to State of Tennessee Comments on the Proposed Plan for the Wrigley Charcoal Site, Wrigley, Tennessee

Dear Dr. Sinclair:

Thank you for your prompt responses concerning the proposed interim remedial activities at the Wrigley Charcoal Site. We greatly appreciate the Division of Superfund's interest in pursuing remediation of this Site.

We are in agreement with the majority of your comments and are in the process of modifying the feasibility study and draft Record of Decision (ROD) to reflect those concerns. Fortunately, we were lucky enough to have Mess'r. David Randolph, Bob Powell, and Dan Roop to discuss Tennessee's comments with during a site visit on July 26th.


Although we intend to transmit to you the draft ROD and Final Feasibility Study very shortly, we wanted to briefly respond to Tennessee's concerns by way of this letter and alert you to any technical differences which need to be resolved before a final ROD is signed. Our comments on your concerns are presented on an item by item basis:

- 1) The Burn-Pit: We agree with Tennessee that the burn-pit does not appear to have any significant organic contamination (dioxins or PCBs). However, the concentrations of metals, particularly lead, is of concern to us. Samples collected during the RI showed lead concentrations in the waste up to 1600 ppm. This lead level is well above recommended soil lead level of 1000 ppm for soil in residential areas. Also, soils may contribute to contamination of groundwater. Therefore, it is our recommendation to remove this waste material and dispose of it properly at an approved off-site facility. The cost of disposal for the estimated twenty cubic yards of material should be minimal.

- 2) The Storage Basin: We accept your proposal and are modifying our approach accordingly.
- 3) The Primary Site Surface Waste/Debris Piles: Ditto of above.
- 4) The Asbestos Corrugated Roofing Material: Because this is an interim action, and is not final, we will agree to leave the bulk of the non-damaged asbestos containing roofing materials (ACM) for the present. We will propose removing the ACM that are presently on the ground, in waste/debris piles or friable on the small building in front of the maintenance building. We will defer a final decision about the ACM until additional laboratory analyses on soils and roofing materials, and on-site asbestos monitoring can be conducted to better define the potential problem with asbestos.
- 5) The Process Tanks: We are in agreement on this element.
- 6) The Spillway Area: We are in agreement with the majority of your concerns, but feel that a buffer zone or deflection will be needed adjacent to the tar-pits to prevent further erosion. We are presently estimating the costs of these activities.
- 7) Deed Restrictions and Institutional Controls: We are in agreement on this element.
- 8) Irrigation Field: We are in agreement on the element. It may be productive to do some minor exploration in this area during the interim action to assure that no deeper contaminants are present.

As we have discussed previously, we are in the process of drafting the ROD and will get the draft to you as soon as possible. In the meantime, should you or your staff wish to discuss these comments, please feel free to contact me or Doug Bell at (404) 347-7791.

Sincerely,

  
Harold W. Taylor Jr., Chief  
Kentucky/Tennessee Remedial Section  
North Superfund Remedial Branch  
Waste Management Division

cc: Doug Bell  
Suzanne Rubini



TENNESSEE HISTORICAL COMMISSION  
701 BROADWAY  
DEPARTMENT OF CONSERVATION  
NASHVILLE, TENNESSEE 37243-0442  
615/742-6716

July 17, 1991

Suzanne Durham  
EPA-REGION IV  
345 Courtland Street, NE  
Atlanta, Georgia 30365

Re: EPA. WRIGLEY CHARCOAL IRA. WRIGLEY, HICKMAN COUNTY.

Dear Ms. Durham:

The above-referenced undertaking has been reviewed with regard to National Historic Preservation Act compliance by the participating federal agency or its designated representative. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (51 FR 31115, September 2, 1986).

In order to complete our review of this undertaking, this office will need to receive from you a detailed and clearly marked USGS quad map indicating the exact location of each specific project activity and a clear project narrative

Upon receipt of the additional information, we will complete our review of this undertaking as expeditiously as possible. Until such time as this office has rendered a final comment on this project, your Section 106 obligation has not been met. Questions and comments may be directed to Joe Garrison (615)742-6720.

Your cooperation is appreciated.

Sincerely,

A handwritten signature in cursive script, reading "Herbert L. Harper".

Herbert L. Harper  
Executive Director and  
Deputy State Historic  
Preservation Officer

HLH:jyg



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.  
ATLANTA, GEORGIA 30365

August 8, 1991

Mr. Herbert L. Harper  
Tennessee Historical Commission  
701 Broadway  
Department of Conservation  
Nashville, TN 37243-0442

Dear Mr. Harper:

This letter is in response to your recent letter dated July 17, 1991. We have recently mailed to Mr. Joe Garrison of your agency the Proposed Plan Fact Sheet describing all activities concerning the Interim Action (Operable Unit 1) proposed to take place at the Wrigley Charcoal Site. We have also made several attempts to contact Mr. Garrison by phone to discuss our proposed activities, however, our calls have not been returned.

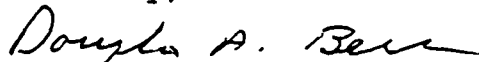
The Historic Structures I have discussed previously with Mr. Garrison (in April) are the Mansion adjacent to the Primary Industrial Site (referred to as the Primary Site) and the old smoke stack in the middle of the Primary Site. None of the proposed activities for the Interim Action would affect or impact either of these structures.

Per your request, we do not have a USGS Quad map that reveals any relevant detail for the structures in question. However, we will send you copies of an Army Corps. of Engineers map that we use for a detailed basemap. Additional information on the Wrigley Charcoal Site can be obtained in the Repository located at the Hickman County Memorial Library on West Swan Street in Centerville, Tennessee. All 14 volumes of our studies, aerial photos, and correspondence can be viewed at this location. Also, Mr. Bob Powell (Superfund State Representative) located in Nashville will be able to answer any questions you may have and he also has copies of the same information that is located in the Repository. He can be reached at (615) 741-5940.

The Proposed Plan Fact Sheet that was sent to Mr. Garrison contains a summary of all proposed activities and serves as a project narrative.

We are aware of our Section 106 commitment and feel that we have made reasonable attempts to contact the Tennessee Historical Commission concerning our plans at the Wrigley Charcoal Site. If there are any future problems with communication, I suggest that you contact me directly for any additional information or assistance at (404) 347-7791.

Sincerely,

A handwritten signature in cursive script that reads "Douglas A. Bell".

Douglas A. Bell, P.G.  
Remedial Project Manager  
KY/TN Remedial Section  
North Superfund Remedial Branch  
Waste Management Division





**TENNESSEE HISTORICAL COMMISSION**

701 BROADWAY  
DEPARTMENT OF CONSERVATION  
NASHVILLE, TENNESSEE 37243-0442  
615/742-6716

August 13, 1991

Suzanne Durham  
EPA-REGION IV  
345 Courtland Street, NE  
Atlanta, Georgia 30365

Re: EPA. WRIGLEY CHARCOAL IRA. WRIGLEY, HICKMAN COUNTY.

Dear Ms. Durham:

The above-referenced undertaking has been reviewed pursuant to Executive Order No. 12372 and Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (51 FR 31115, September 2, 1986).

Based on the documentation submitted, it is our opinion that due to the location, scope and/or nature of the undertaking, and/or the size of the area of project impact, the undertaking will have no effect on National Register of Historic Places listed or eligible properties either because none exist in the area of project impact or because the undertaking will not alter any characteristics of an identified eligible or listed property which qualify the property for listing in the National Register, or alter such property's location, setting or use. Therefore, this office has no objections to proceeding with the project.

If you are applying for federal funds, license or permit, you should submit this letter as evidence of compliance with Section 106 to the appropriate federal agency, which, in turn, should contact this office as required by 36 CFR 800. If you represent a federal agency, you should submit a formal determination to this office for comment. Questions or comments should be directed to Joe Garrison (615)742-6720. Your cooperation is appreciated.

Sincerely,

A handwritten signature in dark ink, appearing to read "Herbert L. Harper", is written over the typed name.

Herbert L. Harper  
Executive Director and  
Deputy State Historic  
Preservation Officer

HLH/jyg



# United States Department of the Interior

FISH AND WILDLIFE SERVICE

Post Office Box 845  
Cookeville, TN 38503



August 16, 1991

Mr. Douglas A. Bell, P.G.  
Remedial Project Manager  
Kentucky/Tennessee Remedial Section  
North Superfund Remedial Branch  
Waste Management Division  
U.S. Environmental Protection Agency  
345 Courtland Street, N.E.  
Atlanta, Georgia 30365

Dear Mr. Bell:

Thank you for providing us with copies of the Proposed Plan, Revised Final Remedial Investigation, and Revised Draft Final Feasibility Study for the Wrigley Charcoal Superfund Site in Wrigley, Tennessee. We were pleased to note that some biological sampling has been conducted in the aquatic habitats, and that the planned future resource studies include additional sampling and subsequent tissue analysis of biota from these habitats as well as terrestrial sampling on the Primary Site. We would, however, like to see the terrestrial sampling and subsequent tissue analysis extended to include the Irrigation Field Site. Additional studies which would be useful include mussel surveys on Mill Creek and North Fork Creek, and mist-net surveys for bats over these same streams. It would also be beneficial to convene an E-TAG meeting to discuss this site, since one has not yet been held.

Thanks again for the opportunity to review the documents, and don't hesitate to call if we can be of assistance.

Sincerely,

Lee A. Barclay, Ph.D.  
Field Supervisor

RLW

XC:

Mr. Jim Lee, Regional Environmental Officer, Atlanta

## **APPENDIX A**

Soil Information Summarized From Unpublished Soils  
Survey Data (Soils Conservation Service, 1977)

### Bodine Series

The Bodine Series consists of deep, somewhat excessively drained, cherty soils on uplands. These soils have pale brown cherty silt loam A horizons, and yellowish brown and strong brown cherty silt loam and cherty silty clay loam B horizons which become very cherty with increasing depth. Bodine soils are on sharply dissected uplands. Slopes commonly are 20 to 50 percent and range from 5 to 60 percent. The soil formed in residuum weathered from cherty limestones, and locally there may be a small component of loess in the upper part. The thickness of solum and depth to cherty limestone bedrock is more than 60 inches. The amount of fragments of chert ranges from 20 to 80 percent by volume in the A horizon, from 35 to 80 percent in the upper part of the B horizon, and from 35 to 85 percent in the lower part of the B horizon. The control section averages between about 35 and 80 percent by volume fragments of chert. The fragments are mostly 4 inches across, but some are as much as 2 feet across. The soil is extremely acid to strongly acid, except where the surface layer is limed. Runoff is moderate and permeability is moderately rapid. Select estimated soil properties for the Bodine Series are presented below in Table A-1.

### Baxter Series

The Baxter Series consists of deep, well drained cherty soils on uplands. They formed in material weathered from cherty limestone. Typically these soils have a brown cherty silt loam surface layer nine inches thick. The subsoil from 9-10 inches is strong brown cherty silty clay loam. From 10-32 inches is red cherty silty clay. And from 32-48 inches is red cherty clay.

TABLE A-1: ESTIMATED SOIL PROPERTIES FOR THE BODINE SERIES

Depth (in)	Clay (%)	Moist Bulk Density (g/cm <sup>3</sup> )	Permeability (in/hr)
0-8	8-20	1.35-1.55	2.0-6.0
0-8	8-20	1.35-1.55	2.0-6.0
0-8	8-20	1.35-1.55	2.0-6.0
8-24	20-35	1.40-1.60	2.0-6.0
24-72	23-38	1.40-1.60	2.0-6.0

The subsoil from 48-75 inches and the substratum from 75-90 inches is mottled red cherty clay. Slopes range from 2-60 percent. Select estimated soil properties for the Baxter Series are presented below in Table A-2.

TABLE A-2: ESTIMATED SOIL PROPERTIES FOR THE BAXTER SERIES

Depth (in)	Clay (%)	Moist Bulk Density (g/cm <sup>3</sup> )	Permeability (in/hr)
0-9	12-27	1.20-1.40	0.6-2.0
0-9	27-35	1.20-1.45	0.6-2.0
9-18	18-40	1.30-1.55	0.6-2.0
18-48	40-80	1.30-1.55	0.6-2.0
48-99	40-80	1.30-1.65	0.6-2.0

Ennis Series

The Ennis Series consists of deep, well drained, cherty moderately rapid permeable soils that formed in alluvial sediments derived from limestone, shale, sandstone, and loess. These soils are on bottom lands, in narrow strips along drainways and in depressions. Slopes range from 0 to 5 percent. Solum thickness ranges from 25 to more than 60 inches. Depth to bedrock ranges from 5 to 15 feet. Reaction ranges from very strongly acid through medium acid in each horizon. The content of fragments of chert, gravel, or cobblestones ranges from 15 percent to 35 percent by volume except the C horizon ranges up to 55 percent. The control section centers on 25 percent clay and ranges from 18 to 32 percent clay and sand coarser than very fine sand ranges from 8 to 45 percent. Ennis soils are well drained. Runoff is slow and permeability is moderately rapid. Flooding is rare to occasional for brief periods. Select soil properties for the Ennis Series are presented below in Table A-3.

TABLE A-3: ESTIMATED SOIL PROPERTIES FOR THE ENNIS SERIES

Depth (in)	Clay (%)	Moist Bulk Density (g/cm <sup>3</sup> )	Permeability (in/hr)
0-10	12-25	1.30-1.45	2.0-6.0
10-60	18-32	1.35-1.50	2.0-6.0

Mountview Series

The Mountview Series consists of very deep, well drained soils that formed in a 2 to 3 foot thick silty mantle, presumably loess, underlain by residuum of cherty or clayey limestone or by old

alluvium. Slopes range from 0 to 15 percent. The texture is silt loam or silty clay loam. The solum thickness and depth to bedrock exceeds 60 inches. The upper solum formed in a silty mantle, presumably loess, and commonly is about 30 inches thick but ranges from about 22 to 36 inches. This overlies a lower solum developed in residuum of cherty limestone or in old alluvium. The content of coarse fragments, commonly fragments of chert, ranges from 0 to about 5 percent in the upper 30 inches and from about 5 to 35 percent below that depth. Transition horizons have characteristics similar to adjacent horizons. Reaction of each horizon is very strongly acid or strongly acid, except the surface layer, which is less acid where limed. Montview soils are on gently to strongly sloping broad ridgetops and plateau-like areas. Montview soils are well drained. Runoff is medium and permeability is moderate. Select estimated soil properties for the Mountview Series are presented below in Table A-4.

TABLE A-4: ESTIMATED SOIL PROPERTIES FOR THE MOUNTVIEW SERIES			
Depth (in)	Clay (%)	Moist Bulk Density (g/cm <sup>3</sup> )	Permeability (in/hr)
0-8	15-25	1.35-1.55	0.6-2.0
8-30	20-35	1.40-1.60	0.6-2.0
30-78	35-55	1.30-1.50	0.6-2.0

#### Dickson Series

The Dickson Series consists of moderately well drained soils that in a representative profile have a 7 inch brown silt loam layer. The subsoil down to the fragipan at 25 inches is yellowish brown friable silt loam. The fragipan which extends from 25 to 45 inches is yellowish mottled and brittle silty clay loam. Below the fragipan is yellowish red firm clay. Slopes range from 0-12 percent. Select estimated soil properties for the Dickson Series are presented below in Table A-5.

TABLE A-5: ESTIMATED SOIL PROPERTIES FOR THE DICKSON SERIES			
Depth (in)	Clay (%)	Moist Bulk Density (g/cm <sup>3</sup> )	Permeability (in/hr)
0-7	15-28	1.30-1.55	0.6-2.0
7-25	18-30	1.35-1.55	0.6-2.0
25-48	20-32	1.55-1.75	0.06-0.6
45-65	38-50	1.35-1.55	0.2-0.6

Other series presented below may be found in localized Site areas. However, these soils series are less likely to be found at the Site but are found throughout Hickman County.

#### Humphreys Series

The Humphreys Series consists of deep, well drained soils on terraces. They formed in alluvium from cherty limestone, loess, and shale. Slopes range from 0 to 12 percent. The texture is cherty silt loam or cherty silty clay loam. Solum thickness ranges from about 30 to 60 inches. The soil ranges from very strongly acid to medium acid in each horizon, except the surface layer which is less acid where limed. The amount of fragments of chert or of gravel in the solum ranges from 15 percent to about 35 percent by volume. The amount of chert or gravel below the solum ranges to 50 percent. Humphreys soils most commonly are on low terraces but some areas are on footslopes. These soils formed in alluvium washed from soils developed mainly in cherty limestone residuum, but in many places it contains materials from loess and shale. They are well drained; runoff is medium or slow. Permeability is moderately rapid.

#### Biffle Series

The Biffle Series consists of moderately deep, somewhat excessively drained, cherty soils on uplands. They have formed in residuum from cherty limestone. Slopes range from 5 to 60 percent. Biffle soils are on sloping to very steep convex ridgetops and side slopes. The upper 10 to 20 inches of Biffle soils on the lower part of many of the side slopes have been influenced by soil creep or colluvium or both. The thickness of solum and depth to a paralithic contact range from 20 to 40 inches. Depth to hard bedrock is greater than 60 inches. Fragments of chert, dominantly 20 to 10 mm but ranging up to 2.5 cm, range from 15 to 35 percent by volume throughout the solum. Reaction is extremely acid to strongly acid. Biffle soils are characterized by moderately rapid permeability. Runoff is medium.

#### Sengtown Series

The Sengtown Series consists of deep, well drained, moderately permeable soils. They formed in residuum weathered from cherty limestone. They occur on sloping to steep uplands. Slopes are 5 to 35 percent. The texture is cherty silt loam. The thickness of solum and the depth to limestone bedrock are greater than 70 inches. The soils are strongly acid to medium acid, except the surface layer is less acid where limed. The chert content averages between 15 and 35 percent in the solum. Runoff is medium and permeability is moderate.

**APPENDIX B**

**Copy of the Proposed Plan Presented at the Public Meeting:  
July 25, 1991, Lyles, Tennessee**



## PROPOSED PLAN FACT SHEET -----



INTERIM REMEDIAL ACTION AT THE WRIGLEY CHARCOAL SITE
--

WRIGLEY, TENNESSEE -----

July 1991

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INTRODUCTION

The Proposed Plan\* for the Interim Remedial Action is issued to describe the alternatives that the U.S. Environmental Protection Agency (EPA) has considered for the cleanup of the Wrigley Charcoal National Priorities List (NPL) Site (the Site) located in Wrigley, Tennessee (see figure 1). This plan presents an evaluation of cleanup alternatives, including the alternative preferred by the EPA. The alternatives summarized are described in greater detail in the Remedial Investigation (RI) and Feasibility Study (FS) Reports which are available, with the Site's Administrative Record, at the information repository located at the Hickman County Public Library, 120 West Swan Street, Centerville, Tennessee.

The alternative EPA prefers represents a preliminary decision, subject to a public comment period. Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, requires publication of a notice and brief analysis of a Proposed Plan for site remediation. This plan provides background information on the Site, describes the remedial alternatives, provides the rationale for identification of the preferred alternatives, and outlines the role of the public in helping EPA make a final decision on a remedy.

EPA encourages the public to submit written comments on all alternatives presented in this plan. Public comments may result in selection of alternatives other than the ones preferred by EPA for the Site.

\* Highlighted terms are defined in the glossary at the end of this fact sheet

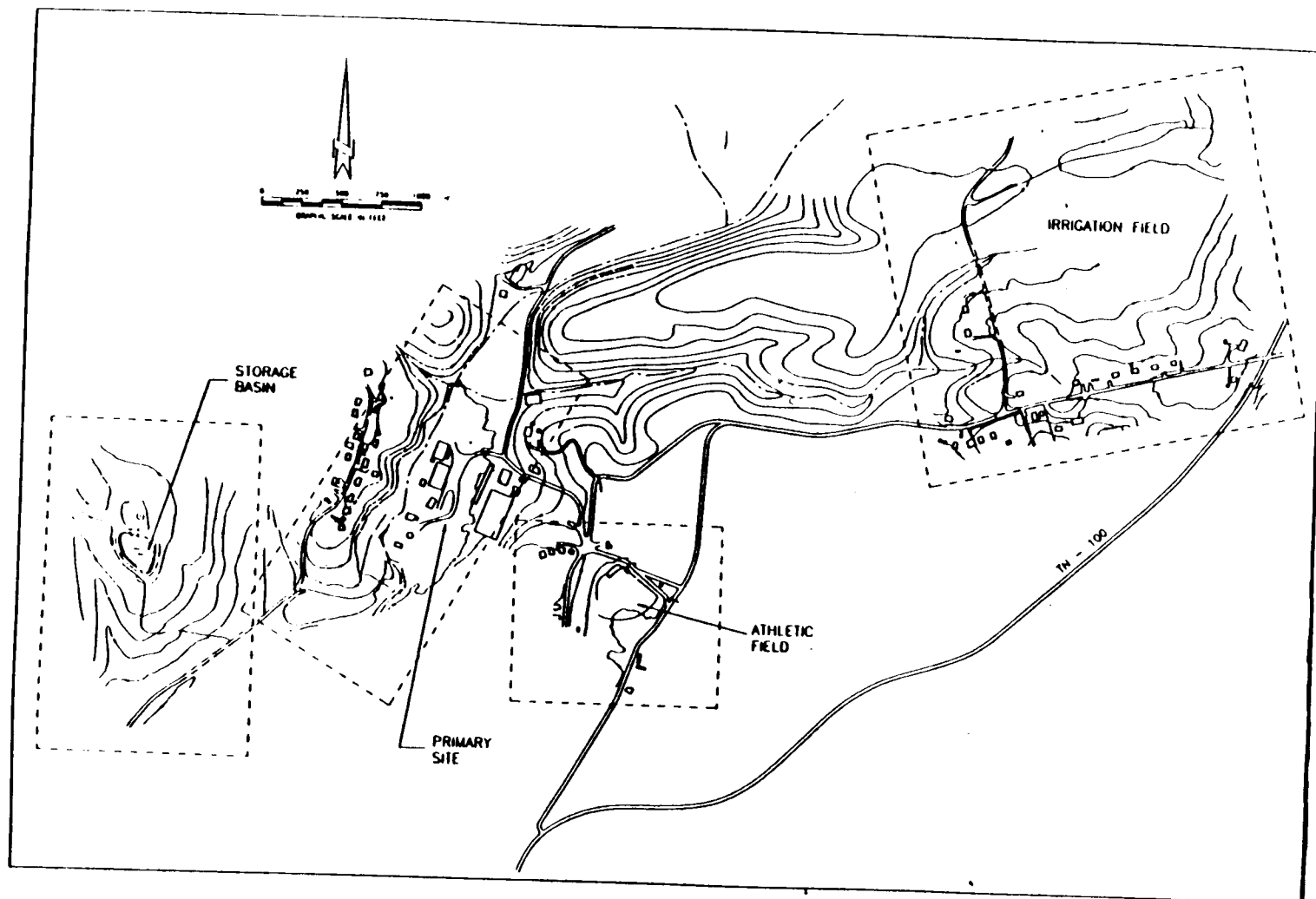


Figure 1) Map of the Wrigley Charcoal Site in Wrigley, Tennessee. The Site consists of four areas: 1) the Primary Site, 2) Storage Basin, 3) Athletic Field, and 4) Irrigation Field.

## SITE BACKGROUND

The Wrigley Charcoal Superfund Site, as depicted in Figure 1, consists of four distinct areas:

- o 1) Primary Site (thirty-five acres represents the extent of industrial activities in the valley);
- o 2) Storage Basin and Overflow Basin (three acres and an adjacent area called Clark Hollow that is approximately thirty acres);
- o 3) Irrigation Field (forty acres) including the abandoned wastewater holding area referred to as the lagoon;
- o 4) Athletic Field (three and one-half acres).

The Primary Site (Figure 2) was used for industrial operations such as producing iron, charcoal, and wood distillation products intermittently from 1881 to 1966. The businesses or individuals involved in the industrial operations during this time period no longer exist and previous investigations have indicated there are no Potentially Responsible Parties (PRPs) from this time period to fund cleanup operations. The Site was purchased in 1966 by the Tennessee Farmers Cooperative (TFC) who are the present owners of all four Site areas. Portions of the Primary Site were also utilized from 1978 to 1983 by R.T. Rivers for metals machining, storage of waste products obtained from other local industries, and recovery of copper from transformers. These additional operations were conducted primarily in three of the remaining on-site buildings; namely, the dryer building, the maintenance building, and the storage shed. Both past and present owners and operators may be considered PRPs. Previous activities left contaminants at several locations at the Primary Site that will be addressed during this effort. Proposed EPA efforts are intended to address the following:

- o The Grease-Pit (referred to as the Burn-Pit since various materials were burned there);
- o Waste debris piles in the southern portion of the Primary Site that contain crushed drums, tar-cubes, tars from open sumps at the Still House, and corrugated asbestos containing roofing materials (ACM) torn from Site buildings, now on the ground;
- o ACM on Primary Site buildings such as the Dryer Building, Maintenance Building, Storage Shed, and other small Site buildings;
- o The Spillway adjacent to the culvert in the southern portion of the Primary Site.

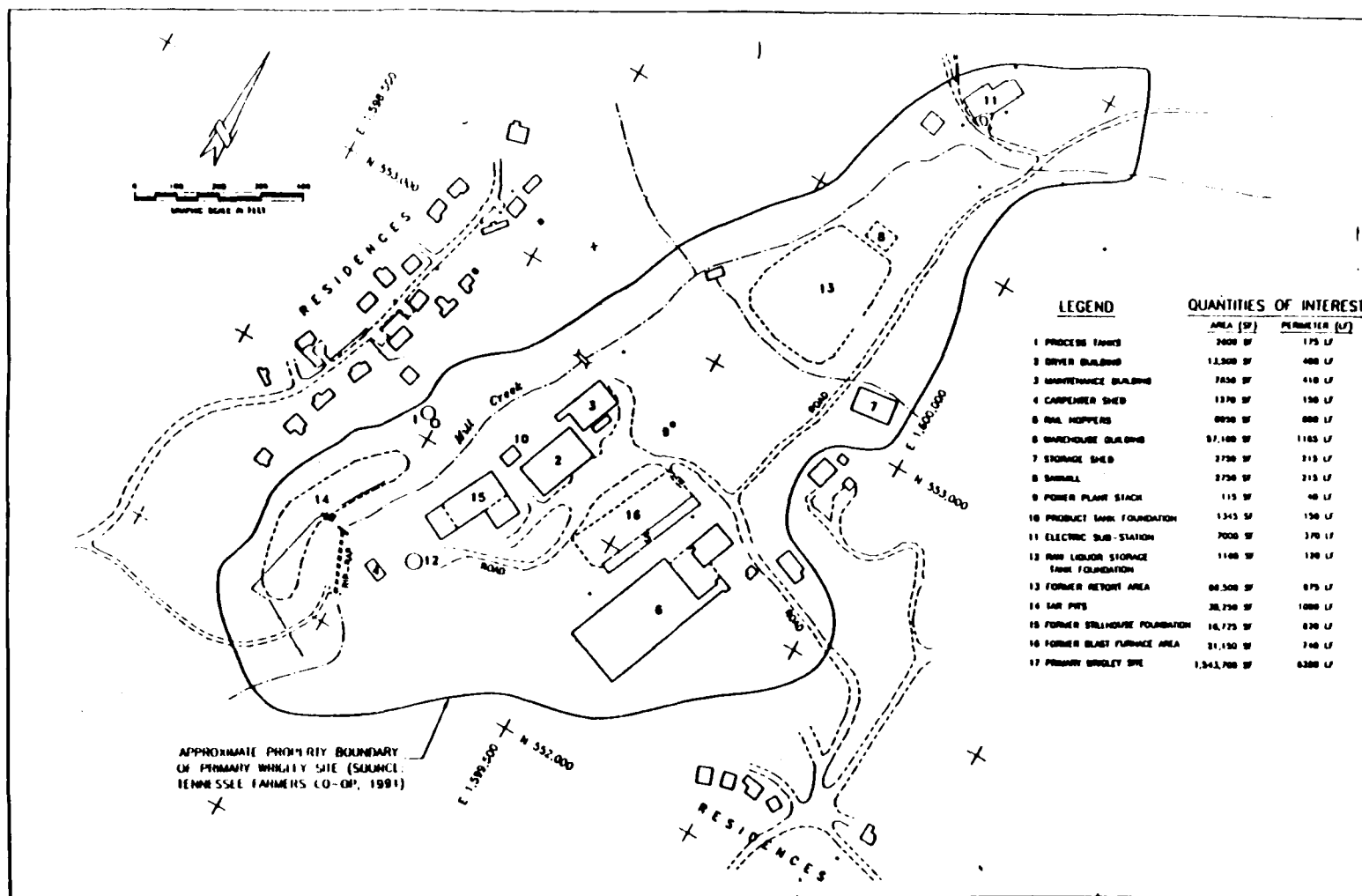


Figure 2) Map of the Primary Site showing building and activity locations.

The Storage Basin located 1400 feet west of the Primary Site was built in the mid to late 1950's to receive wastewaters from the Primary Sites' industrial operations. A relatively small amount of excess wastewater that was not eliminated through evaporation was likely spray irrigated over slag and a small field in order to biologically degrade phenol and organic compounds in the wastewater. These areas are adjacent to the Storage Basin in Clark Hollow. The Storage Basin, similar to the Primary Site contains contaminants in coal-tars that will be addressed in this response action. The following contaminated media are proposed to be addressed at the Storage Basin:

- o Waters contained at the Storage Basin;
- o The Storage Basin sediments.

The Irrigation Field (including the lagoon) located 3500 feet northeast of the Primary Site, was constructed in the late 1950s' and also received wastewaters for disposal from the Primary Site, but on a much larger scale than the Storage Basin. Wastewaters were sprayed over the field to biologically degrade phenol and organic carbon. Proposed EPA activities at the Irrigation Field will restrict access to the small lagoon by fencing the area.

The Athletic Field is located 800 feet southeast of the Primary Site in the eastern portion of the Wrigley community. The section of property where the field now resides was filled in with blast furnace slag and associated materials from 1938 to approximately 1950. The field has been in use since the early 1950's and is still regularly used by local residents.

#### EPA INVOLVEMENT

EPA became involved with the Wrigley Site as a result of the submittal in December of 1985 of a preliminary Hazard Ranking System score and request for emergency action by the Division of Superfund in Tennessee. EPA personnel visited the Site in January 1986, to assess the need for emergency action. EPA later recommended that the raw water intake at the Bon Aqua-Lyles Water District be relocated to avoid potential site affects. In addition, EPA recommended additional sampling to better define the extent and degree of contamination at the Site, including collection of water samples at the Bon Aqua-Lyles Water District intake. EPA subsequently performed a Site sampling effort which confirmed the presence of benzene, toluene, ethylbenzene, phenol, and 2,4-dimethylphenol in tars located on the Site.

The EPA then compiled detailed information about the Site and used a mathematical formula to rank the Site. This formula is called the Hazard Ranking System (HRS) and it generates a Hazard Ranking System score from 0 to 100. This score estimates the impact the

Site may have on the public health and the environment. Any Site that scores above 28.5 is placed on the National Priorities List (NPL) and is then eligible for federal assistance through the Superfund Program. The Wrigley Charcoal Site generated a HRS score of 36.14.

EPA's Removal Program initiated stabilization measures on the Site in the summer and fall of 1988. Measures undertaken included:

- o installation of two 48-inch culverts in the North Fork of Mill Creek and stabilization of the bank retaining the tar-pits using sheet piling;
- o solidification of the tar-pits' contents, and
- o reconstruction of the fencing (around the tar-pit area) previously removed to facilitate Site work (EPA, 1990).

As a result of the stabilization and construction activities at the Site, in October of 1988, 130 cubic yards of tar pit waste material was transported to the Allied-Signal Facility in Detroit, Michigan for incineration. Approximately \$2,000,000 was spent from the Federal Superfund Program for these removal activities.

On October 24, 1988, a Public Meeting was held at East Elementary School in Wrigley, to provide information and also to answer citizens' questions concerning removal activities at the Wrigley Site. Representatives from EPA and the State of Tennessee provided details of activities taken to date, pertinent analytical results and proposed activities to be completed in the future.

In 1989, EPA contracted Ebasco Services Incorporated to perform the RI/FS at the Wrigley Charcoal Site. Both the RI and FS were totally funded out of the federal Superfund Program. The following list presents the major events during the RI/FS:

- o August 1989: The initial Field Investigation began
- o September 1989 - September 1990: Ongoing sampling and analysis for the RI;
- o November 1990: EPA reviews contractor information and suggests taking additional samples at several Site locations as a precaution, and FS activities are initiated;
- o December 1990: EPA collected additional samples at the Athletic Field, in the yards of private residences in the East Neighborhood and the West Neighborhood. Initial RI sampling and analysis indicated elevated concentrations of metals, VOCs, and dibenzofuran at the Athletic Field in isolated locations outside the ballfield fence. Since dibenzofuran was identified during the initial sampling,

EPA took precautions by taking additional samples in the town of Wrigley and analyzed samples specifically for dioxin (no hazardous dioxins were found in the town or neighborhoods of Wrigley). All samples were taken to confirm and further determine the extent of contamination.

- o April 1991: EPA collected additional samples at the Primary Site and Storage Basin. Samples at the Primary Site were of transformer waste in several buildings, waste samples at the far southern portion of the Primary Site, and soil samples from the southern lawn of the mansion property (Walton residence) adjacent to the Primary Site. Additional samples were taken at the Storage Basin to further evaluate contamination. These samples were taken at the waterline and in the deeper sediments within the Basin.
- o June 1991: The Revised Final RI is completed
- o July 1991: The Revised Draft Final FS is completed. The Final FS with the public responses to EPA's Proposed Plan and Public Meeting (called the Responsiveness Summary) is expected to be completed in late August of 1991.

The Findings of the RI and the additional EPA sampling confirmed the presence of many contaminants at the Primary Site and three other Site areas. The present status of the Wrigley Site and contaminants identified are discussed in the following section.

#### RESULTS OF THE REMEDIAL INVESTIGATION

- 1) The Primary Site and the three other areas of Site related activity are now abandoned but past industrial activities left significant contamination at the Primary Site and Storage Basin with lesser amounts of contamination at the Athletic Field and Irrigation Field.

Primary Site contamination exists in abundant waste piles, soils, buildings, tar-pits, above ground storage tanks (called the process tanks), and stream sediments of the North Fork of Mill Creek, and shallow groundwater. These areas contain contaminants identified as phenol, 2,4-dimethylphenol, benzene, toluene, polycyclic aromatic hydrocarbons (PAHs), halocarbons, asbestos, traces of furans, dibenzofurans and dioxins, and an abundant variety of metals.

At the southern portion of the Primary Site is the drainage culvert and spillway built in 1988 to stabilize the tar-pits. This Emergency Response and Removal activity has been effective in reducing the potential release of large volumes of pit wastes into the North Fork of Mill

Creek. However, recent flooding in the North Fork Valley has washed away a portion of the spillway adjacent to culvert installed in 1988. The flood waters uncovered an old portion of the stream channel that was apparently coated with layers of coal-tars that likely overflowed or leaked in the past from the tar-pits into the creek.

- 2) Athletic Field soils were sampled during the RI in August, 1989, and analyses showed the presence of relatively low levels of lead, copper, zinc PAHs, toluene, and dibenzofuran in surface samples. However, one sample located on the south edge of the Athletic Field showed a relatively high level of lead. Therefore, EPA collected more samples in December of 1990 and that analysis confirmed the presence of the contaminants. This resampling effort detected contaminants generally below levels of concern. Due to continued concern about potential hot spots, it will be necessary to perform an additional (future) investigation to assure that no actions are needed at the Athletic Field.
- 3) Initial sampling and analyses of the surficial water and surface sediment at the Storage Basin indicated contaminants of concern were present but in lower concentrations than at the Primary Site. Additional samples taken within the basin (April 1991) indicated that the deeper sediments contain high levels of PAHs, VOCs, and metals.
- 4) Soils at the Irrigation Field were determined to have relatively low levels of contamination as a result of past wastewater disposal activities. Several metals are slightly elevated at the location of the abandoned lagoon which was located in the middle of the Irrigation Field, but at present they do not appear to pose a threat to human health and the environment. At present, our data from the Irrigation Field indicates there are no risks to the nearby residents at this location. However, since limited samples were taken from inside the actual lagoon, it will be necessary to further evaluate the area at a later date to confirm our data and support the conclusion that the entire lagoon area has only slightly elevated levels of metals. Future investigative activities will likely consist of soil samples, soil borings, and perhaps monitoring wells.
- 5) Information concerning the blast furnace slag indicates it is a source for some of the metals contamination identified at the Primary Site and other areas. Large quantities of slag were produced by the Wrigley Charcoal Plant and this waste was used to grade and fill the Athletic Field and portions of the town of Wrigley that surround the Athletic Field. Other construction activities that utilized slag



include: building elevated railroad spurs at the Primary Site, grade and fill activities in Clark Hollow for railroad spurs and wastewater treatment filters, and disposal activities in portions of the valley that produced slag piles that are as large as 40 feet high and 60 feet wide that extend intermittently for 2.5 miles.

#### SUMMARY OF SITE RISKS

During the RI/FS, an analysis was conducted to estimate the health or environmental problems that could result if the contamination at the Site was not remediated. This analysis, commonly referred to as a Baseline Risk Assessment, focused on the health effects that could result from long-term direct exposure to Site contaminants as a result of dermal contact with soil or water, ingestion of Site contaminants, ingestion of fish from the creek, or exposure to airborne contaminants.

The major cause of concern at the Primary Site is from oral and dermal exposures to Site wastes such as PAHs, heavy metals, volatile organic compounds, traces of furans/dioxins, and asbestos contained in waste piles and roofing. The current risks at the Primary Site are elevated for casual visitors that may subject themselves to repeated exposures of various Site contaminants.

Risks associated with ingestion of water or fish from the North Fork of Mill Creek are slightly elevated. In order to determine the full extent of contamination in the creek and the fish, further investigation will be needed. The fish in the creek were found to contain low levels of various metals and traces of furans/dioxins.

Present information indicates the risks associated with the slag are very low. However, it is likely that the slag was initially the source that produced many of the metals hot-spots at the Primary Site and other Site areas.

Samples taken directly within the ballfield in April 1991 indicated that low levels of metals, PAHs, and toluene are present. Three samples taken in 1989 immediately behind the outfield fence contained levels of contaminants that are slightly above acceptable levels, however, in order to expand upon that data, EPA sent a sampling team to the Site in December 1990. The team grided off the field and collected 11 composite samples at depths ranging from 0 - 18 inches. These samples revealed levels of metals within acceptable limits. Based upon the review of the additional sampling, the overall risks at the ballfield associated with ingestion or contact with soils appear to be low and no carcinogens were identified at this location.

The investigative work that has been completed to date does not indicate risks are elevated at the Irrigation Field. In order to

confirm this, additional samples will need to be taken.

For more detailed information on the risks associated with the Wrigley Charcoal Site, please refer to the Baseline Risk Assessment report (volume III) in the Remedial Investigation. This report along with other important Site documents are located at the information repository in Centerville, Tennessee.

#### SCOPE AND OBJECTIVES OF RESPONSE ACTION

Using the information gathered during the Remedial Investigation, Baseline Risk Assessment, and additional sampling information obtained by EPA during 1990 and 1991, EPA identified the following interim remedial action objectives for the cleanup of the Wrigley Charcoal Site:

- o Prevent direct contact with soil and waters at the Storage Basin and minimize potential contaminant migration;
- o Prevent direct contact or ingestion of the contaminated soil/solids in the Burn-Pit;
- o Prevent contact with contaminated debris such as transformer materials, tar cubes, asbestos materials, metallic waste materials, process tanks and associated contaminants and soils, and empty drums on the Primary Site;
- o Prevent further direct contact/ingestion and contamination of the site soil or groundwater through migration of contaminants from the surface waste debris on the Primary Site;
- o Prevent direct contact and ingestion of contaminated soil at the Irrigation Field lagoon.
- o Prevent inhalation of fibrous asbestos containing material contained in roofing on Primary Site buildings;
- o Remove coal-tar contaminated sediments in the Primary Site spillway.
- o Provide additional information on the groundwater quality at the Primary Site and soil quality in surficial soils behind the Athletic Field.

An Interim Action ROD (Operable Unit 1) for the Site is proposed to address the most imminent and substantial threats to human health and the environment by controlling exposure to contaminated materials and reducing the potential for migration of contaminants into surrounding soils, sediments, and surface water.

Factors that may determine the distribution of contamination are:

- 1) the amounts and types of contaminants contained at the Wrigley Charcoal Site and three other Site areas;
- 2) the complex geology (limestone terrain that exhibits numerous sinkholes) of the Site and adjacent area;
- 3) the complex near-surface and sub-surface groundwater flow within the steep-walled valley of the Primary Site; and
- 4) the complicated histories and impact of the three other Site areas.

In order to determine the final remedies needed to clean up the Wrigley Charcoal Site, these four factors were analyzed to determine the overall impacts of the Site and estimate the affect on potential receptors. It is presently estimated that the cleanup of the Wrigley Site can be performed in three (3) separate cleanup efforts called Operable Units. The first cleanup activity at the Wrigley Site will be an Interim Action proposed to remedy the most immediate threats to public health and the environment by controlling and removing various contaminated materials. The second operable unit as described in the FS would remediate wastes stabilized during the first operable unit at the Storage Basin and remediate the Primary Site tar-pits and soils. Operable Unit 3 is tentatively proposed to remediate any groundwater problems at the Primary Site.

All remedial alternatives under consideration are presented below. The FS Report presents a more thorough description and evaluation of these alternatives. The Administrative Record, which contains the FS Report along with other documents and correspondence that are used to decide the Site remedy(ies), is available for public review at the site information repository at the previously listed address.

#### SUMMARY OF ALTERNATIVES

The following summary lists the three (3) remedial alternatives under consideration for the actions to be taken at the Primary Wrigley Site. The FS Report contains a more detailed evaluation of each alternative.

- 1) No Action;
- 2) Limited Action: Fencing/Deed Restrictions (institutional controls), Site monitoring;
- 3) Institutional Controls plus: Soil capping with stabilization at Storage Basin; removal-offsite stabilization and disposal of the wastes in the Burn-Pit of the Maintenance Building; removal of Site surface wastes/debris piles; removal of the asbestos corrugated

roofing material on the Maintenance Building, Dryer Building, Storage Shed, and other small buildings with the tiles; removal of the process tanks and associated contaminants; removal of contaminated soils from the process tank area down the hill to the North Fork of Mill Creek; resampling of Primary Site monitoring wells; and additional soil samples behind the Athletic Field.

All but one (Alternative 1) of these alternatives involve restrictions on land/well use at the Site and upkeep of the fence and property. Monitoring of the Interim Action will not be necessary since none of the actions are considered to be final. Monitoring programs will be proposed implemented during later operable units to assess the effectiveness of the final remedy (ies).

#### ALTERNATIVE 1:

o No Action

Present Worth (PW) Cost: \$36,000 - 54,000\*  
PW Capital Cost: \$30,000 - 45,000 (institutional controls)  
O&M Costs: \$6,000 - 9,000 (Engineering controls & permitting fees)  
Years to Implement: 2 months to implement deed restrictions, restrictive covenants, or local ordinances restricting use of Site activities.

CERCLA requires that the "No Action" alternative be considered at every site. This alternative must be considered to serve as a basis for comparison of other alternatives. Under this alternative, no soil, sediment, groundwater or debris cleanup, containment or treatment would take place. The only reduction of contaminant levels would occur via natural processes such as dispersion or attenuation.

#### ALTERNATIVE 2:

- o Deed Restrictions and Site Access Restrictions (Institutional Controls) including: a 10-foot high chain-link fence topped with barbed wire will be installed around the Site areas of concern. Prior to installation, the areas of fencing will be cleared for access as required for proper installation. The fence would be equipped with a gate for controlled access. Warning signs and placards would be added and posted at 100-foot intervals along the fence. The areas to be fenced are as follows: 1) Primary Site (6,820 feet), Storage Basin (1,230 feet - including the Overflow Basin), and the former lagoon area of the

\* Cost ranges are presented due to uncertainty of exact volumes of contaminated media, and variable remediation costs.

Irrigation Field (575 feet). The total amount of fencing proposed for the three Wrigley Site areas is 8,085 linear feet.

Present Worth Cost: . \$184,441 - 278,662  
PW Capital Cost: . \$153,701 - 230,552 (fencing, & fees)  
PW O & M Cost: . \$30,740 - 46,110 (deed restrict., etc.)  
Years to Implement: 2 months

This alternative will insure that Site access is limited through installation of a security fence while also establishing controls that ensure proper maintenance of the Site through deed restrictions. This alternative does not improve residual risks above baseline conditions. Any reductions in toxicity, mobility, and volume are the same as those discussed for alternative 1. It is assumed that natural processes would eventually reduce most well established contaminants to safe levels.

### ALTERNATIVE 3

- o Institutional controls at the Primary Site, Storage Basin, and former lagoon of the Irrigation Field;
- o Stabilization/clay covering of wastes at the Storage Basin;
- o Removal/offsite stabilization and disposal of the wastes in the Burn-Pit of the Maintenance Building;
- o Removal of Site surface wastes/debris piles;
- o Removal of the asbestos corrugated roofing material on several Site buildings. These buildings are the Maintenance Building, Dryer Building, Storage Shed, and small building in front of the Maintenance Building.
- o Removal of the process tanks and associated contaminants. Tank wastes will be taken to an EPA-approved RCRA incinerator/landfill while the tanks will be decontaminated, and transported to an EPA-approved RCRA landfill for disposal.
- o Removal of contaminated soils from the Process Tanks down to the North Fork of Mill Creek. The area measures approximately 50x10 feet with an average thickness of 0.5 feet;
- o Exposed coal-tars and soils in the spillway should be excavated, and incinerated offsite. The spillway should be regraded and lined with larger riprap. These recently exposed materials have not been thoroughly evaluated, however, aerial photographs suggest that this is the same

material as in the tar-pits. A preliminary estimate of 150 yd<sup>3</sup> has been made and a rough estimate of \$50,000 to remove these contaminated sediments.

- \* Additional Sampling: Resampling of the Primary Site monitoring wells and additional soil samples should be taken from behind the Athletic Field to the garden.

Present Worth Cost:	. . . . .	\$1,032,773 - 1,549,162
PW Capital Cost:	. . . . .	\$786,217 - 1,179,326
PW O & M Cost:	. . . . .	\$196,555 - 294,833
Years to Implement: 6 months		

This alternative retains the institutional controls discussed for Alternative 2 and adds additional remedial measures that are designed to reduce and eliminate some of the most imminent and substantial dangers that reside at the Primary Site and Storage Basin. The wastes in the Burn-Pit will be excavated, stabilized, and transported to a EPA approved RCRA incinerator/landfill. The Burn-Pit would then be backfilled with clean fill and covered with a concrete slab. Stabilization of wastes followed by addition of a clay cover will reduce risks at the Storage Basin while preparing the wastes for elimination during a later operable unit. This cap is also designed to promote runoff and drainage, and prevent erosion. The cap will be properly graded and seeded to promote a thick vegetative cover. Remedial measures will also include the removal of Primary Site surface debris/waste piles.

Recyclable non-hazardous material will be separated out and nonrecyclable material will be disposed in an approved and permitted sanitary landfill. Resampling of the Primary Site monitoring wells is recommended in order to estimate annual fluctuations in contaminant and water levels. Finally, additional soil samples are recommended between the Athletic Field fence to the garden area. This is recommended because one sample behind the fence exhibited lead levels slightly above the threshold level of concern. This indicates that additional sampling is warranted. Operation and maintenance activities for the interim action at the Site is not anticipated to be needed for an extended time period because final remedies will replace many of the interim actions being proposed. However, costs are included as estimates for general upkeep and maintenance of fencing, stabilized areas, etc., until final remedial measures can be undertaken during operable units 2 and 3.

This alternative achieves the CERCLA statutory preference for removal and/or treatment as a principle element of the remedy for the Burn-Pit, Primary Site waste/debris piles, Storage Basin wastes, process tanks/wastes, asbestos corrugated roofing materials on Primary Site structures, and contaminants in the spillway.

## EVALUATION OF ALTERNATIVES

The EPA preferred alternative for the remediation of the Wrigley Charcoal Site is Alternative 3. This alternative appears to represent the overall best remedy for the Site. While Alternatives 1 and 2 do not achieve the CERCLA statutory preference (NCP Requirement) for reduction of toxicity, mobility, or volume through treatment, Alternative 3 does meet this requirement for contaminants in many of the Primary Site locations as well as the Storage Basin.

### ANALYSIS

#### Overall Protection of Human Health and the Environment

The only alternative that would sufficiently be protective of human health and the environment would be Alternative 3. Alternatives 1 and 2 are not protective because they do not address the most significant threats to human health and the environment at the Wrigley Charcoal Primary Site and Storage Basin. Alternative 3 is protective of human health and the environment since it remediates the: burn-pit wastes; Storage Basin wastes, Primary Site wastes/debris piles, process tanks, and asbestos corrugated roofing.

#### Compliance with Applicable or Relevant and Appropriate Requirements

Alternatives 1 and 2 would not meet State and Federal Applicable or Relevant and Appropriate Requirements (ARARs). Alternative 3 meets ARARs as applicable to excavation and transport of contaminated soil and waste debris. Although it is not required that interim remedial actions satisfy ARARs and guidance To Be Considered (TBCs), all requirements for off-site disposal of the materials removed during this action will be met. Resource Conservation and Recovery Act (RCRA) Subtitle C requirements are applicable when excavating and transporting the soil, and certain safety precautions specified in RCRA must be followed. These include standards and requirements for owners and operators of transport and disposal (TSD) facilities. This alternative also complies with the EPA's Groundwater Protection Strategy Policy (TBC requirements) by reducing the possible migration of contamination from the Burn-Pit soil/solids and Storage Basin sediments into the groundwater/surface water. Alternative 3 will also be in compliance with Land Disposal Requirements (LDRs).

#### Reduction of Toxicity, Mobility or Volume

Alternatives 1 and 2 do not involve the treatment of the previously described Site wastes so there will be no direct reduction in the toxicity, mobility, or volume of these materials. Alternative 3 does reduce toxicity, mobility, and volume of

previously described wastes at the Storage Basin and Primary Site. Also, as these wastes are removed or eliminated the potential for bioaccumulation is greatly reduced. However, these Alternatives do not reduce the toxicity, mobility, and volume of contaminants not addressed in Operable Unit 1 and none of the activities are considered to be the final remedy. Proposed activities for this interim action are intended to reduce present risks associated with the most imminent and substantial dangers to human health and the environment while preparing several of Site waste locations for future remedial activities that will eliminate the wastes.

#### Long-Term Effectiveness

Alternatives 1 and 2 do not provide any degree of long-term effectiveness and permanence concerning the majority of activities proposed for Operable Unit 1. Alternative 3 will remove Primary Site Burn-Pit wastes; waste debris piles; process tanks and associated wastes/soils; asbestos roofing; and asbestos contaminated soils will have long-term effectiveness by eliminating risks from these contaminants. Activities proposed to stabilize and cover wastes at the Storage Basin are not intended to be effective in the long-term. This activity is consistent with interim action policy and intended to prepare the wastes for elimination in the next operable unit. These activities will not provide any degree of long-term effectiveness for contaminants in the soils and the groundwater at the Primary Site not addressed in Operable Unit 1. Cleanup activities for these contaminants will be addressed in Operable Units 2 and 3.

#### Short-Term Effectiveness

There will be no short-term impacts connected with Alternatives 1 or 2. The interim action is intended to remove/reduce contaminant levels immediately at several Primary Site locations and the Storage Basin. Therefore, significant short-term effectiveness will result of the previously mentioned activities. Potential impacts associated with Alternative 3 could result from excavation and transport of contaminated soil and waste debris. Potential threats to the public result from direct contact with contaminated soil and/or inhalation of volatile vapors and contaminant dust. An approved Health and Safety Plan will be prepared and followed to minimize the potential threats to workers performing the excavation. Short-term impacts to the North Fork of Mill Creek should be minimal since precautions will be taken during spillway excavation to divert any water away from the excavated area until the work has been completed. Short-term impacts to the North Fork will also be minimal during process tank/waste/soil removal as precautions will be taken to prevent contaminants from entering the creek.



### Implementability

The implementability of an alternative is based on technical feasibility, administrative feasibility and availability of services and materials. All of the Alternatives are readily implementable. Alternatives 1 and 2 will require either No Action or minor institutional activities that will require no activities that would create a implementation problem. For Alternative 3 there will be little or no implementation difficulties since only standard construction techniques will be utilized for excavation and transportation of wastes in the Burn-Pit, and stabilization and covering of wastes at the Storage Basin.

### Cost

Alternative 1 contains a present worth cost ranging from \$36,000 - 54,000. The present worth value represents the total cost of activities including remediation, expressed in today's dollars. The estimated present worth cost for Alternative 2 ranges from \$184,441 to \$278,662. Alternative 3 has a present worth cost ranging from \$1,032,773 to \$1,549,162. Additional areas of contamination that are not addressed during Operable Unit 1 activities are proposed for Operable Unit 2 & 3 and the costs of these activities will be determined after additional information or a supplemental RI/FS is obtained.

### State Acceptance

The State of Tennessee has assisted EPA in the review of reports and site evaluations. The State has reviewed and tentatively agrees with the activities proposed as Operable Unit 1 for the Wrigley Charcoal Site and is awaiting public comment before final concurrence.

### Community Acceptance

Community acceptance of the various alternatives will be evaluated during the public comment period. The public comments will be summarized and included in a responsiveness summary that will be a portion of the ROD for the Wrigley Charcoal Site.

### U.S. EPA's Proposed Plan for Remedial Action

Based on the RI/FS, the U.S. EPA has identified Alternative 3 as the best course of action for the first step of cleanup activities to be taken at the Wrigley Charcoal Site. This first phase of cleanup activities (Operable Unit 1) is designed to lay the ground work for future remedial activities to take place during Operable Units 2 and 3.

U.S. EPA's preferred course of action includes:

- o Removal/offsite incineration/stabilization of the wastes in

the Burn-Pit of the Maintenance Building;

- o Stabilization of Storage Basin coal-tar wastes found in deep sediments in order to minimize migration of contaminants without compromising any potentially applicable remedial actions in the future. Following stabilization, a thin covering of soil and clay will be applied over the stabilized wastes that will prevent infiltration of water and will promote drainage. The entire cover will be graded and seeded to promote a thick cover of grass and the entire Storage Basin area will be fenced (including the Overflow Basin).
- o Removal of Site surface wastes/debris piles that include tar-cubes, pieces of corrugated asbestos roofing, transformer materials, crushed drums, and other miscellaneous metallic debris and tar waste;
- o Removal of the asbestos corrugated roofing material on several Site buildings. These buildings are the Maintenance Building, Dryer Building, Storage Shed, and small building in front of the Maintenance Building;
- o Removal of the process tanks and associated 30 yd<sup>3</sup> of contaminants. Tank wastes will be taken to an EPA-approved RCRA incinerator/landfill while the tanks will be decontaminated, and transported to an EPA-approved RCRA landfill for disposal.
- o Removal of contaminated soils from the Process Tanks down to the North Fork of Mill Creek. The area measures approximately 50x10 feet with an average thickness of 0.5 feet;
- o Exposed coal-tars and soils in the spillway should be excavated, and incinerated offsite. The spillway should be regraded and lined with larger riprap.
- o Deed restrictions and Site access controls (fencing & placards) at the Primary Site, Storage Basin, and Irrigation Field Lagoon;
  - \* Resampling of the monitoring wells at the Primary Site will provide an assessment of the groundwater quality, and soil sampling behind the Athletic Field to the garden area will assess the need any future activities in this area.

The EPA estimates that it will take 6 months to implement the

recommended alternative (number 3) as Operable Unit 1 at a cost of \$1,032,773 to \$1,549,162.

The preferred alternative for this First Operable Unit is recommended to address contaminants and control site access at the Primary Site, Storage Basin, and Irrigation Field lagoon. The EPA selected alternative to be implemented as Operable Unit 1 will also reduce the risks at the previously described locations and prepare the Primary Site and Storage Basin for future (perceived) remedial activities in Operable Units 2 and 3. EPA also recommends monitoring wells at the Primary Site be resampled and soil samples be taken from the behind the Athletic Field to the garden near the trailers.

#### Summary of Statutory Findings

In summary, the preferred alternative represents the best balance among the criteria used to evaluate remedies. Based on the information currently available, EPA has determined that the preferred alternative would be protective of human health and the environment, would satisfy the requirements of all ARARs, and would be cost effective.

#### THE COMMUNITY'S ROLE IN THE SELECTION PROCESS

EPA solicits input from the community on the cleanup methods proposed for each Superfund response action. EPA has set a public comment period from July 15, through August 15, 1991 to encourage public participation in the selection process. The comment period includes a public meeting at which EPA will present results of the RI/FS Reports and the Proposed Plan, will answer questions, and receive both oral and written comments. The public meeting is scheduled for 7:30 pm, July 25, 1991, and will be held at the East Elementary School near Wrigley, Tennessee. Comments will be summarized and responses provided in the Responsiveness Summary section of the Record of Decision (ROD). The ROD is the document that presents EPA's final selection for cleanup.

During the comment period, interested members of the community may submit written comments to Ms. Suzanne Durham, the EPA Community Relations Coordinator for the Wrigley Charcoal Site at the address listed later in this fact sheet. Comments must be postmarked no later than August 15, 1991.

EPA is soliciting public comments about the most acceptable way to clean up the Wrigley Charcoal Site. The Proposed Plan and the RI/FS Reports have been placed in the information repository and Administrative Record for the Site. The Administrative Record includes all documents such as work plans, data analysis, public comments, transcripts, and other relevant material used in developing the remedial alternatives for the Wrigley Charcoal Site. These documents are available for public review and copying at the following locations:

Hickman County Public Library  
120 West Swan Street  
Centerville, TN 37033  
(615) 729-5130  
Librarian/Director: Mary Pruett  
HOURS OF OPERATION: Mon: 11-7, Tue-Wed-Fri-Sat: 9:5  
Thur: 8-12, Sunday & Holidays Closed  
Copy Machine Available: 15 cents per copy

Records Center  
U.S. EPA - Region IV  
345 Courtland Street, N.E.  
Atlanta, Georgia 30365  
(404) 347-0506  
Contact: Mr. Tom Love  
HOURS OF OPERATION: Monday - Friday 8 - 5

#### LIST OF CONTACTS

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Sharon Chandler  
Technical Assistance Grants  
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345 Courtland Street, N.E.  
Atlanta, Georgia 30365  
(404) 347-2234

Robert Powell  
Tennessee Department of Environment and Conservation  
Environmental Field Office  
537 Brick Church Park Road  
Nashville, Tennessee 37243-1550  
(615) 741-5940

#### GLOSSARY OF EVALUATION CRITERIA

**Overall Protection of Human Health and the Environment:** addresses whether or not a remedy provides adequate protection and describes how risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

**Compliance with ARARs:** addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other environmental statutes and/or provide grounds for invoking a waiver.

**Long-term effectiveness and permanence:** refers to the ability to

maintain reliable protection of human health and the environment over time once cleanup goals have been met.

**Reduction of toxicity, mobility, or volume:** is the anticipated performance of the treatment technologies a remedy may employ.

**Short-term effectiveness:** involves the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

**Implementability:** is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

**Cost:** includes capital and operation and maintenance costs.

**State Acceptance:** indicates whether, based on its review of the RI/FS and Proposed Plan, the State concurs with, opposes, or has no comments on the preferred alternative.

**Community Acceptance:** will be assessed in the Record of Decision following a review of the public comments received on the RI/FS Report and the Proposed Plan.

## GLOSSARY

**Administrative Record:** A file which is maintained and contains all information used by the lead agency to make its decision on the selection of a response action under CERCLA. This file is required to be available for public review and a copy is to be established at or near the site, usually at an information repository. A duplicate file is maintained in a central location, such as a regional EPA and/or state office.

**ARARs:** Applicable or Relevant and Appropriate Requirements. Refers to the Federal and State requirements that a remedy that EPA selects must attain. These requirements may vary from site to site.

**Baseline Risk Assessment:** An assessment which provides an evaluation of the potential threat to human health and the environment in the absence of remedial action.

**Bioaccumulated:** The escalating accumulation of toxic materials that occurs within the food chain of an ecosystem.

**Carcinogen:** Any substance that produces cancer.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):** A Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act. The Acts created a special tax that goes into a trust fund, commonly known as Superfund,

to investigate and cleanup abandoned or uncontrolled hazardous waste sites. Under the program, EPA can either pay for site cleanup when the responsible parties cannot be located or are unwilling or unable to perform the work, or take legal action to force responsible parties to cleanup the site or reimburse EPA the cost of the cleanup.

**Groundwater:** Underground water that fills pores in soils or openings in rocks to the point of saturation. Unlike surface water, groundwater cannot clean itself by exposure to sun or rapid aeration. Groundwater is often used as a source of drinking water via municipal or domestic wells.

**Information Repository:** A file containing current information, technical reports and reference documents regarding a Superfund NPL site. The information repository is usually located in a public building that is convenient for local residents, such as a public school, city hall, or a library. As the site proceeds through the Superfund Remedial Process, the file at the information repository is continually updated.

**Institutional Controls:** Legal, non-engineering measures to prevent human exposure to contaminants at hazardous waste sites.

**Interim Action:** An interim action is limited in scope and only addresses areas/media that will be followed by a final or later operable unit ROD. Reasons for taking an interim action could include the need to: 1) take quick action to protect human health and the environment from an imminent threat in the short term, while a final remedial solution is being developed; or 2) institute temporary measures to stabilize the site or operable unit and/or prevent further migration or degradation.

**Monitoring:** The continued collection of information about the environment that helps gauge the effectiveness of a cleanup action.

**Operable Unit:** A term used to describe a separate action undertaken as part of a Superfund site cleanup. Operable units may address geographical portions of a site, specific site problems (such as contaminated groundwater), or interim actions that will be followed by subsequent actions which fully address the scope of the problem.

**Operation and Maintenance:** Activities conducted at a site after a Superfund site action is completed to ensure that the action is effective and operating properly. In the case of the Interim Action, long-term operation and maintenance activities will not be needed since final remedies included in later operable units are proposed to remove many of the contaminants or problems.

**Organic Compounds:** One of two large classes of chemical compounds: organic and inorganic. The term "organic" is used to describe substances that are primarily composed of carbon, hydrogen, and oxygen. Examples of organic compounds include petroleum products such as solvents, oils, and pesticides.

**Phenols:** Organic compounds that are byproducts of wood distillation, petroleum refining, tanning, and resin manufacturing. They are a major constituent in coal-tars.

**Polycyclic Aromatic Hydrocarbons (PAHs):** A group of organic compounds characterized by a fused ring-like molecular structure. PAHs are common environmental pollutants that are produced by the incomplete combustion of organic materials. These compounds occur in the exhaust from motor vehicles and other gasoline and diesel engines, the emissions from coal-, oil-, and wood-burning stoves and furnaces, cigarette smoke, and charcoal-broiled foods.

**Potential Responsible Parties (PRPs):** This may be an individual, a company or a group of companies who may have contributed to the hazardous conditions at a site. These parties may be held liable for costs of the remedial activities by the EPA through CERCLA laws.

**Preferred Alternative:** After evaluating and examining the various remedial alternatives, EPA selects the best alternative based on relevant cost and non-cost factors.

**Proposed Plan:** A fact sheet summarizing EPA's preferred cleanup strategy for an NPL site, the rationale for the preference and reviews of the alternatives presented in the detailed analysis of the remedial investigation/feasibility study.

**Resource Conservation and Recovery Act (RCRA):** A Federal law that established a regulatory system to track hazardous substances from the time of generation to disposal. The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing of hazardous substances. RCRA is designed to prevent new, uncontrolled hazardous waste sites.

**Record of Decision (ROD):** A public document that explains which cleanup alternative will be used at a National Priorities List site and the reasons for choosing that cleanup alternative over other possibilities.

**Remedial Alternatives:** A list of the most technologically feasible alternatives for a remedial strategy.

**Remedial Investigation and Feasibility Study (RI/FS):** Two distinct but related studies, normally conducted together, intended to define the nature and extent of contamination at a site (RI) and to evaluate appropriate, site-specific remedies necessary to achieve final cleanup at the site (FS).

**Responsiveness Summary:** A summary of oral and/or written public comments received by EPA during a comment period.

**Riprap:** Assorted sizes of concrete or stone blocks used to reduce the erosion by water in the stream or spillway.

Superfund Amendments and Reauthorization Act (SARA): Modifications to CERCLA Enacted on October 17, 1986.

**TECHNICAL ASSISTANCE GRANTS (TAGS):** As part of the Superfund program, EPA provides communities with an opportunity to apply for Technical Assistance Grants (TAG's). These grants of up to \$50,000 are designed to enable community groups to hire a technical advisor or consultant to assist them in interpreting and commenting on site findings and the planned cleanup. Citizens who are interested in the TAG program may obtain an application package by calling or writing to the appropriate address listed above.

A group of organized citizens known as "Hickman County Against Lethal Trash (HALT)" expressed interest in obtaining a TAG. EPA submitted a TAG Guidance Manual and an application to the group in September 1989.

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**MAILING LIST ADDITIONS**

Complete the address form below and mail to the address provided to receive information regarding the Wrigley Charcoal Superfund Site.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City, State, ZIP \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Phone \_\_\_\_\_

Suzanne Durham - Community Relations Coordinator  
U.S. Environmental Protection Agency - Region IV  
345 Courtland St., N.E.  
Atlanta, GA 30365



**APPENDIX C**

**Sign-In Sheets From the Public Meeting:  
July 25, 1991, Lyles, Tennessee**

WRIGLEY CHARCOAL SUPERFUND SITE  
INTERIM ACTION ROD MEETING  
SIGN-IN SHEET

July 25, 1991

NAME/ADDRESS/TELEPHONE NUMBER	REPRESENTING	ADD TO MAILING LIST (PLEASE CHECK)	HOW DID YOU HEAR OF THIS MEETING?
Bob Powell - Div. of Superfund State of TN 537 Brick church Park Dr Nashville, TN 37243-1150	TN Div. of Superfund		
BOBBY C. CUNNINGHAM 246 Willow Ln Nashville, TN 37211 833-4683	TN FARMILAS CC-CP	✓	
Sibyl H Head R1 Box 293 CC Lyles, TN 37098			
David Smith 26 W. M.L. King Drive Cincinnati Ohio 45208	USEPA/REEL		
Arnold F. Bishop P.O. Box 677 Columbia Tenn 38402	Pop. over	✓	Popover
Blenn Adams	EPA Atlanta		
Ron Dickson Rt #3 Box 161 Parsons, Tenn 38363	Operator Engineers	✓	Mailing List.
Andrew and Janie Sullivan Rt #1 Box 243a Lyles TN 37098			Mailing List Hickman Co. Times
WALLACE BRASEL Rt #1 Box #840 Bon Aqua, TN 37025 70-4332		✓	

WRIGLEY CHARCOAL SUPERFUND SITE  
INTERIM ACTION ROD MEETING  
SIGN-IN SHEET

July 25, 1991

NAME/ADDRESS/TELEPHONE NUMBER	REPRESENTING	ADD TO MAILING LIST? (PLEASE CHECK)	HOW DID YOU HEAR OF THIS MEETING?
BRENDA APPLE TDSF			
Suzanne Rubini	TDSF		
	U.S. EPA		
RR 2 Box 23 Lyles TN. D. Allen Dickey			
Bob Davis	C.E.		Newspaper
Emery Sullivan			
901 Woodhaven Rd Lyles, In. 37098 Blenda Indueef			
Tom Edwards	Halt		

WRIGLEY CHARCOAL SUPERFUND SITE  
INTERIM ACTION ROD MEETING  
SIGN-IN SHEET

July 25, 1991

NAME/ADDRESS/TELEPHONE NUMBER	REPRESENTING	ADD TO MAILING LIST? (PLEASE CHECK)	HOW DID YOU HEAR OF THIS MEETING?
Daniel Roop 537 Brick Church Park Dr. Nashville TN 37243-1550	State of Tenn.	✓	.
HARLOW TAYLOR USEPA, Region IV	USEPA	—	—
Douglas A. Bell USEPA, Region IV	USEPA	—	—
Suzanne Durham	EPA, Atlanta, Ga.	—	—
Rector Bishop	Lynchburg		
Gary Shockley	Tennessee Farmers Coop		
Phineas Hildebrandt			
Thomas E. Walton			
Rt. Carlene Rivers	Rt 2 - B 4285e Nunnally, Mo. 37137		

## **APPENDIX D**

### **Repository Information for the Wrigley Charcoal Site**

Wrigley Charcoal Site Respository

Hickman County Memorial Library

120 West Swan Street

Centerville, Tennessee 37033

(615) 729-5130

Librarian/Director: Mary Pruett

HOURS OF OPERATION: Mon: 11-7, Tue-wed-Fri-Sat: 9-5,

Thur: 8-12, Sunday & Holidays Closed

Copy Machine Available: 15 cents per copy

## **APPENDIX E**

**A Review of all potentially applicable ARARs for  
the Interim Action at the Wrigley Charcoal Site**

**CONTAMINANT-SPECIFIC ARARs AND TBCs  
WRIGLEY CHARCOAL SITE, WRIGLEY, TENNESSEE**

THE SAFE DRINKING WATER ACT (SDWA) promulgated National Primary Drinking Water Standard Maximum Contaminant Levels (MCLs) (40 CFR Part 141). MCLs are enforceable standards for contaminants in public drinking water supply system. They consider not only health factors, but also the economic and technical feasibility of removing a contaminant from a water supply system. EPA has also proposed Maximum Contaminant Level Goals (MCLGs) for several organic and inorganic compounds in drinking water. MCLGs are non-enforceable guidelines that do not consider the technical feasibility of contaminant removal. Secondary MCLs (40 CFR Part 143) are not enforceable, but are intended as guidelines for contaminants that may adversely affect the aesthetic quality of drinking water, such as taste, odor, color, and appearance, and may deter public acceptance of drinking water provided by public water systems. The SDWA MCLs are applicable to interim remedial actions for the Wrigley Charcoal Site. Secondary MCLs and MCLGs are TBCs for the site. Not directly applicable for interim action remedial alternatives for Operable Unit One.

EPA HEALTH ADVISORIES are non-enforceable guidelines (TBCs) developed by the EPA Office of Drinking Water for chemicals that may be intermittently encountered in public water supply systems. Health advisories are available for short-term, longer-term, and lifetime exposures for a 10-kg child and/or a 70-kg adult. Health advisories may be pertinent for interim remedial actions involving groundwater, especially for contaminants that are not regulated under the SDWA.

EPA AMBIENT WATER QUALITY CRITERIA (AWQC) are non-enforceable guidelines (TBCs) that were developed for pollutants in surface waters pursuant to Section 304(a)(1) of the Clean Water Act. Although AWQC are not legally enforceable, they have been used by many States to develop enforceable water quality standards. As a result, they should be considered as potential ARARs, as specified by CERCLA. AWQC are available for the protection of human health from exposure to contaminants in drinking water as well as from ingestion of aquatic biota and for the protection of freshwater and saltwater aquatic life. AWQC may be considered for actions that involve groundwater treatment and/or discharges to surface water. Not directly applicable for interim action remedial alternatives for Operable Unit One.

REFERENCE DOSE (RFD), as defined in IRIS (the EPA Integrated Risk Information System), is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a life-time. RFDs are developed for chronic and/or subchronic human exposure to hazardous chemicals and are based on the assumption that thresholds exist for certain toxic effects. The RFD is usually expressed as an acceptable dose (mg) per unit body weight (kg) per unit time (day). The RFD is derived by dividing the no-observed-adverse effect level (NOAEL) or the lowest-observed-adverse effect level (LOAEL) by an uncertainty factor (UF) times a modifying factor (MF). The use of uncertainty factors and modifying factors is discussed in the EPA, Office of Research and Development (ORD) Health Effects Assessment Summary Tables, First Quarter FY1989 (March 1989 - ORD [RD-689]) (EPA, 1989c). RFDs are TBCs for the Wrigley Charcoal Site.

CARCINOGENIC POTENCY FACTORS (CPF) are used for estimating the lifetime probability (assumed 70-year life-span) of human receptors contracting cancer as a result of exposure to known or suspected carcinogens. These factors are generally reported in units of kg-day/mg and are derived through an assumed low dosage linear relationship and an extrapolation from high to low-dose responses determined from human or animal studies. Cancer risk and CPFs are most commonly estimated through the use of a linearized multistage extrapolation model applied to animal bioassay results. The value used in reporting the slope factor is the upper 95 percent confidence limit. CPFs are TBCs for the Wrigley Charcoal Site.

THE CLEAN AIR ACT (CAA) consists of three programs for requirements that may be ARARs: National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50), National Emissions Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR Part 61), and New Source Performance Standards (NSPS) (40 CFR Part 60).

NESHAPs, which are emission standards for source types (i.e., industrial categories), that emit hazardous air pollutants, are not likely to be applicable or relevant and appropriate to the Wrigley Charcoal Site because they were developed for a specific source.

The EPA requires the attainment and maintenance of primary and secondary NAAQS, to protect public health and public welfare, respectively. These standards are not source-specific, but rather are national limitations on ambient air intended to protect public health and welfare. States are responsible for assuring compliance with the NAAQS. Requirements in an EPA-approved State Implementation Plan (SIP) for the implementation, maintenance and enforcement of NAAQS, are potential ARARs for the Wrigley Charcoal Site.

NSPS are established for new sources of air emissions to ensure that the new stationary sources reduce emissions to a minimum. These standards are for categories of stationary source that cause or contribute to air pollution that may endanger public health or welfare. Standards are based upon the best demonstrated technology (BDAT). NSPS are generally not applicable to CERCLA interim remedial actions, but may be relevant and appropriate to the Wrigley Charcoal Site if the pollutant(s) emitted and the technology employed during the cleanup action are sufficiently similar to the pollutant and source category regulated by an NSPS and are well-suited to the circumstances at the site.



**LOCATION-SPECIFIC ARARs AND TBCs  
WRIGLEY CHARCOAL SITE, WRIGLEY, TENNESSEE**

**FEDERAL PROTECTION OF WETLANDS EXECUTIVE ORDER (E.O. 11990)** provides for consideration of wetlands during interim remedial actions. This Executive Order is to be considered as implemented by EPA's August 6, 1985 Policy on Flood Plains and Wetlands Assessments for CERCLA Actions (CERCLA Compliance Policy). E.O. 11990 requires Federal agencies, in carrying out their responsibilities, to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. According to the published definition of national wetlands (40 CFR, Part 6, Appendix C), the only area of the Wrigley Charcoal Site that appears to qualify as a wetland area is in the vicinity of location LE-01 on the Primary Wrigley Site. For this reason, E.O. 11990 is applicable to actions taken at the Wrigley Charcoal Site.

**THE ENDANGERED SPECIES ACT OF 1978 (16 USC 1531) (40 CFR Part 502)** provides for consideration of the impacts on endangered and threatened species and their critical habitats. This act requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that any action authorized, funded or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat. A review of the available information indicates that no State or Federally-listed endangered or threatened species are known to permanently or seasonally reside in the area investigated.

**THE FISH AND WILDLIFE COORDINATION ACT (16 USC 661)** provides for consideration of the impacts on wetlands and protected habitats. The act requires that Federal action for the modification of any body of water must consult with the appropriate state agency exercising jurisdiction over wildlife resource, to conserve those resources. Consultation with the U.S. Fish and Wildlife Service is required because there are wetlands or critical habitats in the area of the Wrigley Charcoal Site. The Fish and Wildlife Coordination Act is applicable to actions taken at the site.

**THE FISH AND WILDLIFE IMPROVEMENT ACT OF 1978 (16 USC 742a) and The Fish and Wildlife Conservation Act of 1980 (16 USC 2901)** provide for consideration of the impacts on wetlands and protected habitats. Because there are wetlands or critical habitats in the area of the Wrigley Charcoal Site these acts are applicable to actions taken at the site.

**EPA'S GROUNDWATER PROTECTION STRATEGY (EPA, 1984)** policy is to protect groundwater for its highest present or potential beneficial use. The strategy designates three classes and several subclasses of water as follows:

**Class 1: Special Groundwater** - Waters that are highly vulnerable to contamination and are either irreplaceable sources of drinking water or ecologically vital habitats.

**Class 2: Current and Potential Sources of Drinking Water and Waters Having Other Beneficial Uses** - Waters that are currently used or that are potentially available.

**Subclass 2B** consists of groundwater units with total dissolved solids greater than 10,000 ppm. This water can be treated, and it is a potential source of drinking water and other beneficial uses.

**Class 3: Groundwater Not a Potential Source of Drinking Water and Limited Beneficial Use** - Class 3 groundwater units are further subdivided into two classes.

**Subclass 3A** includes groundwater units that are highly to intermediately interconnected to adjacent groundwater units of a higher class and/or surface waters. They may, as a result, be contributing to the degradation of the adjacent waters. They may be managed at a similar level as Class 2 groundwater, depending upon the potential for producing adverse effects on the quality of adjacent waters.

**Subclass 3B** is restricted to groundwater characterized by a low degree of interconnection to adjacent surface waters or other groundwater units of a higher class within the Classification Review Area. These groundwater are naturally isolated from sources of drinking waters in such a way that there is little potential for producing adverse effects in quality. They have low resource values outside of mining or waste disposal.

3

Groundwater beneath and adjacent to the Wrigley Charcoal Site is classified as a Class 2B aquifer. Not directly applicable for interim action remedial alternatives for Operable Unit One.

**ACTION-SPECIFIC ARARs AND TBCs  
WRIGLEY CHARCOAL SITE, WRIGLEY, TENNESSEE**

RCRA SUBTITLE C REGULATIONS regulate the treatment, storage, and disposal of hazardous waste from generation through ultimate disposal. In Tennessee, this program is administered by the Tennessee Department of Public Safety Division of Solid Waste Management. In general, RCRA Subtitle C requirements for the treatment, storage, or disposal of hazardous waste will be applicable if:

- The waste is a listed or characteristic waste under RCRA, and
- The waste was treated, stored, or disposed (as defined in 40 CFR 260.10) after the effective date of the RCRA requirements under consideration, or
- The activity at the CERCLA site constitutes current treatment, storage, or disposal as defined by RCRA.

RCRA SUBTITLE C REQUIREMENTS may be relevant and appropriate when the interim remedial action constitutes generation of a hazardous waste. On-site activities, mandated by a Federally-ordered Superfund cleanup, must comply with the substantive requirements (i.e., permits) of RCRA. All RCRA Subtitle C requirements must be met if the cleanup is not under Federal order and/or when the hazardous waste is moved off-site.

The following requirements included in the RCRA Subtitle C Regulations may pertain to the Wrigley Charcoal Site:

- Hazardous waste generator requirements (40 CFR Part 462).
- Transportation requirements (40 CFR Part 262).
- Standards for owners and operators of hazardous waste treatment, storage, and disposal facilities (40 CFR Part 264).
- Interim status standards for owners and operators of hazardous waste treatment, storage, and disposal facilities (40 CFR Part 265). A generator who treats, stores, or disposes of hazardous waste on-site must comply with RCRA Standards Applicable to Generators of Hazardous Waste (40 CFR Part 262). These standards include manifest requirements, pre-transport requirements (i.e., packaging, labeling, placarding), record-keeping and reporting. The standards are applicable to actions taken at the Wrigley Charcoal Site that constitute generation of a hazardous waste (i.e., movement of hazardous waste out of the area of contamination).

STANDARDS APPLICABLE TO TRANSPORTERS OF HAZARDOUS WASTE (40 CFR Part 263) are applicable to off-site transportation of hazardous waste from the Wrigley Charcoal Site. These regulations include requirements for compliance with the manifest and record-keeping systems and requirements for immediate action and cleanup of hazardous waste discharges (spills) during transportation.

STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT FACILITIES (TSDFs) (40 CFR Part 264) are applicable to interim remedial actions taken at the site and to offsite facilities receiving hazardous waste from the site for treatment and/or disposal and have a RCRA Part B permit if the site is not a Federally ordered CERCLA cleanup. Standards for TSDFs include requirements for preparedness and prevention, releases from solid waste management units (i.e., corrective action requirements), closure and post-closure care, tank systems, surface impoundments, waste piles, landfills, and incinerators.

**APPENDIX F**

**Acceptable Soil Concentrations (ASCs) for the Wrigley  
Charcoal Site**

# APPENDIX F

## ACCEPTABLE SOIL CONCENTRATIONS (ASCS\*) FOR THE WRIGLEY CHARCOAL SITE (PPM)

Combined Target Risk  $\leq 1.0E-5$

<u>CARCINOGENIC COMPOUNDS</u>	ASC <sup>(1)</sup> (PPM)	BACKGROUND	RME (PPM)
Dioxin TCDD TEQ ( $<10^{-6}$ )	5.22E-05	ND (2)	1.0E-3 (3)
Carcinogenic PAHs	8.17	ND (2)	(4)
<u>NON-CARCINOGENIC COMPOUNDS</u>			
Alkyl Benzenes	5,450	ND (2)	(4)
Barium	4,330	15-72	72
Copper	3,200	ND-38	38
Mercury	26.0	ND	0.1
Manganese	17,300	210-740	740
PAHs	34,600	(4)	(4)
Lead	1,000 (5)	8.6-17	17
Phenols	107	ND (2)	480
Antimony	34.6	ND	20
Zinc	17,300	34-340	340

\* Numbers in parentheses following ASCs are defined below:

- 1) Percentage confidence that a soil conc. less than this value will achieve the  $1E-05$  ( $1E-06$  for dioxin) target risk or a 1.20 hazard index using the stated exposure assumptions.
- 2) No organic contam. detected other than total organic carbon.
- 3) Based on currently accepted target concentration of 1000 ppt TEQ
- 4) Value varies with specific compounds in group
- 5) Recommended lead cleanup level for a light industrial site

## **APPENDIX G**

### **Letters of Concurrence**



STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

September 11, 1991

Mr. Douglas A. Bell, P. G.  
Remedial Project Manager  
North Superfund Remedial Branch  
USEPA - Region IV  
345 Courtland St., N.E.  
Atlanta, GA 30365

**RE: Wrigley Charcoal Superfund Site #41-504**

Dear Mr. Bell:

Personnel from the Division of Superfund of the Tennessee Department of Environment and Conservation have reviewed the above referenced document and find it acceptable to meet the desired objectives for the site. We concur that addressing the surface waste debris is the appropriate first step. This office agrees that once the site surface material is removed, the more important aspects of the site can be addressed such as the tar pit waste and the determination of groundwater conditions, etc.

The only comment concerning the Draft ROD is an explanation of some of the costs. An estimate of \$49,000 to collect and contain transformers in drums and stage them on site appears somewhat excessive. Also, we request a schedule of events when it is formulated. This Division feels that the study of the spillway redesign should proceed the actual field implementation, thereby allowing review of the design. It is desired that this office be allowed an appropriate review and comment period prior to final design.

If you have any further comments or questions concerning this response please call me at (615) 741-6287.

Sincerely yours,

A handwritten signature in cursive script, reading "J. David Randolph", is positioned above the typed name.

J. David Randolph  
Field Office Coordinator  
Division of Superfund



TENNESSEE DEPARTMENT OF CONSERVATION  
ENVIRONMENTAL FIELD OFFICE  
537 BRICK CHURCH PARK DRIVE  
NASHVILLE, TENNESSEE 37243-1550

September 25, 1991

Mr. Douglas A. Bell, P.G.  
Remedial Project Manager  
North Superfund Remedial Branch  
345 Courtland St. N.E.  
Atlanta, Georgia 30365

RE: Wrigley Charcoal Site #41-504

Subject: Acceptance of the Final Interim Action ROD

Dear Mr. Bell:

Personnel of the Tennessee Division of Superfund have reviewed the Final Interim Action ROD for the Wrigley Charcoal Site and find it acceptable to meet the present objectives for eliminating surficial concerns at the site. Thank you for your consideration and inclusion of our alternatives for interim action at various areas of the site. It is our desire to continue working with you to achieve a well thought out and effective cleanup of this site minimizing costs to all parties concerned.

If you have any further comments or questions concerning State of Tennessee involvement in this matter please contact me at (615) 741-6287 or Robert Powell, Project Manager, at (615) 741-5940.

Sincerely,

*Ralph M. Sinclair*  
Ralph M. Sinclair  
Director  
Division of Superfund