TES VIII WORK ASSIGNMENT NO. C04119
SITE INSPECTION PRIORITIZATION
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE
EPA ID NO. TND003382330
WASTELAN NO. 3569

21706

EPA REGION:	IV
CONTRACT NO.:	68-W9-0005; TES VIII
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REGION IV

by

DYNAMAC CORPORATION

September 11, 1992

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Site History and Description

Heywood-Wakefield Company (Heywood-Wakefield) is located on Chemwood Drive approximately 1 3/4 miles northwest of downtown Newport, Tennessee at 35° 59' 10" latitude north and 83° 12' 07" longitude west. The location is pictorially represented in Figure 1 of this report. The property occupies approximately 45 acres (Ref. 1). This parcel is bounded to the west by Sinking Creek, to the north and east by Chemwood Drive and to the south by the Newport Utilities Board (NUB) Wastewater Treatment Plant (Refs. 1; 3, pp. 4, 5; 4, p. 4).

The property is relatively flat and level, with the exception of a berm that separates it from Sinking Creek and the NUB property. This berm is approximately ten feet high to the west at Sinking Creek and approximately 4 to 5 feet high to the south, adjacent to the NUB property. Chemwood Drive is slightly elevated above the Heywood-Wakefield facility (the facility) (Ref. 3, p. 9), and there is a ditch alongside Chemwood Drive to the northeast of the facility. This ditch collects runoff from the facility (Ref. 3, p. 13). The runoff flows under the road and collects in a depression area located directly across the street from the facility (Ref. 4).

There are three buildings and one aboveground storage tank located on the unfenced property. The locations are illustrated in Figure 2. The majority of the property is grassed or heavily vegetated with the exception of the main parking lot on the south side of the facility and a warehouse building (Ref. 3, pp. 4, 5).

Heywood-Wakefield began operations at the Newport location in 1961 as a plating facility which manufactured miscellaneous metal furniture (Ref. 16, pp. 2, 3). Included in the production process was the recovery of the chromium from the spent plating solution. After the reusable metals precipitated out of the process solution, the remaining effluent was to be discharged under a National Pollutant Discharge Elimination System (NPDES) permit. Sludges not recycled into the plating process are classified as hazardous waste (Ref. 7, p. 1). Wastes generated by this production process included chromium, copper, lead, nickel and zinc (Ref. 6, p. 1). This waste was drummed and stored outside the plant until a sufficient quantity was generated to justify shipping offsite (Ref. 7, p. 1).

Manifests kept at the facility indicated that prior to hazardous waste regulations, the wastes produced from this plating process were disposed at the Cocke County Landfill. After the institution of hazardous waste regulations, the plating wastes were drummed and sent to SCA Services, an approved hazardous waste landfill in Pinewood, South Carolina (Ref. 7, p. 1).

As a prerequisite to obtaining a NPDES permit, Heywood-Wakefield contracted the Utilite Company to build a pretreatment system to prepare the plating solution wastes for discharge into Pigeon River (Ref. 8). The facility was issued a temporary NPDES permit on June 13, 1974, which allowed discharge to Sinking Creek. This permit expired June 1, 1977 (Ref. 9).

The available information pertaining to the permanent NPDES permit (No. TN0001392) is contradictory. The earliest issue date for the permanent permit as listed by the Tennessee Department of Environment and Conservation central office is May 15, 1979. The records at the state field office indicate that the permanent permit was issued October 29, 1980. Neither office has information pertaining to permitting during the interim period between the expiration of the temporary permit and the issuance of the permanent permit (Refs. 9; 10).

Heywood-Wakefield filed Part A of a RCRA permit on September 16, 1980, as a Treatment, Storage and Disposal facility and refiled a corrected RCRA Part A application on March 18, 1981 (Ref. 11, pp. 1-7). The facility filed bankruptcy in August 1982 (Ref. 13, p. 1). At that time, Heywood-Wakefield was classified as a large generator of hazardous wastes (Ref. 14).

A Preliminary Assessment was performed by the Tennessee Department of Health and Environment (TDH&E) on September 9, 1986. In this study it was noted that Heywood-Wakefield had ceased operations approximately 4 years previously and Eastern Plating had been operating at the Heywood-Wakefield location for over 2 years (Ref. 16).

Heywood-Wakefield is located in an industrial area. The property is presently owned by Chemwood Properties and Virco Manufacturing Corporation (Ref. 5, p. 5). The facility is currently occupied by four companies: Eastern Plating, Great Lakes Industries, Virco Manufacturing and Electronic Voice (Ref. 5, p. 4). No residences are located within 1/4 mile of the facility (Refs. 1; 5, p. 4).

Summary of Previous Investigations

On March 8, 1982, the Tennessee Division of Solid Waste Management (TDSWM) conducted an initial inspection of the facility to determine if Heywood-Wakefield was in compliance with the Tennessee Hazardous Waste Management Act. Violations cited during this investigation concerned records of waste received. There were no records of quantities of wastes received into the treatment system or placed in the storage area, nor was there a record of the location of the wastes within the facility. It was noted that production at the plant had almost stopped and the plant was likely to close down (Ref. 12).

On April 16, 1982, TDSWM conducted a followup inspection to witness any corrective action implemented by Heywood-Wakefield. Production at the plant had completely stopped and only a few office personnel were still employed. Heywood-Wakefield was cited with numerous violations. These violations included deficiencies in recordkeeping of manifests, contingency plans, spill incidents and discharges. The facility also failed to meet state requirements pertaining to self-inspections and inspection schedules, closure procedures and costs, personnel training programs and operating without proper containment measures. At the time, the facility had experienced a treatment tank overflow. TDSWM advised Heywood-Wakefield to clean up the spill, manage all of the contaminated materials as hazardous waste and reapply for a permit as a treatment and storage facility (Ref. 7, pp. 1 - 5).

On March 8, 1984, TDSWM conducted the closure inspection and oversaw the removal of the hazardous waste left by Heywood-Wakefield. During the clean up conducted by Chemical Waste Management a total of 67 drums belonging to the facility were collected for offsite disposal. Two of the drums were in very bad condition. The bottom of one drum fell out as it was moved. The spill was contained by the concrete floor. The removal crew immediately cleaned up and drummed the substance. All of the drums were taken to Chemical Waste Management's Emelle, Alabama, landfill (Ref. 15, pp. 1, 2, 3).

A Screening Site Inspection Phase I was conducted on August 28, 1989, by the NUS Corporation, EPA Region IV, Field Investigation Team (FIT). No samples were collected during this inspection (Ref. 17).

The NUS FIT conducted a site inspection for EPA on September 11-13, 1990. The objective of this inspection was to determine the contaminants present at the facility as well as the likelihood of release of these substances to the environment (Ref. 18, p. 1). Fourteen environmental samples were collected, including six surface soil, four subsurface soil and four sediment samples. The

location of these sampling stations is depicted in Figure 3. NUS FIT consistently encountered rock approximately 6 to 8 feet below land surface (bls) during boring operations. All samples were collected and analyzed under the Contract Laboratory Program and analyzed for all parameters in the Target Compound List and Target Analyte List. Background samples were designated for all media. Samples containing concentrations of contaminants greater than the minimum Quantitation Limit (MQL) or greater than three times the background are considered to be elevated. Elevated levels of metals were detected in various samples as follows: lead and zinc in surface soil sample HW-SS-05; chromium, copper, nickel and zinc in surface soil sample HW-SS-06; chromium, lead and nickel in sediment sample HW-SD-02 and zinc in sediment sample HW-SD-03 (Ref. 18, Appendix B, pp. 5, 6, 12, 13). These metals are attributable to the pretreatment sludges generated at the facility. Independent analysis of the facility sludge samples, conducted by Kenwill, Inc., on June 15, 1981, for Heywood-Wakefield include chromium, copper, nickel and zinc (Ref. 19).

On January 26, 1989, the TDH&E issued a Notice of Noncompliance concerning illegal discharges by Eastern Plating; Eastern Plating is the current operator of the plating processes at the former Heywood-Wakefield facility. On October 24, 1988, after an overflow of a pretreatment tank, TDH&E collected samples from the roadside ditch at the facility. Analysis of these samples indicated the presence of chromium, lead, nickel and zinc (Refs. 4; 20). Eastern Plating is classified as a large generator of hazardous wastes and does not have a NPDES permit (Refs. 21; 22).

Hydrogeology

The facility is located in the Valley and Ridge physiographic province, approximately 2 miles northwest of Newport, Tennessee (Ref. 1). It is located approximately 1/4 mile west of the Pigeon River, 1/4 mile east of Sinking Creek, 2 1/2 miles southeast of the French Broad River (Douglas Reservoir) and 3 miles north of the boundary of the Blue Ridge physiographic province (Refs. 1; 23, p. 132, plate 10). The facility lies on the flood plain of the Pigeon River and has little topographic variation (Ref. 1). Local elevations range from approximately 1,020 feet at the facility to over 2,400 feet above mean sea level (msl) on English Mountain approximately 4 miles to the southwest (Ref. 1).

The geology beneath the facility area consists of regolith underlain by, in descending stratigraphic order, the Sevier Shale and the Knox Dolomite (Ref. 23, pp. 52 - 55, Plate 10). The Sevier Shale is composed of silty to sandy calcareous shale with minor beds of sandstone, conglomerate and limestone and can be as much as 4,000 feet thick (Ref. 23, pp. 44, 45). This rock has an extensive

system of fractures which has created an enhanced secondary porosity and permeability (Ref. 23, pp. 44, 45). The Knox Dolomite, which underlies the Sevier Shale, is approximately 2,500 to 3,500 feet thick and consists of thick-bedded siliceous dolomite and interbedded limestone (Ref. 23, p. 36).

Groundwater is located in the pore spaces of residual soils and a zone of solutionally enlarged fractures in the underlying bedrock in the Valley and Ridge physiographic province of eastern Tennessee. These geologic units generally act as a single, unconfined aquifer of interconnected calcareous rock units and residual soils (Ref. 23, pp. 19-21, 36-39, 44, 45, 52-54). Fracture enlargement through the solution of the calcareous component of the Sevier Shale and carbonates of the Knox Dolomite has increased its porosity and permeability (Ref. 23, p. 44). Solutional openings in the Valley and Ridge carbonates are generally limited to the upper 300 feet of rock (Ref. 24, p. 3). Fractures in the Sevier Shale and Knox Dolomite are generally sealed by secondary calcite below this depth (Ref. 23, p. 44). Therefore, these units should be considered aquifers only within approximately 300 feet of the ground surface. The depth to the aquifer is approximately 20 to 40 feet bls (Ref. 23, p. 137, Plate 10).

The Sevier Shale and the Knox Dolomite are folded and faulted in the Newport area (Ref. 23, Plate 10). Numerous small faults related to the Great Smokey Fault thrust small "slices" of the Knox Dolomite to the surface approximately 1 mile south of the facility (Ref. 23, Plate 10).

The facility is located on a calcareous shale formation. Landforms associated with karstic activity, such as closed depressions, are shown on the topographic map of Newport to occur in a limited area approximately 1 1/2 miles south of the facility (Ref. 1). Although karst areas are common in the Valley and Ridge province of Tennessee, karstic activity at the facility location is presently not substantiated.

Discussion of Potential Receptors

Residents within 4 miles of the facility obtain potable water from private wells or from the NUB water system. The NUB system has a single intake located on the French Broad River near river mile no. 82. The location of the intake is upgradient of the facility and is not along the 15-mile surface water evaluation distance limit. This system is the only municipal supply in Cocke County (Refs. 1; 5, p. 3; 25). It is not a blended system (Ref. 26). Based upon a house count from the topographic map, excluding areas covered by NUB, it is

estimated that 813 people in the 4-mile area obtain potable water through private wells (Refs. 1; 27). This estimated population is distributed as follows:

Less than 1/4 mile from the facility.....0
1/4 to 1/2 mile from the facility.....0
1/2 to 1 mile from the facility.....0
1 to 2 miles from the facility.....104
2 to 3 miles from the facility.....258
3 to 4 miles from the facility.....451

The nearest confirmed private well user lives approximately 1 1/4 miles southwest of the facility (Ref. 28).

Surface water runoff from the facility drains to the roadside ditch at the northeast corner of the property (Ref. 3, p. 13). This runoff crosses under Chemwood Drive via a culvert pipe. On the north side of the road, there is a surficial depression which retains the initial runoff (Ref. 4). After this depression, runoff most likely travels approximately 1,200 feet on less than a 1 percent grade to Sinking Creek. From this point, Sinking Creek flows approximately 1,000 feet northeast and enters the Pigeon River. The Pigeon River flows northerly 3 1/5 miles to the French Broad River. The French Broad River flows approximately 2 miles further as a single river, before becoming part of Douglas Lake, a reservoir system. The 15-mile surface water migration pathway is completed in Douglas Lake at approximately river mile no. 62 (Ref. 1). There are no potable water intakes along the 15-mile surface water pathway (Ref. 25). The three waterways have been confirmed capable of sustaining a fish population and are accessible for fishing (Refs. 29; 30, pp. 1, 4). Douglas Lake and the French Broad River are state-designated recreational areas (Refs. 30, p. 1; 31). Several species that are considered endangered by the State of Tennessee Wildlife Resources Agency inhabit the French Broad River and Douglas Lake, namely the Epioblasma Torulosa Gubernaculum (Green-blossom), the Fusconala Cuneolus (Fine-rayed Pigtoe) and the Io Fluvialis (Spiny Riversnail). No federally designated endangered species inhabit the 15-mile surface water pathway nor are there any wetlands contiguous to this waterway (Refs. 1; 32, pp. 1 - 5).

The population distribution varies within the 4-mile radius of the facility. The most dense population is located approximately 1 1/2 miles to the southeast, within the Newport city limits. Another well-settled area is approximately 3 miles to the southwest, at the town of Edgemont. The remainder of the population is sparsely distributed among the mountainous terrain or in the river basins. The nearest residence is located approximately 1,500 feet to the west of the

facility (Ref. 1). The numerical representation of population distribution is estimated as follows:

Less than 1/4 mile from the facility	0
1/4 to 1/2 mile from facility	7
1/2 to 1 mile from facility	268
1 mile to 2 miles from facility	3,316
2 to 3 miles from the facility	7,760
3 to 4 miles from the facility	513

These figures were obtained by a combination of a map count of residences within 1 mile of the facility and the 1980 Graphical Exposure Modeling System (GEMS) data for the remainder of the 4-mile area. The number of houses tallied during the map count was multiplied by the standard conversion factor of 2.58 per household for Cocke County, Tennessee. This conversion factor was obtained from the U.S. Department of Commerce, Bureau of Census, Summary of Population and Housing Characteristics.

There are two day care centers in the Newport area located approximately 2 miles from the facility. Each center provides care for approximately 20 to 50 children. There are currently 90 employees at Eastern Plating, 125 at Great Lakes Industries and six or less at Virco Manufacturing (Ref. 2).

There are no federally designated endangered terrestrial species located within a 4-mile radius of the facility. The Myotis Grisescens (gray bat) is designated by the Tennessee Wildlife Resource Agency as a state endangered species. This bat has been sighted approximately 2 1/2 miles southeast of the facility (Ref. 32, pp. 4, 5).

Conclusion/Recommendation

Based upon the above information and enclosures, it is concluded that the site evaluation for this facility has been accomplished.

References

1. U.S. Geological Survey, 7.5 series Topographic Quadrangle Maps of Tennessee: Chestnut Hill 1961 (Photorevised 1980), Newport 1961, Rankin 1961 (Photorevised 1980), White Pine 1961, scale 1: 24,000.

2. Loretta Wild, Secretary, Newport Chamber of Commerce, telephone conversation with Richard J. Jardine, Dynamac Corporation, September 1, 1992. Subject: Worker and day care populations.

3. HALLIBURTON NUS Environmental Corporation Field Logbook No. F4-2521 for Heywood-Wakefield Company, TDD No. F4-9008-32. Documentation of Field Sampling Activity, September 11-13, 1990.

4. Burl Maupin, Environmental Engineer, Tennessee Department of Health and Environment Division of Water Pollution Control, telephone conversation with Richard J. Jardine, Dynamac Corporation, June 11, 1992. Subject: Runoff Route and Illegal Discharges from facility.

5. HALLIBURTON NUS Environmental Corporation Field Logbook No.F4-1555 for Heywood-Wakefield Company, TDD No. F4-8907-27. Documentation of Facility Reconnaissance, August 15-16, 1989.

6. E. W. Kuermmerle, Jr., Ph.D., Chief Chemist, Atek Labs, Inc.,letter to Walter O'Neil, Heywood-Wakefield Company, July 6, 1978. Subject: Physical and chemical characteristics of wastewater treatment sludge.

7. Hazardous Waste Inspection Report, Tennessee Department of Public Health, Division of Solid Waste Management for Heywood-Wakefield Company, Newport, Tennessee, filed by Rick Brown, Environmental Engineer, April 27, 1982.

8. Michael Mullaney and Tom McNealy, Eastern Plating Company, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, June 25, 1991. Subject: Wastewater treatment procedures for Heywood-Wakefield Company and Eastern Plating Company.

9. Abba Yavari, Central Office - Water Pollution Control, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, July 9, 1991. Subject: NPDES permits for Heywood-Wakefield Company.

10. Jesse Jones, Tennessee Department of Environment and Conservation, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, July 8, 1991. Subject: NPDES permit for Heywood-Wakefield Company.

11. EPA Hazardous Waste Permit Application (EPA Form 3510-1) for Heywood-Wakefield Company, filed by E. G. Chartier, Vice President, September 16, 1980.

12. Hazardous Waste Inspection Report, Tennessee Department of Public Health, Division of Solid Waste Management for Heywood-Wakefield Company, Newport, Tennessee, filed by Rick Brown, Environmental Engineer, inspection March 8, 1982.

13. Tennessee Department of Public Health, Request for Order Civil Penalty and Damage Assessment for Heywood-Wakefield Company, Case Number 82-344 before the Tennessee Solid Waste Disposal Control Board, undated.

14. Jennifer Powers, Division of Solid Waste Management, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, July 10, 1991. Subject: RCRA status of Heywood-Wakefield Company at the time of bankruptcy.

15. Hazardous Waste Inspection Report, Tennessee Department of Public Health, Division of Solid Waste Management for Heywood-Wakefield Company, Newport, Tennessee, filed by Rick Brown, Environmental Engineer, dated March 9, 1984.

16. Potential Hazardous Waste Site Preliminary Assessment, (EPA Form 2070-12), for Heywood-Wakefield Company, filed by Charles R. Rush, Tennessee Department of Health and Environment, September 9, 1986.

17. NUS Corporation, Screening Site Inspection Report Phase I, for Heywood-Wakefield Company, Newport, Cocke County, Tennessee. Prepared under TDD No. F4-8907-27 for the Waste Management Division, U.S. Environmental Protection Agency, August 1989.

18. HALLIBURTON NUS Environmental Corporation, Superfund Division, Site Inspection, Final Report, Heywood-Wakefield Company, Newport, Cocke County, Tennessee. Prepared under TDD No. F4-9008-32 for the Waste Management Division, U.S. Environmental Protection Agency, October 1991.

19. E. W. Kuemmerle, Jr., Ph. D., Chemist, Kenwill, Inc., letter to Walter O'Neil, Heywood-Wakefield Company, August 7, 1981. Subject: Certificate of analysis of electroplating sludge.

20. Earl C. Lemming, Manager, TDH&E Division of Water Pollution Control, letter to Tom McNealy, Plant Manager, Eastern Plating, January 26, 1989. Subject: Notice of noncompliance, illegal discharges.

21. Jennifer Powers, Division of Solid Waste Management, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, July 31, 1991. Subject: RCRA status of Eastern Plating Company.

22. Lisa Mullens, Tennessee Department of Environment and Conservation, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, June 21, 1991. Subject: NPDES permits for Heywood-Wakefield Company and Eastern Plating Company.

23. G. D. DeBuchanne and R. M. Richardson, Ground-water Resources of Eastern Tennessee, Bulletin 58 part 1 (Nashville, Tennessee: Tennessee Division of Geology, 1956), excerpt, 30 pages with attachment.

24. U.S. Geological Survey, Preliminary Delineation and Description of the Regional Aquifers of Tennessee--the East Tennessee Aquifer System, Water-Resources Investigations Open File Report 82-4091 (Nashville, Tennessee: 1986), excerpt, 4 pages.

25. Leonard Allen, Water Superintendent, Newport Utilities Board Water Department,telephone conversation with Richard Jardine, Dynamac Corporation, February 7, 1992. Subject: Water supply for residents of Newport, Tennessee.

26. Leonard Allen, Water Department Manager, Newport Utilities Board Water Department,telephone conversation with Richard Jardine, Dynamac Corporation, April 8, 1992. Subject: Water Distribution System - Cocke County, Tennessee.

27. Richard Jardine, Dynamac Corporation, project note with attachment to file for Heywood-Wakefield Company, July 2, 1992. Subject: Private well supply, Newport Utilities Board.

28. G. S. Carruthers, memorandum with attachment to SIU files (15508), May 16, 1988. Subject: Groundwater use in the vicinity of Wall Tube and Metal Site (1.5 miles from Heywood-Wakefield Site).

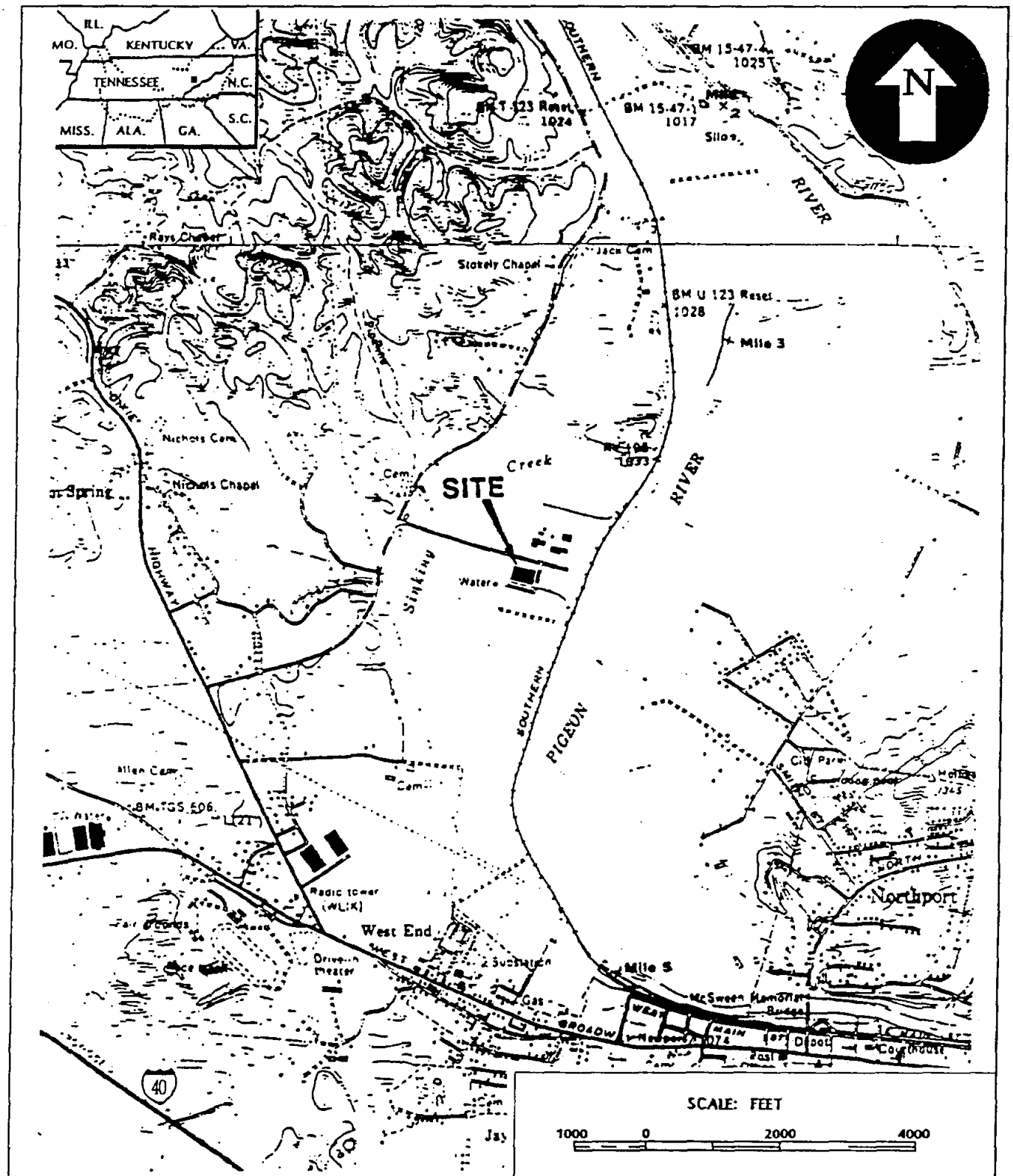
29. Shane Bunch, Wildlife Officer, Cocke County, Tennessee, telephone conversation with Charlotte Boulind, Dynamac Corporation, February 6, 1992. Subject: Fishing in Sinking Creek and Pigeon River.

30. Tennessee Water Quality Control Board, Department of Health & Environment, Tennessee's Water Quality Criteria and Stream Use Calculations for Interstate and Intrastate Streams (Nashville, Tennessee: February 1987).

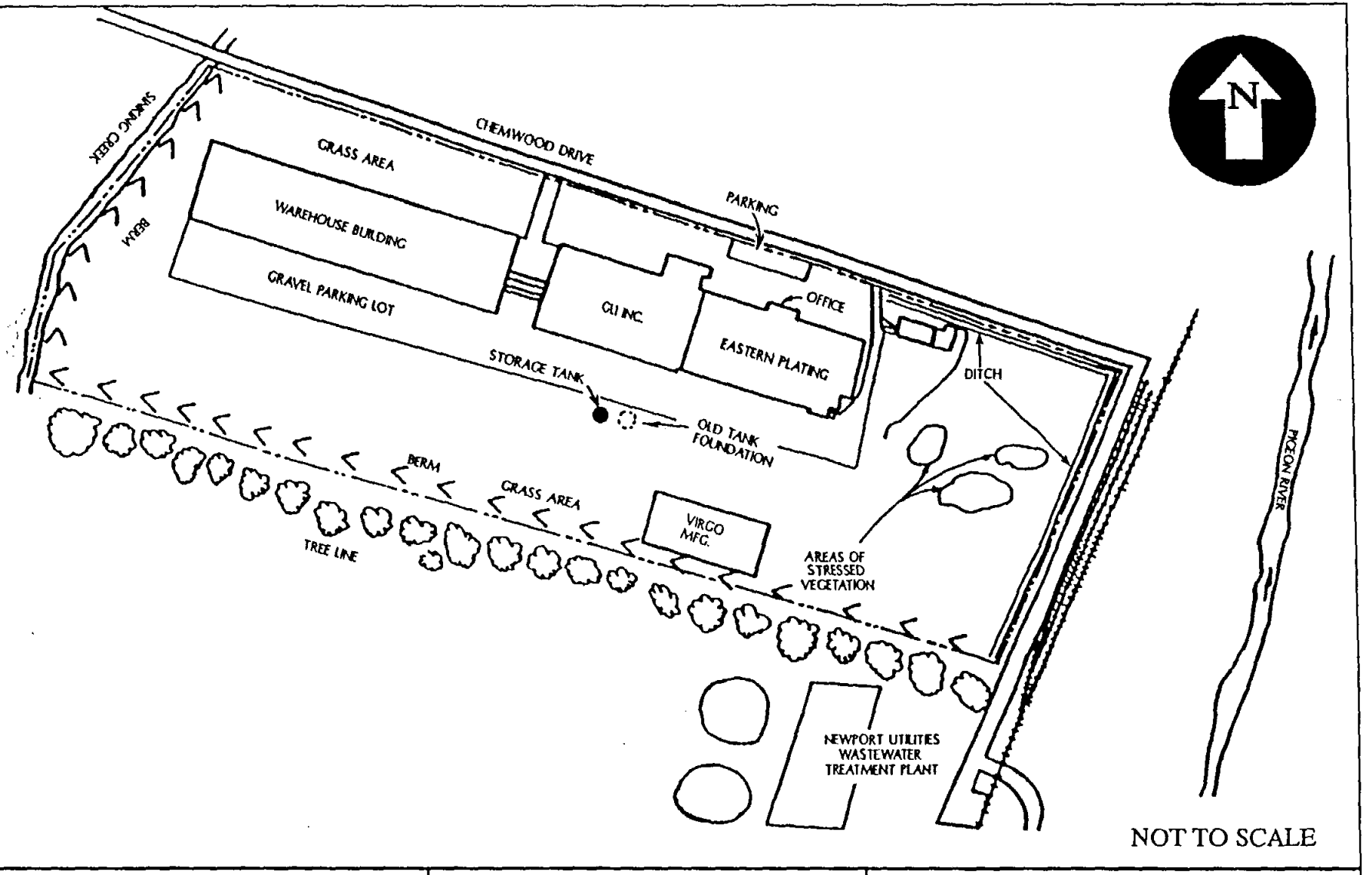
31. Wayne Schacher, Aquatic Habitat Biologist, Tennessee Wildlife Resources Agency, telephone conversation with Charlotte Boulind, Dynamac Corporation, February 6, 1992. Subject: Surface water use.

32. Tennessee Wildlife Resource Agency, "Definitions of State Status for the Official List of Tennessee's Rare Plants", with attachments, March 6, 1992.

33. U.S. Environmental Protection Agency, Graphical Exposure Modeling System (GEMS) Data Base, compiled from U.S. Bureau of the Census Data (1980).



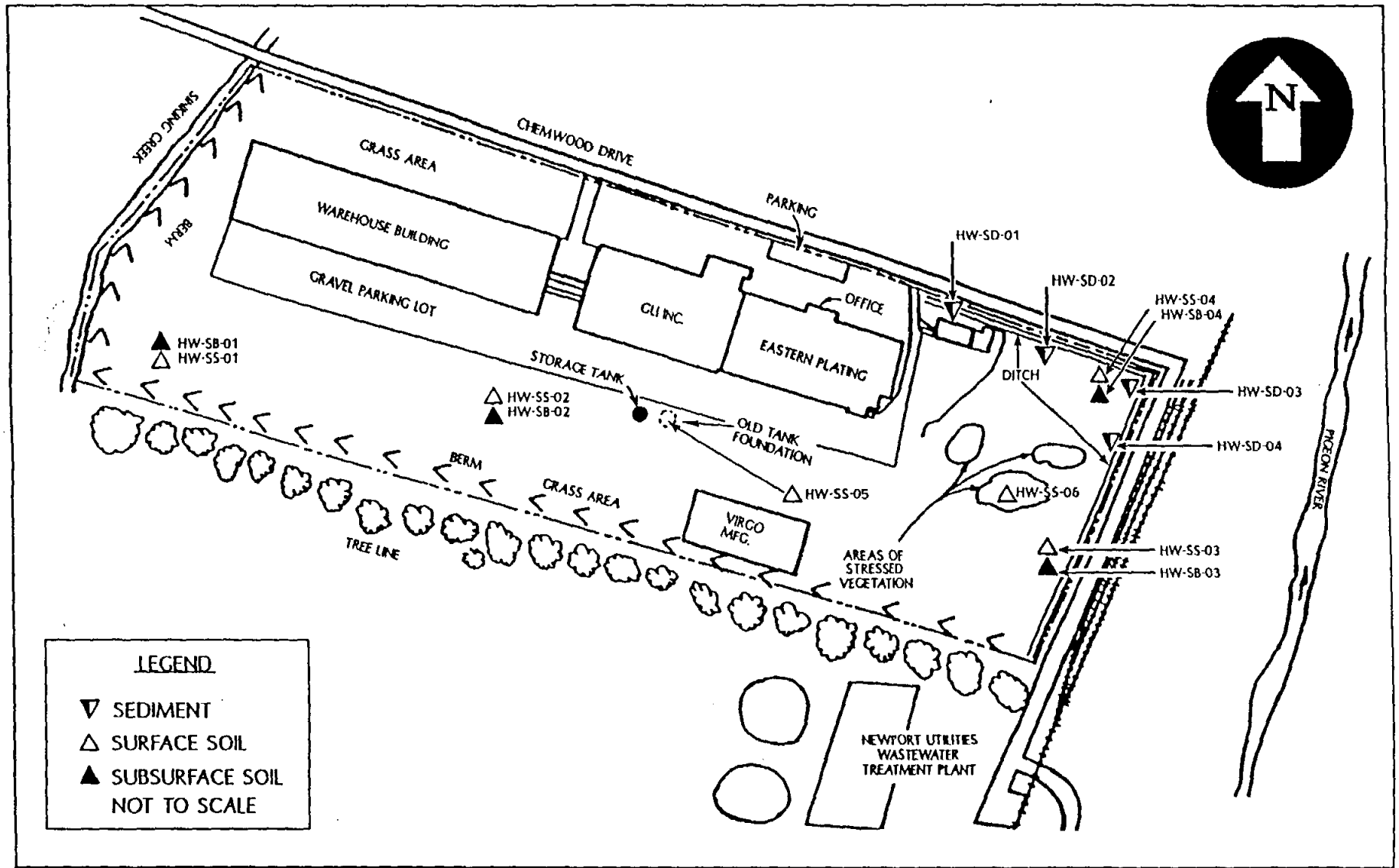
DYNAMAC CORPORATION Environmental Services	Site Location Map Heywood - Wakefield Comppany Newport, Cocke County, Tennessee	Site Location Map was duplicated from Site Inspection Report NUS Corporation Figure 1



DYNAMAC CORPORATION
Environmental Services

Site Layout Map
Heywood - Wakefield Company
Newport, Cocke County, Tennessee

Site Layout Map was
duplicated from Site Inspection Report
NUS Corporation
Figure 2



DYNAMAC CORPORATION
Environmental Services

Sample Location Map
Heywood - Wakefield Company
Newport, Cocke County, Tennessee

Sample Location Map was duplicated from
Site Inspection Report
NUS Corporation
Figure 3

CONFIDENTIAL

HAZARD RANKING SYSTEM PRELIMINARY SCORE FOR HEYWOOD-WAKEFIELD COMPANY NEWPORT, COCKE COUNTY, TENNESSEE

Pathways evaluated using the SI Worksheets included air, groundwater, surface water and soil exposure. No groundwater or surface water/sediment samples were collected. The geology is regionally karst; however, the NUS FIT team reported no observations of surficial karst expressions. The first scenario is based upon the potential to release to a nonkarst aquifer, potential to release to surface water, observed soil contamination and potential to release to the air pathway. The second scenario considers the assumptions of an observed release to a karst aquifer, and an observed release to the surface water pathway (Sinking Creek). Contaminants evaluated include chromium, copper, lead, nickel, zinc, toluene, pentachlorophenol and bis(2-ethylhexyl)phthalate. Despite assumptions of an observed release to groundwater and surface water, the site fails to meet the cutoff score of 28.5 due to the low waste characteristics assigned values. The scores are represented below:

Scenario No. 1

S_{gw} = 0.69
S_{sw} = 2.18
S_{se} = 3.2
S_{air} = 0.53

OVERALL SCORE 1.98

Scenario No. 2

S_{gw} = 9.6
S_{sw} = 32.27
S_{se} = 3.2
S_{air} = 0.53

OVERALL SCORE 16.91

Neither scenario achieves a score high enough for National Priorities List ranking. A hazardous waste quantity score of 10 was assigned based upon 67 drums of abandoned waste and approximately 9 acres of contaminated soil.

DRAFT

Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario I

GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors

	Likelihood of Release to an Aquifer	Maximum Value	Value Assigned	
1.	Observed Release	550	-	
2.	Potential to Release			
	2a. Containment	10	-	
	2b. Net Precipitation	10	-	
	2c. Depth to Aquifer	5	-	
	2d. Travel Time	35	-	
	2e. Potential to Release [lines 2a x (2b + 2c + 2d)]	500	500	
3.	Likelihood of Release (higher of lines 1 and 2e)	550		500
	Waste Characteristics			
4.	Toxicity/Mobility	a	100	
5.	Hazardous Waste Quantity	a	10	
6.	Waste Characteristics	100		6
	Targets			
7.	Nearest Well	50	5	
8.	Population			
	8a. Level I Concentrations	b	0	
	8b. Level II Concentrations	b	0	
	8c. Potential Contamination	b	14	
	8d. Population (lines 8a + 8b + 8c)	b	14	
9.	Resources	5	0	
10.	Wellhead Protection Area	20	0	
11.	Targets (lines 7 + 8d + 9 + 10)	b		19
	Ground Water Migration Score for an Aquifer			
12.	Aquifer Score [(lines 3 x 6 x 11)/82,500][c]	100		0.69
	Ground Water Migration Pathway Score			
13.	Pathway Score (S_{gw}), (highest value from line 12 for all aquifers evaluated)[c]	100		0.69

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] Do not round to nearest integer.

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario I

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned	
DRINKING WATER THREAT			
Likelihood of Release	Not Scored		
1. Observed Release	550	-	
2. Potential to Release by Overland Flow			
2a. Containment	10	-	
2b. Runoff	25	-	
2c. Distance to Surface Water	25	-	
2d. Potential to Release by Overland Flow (lines 2a x [2b + 2c])	500	500	
3. Potential to Release by Flood			
3a. Containment (Flood)	10	-	
3b. Flood Frequency	50	-	
3c. Potential to Release by Flood (lines 3a x 3b)	500	-	
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	500	
5. Likelihood of Release (higher of lines 1 and 4)	550	500	500
Waste Characteristics			
6. Toxicity/Persistence	a	10,000	
7. Hazardous Waste Quantity	a	10	
8. Waste Characteristics	100		18
Targets			
9. Nearest Intake	50	0	
10. Population			
10a. Level I Concentrations	b	0	
10b. Level II Concentrations	b	0	
10c. Potential Contamination	b	0	
10d. Population (lines 10a + 10b + 10c)	b	0	
11. Resources	5	5	

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario I

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET, Continued

Factor Categories and Factors	Maximum Value	Value Assigned	
DRINKING WATER THREAT (Concluded)			
Targets (Concluded)			
12. Targets (lines 9 + 10d + 11)	b		5
Drinking Water Threat Score			
13. Drinking Water Threat Score ([lines 5 x 8 x 12]/82,500, subject to a maximum of 100)	100		0.55
HUMAN FOOD CHAIN THREAT			
Likelihood of Release			
14. Likelihood of Release (same value as line 5)	550		500
Waste Characteristics			
15. Toxicity/Persistence/Bioaccumulation	a	$5x10^6$	
16. Hazardous Waste Quantity	a	10	
17. Waste Characteristics	1,000		56
Targets			
18. Food Chain Individual	50	0	
19. Population			
19a. Level I Concentrations	b	0	
19b. Level II Concentrations	b	0	
19c. Potential Human Food Chain Contamination	b	3	
19d. Population (lines 19a + 19b + 19c)	b	3	
20. Targets (lines 18 + 19d)	b		3

DRAFT

Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario I

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET, Continued

Factor Categories and Factors	Maximum Value	Value Assigned	
Human Food Chain Threat Score			
21. Human Food Chain Threat Score ([lines 14 x 17 x 20]/82,500, subject to a maximum of 100)	100		1.02
ENVIRONMENTAL THREAT			
Likelihood of Release			
22. Likelihood of Release (same value as line 5)	550		500
Waste Characteristics			
23. Ecosystem Toxicity/Persistence/ Bioaccumulation	a	5×10^7	
24. Hazardous Waste Quantity	a	10	
25. Waste Characteristics	1,000		100
Targets			
26. Sensitive Environments			
26a. Level I Concentrations	b	0	
26b. Level II Concentrations	b	0	
26c. Potential Contamination	b	1	
26d. Sensitive Environments (lines 26a + 26b + 26c)	b	1	
27. Targets (value from line 26d)			1
Environmental Threat Score			
28. Environmental Threat Score ([lines 22 x 25 x 27]/82,500, subject to a maximum of 60)	60		0.61

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario I

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET, Concluded

Factor Categories and Factors	Maximum Value	Value Assigned
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE FOR A WATERSHED		
29. Watershed Score[c] (lines 13 + 21 + 28, subject to a maximum of 100)	100	2.18
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE		
30. Component Score (S_{OF})[c] (highest score from line 29 for all watersheds evaluated, subject to a maximum of 100)	100	2.18

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] Do not round to nearest integer.

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario I

SOIL EXPOSURE PATHWAY SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned	
RESIDENT POPULATION THREAT			
Likelihood of Exposure			
1. Likelihood of Exposure	550		550
Waste Characteristics			
2. Toxicity	a	10,000	
3. Hazardous Waste Quantity	a	10	
4. Waste Characteristics	100		18
Targets			
5. Resident Individual	50	0	
6. Resident Population			
6a. Level I Concentrations	b	0	
6b. Level II Concentrations	b	0	
6c. Resident Population (lines 6a + 6b)	b	0	
7. Workers	15	10	
8. Resources	5	0	
9. Terrestrial Sensitive Environments	c	0	
10. Targets (lines 5 + 6c + 7 + 8 + 9)	b		10
Resident Population Threat Score			
11. Resident Population Threat (lines 1 x 4 x 10/82,500)	b		1.2
NEARBY POPULATION THREAT			
Likelihood of Exposure			
12. Attractiveness/Accessibility	100	-	
13. Area of Contamination	100	-	
14. Likelihood of Exposure	500		-
Waste Characteristics			
15. Toxicity	a	-	
16. Hazardous Waste Quantity	a		
17. Waste Characteristics	100		-

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario I

SOIL EXPOSURE PATHWAY SCORESHEET, Concluded

Factor Categories and Factors	Maximum Value	Value Assigned	
NEARBY POPULATION THREAT (Concluded)			
Targets			
18. Nearby Individual	1	-	
19. Population Within 1 Mile	b	-	
20. Targets (lines 18 + 19)	b		-
Nearby Population Threat Score			
21. Nearby Population Threat (Default Value)	b		2
SOIL EXPOSURE PATHWAY SCORE			
22. Soil Exposure Pathway Score[d] (S_s), (lines [11 + 21] subject to a maximum of 100)	100		3.2

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to maximum of 60.
[d] Do not round to nearest integer.

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario I

AIR MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors

	Likelihood of Release	Maximum Value	Value Assigned	
1.	Observed Release	550	0	
2.	Potential to Release			
	2a. Gas Potential to Release	500	-	
	2b. Particulate Potential to Release	500	-	
	2c. Potential to Release (higher of lines 2a and 2b)	500	500	
3.	Likelihood of Release (higher of lines 1 and 2c)	550		500
	Waste Characteristics			
4.	Toxicity/Mobility	a	10	
5.	Hazardous Waste Quantity	a	10	
6.	Waste Characteristics	100		3
	Targets			
7.	Nearest Individual	50	20	
8.	Population			
	8a. Level I Concentrations	b	0	
	8b. Level II Concentrations	b	0	
	8c. Potential Contamination	b	9	
	8d. Population (lines 8a + 8b + 8c)	b	9	
9.	Resources	5	0	
10.	Sensitive Environments			
	10a. Actual Contamination	c	0	
	10b. Potential Contamination	c	0	
	10c. Sensitive Environments (lines 10a + 10b)	c	0	
11.	Targets (lines 7 + 8d + 9 + 10c)	b		29
	Air Migration Pathway Score			
12.	Pathway Score (S_a) [(lines 3 x 6 x 11)/82,500][d]	100		0.53

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] Do not round to nearest integer.

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario II

GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors

	Likelihood of Release to an Aquifer	Maximum Value	Value Assigned	
1.	Observed Release	550	550	
2.	Potential to Release			
	2a. Containment	10	-	
	2b. Net Precipitation	10	-	
	2c. Depth to Aquifer	5	-	
	2d. Travel Time	35	-	
	2e. Potential to Release [lines 2a x (2b + 2c + 2d)]	500	-	
3.	Likelihood of Release (higher of lines 1 and 2e)	550		550
	Waste Characteristics			
4.	Toxicity/Mobility	a	10,000	
5.	Hazardous Waste Quantity	a	10	
6.	Waste Characteristics	100		18
	Targets			
7.	Nearest Well	50	20	
8.	Population			
	8a. Level I Concentrations	b	0	
	8b. Level II Concentrations	b	0	
	8c. Potential Contamination	b	60	
	8d. Population (lines 8a + 8b + 8c)	b	60	
9.	Resources	5	-	
10.	Wellhead Protection Area	20	-	
11.	Targets (lines 7 + 8d + 9 + 10)	b		80
	Ground Water Migration Score for an Aquifer			
12.	Aquifer Score [(lines 3 x 6 x 11)/82,500][c]	100		9.6
	Ground Water Migration Pathway Score			
13.	Pathway Score (S_{gw}), (highest value from line 12 for all aquifers evaluated)[c]	100		9.6

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] Do not round to nearest integer.

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario II

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned	
DRINKING WATER THREAT			
Likelihood of Release	Not Scored		
1. Observed Release	550	-	
2. Potential to Release by Overland Flow			
2a. Containment	10	-	
2b. Runoff	25	-	
2c. Distance to Surface Water	25	-	
2d. Potential to Release by Overland Flow (lines 2a x [2b + 2c])	500	500	
3. Potential to Release by Flood			
3a. Containment (Flood)	10	-	
3b. Flood Frequency	50	-	
3c. Potential to Release by Flood (lines 3a x 3b)	500	-	
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	500	
5. Likelihood of Release (higher of lines 1 and 4)	550	500	500
Waste Characteristics			
6. Toxicity/Persistence	a	10,000	
7. Hazardous Waste Quantity	a	10	
8. Waste Characteristics	100		18
Targets			
9. Nearest Intake	50	0	
10. Population			
10a. Level I Concentrations	b	0	
10b. Level II Concentrations	b	0	
10c. Potential Contamination	b	0	
10d. Population (lines 10a + 10b + 10c)	b	0	
11. Resources	5	5	

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario II

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET, Continued

Factor Categories and Factors	Maximum Value	Value Assigned	
DRINKING WATER THREAT (Concluded)			
Targets (Concluded)			
12. Targets (lines 9 + 10d + 11)	b		5
Drinking Water Threat Score			
13. Drinking Water Threat Score ([lines 5 x 8 x 12]/82,500, subject to a maximum of 100)	100		1.07
HUMAN FOOD CHAIN THREAT			
Likelihood of Release			
14. Likelihood of Release (same value as line 5)	550		550
Waste Characteristics			
15. Toxicity/Persistence/Bioaccumulation	a	$5x10^6$	
16. Hazardous Waste Quantity	a	100	
17. Waste Characteristics	1,000		100
Targets			
18. Food Chain Individual	50	0	
19. Population			
19a. Level I Concentrations	b	0	
19b. Level II Concentrations	b	45	
19c. Potential Human Food Chain Contamination	b	0	
19d. Population (lines 19a + 19b + 19c)	b	45	
20. Targets (lines 18 + 19d)	b		45

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario II

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET, Continued

Factor Categories and Factors	Maximum Value	Value Assigned	
Human Food Chain Threat Score			
21. Human Food Chain Threat Score ([lines 14 x 17 x 20]/82,500, subject to a maximum of 100)	100		30
ENVIRONMENTAL THREAT			
Likelihood of Release			
22. Likelihood of Release (same value as line 5)	550		550
Waste Characteristics			
23. Ecosystem Toxicity/Persistence/ Bioaccumulation	a	$5x10^7$	
24. Hazardous Waste Quantity	a	10	
25. Waste Characteristics	1,000		100
Targets			
26. Sensitive Environments			
26a. Level I Concentrations	b	0	
26b. Level II Concentrations	b	0	
26c. Potential Contamination	b	1	
26d. Sensitive Environments (lines 26a + 26b + 26c)	b	1	
27. Targets (value from line 26d)			1
Environmental Threat Score			
28. Environmental Threat Score ([lines 22 x 25 x 27]/82,500, subject to a maximum of 60)	60		0.606

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario II

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET, Concluded

Factor Categories and Factors	Maximum Value	Value Assigned
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE FOR A WATERSHED		
29. Watershed Score[c] (lines 13 + 21 + 28, subject to a maximum of 100)	100	2.17
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE		
30. Component Score (S_{OF})[c] (highest score from line 29 for all watersheds evaluated, subject to a maximum of 100)	100	2.17

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] Do not round to nearest integer.

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario II

SOIL EXPOSURE PATHWAY SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned	
RESIDENT POPULATION THREAT			
Likelihood of Exposure			
1. Likelihood of Exposure	550		550
Waste Characteristics			
2. Toxicity	a	10,000	
3. Hazardous Waste Quantity	a	10	
4. Waste Characteristics	100		18
Targets			
5. Resident Individual	50	0	
6. Resident Population			
6a. Level I Concentrations	b	0	
6b. Level II Concentrations	b	0	
6c. Resident Population (lines 6a + 6b)	b	0	
7. Workers	15	10	
8. Resources	5	0	
9. Terrestrial Sensitive Environments	c	0	
10. Targets (lines 5 + 6c + 7 + 8 + 9)	b		10
Resident Population Threat Score			
11. Resident Population Threat (lines 1 x 4 x 10/82,500)	b		1.2
NEARBY POPULATION THREAT			
Likelihood of Exposure			
12. Attractiveness/Accessibility	100	-	
13. Area of Contamination	100	-	
14. Likelihood of Exposure	500		-
Waste Characteristics			
15. Toxicity	a	-	
16. Hazardous Waste Quantity	a		
17. Waste Characteristics	100		-

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario II

SOIL EXPOSURE PATHWAY SCORESHEET, Concluded

Factor Categories and Factors	Maximum Value	Value Assigned	
NEARBY POPULATION THREAT (Concluded)			
Targets			
18. Nearby Individual	1	-	
19. Population Within 1 Mile	b	-	
20. Targets (lines 18 + 19)	b		-
Nearby Population Threat Score			
21. Nearby Population Threat (Default Value)	b		2
SOIL EXPOSURE PATHWAY SCORE			
22. Soil Exposure Pathway Score[d] (S_s), (lines [11 + 21] subject to a maximum of 100)	100		3.2

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to maximum of 60.
[d] Do not round to nearest integer.

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Site Name: Heywood-Wakefield Company
Location: Newport, Cocke County, Tennessee

Scenario II

AIR MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors

	Likelihood of Release	Maximum Value	Value Assigned	
1.	Observed Release	550	0	
2.	Potential to Release			
	2a. Gas Potential to Release	500	-	
	2b. Particulate Potential to Release	500	-	
	2c. Potential to Release (higher of lines 2a and 2b)	500	500	
3.	Likelihood of Release (higher of lines 1 and 2c)	550		500
	Waste Characteristics			
4.	Toxicity/Mobility	a	10	
5.	Hazardous Waste Quantity	a	10	
6.	Waste Characteristics	100		3
	Targets			
7.	Nearest Individual	50	20	
8.	Population			
	8a. Level I Concentrations	b	0	
	8b. Level II Concentrations	b	0	
	8c. Potential Contamination	b	9	
	8d. Population (lines 8a + 8b + 8c)	b	9	
9.	Resources	5	0	
10.	Sensitive Environments			
	10a. Actual Contamination	c	0	
	10b. Potential Contamination	c	0	
	10c. Sensitive Environments (lines 10a + 10b)	c	0	
11.	Targets (lines 7 + 8d + 9 + 10c)	b		29
	Air Migration Pathway Score			
12.	Pathway Score (S_a) [(lines 3 x 6 x 11)/82,500][d]	100		0.53

[a] Maximum value applies to waste characteristics category.
[b] Maximum value not applicable.
[c] Do not round to nearest integer.

DRAFT

CERCLA Eligibility Form

Site Name: Heywood-Wakefield Company

City/County/State: Newport, Cocke County, Tennessee

EPA ID Number: TND003382330

Type of Facility: Generator ✓ Transporter ___ Disposal ___
Treatment ___ Storage (more than 90 days) ___

	Yes	No
Has this facility treated, stored or disposed of a RCRA hazardous waste since Nov. 19, 1980?	✓	
Has a RCRA Facility Assessment (FA) been performed on this site?		✓
Does the facility have a RCRA operating or post-closure permit? If so, date issued		✓
Did the facility file a RCRA Part A application?	✓	
If so:		
1) Does the facility currently have interim status?		✓
2) Did the facility withdraw its interim status?		✓
3) Is the facility a known or possible protective filer?		✓
Is the facility a late (after Nov. 19, 1980) or non-filer that has been identified by EPA or the State?	✓	
Is the site a Federal Facility?		✓
Is there at least one source onsite which is not covered by CERCLA Petroleum Exclusion Legislation?	✓	
Is the facility owned by an entity that has filed for bankruptcy under federal or State laws?	✓	
Has the facility lost authorization to operate or had its interim status revoked?		✓
Has the facility been involved in any other RCRA enforcement action?		✓

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OVERSIZED

DOCUMENT

REFERENCE NO. 2

TELEPHONE CONTACT SUMMARY

CALL MADE BY: Richard J. Jardine
DYNAMAC CORPORATION

REGION IV

SIGNATURE: Richard J. Jardine 9-1-92

SITE: Heywood-Wakefield Company

DATE: September 1, 1992

TIME: 330 pm edt

EPA ID#: TND003382330

PERSON CONTACTED: NAME: Loretta Wild
TITLE: Secretary
PHONE NO: (615) 623-7201
ORGANIZATION: Newport Chamber of Commerce
ADDRESS:

SUBJECT: Worker and Daycare Populations.

CONVERSATION SUMMARY: As of this date, the Chamber of Commerce records show that there are two daycare centers in the Newport area. They are both located within several blocks of each other in downtown Newport; one is located on Fourth Street, the other on Washington Avenue. There is no record of enrollment at either daycare center however, Ms. Wild estimates that the number of children attending each to be between 20 and 50.

The number of employees at Eastern Plating of Newport, Tennessee is 90. There are 125 employees at GLI. Virco Manufacturing has left the town. Ms. Wild estimates that no more than five or six employees remain there.

"Rite in the Rain"®

ALL-WEATHER

LEVEL

Notebook No. 311

F4-2521

F4-9008-32
Heywood-Wakefield Co.
Newport/Cocke Co./Tennessee
Andrew Harvey

REFERENCE # 4

REFERENCE NO. 3

LOGBOOK REQUIREMENTS
REVISED - NOVEMBER 29, 1988

NOTE: ALL LANGUAGE SHOULD BE FACTUAL AND OBJECTIVE

1. Record on front cover of the Logbook: TDD No., Site Name, Site Location, Project Manager.
2. All entries are made using ink. Draw a single line through errors. Initial and date corrections.
3. Statement of Work Plan, Study Plan, and Safety Plan discussion and distribution to field team with team members' signatures.
4. Record weather conditions and general site information
5. Sign and date each page. Project Manager is to review and sign off on each logbook daily.
6. Document all calibration and pre-operational checks of equipment. Provide serial numbers of equipment used onsite.
7. Provide reference to Sampling Field Sheets for detailed sampling information.
8. Describe sampling locations in detail and document all changes from project planning documents.
9. Provide a site sketch with sample locations and photo locations.
10. Maintain photo log by completing the stamped information at the end of the logbook.
11. If no site representative is on hand to accept the receipt for samples, an entry to that effect must be placed in the logbook.
12. Record I.D. numbers of COC and receipt for sample forms used. Also record numbers of destroyed documents.
13. Complete SMO information in the space provided.

We, the undersigned, have read and understand the work, study, and safety plans:

- Andy Harvey (Proj Mgr) Andy Harvey 9/11/90
- Ron Wilde (Health & Safety Officer) [signature]
- Wendell McLendon (Paperwork Officer) [signature]
- Patricia Harris (Sampler) [signature]
- Mark Hitchcock (Sampler) [signature]
- ~~Andy Spaugh~~ JAY CHASTAIN (Sampler) [signature]
- Greg Thomas (Sampler) [signature]
- Robert Hutcheson (Geophysics) [signature] 9/11/90
- Brant McCanless (Geophysics) [signature] 9/11/90

All entries shall be made by me, Andy Harvey, unless indicated otherwise. My initials are AH. AH 9/11/90

photo [illegible]

Weather is hazy and hot

10:55 Arrived at Site. Asked for Mike Mullaney of Eastern Plating.

11:05 Brant, Robert & I met with Tom McNealy & Mike Mullaney until 11:35. We ~~answe~~ answered questions about our operations and they decided they do want split samples.

11:40 We all walked around the site. Eastern Plating plates exercise equipment and other products.

11:55 There is a new building on the southeast portion of the site which has been built at least 10 years ago. A water storage tank is in the back, and a concrete foundation (circular) is next to it, where a tank of some type was torn down.

9/11/90 A.H.

The new building mentioned above was not mentioned in the Phase I file material, or on the property map.

12:15 The site is extremely big, and the southeast corner is extremely overgrown with much vegetation.

ADDENDUM TO MEETING:
We explained to Mr. McNealy, Plant Manager, and Mr. Mullaney, Pres. of Eastern Plating, about how we take split samples, and the procedures involved. I then showed Mr. ~~[illegible]~~ Mullaney our proposed sample locations on a plot map.

12:30 Inspected Geophysical locations and then went to lunch

9/11/90 A.H.

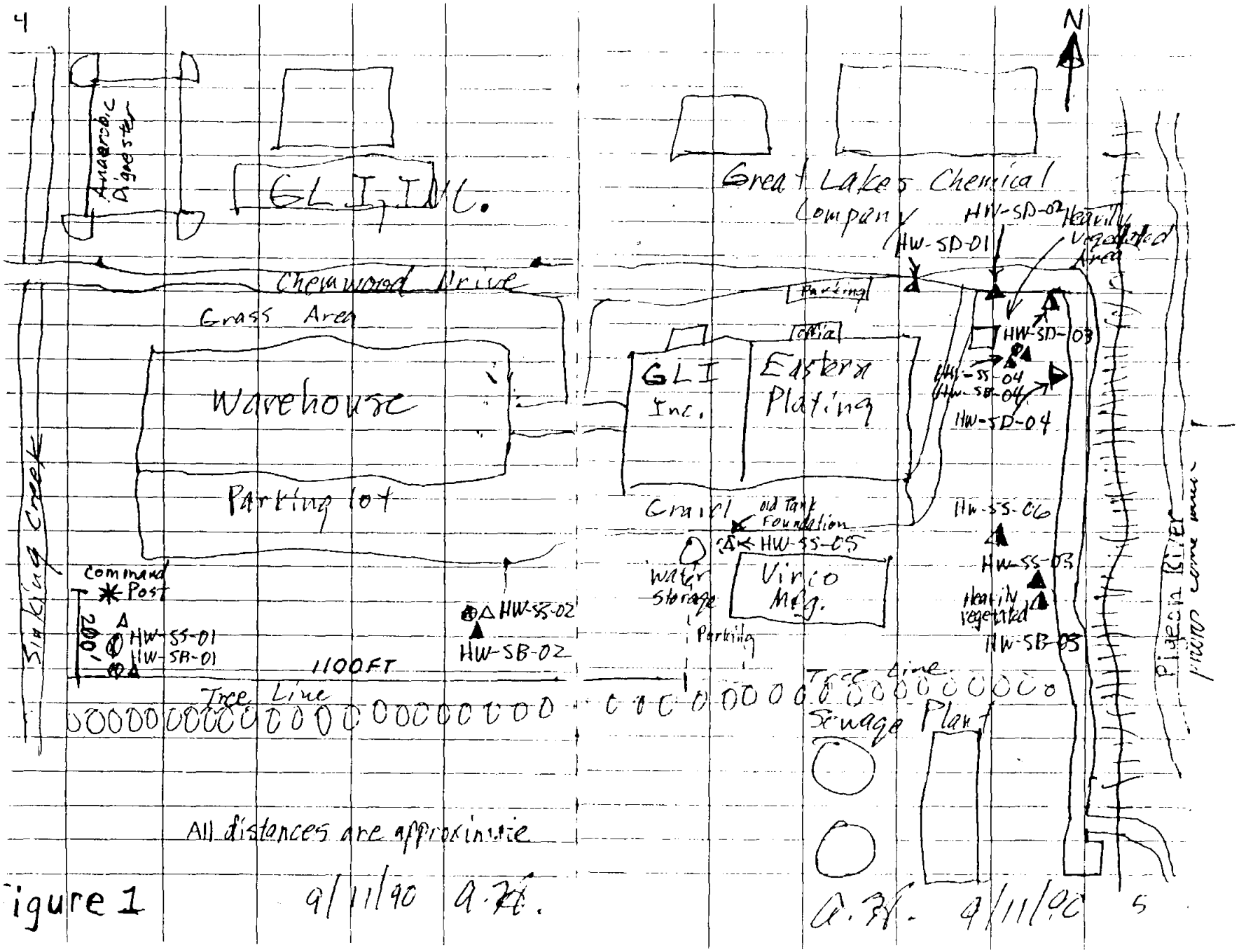

Figure 1 9/11/90 A.H. A.H. 9/11/90

0115 Back at site, conducted calibration and background reading in field across the street from the sewage plant. Instrument is the Geonics EM31, EPA serial # 307293. We are conducting a geophysical survey to find a suspected burial site somewhere on the property. The literature states that Heywood-Wakefield operated an incinerator to burn air pollution ~~equipment~~ control waste, and buried the remnants somewhere on site.

0130 We are setting up a grid next to Virco Mfg. Building (west of it).

1715 a.r. 9/11/90
~~0515~~ We have finished geophysical surveys with the conductivity meter in the back of the facility.

a.r. 9/11/90

1730 a.r. 9/11/90
~~0530~~ Inspected ~~area~~ a.r. 9/11/90 N.E. corner of site.

1745 a.r. 9/11/90
~~0545~~ End of Day
1845 Reviewed day's activities a.r. 9/11/90
0745 9/12/90
Hazy, partly cloudy with a chance of rain
- Brant McCanless, Robert Hutelesou and I arrived early to complete ~~expe~~ geophysical survey. a.r. 9/12/90

0750 This morning we are going to run the Geonics EM31 in the NE corner of the site, to delineate the location of a suspected burial site.

0755 We have returned to the grass field across the street from the sewage plant to recalibrate the instrument and run a background check. The rest of the crew is scheduled

9/12/90 a.r.

continued on next page

8 9/12/90

[illegible] to be here at 8:30.

There are 2 large plants across the street from the Heywood-Wakefield facility, (See Fig. 1). The GLI, Inc. plant is a recently built facility, and is going to manufacture a non-caloric sweetener for foods, according to Mike Mullaney, Pres., Eastern Plating. The other plant is a Great Lakes Chemical facility, and they manufacture phosgene gas, according to M. Mullaney.

0805 Today we will use the magnetometer to further delineate possible burial sites. We are calibrating and taking a background reading in the same area as the conductivity meter, across the street from the sewage plant.

9/12/90 [illegible]

0812 We will be using a Geometrics G-856 Magnetometer, Serial No. 690741

0820 Although the site appears to be quite level, it seems that drainage will flow to the eastern portion of the site. The site is surrounded by a berm which is approximately 10 ft. high in the west, and separates Sinking Creek from the site in the west. To the south the berm is approximately 4 to 5 feet high and to the east is Chemwood Dr., which is slightly higher than the eastern, heavily vegetated, portion of the site. There is no evidence of stressed vegetation and insect life is highly abundant. See Figure 1

9/12/90 [illegible]

photos come back

9

0900 Crew arrived. Wendell & Mark are going to search for the private well nearest the site, to the west which is upgradient. They are also going back to the hotel to pick up blanks & spikes. We are setting up the command post in the SW corner of the site, near our background location.

Additional Note

0955 We forgot to use the Hnu yesterday, because we only did geophysics in an open field in the back of the site. Greg Thomas has been tasked to check for organic vapors with it today, 9/12/90 before we start sampling. We calibrated it at 9.8 span with the 10.2 eV probe 57 ppm. The Hnu ova readings turned up no prohibitive vapors.

a.f. 9/12/90

1045 We inspected heavily vegetated area east of buildings and south of Chemwood Dr. We found some stunted growth in pockets within the area.

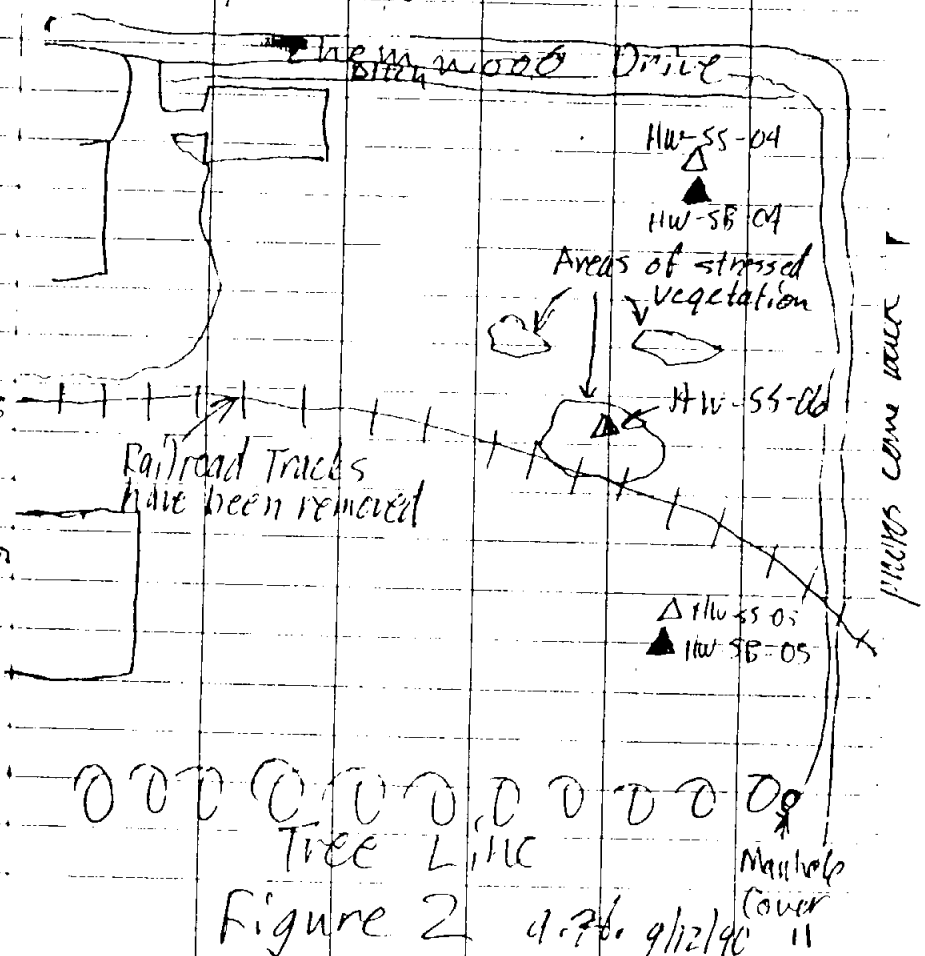

Figure 2 a.f. 9/12/90

110 After a thorough investigation of the site, it appears that there is no well defined surface water pathway. Discussed sample locations with crew.

130 Obtained sample bottles from Tom McNealy. Sample bottles are the wrong kind, they are plastic (liter bottles. We told them we would get split samples for them.

00 Set up area for background samples. A.H. 9/12/90 1st sample is located in SW portion of site. Sample is named HW-SS-01, ~~HW-SB-01~~ A.H. 9/12/90 and it was taken at a depth of 6 inches and it is a dark brown clay. We started drilling with the Little Beaver and hit rock at approximately 5 feet. Then we moved it 25 ft South.

A.H. 9/12/90

1230 Ron Wilde, Tom McNealy, and I have gone to look for sample locations.

1240 We have found a ditch running in front of the site, along Chemwood Dr. This appears to be the surface water drainage pathway

~~3??~~ 9.47 We are back at the command post

1310 4 ft deep with Lil Beaver. Decided to take HW-SB-01 now before we hit rock again. HW-SB-01 taken at 5 ft. depth. It is dark brown sandy clay. Hit rock at 8 ft. deep. My belief is that the water table is within the rock, and deeper than 8 ft. Therefore we will attempt to obtain a groundwater sample at our next location.

A.H. 9/12/90

pieces come back

1345 To Lunch

1430 Picked sample locations in drainage ditch. Found a pipe which ends in ditch, 50' East of 2nd entrance in front of Eastern Plating building.

1445 HW-SD-01 → Hnu negative. Dark brown sandy clay with small amount of organic detritus. Location 50' west of 2nd entrance, in front ditch

1450 HW-SD-02 - Sediment sample out of ditch. Hnu negative. Grayish brown sandy clay with intermixed organic matter. Location 50' E of 2nd Entrance. Taken where pipe intersects ditch to drain into it. Pipe could possibly be an outlet for excess water pressure.

1500 HW-SD-03 - Sediment sample out of ditch, at corner of property approx. 800' from 2nd entrance. Hnu negative. Dark brown sandy clay with some organic matter.

1520 HW-SD-04 - sediment sample taken from ditch on Chemwood Drive toward Sewage plant, approximately 50 ft. away from the corner of the lot.

1525 Hnu serial # is 41549

1530 Tommy Morrow, of H&R trucking came by and asked how to get the results because he wanted to buy some property at the east of the site. I told him to call Ramona Klein at the U.S.E.P.A.

NOTE: HW-SD-01 is background sample.

A.H. 9/12/90

A.H. 9/12/90

photos come back

1530 HW-SS-05 - obtained from the middle of the incinerator foundation. Hnu negative. Soil was dark brown clay intermixed with organic detritus.

FOR SAMPLE LOCATIONS SEE Figure 1 on pages 4 & 5. See field sampling sheets for detailed info as they are an extension of this logbook.

1600 We have ~~flags~~ 9/12 measured 400' from the southwest corner, along the baseline of the geophysic. grid system, and then 100' to the North of that point. Based upon a conductivity anomaly detected during our survey of yesterday. The anomaly was an area of higher conductivity in the shape of a teardrop.

A.M. 9/12/90

HW-SS-02 - Location moved from study plan to location stated in above paragraph. Hnu negative. Depth 6 inches. Soil is Dark brown sandy clay.

HW-SB-02 - Depth 6 ft. Hnu-negative. Location 400' from southwest corner of site, then 100' perpendicular to baseline. Grayish brown wet clay. Hit rock at 7½ ft. I believe the water table is below this depth, although the soil directly above the rock is saturated. Pebbles recovered are rounded and could be part of a riverbed gravel deposit, which could possibly have created the conductivity anomaly.

A.M. 9/12/90

Pebbles come back

1540 we are packing up to go home. END OF DAY

1730 I have reviewed the day's activities Andy Stanley 9/12/90

A.S. 9/12/90

9/13/90

weather - overcast with intermittent rain & drizzle

08:30 Arrived at site. Set up command post in the eastern portion of site. Picked sample locations. Calibrated Hnu with the 10.2 Ev probe at 9.8 span - 57 ppm.

0900 Hnu not functional. Out was taken back to Atlanta inadvertantly by the Geophysics crew. Based on our negative readings of yesterday I have decided to proceed sampling with caution. I have advised the crew to withdraw upon the 1st odor smelled which is out of the ordinary.

Hnu came back

A.S. 9/13/90

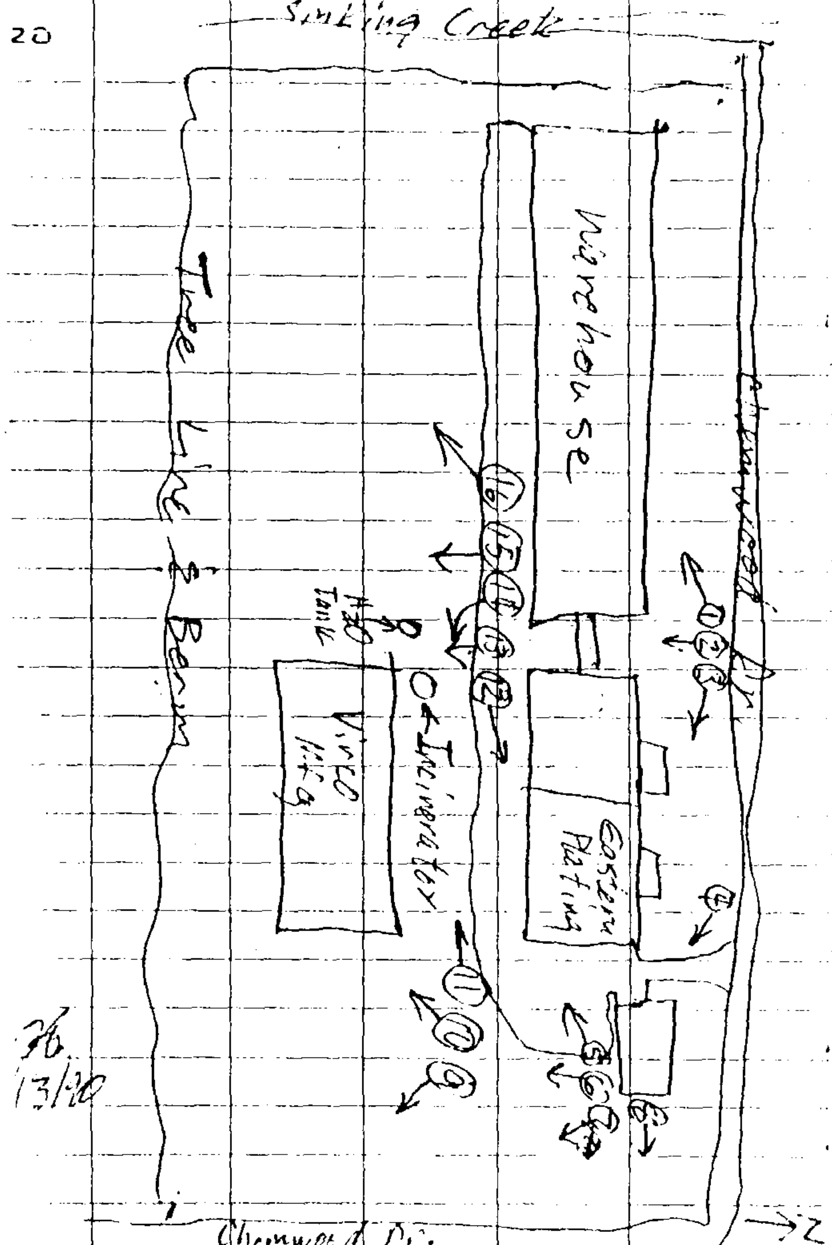

PHOTO LOCATION MAP Figure 3

Pidgeon River

0950 HW-SS-06-Location- middle of field east part of site. Soil is grayish granular flakes 1/4 inch in diameter with blue plastic bits intermixed. Sample obtained from an area of stressed vegetation. (see Figures 1 & 2).

1000 HW-SS-04-Location- NE corner of site. Dark brown clay with much organic matter intermixed. Hit rock at 4 ft, but it was a river deposit of large rounded pebbles, and we were able to break thru. Decided to take HW-SB-04 at 5 1/2 ft depth for fear of hitting bedrock

photos come back

2

1005	HW-SS-03 - Dark brown sandy clay with some organic matter intermixed. Location - Southeastern corner of site at the estimated location of old settling basin. Depth - 6 inches	1115	Met with FRP. Updated sample location map with study plan and gave them a copy of it. Tom McNealy signed a receipt for samples form & we transferred his samples to him.
1015	HW-SB-04 - Dark brown clayey sand with large rounded pebbles. Depth - 4½ ft. Location - NE corner of site. Due to the rocky nature of the soil and the weather conditions, No temporary well will be dug, and we will not be able to obtain a ground water sample. Location - same as HW-SS-04	1230	Photo 1, Front of warehouse Photo 2, First entrance, front of facility Photo 2, Front of 2nd building #4 2nd entrance to facility off Chamwood Drive.
1020	HW-SB-03 - Location - Southeast corner of site, in possible settling basin. Dark brown sandy clay, with some blue specks and rounded pebbles, depth 4 ft.	1230 1240	#5 East side of Eastern Plating 6 Looking south from garage 7 Looking SE toward field
1030	Packed up to leave.	1245	8 Looking E toward field 9 Parking lot, looking SE toward settling basin
	A.H. 9/13/00		A.H. 9/13/00

Photos come back

23

1245 9 Parking lot - toward settling basin
10 Looking toward back of Virco Mfg. (East side)
11 Toward old water tank

1255 12 Rear of Eastern Plating

13 Old incinerator and storage tank

14 Front of Virco Mfg.

1300 15 Next to H2O tank, looking south

16 Overlooking field in rear of facility
see Figure 3 for a map of sample locations.

1330 Back at hotel. Helped Wendell w/paperwork. End of day

A.A. 9/13/90

NOTE: Since A.A. 9/13/90 saturation zone could not be reached, all temporary wells and water samples as described in the study plan have been eliminated.

1530 I have reviewed the days activities as disclosed in this logbook
Andrew Barney 9/13/90

A.A. 9/13/90

Photos come back

REFERENCE NO. 4

TELEPHONE CONTACT SUMMARY

CALL MADE BY: Richard J. Jardine
DYNAMAC CORPORATION

REGION IV

SIGNATURE: Richard J. Jardine

SITE: Heywood-Wakefield Company

DATE: June 11, 1992 6/11/92

TIME: 3:00 pm edt

EPA ID#: TND003382330

PERSON CONTACTED: NAME: Burl Maupin
TITLE: Environmental Engineer
PHONE NO: (615) 594-6444
ORGANIZATION: Tennessee Department of Environment & Conservation Water Pollution Control

SUBJECT: Runoff Route and Illegal Discharges from Facility

CONVERSATION SUMMARY:
I asked Mr. Maupin about the Notice of Non-Compliance that was served to the Eastern Plating Company, the new owner/operator of the former Heywood-Wakefield facility. Mr. Maupin stated that he remembers the site but vaguely remembers the details of that particular inspection.

I told Mr.Maupin that the notice stated "samples collected by the TDHE "indicated illegal discharges of industrial waters into waters, and a location from which they are likely to move into waters" have occurred. I asked Mr. Maupin how a release from this facility would reach Sinking Creek or Pigeon River, the two surface waterways nearby; considering the berms, paved roads, railroads, and flat topography. He replied that runoff/releases may not make it to the surface water. He stated that it was apparrent that runoff/releases do exit the facility property via an obscurred culvert which connects the ditch on the south side of Chemwood Drive with a surficial depression on the north side of the road. He stated that he believes that runoff from the facility collects in this ditch and percolates into the soil. He said that pursuant to the purchase of the property north of Chemwood Drive, an environmental survey was performed. He said that during this survey, soil samples were collected from the depression area to the southeast corner of the property. These samples indicated concentrations of chromium, lead, nickel, and zinc; substances common to plating processes.

Mr. Maupin further stated that the plating facility has experienced overflows of their chromium reclaim tank. This tank is inside of the process building but, when it overflows, the liquids seep out of the building near the foundation.

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LEVEL

Notebook No. 311

F4-1555
HEYWOOD WAKEFIELD Co.
NEWPORT - TENNESSEE
TDD F4-8907-27
BOB DONAGHUE

REFERENCE NO. 5

8/15 Went to State office to review file material for site. Also obtained some information on water systems in Cocke County

Newport Utilities serves all Cocke County except for small area served by L.W. Hooper. Areas not served use private wells.

8/16 Drove to Newport Utilities office and met with Leonard Allen's assistant - Mr Tucker

I showed him a topo with water lines I had copied from a service area map contained

8/16 BD

in the state file. He verified that water lines existed in those locations.

He indicated that areas without service use private wells.

Water is obtained from intake on French Broad River at River Mile 82.

Directions to site
27-70 E to 25 E go left and drive to Rankin Road make right. Large complex on right across from Great Lakes Chemical is the old Heywood Wakefield location. In Rankin Road Industrial Park

8/16 BD

It is currently occupied by Eastern Plating, GLI, Virco Manufacturing and EV (Electric Voice).

South of site is Newport Wastewater treatment plant expansion, while Great Lakes Chemical north of site

No residences in immediate vicinity of site, since it is an industrial area.

Slope is level.

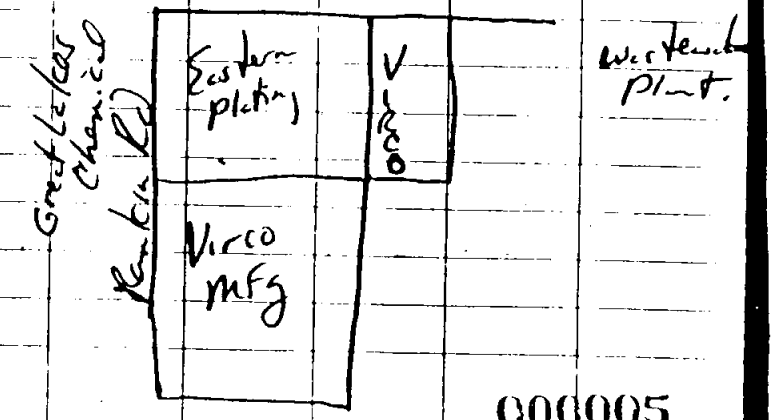
Few mobile homes near intersection of Rankin Road an Rt 25E. No well pumps or well houses visible. Water line atlas shows area served by public water.

8/16 BD

Drove to tax assessors office Property currently owned by

1. Chemwood Properties (18.98 acres)
   1608 Camden Street
   Chattanooga TN 37406
   (Eastern Plating is large stockholder)

2. Virco Manufacturing Corp
   15134 S. Vermont Ave
   Box 44846
   Los Angeles CA 90044
   (18 Acre)



Went to Agricultural Extension and got copy of aerial

Aerial shows a stormwater pond at southeast corner of property. Not visible from road due to dense vegetation.

8/10
BD.

15-502 (4)

[redacted]

REFERENCE NO. 6

July 6, 1978

Haywood-Wakefield Company
Rankin Road
Newport, TN 37821
Attn: Mr. Walter O'Neil

Dear Mr. O'Neil:

The results of the solid waste (sludge) sample from filter press of your wastewater treatment plant, taken 6-19-78 at 0800 hrs., are as follows:

Physical characteristics

a. State: semisolid sludge @ 25°C.
b. Color: light brown
c. Moisture content: 74.8% (w/w)
d. Density: 74.2 lb/ft.^{3}

Chemical Characteristics

(1) Percentage of specific compounds present on a dry weight basis:

Iron (Fe), total	8.91%
Nickel (Ni)	9.44
Chromium (Cr), total	2.27
Zinc (Zn)	0.31
Copper (Cu)	0.073
Cadmium (Cd)	< 0.001
Lead (Pb)	0.022
Manganese (Mn)	0.12

(2) pH: 8.7

(3) Solubility

a. At point source pH: 0.048 g/100 ml @ 25°C.
b. At pH 4: 0.446 g/100 ml @ 25°C.
c. At pH 10: 0.061 g/100 ml @ 25°C.

July 6, 1978

Heywood-Wakefield Company

The solubilities of the sludge at the various pH values were determined as follows: 100ml of deionized water was stirred at 25°C. with an excess (> saturated) of sludge for a period of 24 hrs. For the pH 4 and pH 10 samples, the pH of the stirred mixture was adjusted with acid or base to the required value, and was monitored until no further change in pH occurred. Stirring was continued for 24 hrs. Each mixture was then filtered through 37/C paper, and 100 ml of filtrate was placed in a tared 250 ml beaker. The [illegible] was evaporated and the residue was dried and weighed.

Sincerely yours,
ATEK LABS, INC.

E. W. Kuemmerle, Jr., Ph.D.
Chief Chemist

HAZARDOUS WASTE INSPECTION REPORT

[redacted]

NAME OF FACILITY
Heywood-Wakefield

REFERENCE NO. 7

I. D. NUMBER
TND003382330

ADDRESS AND LOCATION
Off Rankin Road
Newport, TN

OWNER/OPERATOR/PRINCIPAL CONTACT
Forrest Ellison

MAILING ADDRESS
Rural Route 7
Newport, TN 37821

TELEPHONE
(615) 623-3042

DATE/TIME OF INSPECTION
April 16, 1982 10:00 A.M.

REPORT PREPARED BY:
Rick Brown

NAME(S) OF PARTICIPANTS/TITLES/AFFILIATIONS
Rick Brown
Environmental Engineer
Tennessee Division of Solid Waste Management

Forrest Ellison
Heywood-Wakefield Company

PURPOSE OF INSPECTION
Compliance inspection under the Tennessee Hazardous Waste Management Act. The facility was inspected as a generator and as a treatment and storage facility. The purpose of this inspection was to determine whether the violations noted during the previous inspection, (March 8, 1982), had been corrected.

FACILITY DESCRIPTION
The Heywood-Wakefield plant at Newport, Tennessee, manufactures metal-frame desks for schools. One stage in the process is nickle and chrome plating of the frames. The plating process includes a unit which recovers and recycles much of the chromium. The spent plating solution is discharged into a treatment system which by pH adjustment precipitates most of the remaining metals so that the resulting effluent can be discharged under an NPDES permit. The sludge from the treatment system is a hazardous waste. After being pressure-filtered to reduce the moisture content, it is put into drums. The drums filled with this waste are stored outside the plant until enough have accumulated to justify a shipment to an approved off-site disposal facility. Manifests kept at the facility show that the waste has been shipped to SCA Services' approved hazardous waste landfill at Pinewood, South Carolina. Prior to the hazardous waste laws, the waste went to the Cocke County landfill.

Production has completely stopped at the plant and only a few office personnel are employed. The hazardous waste treatment and storage facilities have not been closed or removed and they are not being inspected or maintained. The plant plans to reopen in about 30 days.

INSPECTION FINDINGS

The following violations of the Tennessee Hazardous Waste Management Rules were noted during the inspection:

1. Rule 1200-1-11-.05(5)(d)2(i) requires owners or operators to keep records of each hazardous waste received at the facility, as the information becomes available, which contains a description of each waste by its common name and the appropriate waste codes, the estimated or manifest-reported weight, or volume and density, where applicable, and the methods and dates of treatment, storage or disposal.

   There is no provision for keeping such records.

2. Rule 1200-1-11-.05(5)(d)2(ii) requires owners or operators of hazardous waste management facilities to record the location of each hazardous waste within the facility and the quantity in each location, this information must include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest.

   This has not been done.

3. Rule 1200-1-11-.05(4)(g)10 requires owners or operators of hazardous waste management facilities to note in the operating record, the time, date, and details of any incident that requires implementing the contingency plan.

   This rule could not have been complied with because no contingency plan existed.

4. Rule 1200-1-11-.05(2)(f)1 requires owners or operators of hazardous waste management facilities to inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing, or may lead to, release of hazardous waste constituents to the environment or a threat to public health.

   This is not being done.

5. Rule 1200-1-11-.05(2)(f)2 requires owners or operators of hazardous waste management facilities to develop and follow a written inspection schedule that will both identify the types of problems which are to be looked for when inspecting monitoring equipment, safety and emergency equipment, security devices, operating and structual equipment, and the other items required to be inspected, and the frequency for inspecting them.

   This has not been done.

6. Rule 1200-1-11-.05(2)(f)4 requires owners or operators of hazardous waste management facilities to record inspections in an inspection log or summary which includes the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions, and to retain these records for three years from the date of the inspection.

   This is not being done.

7. Rule 1200-1-11.05(9)(e) requires owners or operators who manage hazardous waste in containers to inspect the areas where containers are stored at least weekly, looking for leaks and for deterioration caused by corrosion or other factors.

   This has not been done.

8. Rule 1200-1-11-.05(17)(d)2 requires owners or operators who chemically, physically, and biologically treat hazardous waste to inspect data gathered from monitoring equipment, at least once each operating day, to ensure that the treatment process or equipment is being operated according to its design.

   This has not been done.

9. Rule 1200-1-11-.05(17)(d)3 requires owners or operators who chemically, physically, and biologically treat hazardous waste to inspect the construction materials of the treatment process or equipment, at least weekly, to detect corrosion or leaking of fixtures or seams.

   This has not been done.

10. Rule 1200-1-11-.05(17)(d)4 requires owners or operators who chemically, physically, and biologically treat hazardous waste to inspect the construction materials of, and the area immediately surrounding discharge confinement structures, at least weekly to detect erosion or obvious signs of leakage.

    This has not been done.

11. Rule 1200-1-11-.05(8)(b)1 requires owners or operators of hazardous waste management facilities to have a written estimate of the cost of closure, which is equal to the cost of closure at the point in the facilities' operating life when the extent and manner of its operation would make closure the most expensive.

    This has not been done.

12. Rule 1200-1-11-.05(2)(g)1(i) requires owner or operators of hazardous waste management facilities to ensure that facility personnel successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures that the facility will be properly managed.

    This has not been done.

13. Rule 1200-1-11-.05(2)(g)1(ii) requires owners or operators of hazardous waste management facilities to ensure that the training program be directed by a person trained in hazardous waste management procedures, and include instruction which teaches facility personnel hazardous waste management procedures relevant to the positions in which they are employed.

    This has not been done.

14. Rule 1200-1-11-.05(2)(g)2 requires owner or operators of hazardous waste management facilities to ensure that facility personnel successfully complete the training program by September 6, 1981 or six months after the date of their employment or assignment to a facility or to a new position at a facility, and not work in an unsupervised position until they have successfully completed the training program.

    This has not been done.

15. Rule 1200-1-11-.05(2)(g)4 requires owners or operators of hazardous waste management facilities to maintain the documents and records for the job titles for each position related to hazardous waste management, and the names of the employees filling each job, a written job description for each position, a written description of the type and amount of both introductory and continuing training that will be given to each person filling the position, and records that document that the training or job experience has been given to, and completed by, facility personnel.

This has not been done.

16. Rule 1200-1-11-.05(3)(g)1(i) requires owners or operators of hazardous waste management facilities to attempt to make arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes, as appropriate for the type of waste handled at the facility and potential need for the services of these organizations.

Rule 1200-1-11-.05(3)(g)1(ii) requires owners or operators of hazardous waste managment facilities to attempt to make arrangements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority, where more than one police and fire department might respond to an emergency, as appropriate for the type of hazardous waste handled at the facility and the potential need for the services of these organizations.

Rule 1200-1-11-.05(3)(g)1(iii) requires owners or operators of hazardous waste management facilities to make agreements with State emergency response teams, emergency response contractors, and equipment suppliers, as appropriate for the type of hazardous waste handled at the facility and the potential need for the services of these organizations.

Rule 1200-1-11-.05(3)(g)1(iv) requires owners or operators of hazardous waste management facilities to make agreements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility, as appropriate for the hazardous waste handled at the facility and the potential need for the services of these organizations.

Rule 1200-1-1-.05(3)(g)2 requires owners or operators of hazardous waste management facilities to document the refusal in the operating record, where State or local authorities decline to enter into emergency preparedness arrangements.

There has been no effort to comply with these rules.

17. Rule 1200-1-11-.05(4)(b)1 requires owners or operators of hazardous waste management facilities to have a contingency plan, designed to minimize hazards to public health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

This has not been done.

18. Rule 1200-1-11-.05(4)(c)1 requires owners or operators of hazardous waste management facilities to describe in the contingency plan, the actions facility personnel must take in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.

Rule 1200-1-11-.05(4)(d)2 requires owners or operators of hazardous waste management facilities to submit a copy of the contingency plan and all revisions to the plan to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

No provision has been made for complying with these rules.

19. Rule 1200-1-11-.05(7)(c)1 requires owners or operators of hazardous waste management facilities to have, at the facility, a written closure plan which identifies the steps necessary to completely close the facility at any point during its intended life and at the end of its intended life.

This has not been done.

20. Rule 1200-1-11-.05(7)(c)1(i) requires owners or operators of hazardous waste management facilities to include in the closure plan a description of how and when the facility will be partially closed, if applicable, and ultimately closed, and ensure that the description identifies the maximum extent of the operation which will be unclosed during the life of the facility, and how all applicable closure requirements will be met.

Rule 1200-1-11-.05(2)(c)1(iv) requires owners or operators of hazardous waste management facilities to include in the closure plan a schedule for final closure which must include, as a minimum, the anticipated date when wastes will no longer be received, the date when completion of final closure is anticipated, and intervening milestone dates which allow tracking of the progress of closure.

No provision has been made for complying with these rules.

21. Rule 1200-1-11-.05(2)(e)1 requires owners or operators of hazardous waste management facilities to prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of his facility, unless physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of the facility, and disturbance of the waste or equipment, by the unknowing or unauthorized entry of persons or livestock onto the active portion of a facility, will not cause a violation of the requirements for this facility.

Rule 1200-1-11-.05(2)(e)2 requires owners or operators of hazardous waste management facilities to have a 24-hour surveillance system which continuously monitors and controls entry onto the active portion of the facility, or an artificial or natural barrier, which completely surrounds the active portion of the facility, and a means to control entry, at all times, through the gates or other entrances to the active portion of the facility, if this kind of control is needed for this kind of facility.

Rule 1200-1-11-.05(3)(f) requires owners or operators of hazardous waste management facilities to maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless aisle space is not needed for any of these purposes.

The drum storage area is in violation of these rules.

22. Rule 1200-1-11-.05(3)(b) requires owners or operators of hazardous waste management facilities to maintain and operate their facilities in a manner which will minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten public health or the environment.

    The treatment system was in violation of this rule because some of the tanks had overflowed and several of them were in violation of freeboard requirements, resulting in spillage of the liquid waste.

23. Rule 1200-1-11.05(10)(b)3 requires owners or operators of hazardous waste management facilities that manage hazardous waste in uncovered tanks, to operate them to ensure at least 60 centimeters (2 feet) of freeboard, unless the tank is equipped with a containment structure, a drainage control system, or a diversion structure with a capacity that equals or exceeds the volume of the top 60 centimeters (2 feet) of the tank.

    Several tanks in the treatment system were in violation of this rule.

RECOMMENDATIONS/REMARKS

The violations noted in the previous inspection have not been corrected primarily because the report was addressed to the former environmental manager who is no longer with the company, and the general manager, Mr. Ellison, was not present during the previous inspection and was not aware of the report. The wastewater plant overflowed because no one who was familiar with the system was there to watch it.

Mr. Ellison assured me that he would call a wastewater operator back immediately to stop the overflow and clean up the spill. He was instructed to manage all of the spilled liquid as a hazardous waste after it is cleaned up.

The company has been advised that they must notify as a treatment and storage facility, as well as a generator and that they must correct all of the listed violations if they continue to maintain or operate treatment or storage facilities.

Rick Brown
SIGNATURE

4-27-82
DATE

RB:pg D/I

REFERENCE NO. 8

NUS CORPORATION AND SUBSIDIARIES **OTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	06/25/91	14:30

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN:	OF:	PHONE:
Michael Mullaney Tom McNealy	Eastern Plating Co. Newport, Tennessee	(615) 623-0062

AND:
Wendell C. McLendon Wendell C. McLendon 6/25/91

DISCUSSION:

I talked with Mr. Mullaney and Mr. McNealy concerning wastewater treatment at Eastern Plating Company. They stated that the Heywood-Wakefield Company built a waste treatment plant (constructed by Utilite Co.) to allow the discharge of effluent to the Pigeon River.

A pretreatment plant was already in place when Eastern Plating Co. began operations. Water used in the electroplating process is pretreated before pumping effluent directly to the Newport Utilities wastewater treatment plant.

Eastern Plating Company holds an Industrial Wastewater Discharge Permit (No. NUB-001).

REFERENCE NO. 9

NUS CORPORATION AND SUB[illegible] ELECON NOTE

CONTROL NO.:	DATE:	TIME:
F4-9008-32	07/09/91	14:25

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

[illegible] 9-1-92

BETWEEN: Abba Yavari	OF: Central Office - Water Pollution Control	PHONE: (615) ~~(625)~~ 741-7883

AND:

Wendell C. McLendon [illegible] 7/9/91

DISCUSSION:

Mr. Yavari stated that Heywood-Wakefield Company was issued a temporary NPDES permit on June 13, 1974 (expired June 1, 1977). The earliest date for a permanent NPDES permit (No. TN0001392) listed is May 15, 1979. The original outfall (listed on the temporary permit) was for 0.2 mile on Sinking Creek. The outfall for the permanent NPDES permit is River Mile No. 4 on the Pigeon River.

REFERENCE NO. 10

NUS CORPORATION AND SUB **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	07/08/91	15:35

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN: Jesse Jones	OF: TN Dept. of Environment and Conservation	PHONE: (615)594-6035

AND:
Wendell C. McLendon Wendell C McLendon 7/8/91

DISCUSSION:

Mr. Jones stated that Heywood-Wakefield Company was issued an NPDES permit on July 1, 1983 (original issue date - October 29, 1980). The permit was to expire July 30, 1988. The permit was recorded as inactive on October 16, 1983. NPDES permit No. TN0001392.

REFERENCE NO. 11

MAR 20 1981

HEYWOOD-WAKEFIELD COMPANY OF NEWPORT

A DIVISION OF HEYWOOD-WAKEFIELD COMPANY
NEWPORT, TENNESSEE 37821

615 623 3042
Telex 55 7454

REFERENCE # 6

March 18, 1981

Environmental Protection Agency
Region IV
345 Courtland St.
Atlanta, Ga. 30365

Dear Sir:

The attached Hazardous Waste Permit Application is re-submitted per your request with corrections and additional information as needed to complete approval.

If further assistance is required concerning this application, please direct correspondence to the undersigned.

Sincerely,

Walter O'Neil

Walter O'Neil
Engineering

CC: State of Tennessee
Dept. of Public Health
Cordell Hull Bldg.
Nashville, Tn. 37219

Please print or type in the unshaded areas only.
(Fill-in areas are spaced for elite type, i.e., 12 characters/inch.)

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

TND000 [illegible]

HENWOOD [illegible]

FURNACE [illegible]

MENFORT [illegible]

OFF [illegible]

MENFORT [illegible]

I. EPA I.D. NUMBER

F

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK X: YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to waters of the U.S.? (FORM 2A)		X	
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	X		
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	X		
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	

SPECIFIC QUESTIONS	MARK X: YES	NO	FORM ATTACHED
B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)		X	
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)		X	
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP

IV. FACILITY CONTACT

A. NAME & TITLE (List first, separate by comma)

CHARTIER [illegible] PRESIDENT

2 ~~KELLY, JOHN~~ ~~OPERATIONS MGR~~

B. PHONE (area code & no.)

615 623 3042

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3

B. CITY OR TOWN | C. STATE | D. ZIP CODE

4

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5

B. COUNTY NAME

COCKE

C. CITY OR TOWN | D. STATE | E. ZIP CODE | F. COUNTY CODE (if known)

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
2531 (specify) MFG SCHOOL FURNITURE	(specify)
C. THIRD	**D. FOURTH**
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME: HEYWOOD-WAKEFIELD COMPANY

B. Is the name listed in Item VIII-A also the owner? ☒ YES ☐ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)

P (specify)

D. PHONE (area code & no.): A 615 623 3042

E. STREET OR P.O. BOX: ROUTE 7

F. CITY OR TOWN: NEWPORT

G. STATE: TN

H. ZIP CODE: 37821

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): 9 N TN0001392	**D. PSD** (Air Emissions from Proposed Sources): 9 P
B. UIC (Underground Injection of Fluids): 9 U	**E. OTHER** (specify): 9 (specify)
C. RCRA (Hazardous Wastes): 9 R	**E. OTHER** (specify): 9 (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

MANUFACTURE MOVABLE CLASS ROOM SCHOOL FURNITURE

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
~~JOHN J. KELLY~~ E. E. Chartier V. Pres. ~~OPERATIONS MANAGER~~	E. E. Chartier 3/17/81 ~~John J. Kelly~~	9/16/80

COMMENTS FOR OFFICIAL USE ONLY

C

Full-in areas are spaced for elite type (i.e., 12 characters/inch)

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

X 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN: YR 78 MO 03 DAY 06

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

1. FACILITY HAS INTERIM STATUS

2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided. Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP T/A C I

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600	G		5				
X-2	T03	20	E		6				
1	D80	~~25~~ 120	L ~~A~~		7				
2					8				
3					9				
4					10				

Continued from the front

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER – Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY – For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic or toxic contaminant** entered in column A estimate the total annual quantity of all the non–listed **waste***(s)* that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE – For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:
   For listed hazardous wastes: For each listed hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non–listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

CONTINUE ON PAGE 5

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)		FOR OFFICIAL USE ONLY	
W	1	W DUP	2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F006	4,200	P	D80	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

Continued from the front

IV. DESCRIPTION OF HAZARDOUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*	
F	6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
35 84 30N	83 12 00W

VIII. FACILITY OWNER

X A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
	G		

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
E.G. Chartier, V. Pres ~~JOHN J. KELLY~~	E.G. Chartier 3/17/81 ~~John J. Kelly~~	1/28/81

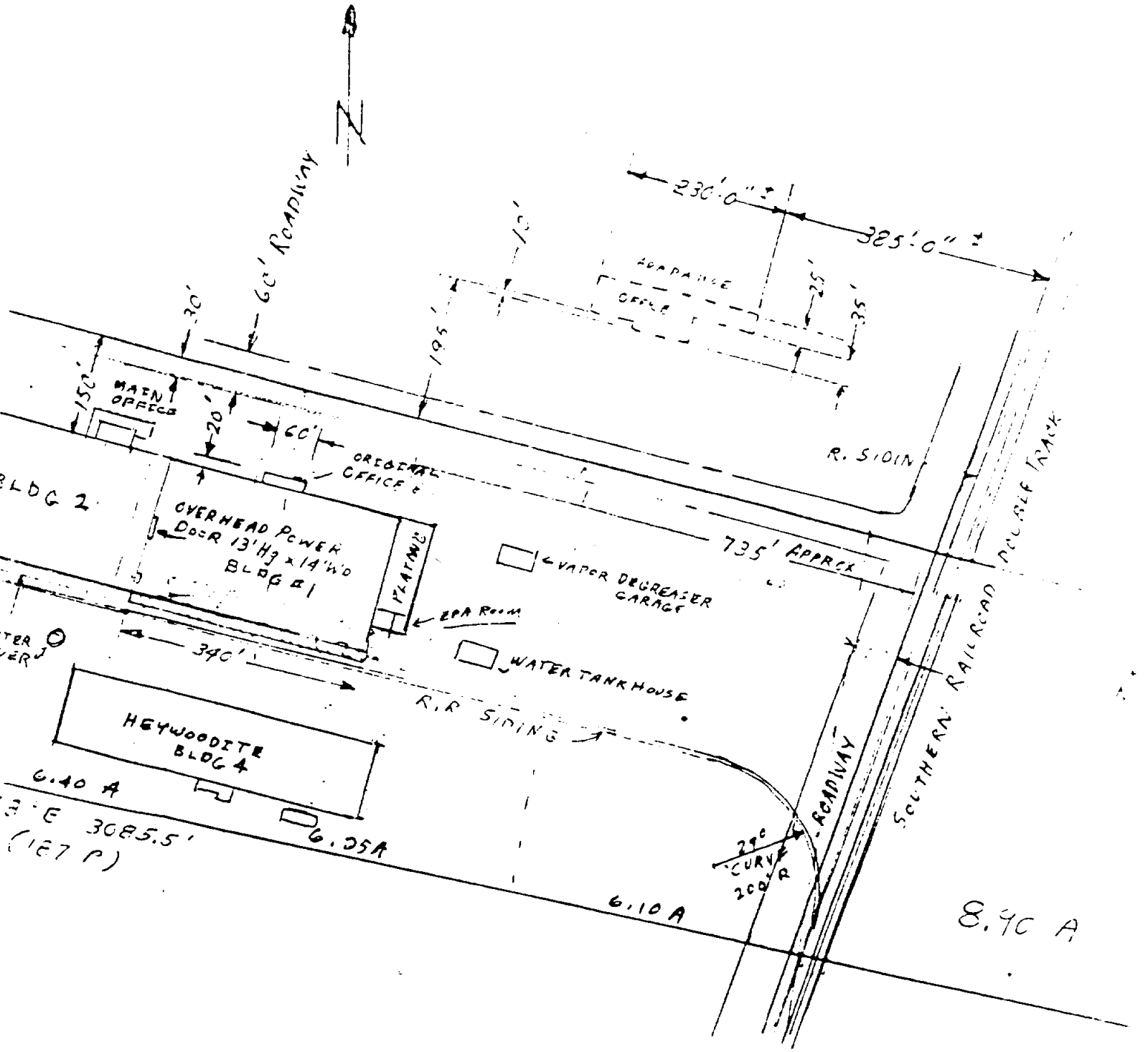
X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
E.G. Chartier, V. Pres ~~John J. Kelly~~	E.G. Chartier 3/13/81 ~~John J. Kelly~~	9/16/80

CONTINUE ON PAGE 5

NEWPORT TENN



1/16" = 12.5'

REFERENCE NO. 12

NAME OF FACILITY
Heywood-Wakefield Company

D. NUMBER
ND003382330

ADDRESS AND LOCATION
Off Rankin Road, Newport, Tennessee

OWNER/OPERATOR/PRINCIPAL CONTACT
Walter O'Neill

MAILING ADDRESS
Rural Route 7, Newport, Tennessee 37821

TELEPHONE
615-623-3042

DATE/TIME OF INSPECTION
March 8, 1982, 10:00 A.M.

REPORT PREPARED BY:
Rick Brown

NAME(S) OF PARTICIPANTS/TITLES/AFFILIATIONS
Rick Brown, Environmental Engineer, Tennessee Division of Solid Waste Management
Walter O'Neill, Heywood-Wakefield Company

PURPOSE OF INSPECTION
Initial inspection under the Tennessee Hazardous Waste Management Act. The purpose of this inspection was to examine records pertaining to and facilities involved in the generation, treatment, and storage of those hazardous wastes of which Heywood-Wakefield has notified the State of Tennessee, as required by law, in order to determine whether the facility is in compliance with the regulations established under the Act.

FACILITY DESCRIPTION
The Heywood-Wakefield plant at Newport, Tennessee, manufactures metal-frame desks for schools. One stage in the process is nickel and chrome plating of the frames. The plating process includes a unit which recovers and recycles much of the chromium. The spent plating solution is discharged into a treatment system, which by pH adjustment precipitates most of the remaining metals so that the effluent can be discharged under an NPDES permit. The sludge from the treatment system is pressure-filtered to reduce the moisture content and is then put into drums. The sludge from the treatment system is a hazardous waste. The drums containing this waste are stored in an area outside the plant until enough have accumulated to justify a shipment to an approved disposal facility. Presently, the waste is transported to SCA Services' approved hazardous waste landfill at Pinewood, South Carolina. Manifests are kept on these shipments. Prior to the RCRA requirements, the waste went to the Cocke County landfill.

Presently production has almost stopped at the plant and the plant is likely to close down.

INSPECTION FINDINGS
The following violations of the Tennessee Hazardous Waste Management Rules were noted during the inspection:

1. The facility was is violation of 1200-1-11-.05(5)(d)2. (i), .05/A(a)(1-3), and (5)(d)2.(ii) concerning records of wastes received. There were no records of quantities of wastes received into the treatment system or placed in the storage area, and there was no record of the location of the wastes within the facility.

REFERENCE NO. 13

ONTROL BOARD

15-26

IN THE MATTER OF:)
)
HEYWOOD-WAKEFIELD COMPANY) 82-344
NEWPORT, TENNESSEE)
)
)

REQUEST FOR
ORDER
CIVIL PENALTY AND DAMAGE ASSESSMENT

Comes now the Tennessee Department of Public Health, and states that:

I.

It is responsible for the State Hazardous Waste Management Program under the provisions of T.C.A. 53-6301, et. seq. and the Tennessee Department of Public Health Regulations 1200-1-11-.01 et. seq. The Division of Solid Waste Management, hereinafter referred to as "The Division", is delegated administrative responsibility under the foregoing statute and regulations for carrying out the State Hazardous Waste Management Program.

II.

Heywood-Wakefield Company, hereinafter referred to as "The Respondent", is a manufacturing concern located in Newport, Tennessee, and was, at all times pertinent to this order, engaged in the business of the manufacture of moveable classroom school furniture. The Respondent has not registered with the Division, either as a storage, treatment or disposal facility or as a generator of hazardous waste, namely, wastewater treatment sludge generated from its electroplating operations. Originally, the waste was generated, accumulated and shipped off-site for disposal, within the 90 day time limit in accordance with Rule 1200-1-11-.03(4)(b)2. On August 17, 1982, the Division was informed that the Respondent has filed for Bankruptcy under Chapter 11 of the Federal Bankruptcy Act (Case # 82-B-10393(JJG)UNITED STATES BANKRUPTCY COURT FOR THE SOUTHERN DISTRICT OF NEW YORK). Since that time, the resultant inactivity on the Respondent's part has resulted in the storage of hazardous waste for longer than 90 days which made the Respondent subject to the permitting requirements of Rule 1200-1-11-.07. A representative of the Division inspected the facility first

on March 8, 1982 and found numerous violations of Division regulations. Subsequent inspections conducted on April 16, July 1, August 17, and October 5 continued to show violations though some progress seemed to be made. At the present time, the plant is no longer in operation and hazardous waste accumulated from the time when it was active continues to be stored on the site. This storage consists of two types, the first being plating liquid accumulated from the spent plating fluid used in the chrome and nickel plating of the frames of the furniture produced there. This liquid is stored in two tanks on the site. The second consists of drums containing the sludge generated from the treatment of the spent plating fluid, the water from which was later discharged under a waste water treatment system permitted for that limited purpose by the Tennessee Department of Public Health, Division of Water Quality Control through an NPDES Permit (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM). The generation and maintenance of such hazardous wastes for longer than 90 days necessitates the classification of Respondent as a Non-Notifier of hazardous waste activities, subject to obtaining a permit under the provisions of T.C.A. 53-6301 et. seq. and Tennessee Department of Public Health regulations 1200-1-11-.01 et. seq. (to be cited in more detail below).

III.

On December 1, 1982, a representative of the Department inspected the facility for the sixth time in 1982 to monitor correction of the violations which were noted at the time of the initial inspection. During that inspection, the following deficiencies were noted:*

> N.B: These violations resulted from the Respondent's storing hazardous waste longer than 90 days, thereby requiring it to comply with all provisions of Division Regulations governing the storage and treatment of hazardous waste.

1. Hazardous waste at the site was not cataloged as to location within the facility and as to quantity in each location, including cross references to specific document numbers, if the waste was accompanied by a manifest.

2. Personnel remaining at the facility had not been given training to insure appropriate response to emergency situations involving the hazardous waste, either through classroom instruction or on the job training.

3. There was no documentation of efforts to familiarize local police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances into the facility and possible evacuation routes with specific designation of primary and secondary response authorities in these areas; there was no documentation of attempts to reach agreements with state emergency response teams, emergency response contractors and equipment suppliers; there was no documentation of any agreements made to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions or releases at the facility; and there was no documentation of any refusals by local or state authorities to enter into such arrangements.

4. The contingency plan was deficient in that no directions were given which employees must take in response to fires, explosion or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents to air, soil or surface water at the facility, due to the fact that no specific steps were set out for each particular type of realistic emergency (e.g. the possibility of release of a highly corrosive waste from tanks at the site).

5. The contingency plan was further deficient in that no list of the emergency equipment at the facility was given to include its location, a physical description of each item on the list, and a brief outline of its capabilities.

6. The contingency plan was further deficient in that there was no record of any agreements between the respondent and local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services, nor had a copy of the contingency plan as existing been submitted to all of the above agencies.

7. The closure plan was deficient in that it failed to provide the description of how and when the facility would be partially closed if applicable, or ultimately closed, and failed to identify with specificity the maximum extent of the operation which would be unclosed during the life of the facility nor did it describe how all applicable closure requirements would be met nor did it include an estimate of the maximum inventory of waste in storage at any given time during the life of the facility.

IV.

The above conditions found at the inspection on December 1, 1982, constitute violations of the following specific regulations, respectively:*

*N.B: Division Regulations require compliance with these provisions whenever a generator exceeds the 90 day accumulation time allowance of Rule 1200-1-11-.03(4)(b) thereby making him subject to receiving the proper operating authority in accordance with Rule 1200-1-11-.07(1)(b)1(ii). As set forth in Rule 1200-1-11-.07(1)(b)1(ii), an existing facility must not treat, store, or dispose of hazardous wastes without a permit unless interim status is obtained. To operate during interim status the owner or operator must qualify for interim status and comply with the requirements of Rule 1200-1-11-.05 (see paragraph IV 1-7 of this order).

1. Tennessee Department of Public Health, Division of Solid Waste Management, Rule 1200-1-11-.05(5)(d).
2. Tennessee Department of Public Health, Division of Solid Waste Management, Rules 1200-1-11-.05(2)(g)(i), (2)(g)1(ii), (2)(g)1(iii) and (2)(g)4.
3. Tennessee Department of Public Health, Division of Solid Waste Management, Rules 1200-1-11-.05(3)(g)1(i), (3)(g)1(ii), (3)(g)1(iii), (3)(g)1(iv) and (3)(g)2.
4. Tennessee Department of Public Health, Division of Solid Waste Management, Rule 1200-1-11-.05(4)(c)(1).
5. Tennessee Department of Public Health, Division of Solid Waste Management, Rule 1200-1-11-.05(4)(c).
6. Tennessee Department of Public Health, Division of Solid Waste Management, Rules 1200-1-11-.05(4)(c)3, and (4)(d)2.
7. Tennessee Department of Public Health, Division of Solid Waste Management, Rules 1200-1-11-.05(7)(c)(i) and (7)(c)1(ii).

RELIEF

V.

NOW, THEREFORE, the Department hereby requests the Board to order the respondent to take the following steps:

(a) Within forty-five days from receipt of the Board's Order, a written proposal for removal of the waste from the Heywood Wakefield Company Plant in Newport must be submitted to the Division. The written proposal must include:

1. The dates for sampling the waste if applicable.
2. The name of the certified laboratory employed if needed.
3. The permitted contracted transporter to transport the waste.
4. The hazardous waste facility employed to manage the waste.

(b) Within seventy-five days from receipt of the Board's Order, the removal of hazardous waste must be initiated.

(c) Respondents must comply with all manifest requirements of the Rules Governing Hazardous Waste Management in Tennessee.

(d) Within 120 days of receipt of the Board's Order, all hazardous waste must have been removed to an authorized hazardous waste management facility.

DAMAGES

VI.

FURTHERMORE, the Department requests that Damages of $632.00 be assessed against the Respondent for expenses incurred by the Division for investigating the above violations and enforcing the restoration of the environment to its former condition more particularly as follows:

PERSONNEL 45 hours at $12.00 per hour	540.00
MILEAGE 460 mile at .20 per mile	92.00
TOTAL	632.00

CIVIL PENALTY

VII.

FINALLY, the Department requests that Respondent be assessed a civil penalty in the amount of:

$20,000.00 (TWENTY-THOUSAND DOLLARS).

In requesting this civil penalty, at least the following factors were considered:

1. In spite of the cooperation of local representatives of the Respondent, the lack of effort put forth by corporate officials and their creditors to comply with the law.
2. The economic benefit gained by the Respondent in failing to make the proper financial outlay for removal of the waste.

NOTICE OF RIGHT TO APPEAL

REQUEST FOR

ORDER, CIVIL PENALTY AND DAMAGE ASSESSMENT

The Respondents are hereby notified that in accordance with T.C.A. 53-6313 and statutes cited therein, they may appeal this Request for Order, Civil Penalty and Damage Assessment to the Solid Waste Disposal Control Board by filing with the Deputy Commissioner a written petition setting forth the grounds and reasons for and asking for a hearing in the matter before that Board. If no written petition for review is filed within thirty days after the date of service, the Respondents shall be deemed to have consented and this Request for Order, Civil Penalty and Damage Assessment shall become final as though granted by the Board. The petition must be filed in accordance with Division Rule 1200-1-10-.04. The hearing before the Board would be governed by Tennessee Code Annotated 53-6313, Division Rules 1200-1-10-.01 et. seq. and applicable provisions as set out in T.C.A. 4-5-101 et. seq. The Respondents may be represented by legal counsel.

REFERENCE NO. 14

NUS CORPORATION AND **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	07/10/91	14:10

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN: Jennifer Powers	OF: Division of Solid Waste Management	PHONE: (615)741-3424

AND:
Wendell C. McLendon Wendell C. McLendon 7/10/91

DISCUSSION:

Ms. Powers stated that Heywood-Wakefield Company was classified as a large generator at the time of bankrputcy (August, 1982).

NAME OF FACILITY
Heywood-Wakefield Company

I. D. NUMBER
TND003382230

ADDRESS AND LOCATION
off Rankin Road
Newport, Tennessee

OWNER/OPERATOR/PRINCIPAL CONTACT
None (the company is bankrupt and out of business). Sam Spratlin of Barclay's Bank, a creditor of the company, is acting as the contact for the company in its dealings with the State.

MAILING ADDRESS
None (No employees or contacts of the company can now be reached at this location).

TELEPHONE
None

DATE/TIME OF INSPECTION
March 8, 1984, 2:00 P.M.

REPORT PREPARED BY:
Rick Brown
Division of Solid Waste Management
East Tennessee Regional Health Office
1522 Cherokee Trail
Knoxville, Tennessee 37920

NAME(S) OF PARTICIPANTS/TITLES/AFFILIATIONS
Rick Brown, Environmental Engineer, Division of Solid Waste Management
Larry Trapp, Chemical Waste Management, Inc.

PURPOSE OF INSPECTION
This was a closure inspection for an inactive storage facility. We were notified that the hazardous wastes were to be removed on this date, in accordance with an agreement between the Division and Barclay's Bank. The purpose of the inspection was to verify that all hazardous wastes and hazardous waste residues were removed.

FACILITY DESCRIPTION
The Heywood-Wakefield Company used to manufacture metal desks for schools. The desk frames were plated at the plant. The plating wastewater was treated in an on-site wastewater treatment plant, and a wastewater treatment sludge (F006) was generated. This waste was stored in drums, most of which were stored inside a locked building, although a few were placed outside in the plant yard.

There has been no production at the plant for almost two years, and all personnel except for a security guard have been gone for over a year. The portion of the plant where the plating was done has been leased to another company, Eastern Plating Company, which has reactivated the plating line and the wastewater treatment system. They have notified as a generator.

Up until the time of this inspection all of the drums containing waste generated by Heywood-Wakefield have remained where they were when Heywood-Wakefield abandoned the plant. At the time of this inspection the wastes were being loaded into a trailer and the site was being cleaned up by personnel from Chemical Waste Management, Inc. The wastes from Heywood-Wakefield's operations make up one trailer load; when this is gone, none of Heywood-Wakefield's wastes will remain at the site.

INSPECTION FINDINGS

The Heywood-Wakefield Company has been in enforcement for some time due to their improper storage of hazardous wastes, and has been ordered to remove the wastes. Barclay's Bank, a creditor of Heywood-Wakefield, agreed to remove the hazardous wastes, and contracted with Chemical Waste Management to have this done. This inspection verified that the wastes were removed and that the site was cleaned up.

RECOMMENDATIONS/REMARKS

Heywood Wakefield had told us that they had put all of their drums of hazardous waste inside a locked building for storage. However, Chemical Waste Management found some of the same plating sludge in eight supposedly "empty" drums on the plant yard and agreed to include them in the cleanup project. This brought the total of drums up to 67. Also, a number of the drums contained free liquids on top of the sludge. These liquids were pumped off into other drums so that they could be handled separately. Ten more drums were generated from removing the liquids. Two drums were in very bad condition; the bottom fell out of one drum when it was moved. These were placed inside recovery drums. Some waste material had to be cleaned up around these leaky drums. Fortunately, they were on a concrete base so no soil was contaminated. Also, some water was spilled on the floor when the liquid portion of the waste was transferred. All spilled waste was cleaned up using absorbents, brooms, and shovels, and was drummed for shipment.

I stayed until the last drums were being loaded and the spillage on the floor was being cleaned up. Mr. Larry Trapp of Chemical Waste Management told me that he had been empowered by Mr. Sam Sprattlin of Barclay's Bank to sign the generator's copy of the manifest. I requested that copies of the manifest be submitted to this office when the project is completed.

Rick Brown

Rick Brown

March 9, 1984
DATE

RSB:pjm M/5

ATTACHMENTS/EXHIBITS

WASTE TRANSPORTATION AND DISPOSAL AGREEMENT

On this 9th day of January, 19 84, the parties, Barclays American Business Credit, a corporation, with its principal offices at _____, (hereinafter called "Generator"), and Emelle, Alabama Division of Chemical Waste Management, Inc., a Delaware corporation, with its principal offices at P.O. Box 55, Emelle, Alabama 35459, (hereinafter referred to as "Disposer"), have agreed as follows:

1. WASTE MATERIALS. During the term of this Agreement, Generator will provide to Disposer Generator's entire output of certain waste materials generated at Heywood Wakefield Rankin Road, Newport, Tennessee (up to a maximum of 80 drums per one time), the chemical composition and physical characteristics of which materials are described in the "Generator's Waste Material Profile Sheet", Code designation MAR-D24992, attache hereto, and incorporated herein.

2. DISPOSER SERVICES. Disposer agrees to provide Generator the following services, as indicated by the initials of Disposer on one or more of the following sections:

a. MCW Loading of the described waste materials onto transportation vehicles, cars or vessels.

b. ____ Transportation of the described waste materials from _____ to the permitted storage facility at _____

c. MCW Transportation of the described waste materials from Heywood Wakefield Newport, Tennessee to the disposal facility next following.

d. MCW Disposal of the described waste materials, in a manner permitted by law, at the following facility:
Chemical Waste Management, Inc., Highway 17 @ Mile Marker 163, Emelle, Alabama 35459

REFERENCE NO. 16

Potential Hazardous Waste Site

PRELIMINARY ASSESSMENT

HEYWOOD-WAKEFIELD COMPANY

COCKE COUNTY, NEWPORT, TENNESSEE

TND 003382330

PRELIMINARY ASSESSMENT
HEYWOOD-WAKEFIELD COMPANY
TND 003382330

The Heywood-Wakefield Company was located off of Rankin Road, north of Newport, Cocke County, Tennessee, and was a manufacturer of metal desks for schools. The frames of the desks were metal plated at the Plant. The company went bankrupt and ceased production in about 1982.

There were approximately 50 drums of waste left on site after the plant closure. Most of the drums were contained in an old plant building that was kept locked, but during clean-up procedures approximately eight drums with waste in them were discovered in the back lot behind the old process building. It is unknown what drum storage or waste disposal policies were used during the plants productive years.

The site lies in a valley between and within one mile of Sinking Creek and the Pigeon River. It is located one mile north, northwest of Newport, Tennessee and is located in a highly faulted area of the Appalachian Mountains. Migration of any contamination could result in the contamination of both ground and surface water.

The plants by-product sludge contained both chromium and nickel and spent solvents. The site was cleaned up in 1984 by Chemical Waste Management Inc. and hazardous waste was transported and properly disposed of by Chemical Waste Management at the Emelle, Alabama facility. For these reasons a low priority was assigned and should be inspected on a time available basis.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE: TN | 02 SITE NUMBER: [illegible]

II. SITE NAME AND LOCATION

01 SITE NAME: Heywood-Wakefield Company
02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: Route 7
03 CITY: Newport
04 STATE: TN | 05 ZIP CODE: 37821 | 06 COUNTY: Cocke | 07 COUNTY CODE: [illegible] | 08 CONG. DIST.:
09 COORDINATES LATITUDE: 35° 84' 30" | LONGITUDE: 83° 12' 00"
10 DIRECTIONS TO SITE (Starting from nearest public road):
US 70 west from Newport, TN, North on Dixie Highway to Rankin Road. East on Rankin Road. The road to the site is the second right off of Rankin Road.

III. RESPONSIBLE PARTIES

01 OWNER (if known): Heywood-Wakefield Company
02 STREET (Business, mailing, residential): Rural Rt. #7
03 CITY: Newport
04 STATE: TN | 05 ZIP CODE: 37821 | 06 TELEPHONE NUMBER: (615) 623-3042
07 OPERATOR (if known and different from owner): Forrest Ellison
08 STREET (Business, mailing, residential): Off Rankin Road
09 CITY: Newport
10 STATE: TN | 11 ZIP CODE: 37821 | 12 TELEPHONE NUMBER: (615) 623-3042
13 TYPE OF OWNERSHIP (Check one):
☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN
14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply):
☐ A. RCRA 3001 DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES DATE 3/8/8- (MONTH DAY YEAR)
☐ NO
BY (Check all that apply):
☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)
CONTRACTOR NAME(S): _____
02 SITE STATUS (Check one):
☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN
03 YEARS OF OPERATION: 1961 (BEGINNING YEAR) | 1982 (ENDING YEAR) ☐ UNKNOWN
04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED:
Site was an old electroplating plant with drums of electroplating sludge and solvents on site.
05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION:
If waste was allowed to be spilled on ground, then soil, groundwater, and surface water contamination is possible.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents):
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☒ D. NONE (No further action needed; complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT: | 02 OF (Agency/Organization): | 03 TELEPHONE NUMBER: ( )
04 PERSON RESPONSIBLE FOR ASSESSMENT: Charles R. Rush | 05 AGENCY: TDH&E | 06 ORGANIZATION: Superfund | 07 TELEPHONE NUMBER: (615) 741-6287 | 08 DATE: 9 9 86 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE: TN | 02 SITE NUMBER: D 003382330

II. WASTE STATES QUANTITIES AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [ ] A SOLID
- [ ] B POWDER FINES
- [X] C SLUDGE
- [ ] D OTHER _____ (Specify)
- [ ] E SLURRY
- [X] F LIQUID
- [ ] G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

NO. OF DRUMS 41

03 WASTE CHARACTERISTICS (Check all that apply)

- [X] A TOXIC
- [ ] B CORROSIVE
- [ ] C RADIOACTIVE
- [X] D PERSISTENT
- [ ] E SOLUBLE
- [ ] F INFECTIOUS
- [ ] G FLAMMABLE
- [ ] H IGNITABLE
- [ ] I HIGHLY VOLATILE
- [ ] J EXPLOSIVE
- [ ] K REACTIVE
- [ ] L INCOMPATIBLE
- [ ] M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	2255 +	gallons	
OLW	OILY WASTE			
SOL	SOLVENTS	unknown		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	unknown		

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU	electroplating sludge	999	Drums		
SOL	Spent electroplating solvents	999	Tanks		
MES	Chromium	7440473	Drums		
MES	Nickle	7440020	Drums		

V. FEEDSTOCKS (See Appendix for CAS numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

See references.

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D [illegible]

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: <100 — 04 NARRATIVE DESCRIPTION

Due to the highly fractured nature of the mountainous area, there exists the potential for groundwater contamination.

01 [X] B. SURFACE WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 — 04 NARRATIVE DESCRIPTION

If migration of contaminants occures the possibility exists that it could go to the Pigeon River and Sinking Creek since both are within one mile of the site.

01 [ ] C. CONTAMINATION OF AIR — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [X] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: < 100 — 04 NARRATIVE DESCRIPTION

Some of the drums were stored in a back lot and the condition is unknown. If leakage occured there is a possibility of contact contamination.

01 [X] F. CONTAMINATION OF SOIL — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED: 1.0 (acres) — 04 NARRATIVE DESCRIPTION

Some of drums were stored in a back lot and if leakage occured, there will be soil contamination.

01 [ ] G. DRINKING WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] H. WORKER EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: TN
02 SITE NUMBER: T [illegible]

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES — 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: < 100
04 NARRATIVE DESCRIPTION
Drums were stored outside in a back lot of the plant with no barriers and it is possible leakage could occur.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: < 100

IV. COMMENTS

The drums were all removed from this site in 1984.

V. SOURCES OF INFORMATION

See references.

EPA FORM 2070-12 (7-81)

REFERENCES

Nashville Central Superfund Files.

Chestnut Hill, Tenn. 7½ Minute Quadrangle Topographic Map (1961) 164-NE.

Newport, Tenn. 7½ Minute Quadrangle Topographic Map (1961) 173-NW.

Rankin, Tenn. 7½ Minute Quadrangle Topographic Map (1961) 172-SW.

CRR/ib

AGREEMENT #84-009C

WASTE TRANSPORTATION AND DISPOSAL AGREEMENT

On this 9th day of January, 19 84, the parties, Barclays American Business Credit, a corporation, with its principal offices at _____, (hereinafter called "Generator"), and Emelle, Alabama Division of Chemical Waste Management, Inc., a Delaware corporation, with its principal offices at P.O. Box 55, Emelle, Alabama 35459, (hereinafter referred to as "Disposer"), have agreed as follows:

1. WASTE MATERIALS. During the term of this Agreement, Generator will provide to Disposer Generator's entire output of certain waste materials generated at Heywood Wakefield Rankin Road, Newport, Tennessee (up to a maximum of 80 drums per one time), the chemical composition and physical characteristics of which materials are described in the "Generator's Waste Material Profile Sheet", Code designation MAR-D24992, attached hereto, and incorporated herein.

2. DISPOSER SERVICES. Disposer agrees to provide Generator the following services, as indicated by the initials of Disposer on one or more of the following sections:

a. new Loading of the described waste materials onto transportation vehicles, cars or vessels.

b. ____ Transportation of the described waste materials from _____ to the permitted storage facility at _____

c. new Transportation of the described waste materials from Heywood Wakefield Newport, Tennessee to the disposal facility next following.

d. new Disposal of the described waste materials, in a manner permitted by law, at the following facility: Chemical Waste Management, Inc., Highway 17 @ Mile Marker 163, Emelle, Alabama 35459

Form no. WMI-55-A (Revised as of 12/18/80)

HAZARDOUS WASTE INSPECTION REPORT

NAME OF FACILITY
Heywood-Wakefield Company

I. D. NUMBER
TND003382230

ADDRESS AND LOCATION
off Rankin Road
Newport, Tennessee

OWNER/OPERATOR/PRINCIPAL CONTACT
None (the company is bankrupt and out of business). Sam Sprattlin of Barclay's Bank, a creditor of the company, is acting as the contact for the company in its dealings with the State.

MAILING ADDRESS
None (No employees or contacts of the company can now be reached at this location).

TELEPHONE
None

DATE/TIME OF INSPECTION
March 8, 1984, 2:00 P.M.

REPORT PREPARED BY:
Rick Brown
Division of Solid Waste Management
East Tennessee Regional Health Office
1522 Cherokee Trail
Knoxville, Tennessee 37920

NAME(S) OF PARTICIPANTS/TITLES/AFFILIATIONS
Rick Brown, Environmental Engineer, Division of Solid Waste Management
Larry Tropp, Chemical Waste Management, Inc.

PURPOSE OF INSPECTION
This was a closure inspection for an inactive storage facility. We were notified that the hazardous wastes were to be removed on this date, in accordance with an agreement between the Division and Barclay's Bank. The purpose of the inspection was to verify that all hazardous wastes and hazardous waste residues were removed.

FACILITY DESCRIPTION
The Heywood-Wakefield Company used to manufacture metal desks for schools. The desk frames were plated at the plant. The plating wastewater was treated in an on-site wastewater treatment plant, and a wastewater treatment sludge (F006) was generated. This waste was stored in drums, most of which were stored inside a locked building, although a few were placed outside in the plant yard.

There has been no production at the plant for almost two years, and all personnel except for a security guard have been gone for over a year. The portion of the plant where the plating was done has been leased to another company, Eastern Plating Company, which has reactivated the plating line and the wastewater treatment system. They have notified as a generator.

Up until the time of this inspection all of the drums containing waste generated by Heywood-Wakefield have remained where they were when Heywood-Wakefield abandoned the plant. At the time of this inspection the wastes were being loaded into a trailer and the site was being cleaned up by personnel from Chemical Waste Management, Inc. The wastes from Heywood-Wakefield's operations make up one trailer load; when this is gone, none of Heywood-Wakefield's wastes will remain at the site.

INSPECTION FINDINGS

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RECOMMENDATIONS/REMARKS

Heywood Wakefield had told us that they had put all of their drums of hazardous waste inside a locked building for storage. However, Chemical Waste Management found some of the same plating sludge in eight supposedly "empty" drums on the plant yard and agreed to include them in the cleanup project. This brought the total of drums up to 67. Also, a number of the drums contained free liquids on top of the sludge. These liquids were pumped off into other drums so that they could be handled separately. Ten more drums were generated from removing the liquids. Two drums were in very bad condition; the bottom fell out of one drum when it was moved. These were placed inside recovery drums. Some waste material had to be cleaned up around these leaky drums. Fortunately, they were on a concrete base so no soil was contaminated. Also, some water was spilled on the floor when the liquid portion of the waste was transferred. All spilled waste was cleaned up using absorbents, brooms, and shovels, and was drummed for shipment.

I stayed until the last drums were being loaded and the spillage on the floor was being cleaned up. Mr. Larry Trapp of Chemical Waste Management told me that he had been empowered by Mr. Sam Sprattlin of Barclay's Bank to sign the generator's copy of the manifest. I requested that copies of the manifest be submitted to this office when the project is completed.

Rick Brown

Rick Brown

March 9, 1984
DATE

RSB:pjm M/5

ATTACHMENTS/EXHIBITS

SCALE 1:21000
3 mi.
2 mi.
1 mi.
Bottoms
FRENCH
BROAD
RIVER
Proposed
Cocke Co.
S. Landfill
HEYWOOD
WAKEFIELD
SITE
Northport
CHESTNUT HILL, TENN
1961
164-NE
NEWPORT

NUS CORPORATION
1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404-938-7710

REFERENCE NO. 17

RECEIVED
AUG 30 1989
EPA - REGION IV
ATLANTA, GA.

C-586-8-9-225

August 28, 1989

Mr. A. R. Hanke
Site Investigation and Support Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Date: 10/13/89
Site Disposition: [illegible]
EPA Project Manager: [illegible]

Subject: Screening Site Inspection, Phase I
Heywood-Wakefield Company
Newport, Cocke County, Tennessee
EPA ID No. TND003382330
TDD No. F4-8907-27

Dear Mr. Hanke:

FIT 4 conducted a Screening Site Inspection at the Heywood-Wakefield Company on Chemwood Drive in Newport, Cocke County, Tennessee. Phase I included a review of EPA and state file material, completion of a target survey, and an offsite reconnaissance of the facility and the surrounding area.

The facility formerly manufactured metal desks. The frames of the desks were plated at the site. The plant began operation in 1957 and went bankrupt in 1982 (Refs. 1, 2). The facility is currently occupied by Eastern Plating, Virco Manufacturing, a warehouse for Electric Voice, and offices for Great Lakes Chemical Industries (GLI) (Ref. 3).

Waste disposal practices during Heywood-Wakefield's period of operation are not completely clear. Approximately 200 pounds per day of waste material was generated from air pollution control equipment, and was disposed onsite. According to the company, the waste contained ground wood chips and inert materials (Ref. 4). Spent plating solution was discharged into a treatment system prior to disposal into the Pigeon River under a NPDES permit, and treated plating sludge was drummed (Refs. 1, 5, 6). It was originally shipped offsite to the Cocke County landfill and later disposal at the SCA Services facility in Pinewood, South Carolina (Ref. 7). After Heywood-Wakefield's closure, approximately 60 drums of waste were found inside the locked plant building and 8 were discovered in the lot near the old processing building (Ref. 2). The drums contained a treatment sludge consisting of chromium, nickel, and spent solvents. The drums were removed in 1984 by Chemical Waste Management, and they were disposed at its Emelle, Alabama facility (Ref. 2). A settling pond for site drainage is also located at the southeast corner of the facility (Ref. 8). Sediment and stormwater samples collected from the facility in 1989 by the Tennessee Department of Health and Environment showed elevated levels of chromium, nickel, and lead (Ref 9). Heywood-Wakefield was notified several times that it was not in compliance with RCRA regulations, however, the current owner, Eastern Plating has filed as a RCRA generator (Refs. 6, 10).

The site is in the Valley and Ridge Physiographic Province which is typified primarily by faulted and folded carbonate rocks which result in northeast to southwest trending ridges and valleys (Ref. 11, p. 132). Groundwater in this region is found in fractures and solution features in the upper 300 feet of the rocks and the overlying regolith (Ref. 11, p. 44). This is a region of karst topography (Ref. 12). The aquifer normally used in this area is the carbonates of the Knox Group, and while the depth to water is variable, it can be found as shallow as 15 feet below land surface (Ref. 11, p. 134-137). In the site vicinity, the wells are completed in the Siever Shale with depths to water ranging from 7 to 71 feet bls (Ref. 11, p. 137). The silty to sandy residium of the Siever shale represents the layer of lowest hydraulic conductivity between the surface and the aquifer (Ref. 11, p. 44). The net annual rainfall is 11.0 inches and the 1 year-24 hour rainfall is 2.8 inches (Refs. 13, pp. 43, 63 and 14, p. 93).

Numerous private wells and one public well are located within a 4-mile radius of the facility. About 200 private wells are located in those areas not served by the Newport Utilities Board, and their depths range from 100 to 300 feet (Ref. 11, p. 134-137). The L.W. Hooper system serves about 328 residents from two wells and a spring, and it is also interconnected with the Newport system (Ref. 15). The Newport water system receives its water from an intake on the French Broad River and serves 14,588 residents (Ref. 16).

Surface water runoff from the facility drains to a stormwater pond. It is not known whether runoff discharges to the Pigeon River, a tributary of the French Broad River. The rivers join about 3 miles downstream of the site and form a lake. It is unlikely that site contaminants could reach the intake.

The facility is located in an industrial park. The population residing within one mile of the facility is estimated at 342 people (Ref. 17). Access to the facility is not restricted.

Based upon the presence of contamination, the target population and the enclosures, a Screening Site Inspection - Phase II is recommended on a high priority basis. Should you have any questions, please contact me at NUS Corporation.

Very truly yours,

Bob Donaghue

Bob Donaghue
Project Manager

Approved:

Greg Schank

BD/dwf

Enclosures

cc. Charlie Stevens

REFERENCES

1. History of Heywood-Wakefield Company and map, Newport, Tennessee, obtained from Tennessee Department of Health and Environment (TDH &E) files in Knoxville.

2. Potential Hazardous Waste Site Preliminary Assessment (EPA Form 2070-12) and attachments for Heywood-Wakefield Company. Filed by Charles R. Rush, TDH&E, September 9, 1986.

3. NUS Corporation Field Logbook No. F4-1555 for Heywood-Wakefield Company, TDD No. F4-8907-27. Documentation of facility reconnaissance, August 15-16, 1989.

4. Walter O'Neil, Heywood-Wakefield Company, letter to Larry K. Ledford, Tennessee Department of Public Health, July 13, 1978. Subject: Air pollution control equipment waste disposal practices.

5. Rick Brown, Tennessee Department of Public Health, Division of Solid Waste Management, Notice of Violation letter to Forrest Ellison, Heywood-Wakefield Company, dated April 21, 1982. Subject: Hazardous waste inspection report.

6. Tennessee Department of Public Health, Request for Order Civil Penalty and Damage Assessment for Heywood-Wakefield Company, Case Number 82-344 before the Tennessee Solid Waste Disposal Control Board, April 15, 1983.

7. Rick Brown, TDH&E, Hazardous Waste Inspection Report, obtained from TDH&E files in Knoxville, Tennessee.

8. Site layout map for Heywood-Wakefield Company, obtained from TDH&E files in Knoxville, Tennessee.

9. Earl C. Leming, Manager, TDH&E Division of Water Pollution Control, letter to Tom McNealy, Plant Manager, Eastern Plating, dated January 26, 1989. Subject: Notice of Noncompliance, Illegal Discharges.

10. Rick Brown, TDH&E, Division of Solid Waste Management, Hazardous Waste Inspection Report, dated March 9, 1984.

11. G.D. DeBuchananne and R.M. Richardson, 1956, "Groundwater Resources of East Tennessee," Tennessee Division of Geology, Bulletin 58, Part 1.

12. Robert A. Miller, "Geological Hazards Map of Tennessee," Environmental Geology Series No. 5 (State of Tennessee, 1977).

13. U.S. Department of Commerce, "Climatic Atlas of the United States," (Washington, D.C.: GPO, June 1968) Reprint: 1983, National Oceanic and Atmospheric Administration.

14. U.S. Department of Commerce, "Rainfall Frequency Atlas of the United States," Technical Paper No. 40, (Washington, D.C.: GPO, 1963, p. 93).

15. Tennessee Department of Health and Environment, Drinking Water Division, Public Water System Data for L.W. Hooper Water System in Newport, Tennessee, dated October 9, 1987.

16. Tennessee Department of Health and Environment, Drinking Water Division, Public Water System Data for Newport Utilities Board in Newport, Tennessee, dated October 9, 1987.

17. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Tennessee, Rankin, 1961 and Newport, 1961.

RECONNAISSANCE CHECKLIST FOR HRS2 CONCERNS

Instructions: Obtain as much "up front" information as possible prior to conducting fieldwork. Complete the form in as much detail as you can, providing attachments as necessary. Cite the source for all information obtained.

Site Name: Heywood-Wakefield Company
City, County, State: Newport, Cocke County, Tennessee
EPA ID No.: TND 003 382330
Person responsible for form: Bob Donaghue
Date: 8/16/89

Air Pathway

Describe any potential air emission sources onsite: None

Identify any sensitive environments within 4 miles: None

Identify the maximally exposed individual (nearest residence or regularly occupied building - workers do count): Workers at Virco Manufacturing and Eastern Plating at former Heywood-Wakefield site

Groundwater Pathway

Identify any areas of karst terrain: This is a karst area.

Identify additional population due to consideration of wells completed in overlying aquifers to the AOC: None

Do significant targets exist between 3 and 4 miles from the site?
Some private wells are located within this radius.
Is the AOC a sole source aquifer according to Safe Drinking Water Act? (i.e. is the site located in Dade, Broward, Volusia, Putnam, or Flagler County, Florida): No

Surface Water Pathway

Are there intakes located on the extended 15-mile migration pathway? Newport has an intake at River Mile 82 of the French Broad River, however it is upstream of the site.
Are there recreational areas, sensitive environments, or human food chain targets (fisheries) along the extended pathway? The Pigeon and French Broad Rivers are used for recreational fishing.

Onsite Exposure Pathway

Is there waste or contaminated soil onsite at 2 feet below land surface or higher? yes, sediment samples collected in the storm drainage system contained lead, chromium.
Is the site accessible to non-employees (workers do not count)?
yes
Are there residences, schools, or day care centers onsite or in close proximity?
The nearest residence is about one mile from the site
Are there barriers to travel (e.g., a river) within one mile?
Pigeon River 1200 feet east of the site

RCRA/NPL POLICY QUESTIONNAIRE FOR INITIAL SCREENING

Site Name: Heywood-Wakefield Co

City: Newport State: Tennessee

EPA I.D. Number: TND 003382330

Type of Facility: Generator X Transporter ____ Disposal ____
Treatment ____ Storage (more than 90 days) ____

I. RCRA APPLICABILITY	yes	no
Has this facility treated, stored or disposed of a RCRA hazardous waste since Nov. 19, 1980?	X	
Has a RCRA Facility Assessment (RFA) been performed on this site?		X
Does the facility have a RCRA operating or post-closure permit? If so, date issued _____		X
Did the facility file a RCRA Part A application?		X
If so:		
1) Does the facility currently have interim status?		X
2) Did the facility withdraw its interim status?		X
3) Is the facility a known or possible protective filer?		X
Is the facility a late (after Nov. 19, 1980) or non-filer that has been identified by EPA or the State?	X	

STOP HERE IF ALL ANSWERS TO QUESTIONS IN SECTION I ARE NO

II. FINANCIAL STATUS		
Is the facility owned by an entity that has filed for bankruptcy under federal or State laws?	X	

III. RCRA ENFORCEMENT STATUS		
Has the facility lost authorization to operate or had its interim status revoked?		X
Has the facility been involved in any other RCRA enforcement action?		X

HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

HEYWOOD-WAKEFIELD COMPANY
EPA SITE NUMBER TND003232330
NEWPORT
COCKE COUNTY, TN
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY ROB DONAHUE
OF NUS CORPORATION
ON 08/23/89

DATE OF THIS REPORT: 08/30/89
DATE OF LAST MODIFICATION: 08/23/89

GROUND WATER ROUTE SCORE : 49.29
SURFACE WATER ROUTE SCORE: 6.55
AIR ROUTE SCORE : 0.00

MIGRATION SCORE : 20.95

HRS GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASK. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	70 FEET		
DEPTH TO BOTTOM OF WASTE	6 FEET		
DEPTH TO AQUIFER OF CONCERN	64 FEET	2	4
PRECIPITATION	43.0 INCHES		
EVAPORATION	33.0 INCHES		
NET PRECIPITATION	10.0 INCHES	2	2
PERMEABILITY	1.0X10-3 CM/SEC	2	[illegible]
PHYSICAL STATE		2	[illegible]
TOTAL ROUTE CHARACTERISTICS SCORE:			1[illegible]
3. CONTAINMENT		3	3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE: LEAD			[illegible]
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	9	[illegible]
TOTAL WASTE CHARACTERISTICS SCORE:			2[illegible]
5. TARGETS			
GROUND WATER USE		3	[illegible]
DISTANCE TO NEAREST WELL	3000 FEET		
AND	MATRIX VALUE	84	[illegible]
TOTAL POPULATION SERVED	1088 PERSONS		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	1088		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			[illegible]

GROUND WATER ROUTE SCORE (Sgw) = 49.39

SITE: HEYWOOD-WAKEFIELD COMPANY

HRS SURFACE WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER	NO		
SITE WITHIN CLOSED BASIN	NO		
FACILITY SLOPE	2.9 %		
INTERVENING SLOPE	2.9 %	0	0
24-HOUR RAINFALL	2.9 INCHES	2	2
DISTANCE TO DOWN-SLOPE WATER	1200 FEET	2	4
PHYSICAL STATE			2
TOTAL ROUTE CHARACTERISTICS SCORE:			8
3. CONTAINMENT	3		3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE/LEAD			1
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
CHANNEL	0		
TONS	0		
TOTAL	2501 CU. YDS	3	3
TOTAL WASTE CHARACTERISTICS SCORE:			2
5. TARGETS			
SURFACE WATER USE		2	2
DISTANCE TO SENSITIVE ENVIRONMENTS		0	0
COASTAL WETLANDS	NONE		
FRESH WATER WETLANDS	NONE		
CRITICAL HABITAT	NONE		
DISTANCE TO STATIC WATER	> 3 MILES		
DISTANCE TO WATER SUPPLY INTAKE	> 3 MILES		
AND	MATRIX VALUE	0	0
TOTAL POPULATION SERVED	0		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			0

SURFACE WATER ROUTE SCORE (Sew) = 6.55

HRS AIR ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASS. VALUE	[illegible]
1. OBSERVED RELEASE	NO	0	[illegible]

2. WASTE CHARACTERISTICS

REACTIVITY:

INCOMPATIBILITY — MATRIX VALUE

TOXICITY

WASTE QUANTITY: CUBIC YARDS
DRUMS
GALLONS
TONS

TOTAL

TOTAL WASTE CHARACTERISTICS SCORE: [illegible]

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS
0 to 0.25 mile
0.25 to 0.5 mile
0.5 to 1.0 mile
1.0 to 4.0 miles

DISTANCE TO SENSITIVE ENVIRONMENTS
COASTAL WETLANDS
FRESHWATER WETLANDS
CRITICAL HABITAT

DISTANCE TO LAND USES
COMMERCIAL/INDUSTRIAL
PARK/FOREST/RESIDENTIAL
AGRICULTURAL LAND
PRIME FARMLAND
HISTORIC SITE WITHIN VIEW?

TOTAL TARGETS SCORE: [illegible]

AIR ROUTE SCORE (Sa) = 0.00

HAZARD RANKING SYSTEM SCORING CALCULATIONS
FOR
SITE: HEYWOOD-WAKEFIELD COMPANY
AS OF 08/23/89

GROUND WATER ROUTE SCORE

ROUTE CHARACTERISTICS		11
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	33

= 28314 /57,330 X 100 = 49.39 = S_{gw}

SURFACE WATER ROUTE SCORE

ROUTE CHARACTERISTICS		[illegible]
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	24
TARGETS	X	6

= 4212 /64,350 X 100 = 6.55 = S_{sw}

AIR ROUTE SCORE

OBSERVED RELEASE 0 /85,100 X 100 = 0.00 = S_{air}

SUMMARY OF MIGRATION SCORE CALCULATIONS

	S	S^2
GROUND WATER ROUTE SCORE (S_{gw})	49.39	[illegible]
SURFACE WATER ROUTE SCORE (S_{sw})	6.55	42.90
AIR ROUTE SCORE (S_{air})	0.00	0.00
$S^2_{gw} + S^2_{sw} + S^2_{air}$		[illegible]
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}$		49.5[illegible]
$S_m = \sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}/1.73$		28.8[illegible]

REFERENCE NO. 18

R-586-10-1-2

FINAL REPORT

SITE INSPECTION
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE
EPA ID NO.: TND003382330

Prepared Under
TDD No. F4-9008-32
Contract No. 68-01-7346

Revision 0

FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

OCTOBER 2, 1991

HALLIBURTON NUS ENVIRONMENTAL CORPORATION
SUPERFUND DIVISION

Prepared By	Reviewed By	Approved By
Wendell C. McLendon Project Manager		Phil Blackwell Regional Project Manager

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EXECUTIVE SUMMARY

The Heywood-Wakefield Company is located in an industrial park on the south side of Chemwood Drive approximately 1 mile northwest of the city of Newport, Cocke County, Tennessee. The facility began hand production of school desks and various metal seatings in 1957. In 1963, implementation of automation added an electroplating line to the manufacturing process. Heywood-Wakefield Company ceased operations in 1982 and declared a Chapter 11 bankruptcy. Currently, the property is occupied by Virco Manufacturing, Electric Voice, the offices of Great Lakes Chemical Industries, and Eastern Plating Company. Eastern Plating Company occupies the main plant building and operates the electroplating line formerly used by Heywood-Wakefield Company.

The Heywood-Wakefield Company built a wastewater treatment plant (constructed by Utilite Co.) to allow the discharge of effluent to the Pigeon River. On June 13, 1974, the Heywood-Wakefield Company was issued a temporary NPDES permit to discharge effluent from a wastewater treatment system into Sinking Creek. A permanent NPDES permit was issued May 15, 1979, for discharge into the Pigeon River. This permit was recorded as inactive on October 16, 1983.

The main waste associated with the facility is wastewater treatment sludge from electroplating operations, containing the hazardous constituents cadmium, chromium, nickel, lead, copper, and zinc. In 1978, approximately 200 pounds of sludge waste produced at the facility was disposed of at the Cocke County Landfill. Prior to 1978, solid waste material collected by air pollution control equipment (containing 55 percent wood flour and 45 percent inert materials), approximately 200 pounds per day, was buried on the Heywood-Wakefield Company grounds. Following the implementation of RCRA the wastes were shipped to SCA Services' hazardous waste landfill at Pinewood, South Carolina.

On March 8, 1982, the state conducted an inspection of the facility and several violations of the Tennessee Hazardous Waste Management. Rules were noted. On April 16, 1982, the state conducted another inspection of the facility to determine whether the violations noted during the previous inspection had been corrected. It was noted that the violations found in the previous inspection had not been corrected, and that there had been an overflow from the wastewater treatment plant. In March 1984, representatives from the state of Tennessee Division of Solid Waste Management performed a RCRA closure inspection. During the inspection, Chemical Waste Management, Inc. removed approximately 77 drums of hazardous waste from the property. The Heywood-Wakefield site is located in the Valley and Ridge physiographic province of northeastern Tennessee. This

province is typified primarily by faulted and folded carbonate rocks which result in northeast to southwest trending ridges and valleys. Topography of area the consists of discontinuous northeast trending mountainous ridges and broad, flat stream valleys. Groundwater in the area of the facility occurs in the residual soil and primarily in fractures and solution features in the upper 200 feet of the underlying bedrock of the Sevier Shale and the Knox Group. Based on analysis of topographic contours in the area surrounding the facility, the estimated depth to the water table ranges between 10 and 15 feet below land surface (bls), and is very dependent upon topographic position and elevation as well as seasonal changes in the availability of water.

Newport Utilities supplies water to the city of Newport and Cocke County. Water is obtained from an intake on the French Broad River at river mile 82. This surface water intake is upgradient of the Heywood-Wakefield Company site. Those people within 4 miles of the Heywood-Wakefield Company site that do not use city water obtain potable water from private wells. The majority of private wells in the area are completed in the shales, sandstones, and limestone of the Sevier Shale (at depths of 20 to 450 feet) or in the dolomite of the Knox Group of rocks (at depths of 34 to 800 feet). There are 779 homes within a 4-mile radius that obtain water from private wells. The nearest well is located approximately 0.8 miles north of the site.

A total of 14 environmental samples were collected during the field investigation. Analysis of surface soil samples indicated the presence of lead, zinc, chromium, copper, and nickel at elevated levels. Sediment samples indicated the presence of lead, chromium, nickel, and zinc at elevated levels; calcium was also present. One surface soil sample contained an elevated level of bis(2-ethylhexyl)phthalate (a common plasticizer). No elevated levels of organic or inorganic constituents were detected in subsurface soil samples. Inorganic contaminants detected at Heywood-Wakefield Company can generally be attributed to the metal plating operations of the plant. The onsite exposure and air pathways are of greatest concern at the Heywood-Wakefield Company site. The site is not fenced and easily accessible, allowing direct contact with surface soils with elevated levels of heavy metal constituents. The surface water pathway is of concern because surface water from the north side of the site eventually drains into the Pigeon River. The groundwater pathway is of concern because there are 2,010 persons within 4 miles of the site who obtain water from private wells. The nearest private well is located approximately 0.8 miles north of the site. Based upon the results of the field investigation, FIT 4 recommends that the site be evaluated using the HRS (effective March 14, 1991).

1.0 INTRODUCTION

The HALLIBURTON NUS Environmental Corporation Region 4 Field Investigation Team (FIT) was tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division to conduct a Site Inspection (SI) at the Heywood-Wakefield Company site in Newport, Cocke County, Tennessee. The investigation was performed under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The task was performed to satisfy the requirements stated in Technical Directive Document (TDD) number F4-9008-32. The field investigation was conducted September 11-13, 1990.

1.1 OBJECTIVES

The objectives of this inspection were to determine the nature of contaminants present at the site and to determine if a release of these substances has occurred or may occur. Further, this inspection sought to determine the possible pathways by which contamination could migrate from the site and the populations and environments it would potentially affect. Through these objectives, a recommendation was made regarding future activities at the site.

1.2 SCOPE OF WORK

The objectives were achieved through the completion of a number of specific tasks. These activities were to:

- Obtain and review relevant background materials.
- Obtain information on local water systems.
- Determine location of and distance to nearest potable well.
- Evaluate target populations and environments associated with the groundwater, surface water, air, and soil exposure pathways.

- Develop a site sketch.

- Conduct a geophysical screening of site to determine whether buried drums may be present.

- Collect environmental samples.

2.0 SITE CHARACTERIZATION

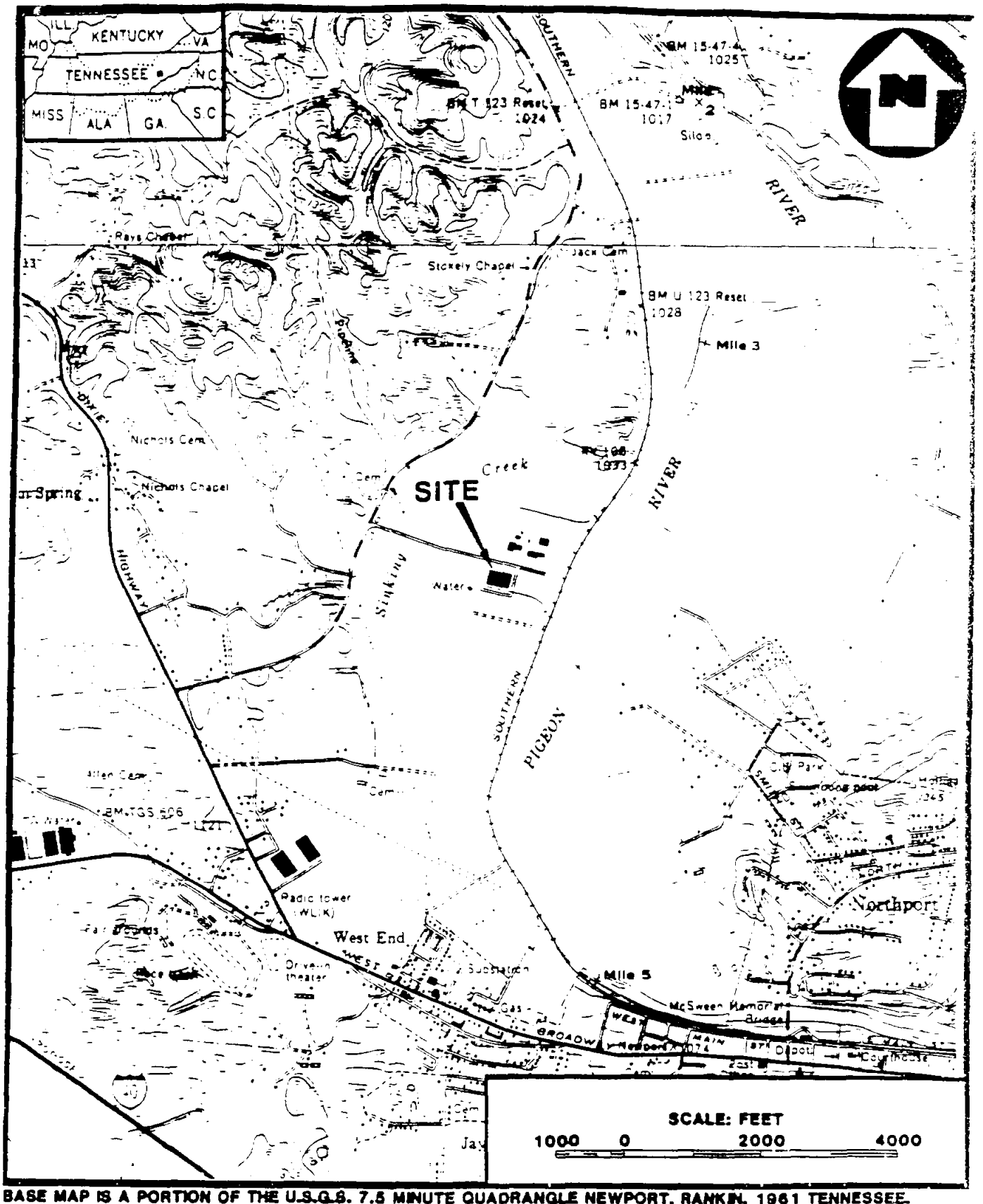
2.1 SITE HISTORY

The Heywood-Wakefield Company is located in an industrial park on Chemwood Drive, approximately 1 mile northwest of the city of Newport, Cocke County, Tennessee (Figure 1). Geographically, the facility is located at 35°59'10" N latitude and 83°12' 07" W longitude (Appendix A). The site location is shown in Figure 1, and the site layout is shown in Figure 2.

The Heywood-Wakefield Company began hand production and plating of school desks and various other types of metal seatings in 1957. In 1963, an automatic electroplating line was added to upgrade the manufacturing process (Ref. 1). Heywood-Wakefield Company ceased operations in 1982 and declared a Chapter 11 bankruptcy (Refs. 2, 3).

Currently, the facility property is occupied by Virco Manufacturing, Electric Voice, the offices of Great Lakes Chemical Industries, and Eastern Plating Company. Eastern Plating Company owns the main plant building and parking lot and operates the electroplating line formerly used by Heywood-Wakefield Company (Refs. 2, 4). Virco Manufacturing owns the building they occupy and also the large warehouse building. Eastern Plating Company leases space to Great Lakes Chemical Industries (Ref. 5).

The Heywood-Wakefield Company filed Part A of an EPA Hazardous Waste Permit Application on September 16, 1980 as a TSD facility. The application was resubmitted with corrections on March 18, 1981 (Ref. 6). The Heywood-Wakefield Company was classified as a large generator at the time of bankruptcy (August 1982) (Ref. 7). The Heywood-Wakefield Company built a wastewater treatment plant (constructed by Utilite Co.) to allow the discharge of effluent to the Pigeon River (Ref. 8). On June 13, 1974, the Heywood-Wakefield Company was issued a temporary NPDES permit to discharge effluent from a wastewater treatment system into Sinking Creek (Refs. 9, 10, 11). A permanent NPDES permit was issued May 15, 1979, for discharge into the Pigeon River (Ref. 9). This permit was recorded as inactive on October 16, 1983 (Ref. 12). An old wastewater treatment plant operated by Newport Utilities, located between the railroad tracks southeast of the site and the Pigeon River, was built in 1960. A new wastewater treatment plant operated by Newport Utilities, located behind the Heywood-Wakefield Company site, was put in operation in September 1979 (Ref. 13). A pretreatment plant was already in place when Eastern Plating Company began operations (Ref. 8). Pretreated effluent (electroplating process water) is pumped directly to the Newport Utilities

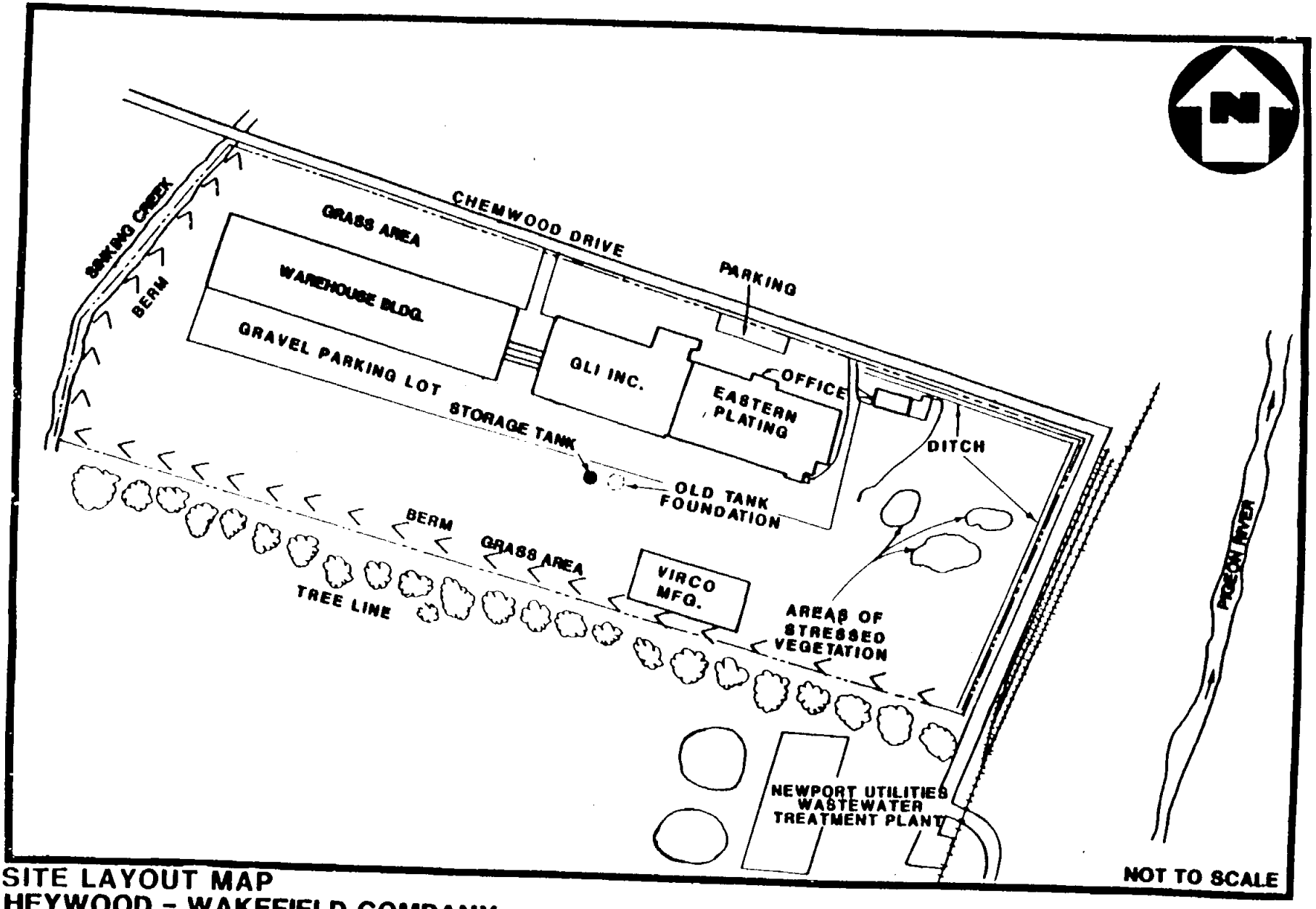


BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE NEWPORT, RANKIN, 1961 TENNESSEE.

SITE LOCATION MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 1

NUS CORPORATION



SITE LAYOUT MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 2

NUS

wastewater treatment plant (Refs. 5, 8). Eastern Plating Company holds an Industrial Wastewater Discharge Permit (No. NUB-001) for discharge of pretreated effluent to the Newport Utilities wastewater treatment plant (Ref. 8). Eastern Plating Company does not have an NPDES permit (Ref. 14). On March 8, 1982, the state conducted an inspection of the facility and several violations of the Tennessee Hazardous Waste Management Rules were noted (Ref. 11). On April 16, 1982, the state conducted another inspection of the facility to determine whether the violations noted during the previous inspection had been corrected. It was noted that the violations found in the previous inspection had not been corrected, and that there had been an overflow from the wastewater treatment plant (Ref. 11). In April 1982, the state inspected the site as a generator and as a treatment and storage facility (Ref. 10). The state said the company needed to notify as a treatment and storage facility as well as a generator and correct the violations in order to continue operations. The wastes were stored in drums prior to offsite disposal (Refs. 2, 11). In August 1982, the Heywood-Wakefield Company filed for bankruptcy (Ref. 3). The Heywood-Wakefield Company was classified as a large generator at this time (Ref. 7). A "Request for Order Civil Penalty and Damage Assessment" was entered on April 15, 1983 for RCRA storage of hazardous waste at the facility after the plant ceased operations. The state of Tennessee found that no inspections were being conducted, and there was no control of access to the drum storage area. The Heywood-Wakefield Company had a large number of state violations (Ref. 3). In March 1984, representatives from the state of Tennessee Division of Solid Waste Management performed a RCRA closure inspection. During the inspection, it was noted that Eastern Plating Company was leasing and operating the plating facility and had notified as a generator. Chemical Waste Management, Inc. removed 59 drums of sludge from a locked building, eight drums of sludge from the plant yard, and 10 drums that were used to contain free liquids from the sludge drums in order to handle the waste types separately (Ref. 2). All drums of wastes associated with Heywood-Wakefield's operations were removed by Chemical Waste Management, Inc. (Ref. 2). In January 1989, Eastern Plating Company was served with a notice of noncompliance for illegal discharges, which resulted in high concentrations of chromium, nickel, and lead in stormwater run-off and sediment (Ref. 15). Eastern Plating Company has current RCRA status of large generator (Ref. 16).

2.2 SITE DESCRIPTION

2.2.1 Site Features

The Heywood-Wakefield Company site occupies approximately 39 acres of land in Cocke County. The site is located on the south side of Chemwood Drive approximately 1 mile northwest of the city of Newport, Tennessee (Figure 1).

The site consists of two large buildings separated by a covered gravel driveway and a grass lawn to the front of the buildings. A gravel parking lot is located to the rear of the buildings. A large open grassy area is located between the rear parking lot and a tree line at the rear of the property. There is a water storage tank and an old tank foundation at the rear of the parking lot. Virco Manufacturing occupies a building behind the water storage tank (Figure 2). A wastewater treatment plant used by Heywood-Wakefield Company is located to the southeast of the site (Ref. 2; Figure 2). Railroad tracks are located to the east of the site across the road to the wastewater treatment plant. The middle of Sinking Creek is the west property boundary (Figure 2). The property is not fenced, and is easily accessible on foot or by vehicle (Ref. 4).

2.2.2 Waste Characteristics

The waste associated with the facility includes spent electroplating solvents and RCRA listed F006 waste - wastewater treatment sludges from electroplating operations. The wastewater treatment sludges contain the hazardous constituents chromium, lead, copper, zinc, and nickel (Refs. 2, 17, 18, 19).

Before 1980, sludge waste produced at the facility was disposed of at the Cocke County Landfill (Ref. 11). Prior to 1978, waste material (containing 55 percent wood flour and 45 percent inert materials) collected by air pollution control equipment, approximately 200 pounds per day, was buried on the Heywood-Wakefield Company grounds (Ref. 20). Following the implementation of RCRA, manifests kept at the facility indicate that the wastes were shipped to SCA Services hazardous waste landfill at Pinewood, South Carolina (Ref. 10).

3.0 REGIONAL POPULATIONS AND ENVIRONMENTS

3.1 POPULATION AND LAND USE

3.1.1 Demography

The Heywood-Wakefield Company site is located in an industrial area approximately 1 mile northwest of the city of Newport, Tennessee (Appendix A). A house count, using topographic maps, provided an estimate of population in the 0 - 0.25, 0.25 - 0.5, 0.5 - 1 and 3 - 4-mile radii. Figures for the 1- to 2- and 2- to 3-mile radii were obtained from the U.S.Census Bureau data base. The 4-mile radius surrounding the site includes all of the incorporated area of the city of Newport, and has a total population of 12,976. The population within 4 miles of the facility is 0 - 0.25 mile (0); 0.25 - 0.5 mile (8); 0.5 - 1 mile (284); 1 - 2 mile (3,316); 2 - 3 mile (7,760); and 3 - 4 mile (1,790) (Refs. 21, 22; Appendix A). One grammar school and one high school are located within 2 miles of the facility. The nearest residence is located approximately 0.4 mile northwest of the facility (Appendix A).

3.1.2 Land Use

Land in the immediate vicinity of Heywood-Wakefield Company is used for industrial purposes. The nearest regularly occupied buildings are G.L.I., Inc. and Great Lakes Chemical Company, located on the north side of Chemwood Drive across from the site. Although most of the housing in the area is single-family, there are trailer parks and multi-family residences within the 4-mile radius. The Newport city park is approximately 1 mile northeast of the site. Land in the Newport area is also used for farming. Major crops include tobacco, tomatoes, corn, and fruit. An orchard is located approximately 4 miles from the site. There are also livestock and dairy farms in the area (Refs. 23, 24, Appendix A).

The ranges of several endangered species include the area surrounding the Heywood-Wakefield Company site. The endangered species are the gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), eastern cougar (*Felis concolor cougar*), bald eagle (*Haliaeetus leucocephalus*), American peregrine falcon (*Falco peregrinus anatum*), and the red-cockaded woodpecker (*Picoides*

(Dendrocopos) borealis). The critical habitat for the Indiana bat is not included within the 4-mile radius of the Heywood-Wakefield Company facility (Ref. 25, Appendix A).

3.2 SURFACE WATER

3.2.1 Climatology

Cocke County is located in eastern Tennessee. The climate in the area is classified as humid subtropical with no distinct dry season. The average summer temperature is 76° F, and the average winter temperature is 39° F. The average annual precipitation is 44.8 inches and is well distributed throughout the year (Ref. 26, pp. 7-9). The net annual rainfall for this area is 11 inches, and the 2-year, 24-hour rainfall is 3.2 inches (Refs. 27, pp. 43, 63; 28, p. 95).

3.2.2 Overland Drainage

After a thorough investigation of the site, there appears to be no well defined surface water pathway. Although the site seems to be level, surface water drainage will flow to the eastern portion of the site. The site is bordered on the west by a berm approximately 10 feet high. This berm separates the site from Sinking Creek. To the south, the berm is approximately 5 feet high. Thus, the site may be considered to be in an artificially enclosed basin (Refs. 4, 23). Chemwood Drive borders the site on the east and north sides and is slightly higher than the site elevation. There is a drainage ditch along Chemwood Drive on the north and east sides of the site. Surface water along the eastern side of the site will flow south to a low area, where a railroad spur track was formerly located (Figure 2). Surface water from the north side of the site would drain approximately 0.2 miles to the east along Chemwood Drive, travel under the roadway, and flow approximately 0.2 mile eastward into the Pigeon River. Drainage would continue 3.7 miles along the Pigeon River and flow into the French Broad River. Surface water would then flow another 10.9 miles along the French Broad River (the backwaters of Douglas Lake) to complete the 15-mile surface water pathway (Appendix A).

3.2.3 Potentially Affected Water Bodies

The Pigeon River, the French Broad River, and Douglas Lake are potentially affected by surface water run-off from the site. There are no documented surface water intakes along the surface water pathway (Appendix A). There is little recreational fishing in the Pigeon River. The French Broad River and Douglas Lake are used for swimming, boating, and recreational fishing (Ref. 29).

3.3 GROUNDWATER

3.3.1 Hydrogeology

The Heywood-Wakefield site is located in the Valley and Ridge physiographic province of northeastern Tennessee. This province is typified primarily by faulted and folded carbonate rocks which result in northeast to southwest trending ridges and valleys (Refs. 26, p. 4; 30, p. 132; 31, p.391). Topography of the area consists of discontinuous northeast trending mountainous ridges and broad, flat stream valleys. Elevations in the area of the site range between 1,009 and 2,420 feet above mean sea level (amsl). The elevation of the Heywood-Wakefield Company facility is approximately 1,030 feet amsl (Appendix A). Major soil types beneath the site include the Chewacla fine sandy loam, the Congaree fine sandy loam, the Congaree loam, and the State loam (Ref. 26, Legend sheet, Newport sheet). These residual soils have developed from old alluvial material, and range between 5 and 15 feet thick (Ref. 26, pp. 16-17, 31-33, 88). The Middle Ordovician Sevier Shale underlies the residual soils (Ref. 32). The Sevier Shale consists of blue calcareous shale interbedded with sandstone, grading to a basal unit of blue limestone. The Sevier Shale is approximately 2,500 to 4,000 feet thick in the area of the facility (Ref. 30, pp. 12-13, 132-133). The Lower Ordovician Knox Group underlies the Sevier Shale (Ref. 32). The Knox Group consists of interbedded siliceous dolomite and limestone. The Knox Group ranges between 2,450 and 3,100 feet thick in the area of the facility (Ref. 30, pp. 12-13, 132-133). Groundwater in the area of the facility occurs in the residual soil and primarily in fractures and solution features in the upper 200 feet of the underlying bedrock of the Sevier Shale and the Knox Group. The rocks have little or no primary porosity but contain fractures caused by folding and faulting (Ref. 31, p. 394). These secondary openings and fractures along bedding planes may be enlarged by dissolution of the carbonate rocks (Ref. 30, p. 270). The residual soil and fractured bedrock make up the unconfined residual soil/fractured rock aquifer system. Based on analysis of topographic contours in the area surrounding the facility, the estimated depth to the water table ranges between 10 and 15 feet below land surface (bls) and is very dependent upon topographic position and elevation as well as seasonal changes in the availability of water. The general direction of groundwater flow is to the east toward the Pigeon River (Appendix A). Hydraulic conductivity values of materials similar in composition as those present in the silty to sandy residual soils underlying the facility range between 1.0×10^{-3} cm/sec and 1.0×10^{-5} cm/sec (Ref. 26, pp. 16-17, 31-33, 88; 33, p. 29).

3.3.2 Aquifer Use

Newport Utilities supplies water to the city of Newport and Cocke County. Water is obtained from an intake on the French Broad River at river mile 82. This surface water intake is upgradient of the

Heywood-Wakefield Company site and greater than 4 miles from the site. The water treatment plant is located at Eastport to the east of Newport (Refs. 23, 34, Appendix A).

Those people within 4 miles of the Heywood-Wakefield Company site that do not use city water obtain potable water from private wells. The majority of private wells in the area are completed in the shales, sandstones, and limestone of the Sevier Shale or in the dolomite of the Knox Group of rocks. Depths of wells completed in the Sevier Shale in the site area range between 20 and 450 feet deep, averaging 89 feet deep. Well yields range between 5 and 300 gallons per minute (gpm) averaging 103 gpm. Depths of wells completed in the Knox Group of rocks in the site area range between 34 and 800 feet deep averaging 174 feet deep. Well yields range between 125 and 300 gallons per minute (gpm) averaging 200 gpm (Ref. 30, pp. 134-144).

A house count, using topographic maps of the area, indicates that there are 2,010 persons (779 homes x 2.58) within 4 miles of the site who obtain water from private wells. There are 72 homes within the 0- to 1-mile radius, 93 homes within the 1- to 2-mile radius, 211 homes within the 2- to 3-mile radius, and 403 homes within the 3- to 4-mile radius (Ref. 22, Appendix A). The nearest private well is located approximately 0.8 mile north of the site (Appendix A).

4.0 FIELD INVESTIGATION

4.1 GEOPHYSICAL FIELD SURVEYS

The purpose of this geophysical survey was to provide a screening technique by which sample localities for environmental sampling could be chosen by the HALLIBURTON NUS Environmental Corporation FIT 4 sampling team. In the accomplishment of this task, areas of suspected waste disposal on the property were surveyed using two geophysical techniques to produce a magnetic intensity survey and a ground conductivity survey, respectively. Details of geophysical methods used in the survey occur in Appendix C.

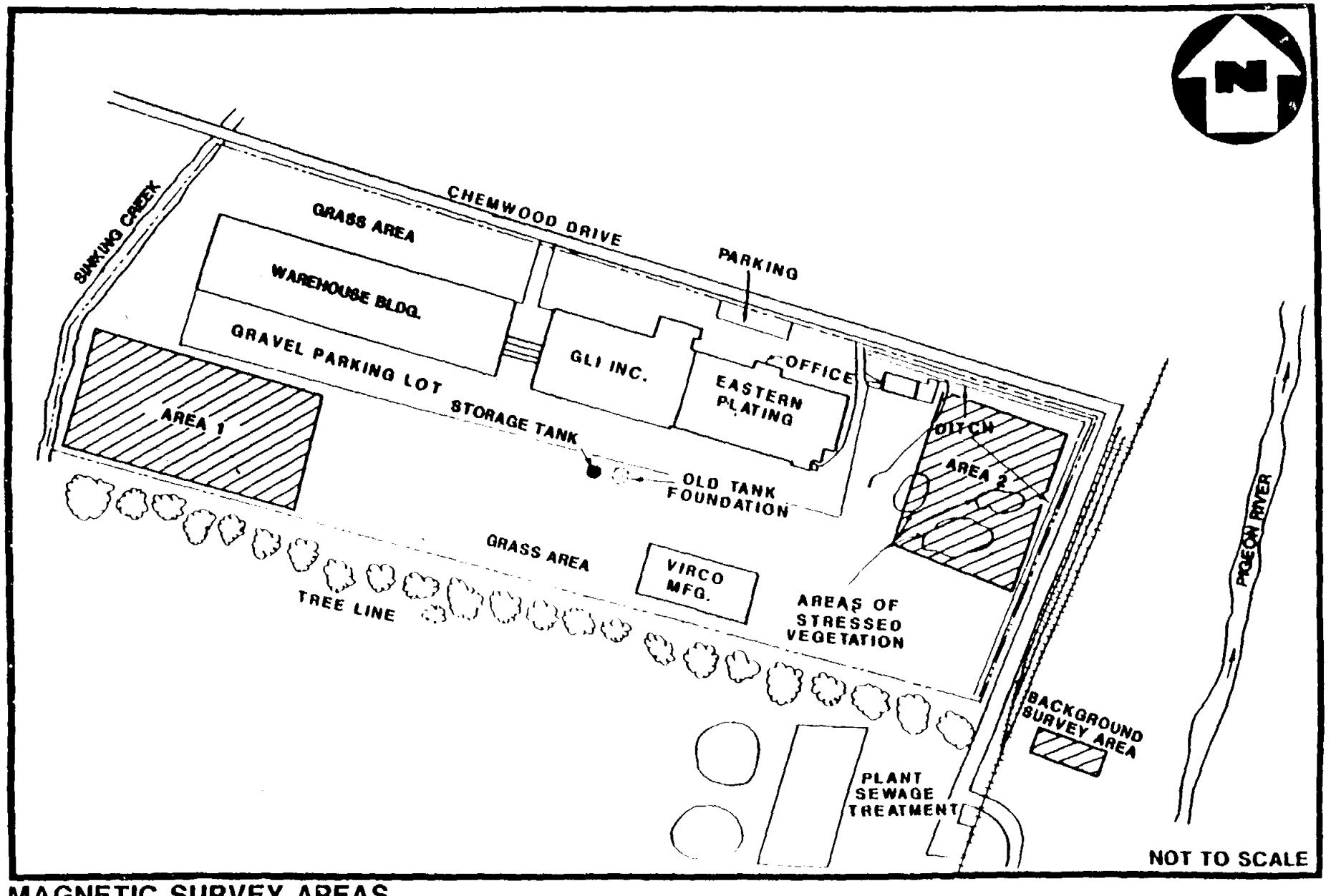
4.1.1 Methodology

Two geophysical instruments were utilized in this geophysical study: a proton precision magnetometer and a non-contacting ground conductivity meter. Both instruments were calibrated and put through a pre-operational check according to standard manufacturer's operational procedures. A base station was established in an area located southeast of the facility in which undisturbed local field conditions were believed to exist. Five measurements, 20 feet apart, were taken with both instruments at this location prior to the surveys. The magnetic field intensity ranged from 53,666 to 53,695 gammas and averaged 53,674 gammas. The background conductivity level ranged from 3.8 to 4.2 mmhos/m and averaged 4.0 mmhos/m. The values were used for comparison purposes, with measurements recorded on the facility property.

A cartesian coordinate grid was established before performing the surveys. Grid stations were established at 50-foot spacings in the x- and y-coordinate directions. Survey areas are shown in Figures A-1 and A-2. Data were recorded on geophysical field data sheets from measurements taken at each station. Field data sheets are listed in Appendix C.

4.1.2 Geophysical Survey Results

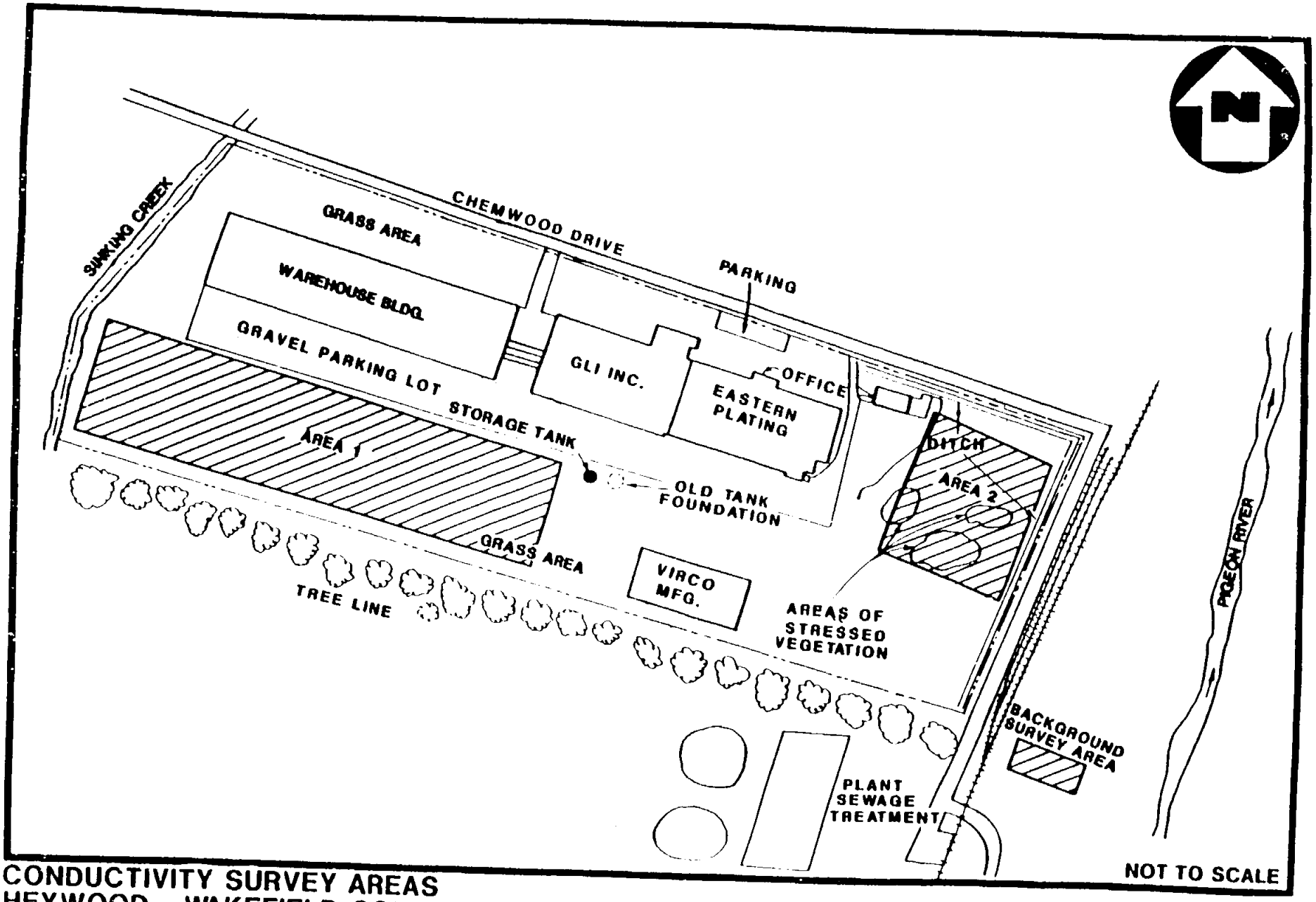
The results of the magnetic and conductivity survey performed at the respective survey areas are presented as computer generated contour maps in Figures A-3 through A-6. The survey results generally indicate uniform conditions in both survey areas.



MAGNETIC SURVEY AREAS
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-1

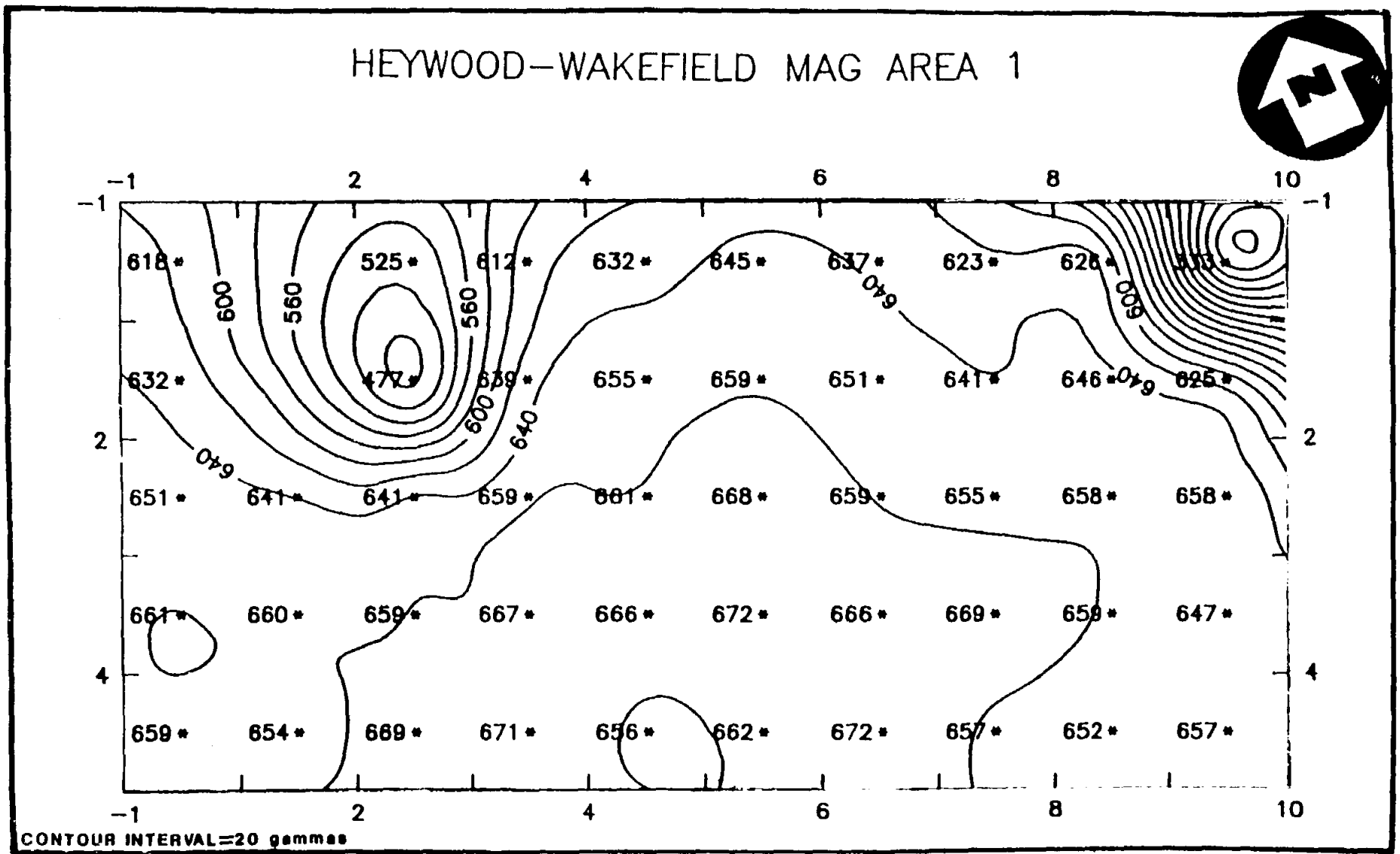
NUS CORPORATION



CONDUCTIVITY SURVEY AREAS
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-2

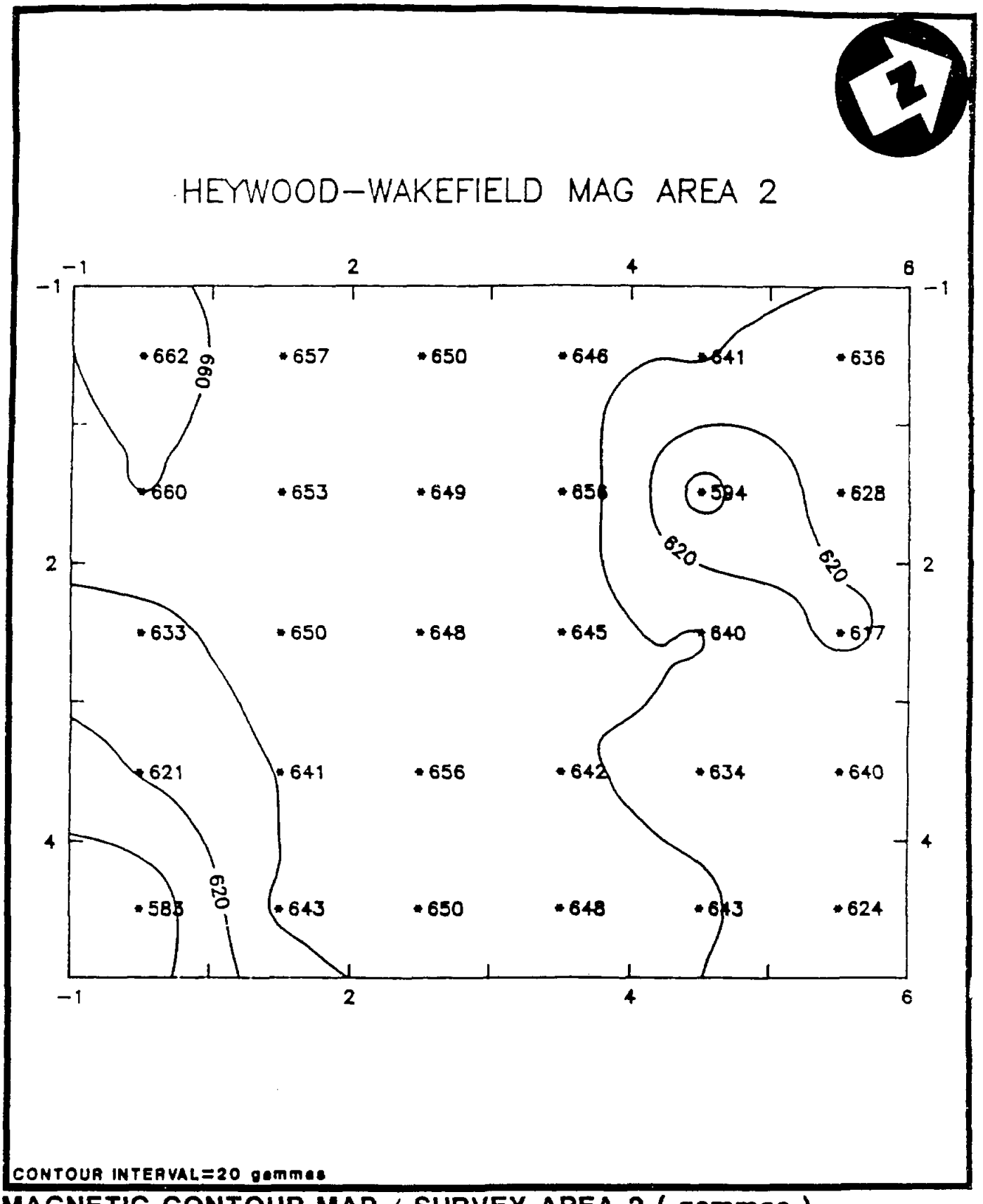
NUS CORPORATION



MAGNETIC CONTOUR MAP / SURVEY AREA 1 (gammas)
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-3

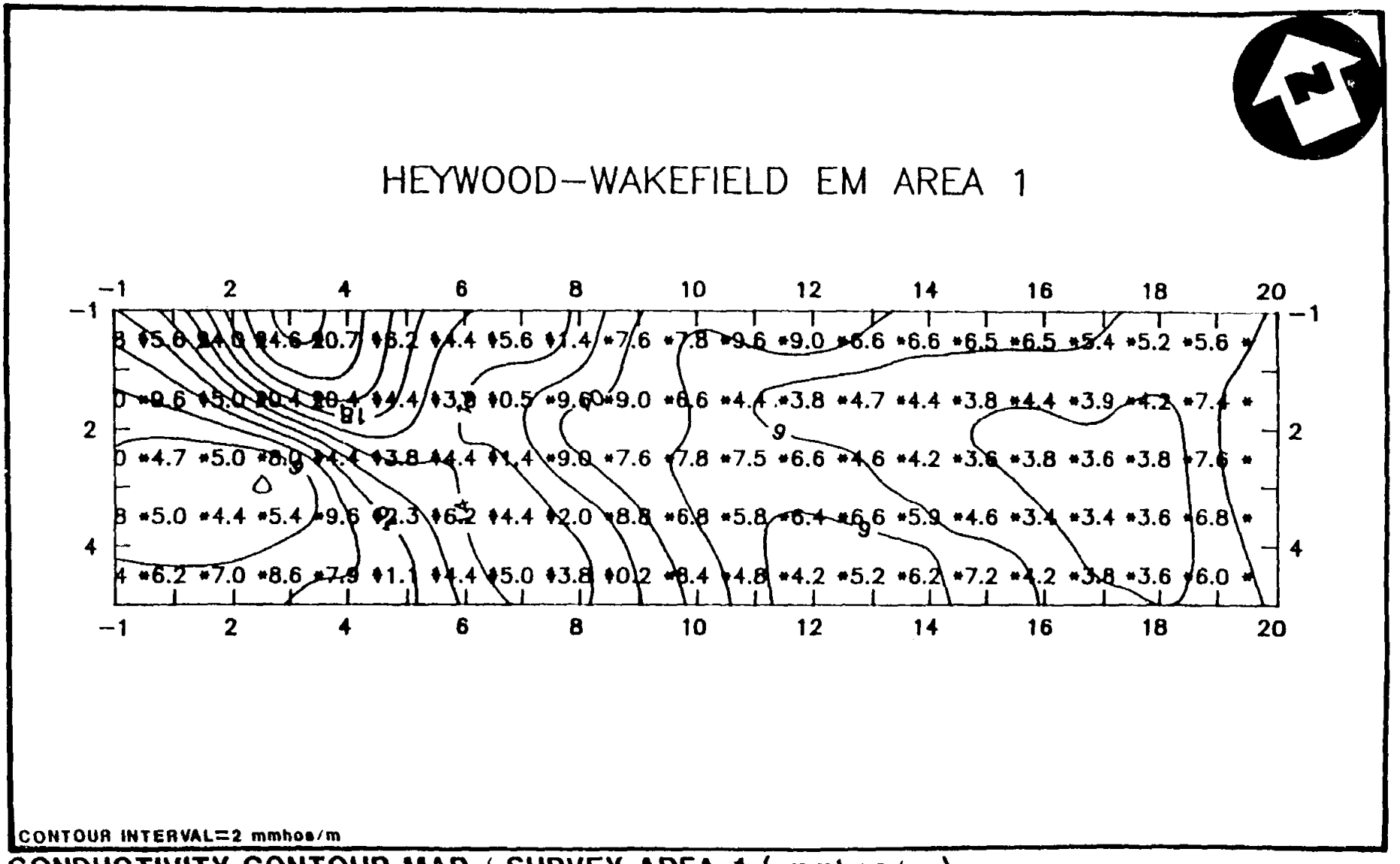
NUS CORPORATION



MAGNETIC CONTOUR MAP / SURVEY AREA 2 (gammas)
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-4

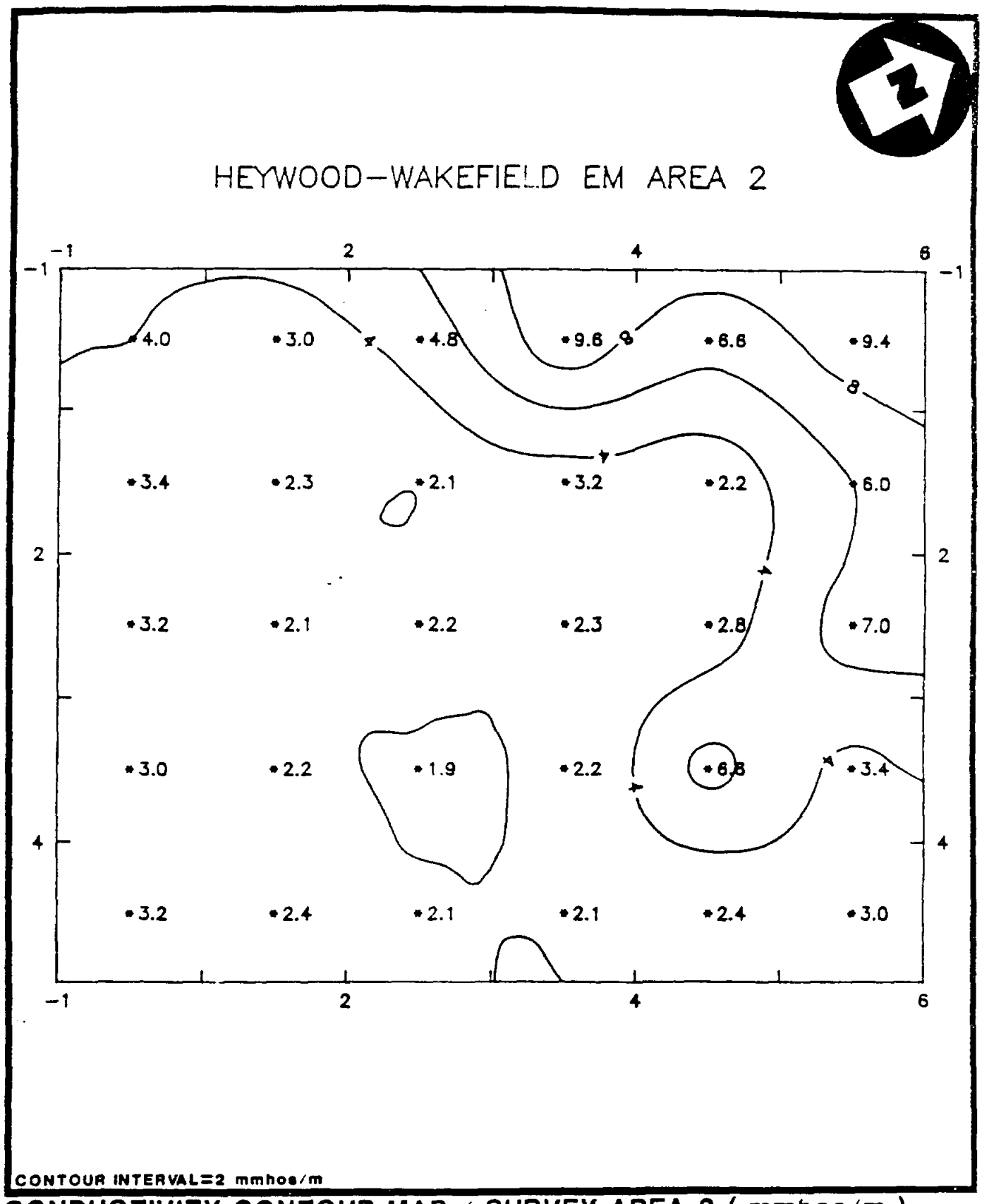
NUS CORPORATION



CONDUCTIVITY CONTOUR MAP / SURVEY AREA 1 (mmhos/m)
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-5

NUS CORPORATION



CONDUCTIVITY CONTOUR MAP / SURVEY AREA 2 (mmhos/m)
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-6

NUS CORPORATION

Conductivity values in survey area 1 ranged from 3.4 to 24.6 mmhos/m. An anomalous feature of interest is located in the northwest corner centered on the 24.6 mmhos/m conductivity value. The magnetic survey performed in area 1 had values that ranged from 56,333 to 56,656 gammas. A magnetic low anomaly is located close to the conductivity anomaly.

Conductivity values in area 2 ranged from 1.9 to 9.4 mmhos/m, while magnetic values ranged from 56,583 to 56,662 gammas. No outstanding anomalous feature was noted in area 2.

4.2 SAMPLE COLLECTION

During the field investigation, conducted August 27, 1990, FIT 4 attempted to identify and characterize contaminants which may be present in the environment as a result of activities that were conducted at Heywood-Wakefield Company. To accomplish this, FIT 4 collected environmental surface soil, subsurface soil, and sediment samples from a number of strategic locations. These locations were selected based on historical information, hydrogeological data for the region and site area, and direct observation at the site. No groundwater samples were taken due to the fact that bedrock was encountered before the saturation zone was reached.

4.2.1 Sample Collection Methodology

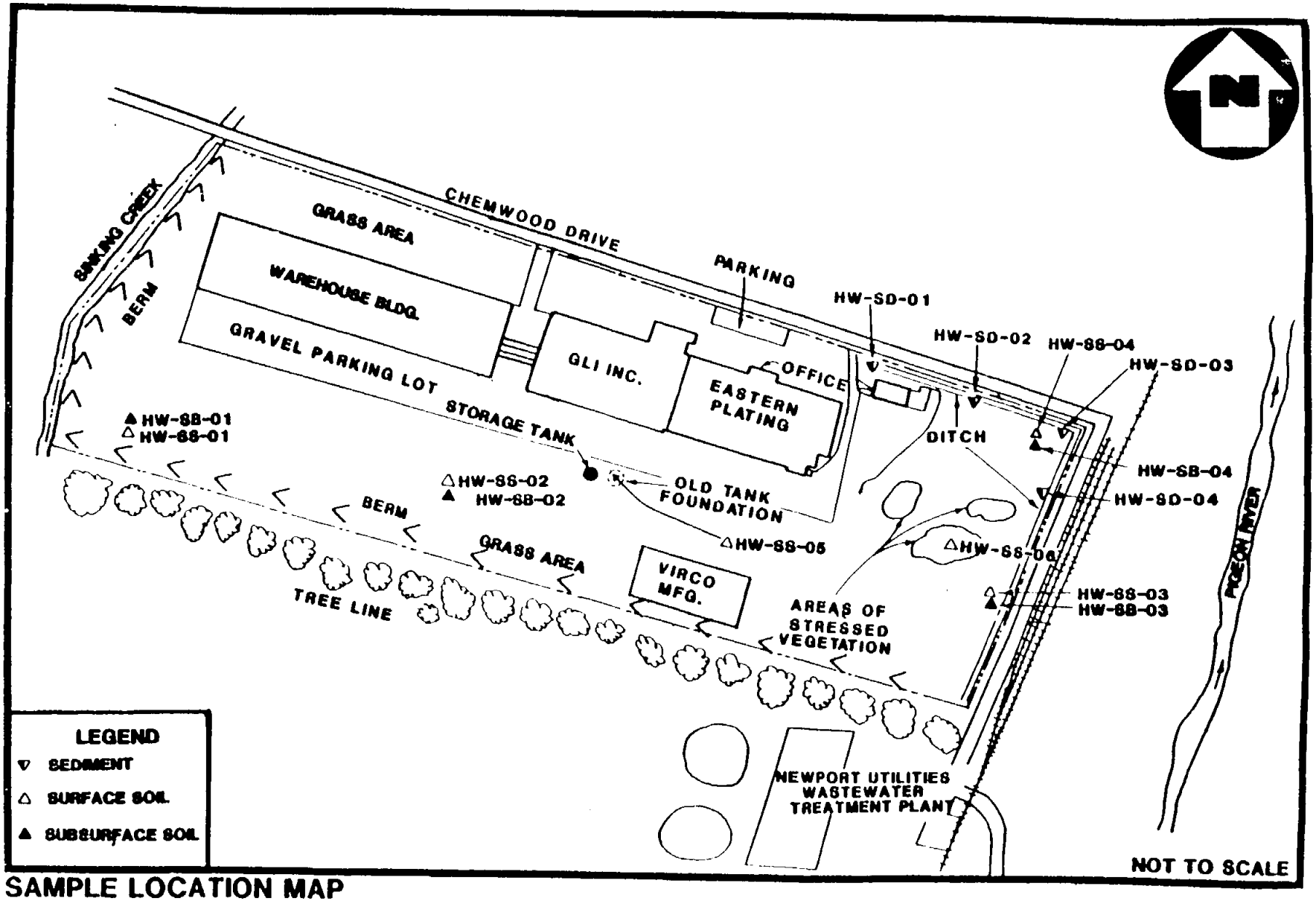
All sample collection, sample preservation, and chain-of-custody procedures used during this investigation were in accordance with the standard operating procedures as specified in Sections 3 and 4 of the Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual; U.S. Environmental Protection Agency, Region IV, Environmental Services Division, February 1, 1991.

4.2.2 Duplicate Samples

Duplicate samples were offered to and accepted by Tom McNealy, a designated representative of Eastern Plating, the current owner of the Heywood-Wakefield Company facility. Receipt for sample forms are on file at FIT 4.

4.2.3 Description of Samples and Sample Locations

During the sampling investigation, a total of 14 environmental samples were collected. Six surface soil, four subsurface soil, and four sediment samples were collected. All sample locations are shown in Figure 3. Sample codes, descriptions, locations, and rationale are contained in Table 1.



SAMPLE LOCATION MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 3

NUS

TABLE 1

SAMPLE LOCATIONS AND RATIONALE
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

Sample Code	Sample Type	Location	Rationale
HW-SS-01	Surface Soil	Southwest corner of site	Background sample
HW-SS-02	Surface Soil	On site, southwest of storage tank	Determine presence or absence of contamination
HW-SS-03	Surface Soil	On site, near east side of site	Determine presence or absence of contamination
HW-SS-04	Surface Soil	Northeast corner of site	Determine presence or absence of contamination
HW-SS-05	Surface Soil	On site, at old storage tank foundation	Determine presence or absence of contamination
HW-SS-06	Surface Soil	On site, in stressed vegetation due east of main building	Determine presence or absence of contamination
HW-SB-01	Subsurface Soil	Southwest corner of site, 4 feet below land surface (bls)	Background sample
HW-SB-02	Subsurface Soil	On site, southwest of storage tank, 7.5 feet bls	Determine the presence or absence of contamination
HW-SB-03	Subsurface Soil	On site, near east side of site, 4 feet bls	Determine the presence or absence of contamination
HW-SB-04	Subsurface Soil	Northeast corner of site, 4.5 feet bls	Determine the presence or absence of contamination
HW-SD-01	Sediment	West end of drainage ditch on north side of site	Background sample
HW-SD-02	Sediment	In drainage ditch on north side of site	Determine presence or absence of contamination
HW-SD-03	Sediment	East end of drainage ditch on north side of site	Determine the presence or absence of contamination
HW-SD-04	Sediment	From the drainage ditch toward the sewage plant, 50 feet south of the northeast corner of the site	Determine the presence or absence of contamination

HW - Heywood-Wakefield Company
SS - Surface Soil
SB - Subsurface Soil
SD - Sediment

Background surface soil (HW-SS-01) and subsurface soil samples (HW-SB-01) were collected upgradient near the southwest corner of the site. The background sediment sample (HW-SD-01) was collected in a drainage ditch to the east, adjacent to the facility.

Surface soil samples were collected near the storage tank, near the east side of the site, at the old storage tank foundation, and in an area of stressed vegetation due east of the main building. Subsurface soil samples were collected near the storage tank, near the east side of the site, and at the northeast side of the site. Subsurface soil samples were collected at depths ranging between 4 and 6 feet below land surface. Sediment samples were collected in a drainage ditch on the north side of the site, at the east end of the drainage ditch, and in the drainage ditch toward the sewage treatment plant approximately 50 feet south of the northeast corner of the site.

4.2.4 Field Measurements

No field measurements were performed on the surface soil, subsurface soil, or sediment samples during this investigation.

4.3 SAMPLE ANALYSIS

4.3.1 Analytical Support and Methodology

All samples collected were analyzed under the Contract Laboratory Program (CLP) and analyzed for all organic and inorganic parameters listed in the Target Compound List (TCL). Organic analysis of soil and water samples was performed by Gulf South Environmental Labs of New Orleans, Louisiana. Inorganic analysis of soil and water samples was performed by Chemtech Consulting Group, Ltd. of New York, New York.

All laboratory analyses and laboratory quality assurance procedures used during this investigation were in accordance with standard procedures and protocols as specified in the Laboratory Operations and Quality Control Manual, U.S. Environmental Protection Agency (EPA), Region IV, Environmental Services Division, issued October 24, 1990; or as specified by the existing EPA standard procedures and protocols for the CLP Statement of Work, as applicable.

4.3.2 Analytical Data Quality and Data Qualifiers

All analytical data were subjected to a quality assurance review as described in the EPA Environmental Services Division laboratory data evaluation guidelines. In the tables, some of the concentrations of the organic and inorganic parameters have been flagged with a "J". This indicates that the qualitative analysis was acceptable, but the quantitative value has been estimated. A few other compounds are flagged with an "N", indicating that they were detected based on the presumptive evidence of their presence. This means that the compound was tentatively identified, and its detection cannot be used as positive identification of its presence. Results for some background samples are reported with a "U" flag. This flag means that the material was analyzed for but not detected. The reported number is the laboratory-derived minimum quantitation limit (MQL) for the compound or element in that sample. At times, miscellaneous organic compounds that do not appear on the target compound list are reported with a data set. These compounds are labeled as "JN", indicating that they are tentatively identified at estimated quantities. Because these compounds are not routinely analyzed for or reported, background levels or MQL values are not generally available for comparison. The complete analytical data sheets are presented in Appendix B.

4.3.3 Presentation of Analytical Results

This section presents a discussion and interpretation of the analytical results from the environmental samples collected during the investigation at Heywood-Wakefield Company samples are presented in Tables 2, 3, 4, and 5. Background samples have been designated for all media. Values for background sample results are presented as either a measured value or as the MQL. Samples containing concentrations of contaminants greater than 3 times the background level or MQL of these contaminants are considered to be elevated. These samples are noted in the text.

4.3.3.1 Summary of Organic Analytical Results

Organic analytical results are presented in Tables 2 and 3. Only one organic compound was detected at an elevated level in surface soil samples, bis(2-ethylhexyl)phthalate in HW-SS-05 (at the old storage tank foundation). This compound, a common plasticizer, was found at a concentration of 87,000 ug/kg (110 x background). Also detected in this sample was presumptive evidence of six miscellaneous extractables in a estimated range of concentrations from 700 - 4,000J ug/kg. Presumptive evidence of a petroleum product was found in both HW-SS-05 and HW-SS-06 (in an area of stressed vegetation due east of the main building) (Table 2). No elevated levels of organics were detected in subsurface soil samples (Table 3).

TABLE 2

SUMMARY OF ORGANIC ANALYTICAL RESULTS
SURFACE SOIL SAMPLES
HEYWOOD WAKEFIELD CO.
NEWPORT, COCKE COUNTY, TENNESSEE

PARAMETERS (ug/kg)	Trip Blank	Background	On Site				
	HW-TB-01	HW-SS-01	HW-SS-02	HW-SS-03	HW-SS-04	HW-SS-05	HW-SS-06
PURGEABLE COMPOUNDS							
TOLUENE	-	47U	-	-	-	120J	-
TRICHLOROFLUOROMETHANE	-	47U	9.6J	-	-	-	-
EXTRACTABLE COMPOUNDS							
PENTACHLOROPHENOL	-	1600U	-	-	-	3900J	-
CHRYSENE	-	790U	-	-	-	280J	-
BIS(2-ETHYLHEXYL) PHTHALATE	-	790U	-	-	-	87000	-
BENZO(B AND/OR K)FLUORANTHENE	-	790U	-	-	-	360J	-
METHYLBENZENESULFONAMIDE(1)						1000JN	
HEXADECANOIC ACID(1)						3000JN	
OCTACENENOIC ACID(1)						4000JN	
HEXADECANAMIDE(1)						700JN	
METHYLFLUORANTHENE(1)						2000JN	
PHOSPHORIC ACID TRIPHENYLESTER(1)						3000JN	
PETROLEUM PRODUCT(1)						N	N

- Material analyzed for but not detected above minimum quantitation limit (MQL).
J Estimated value.
N Presumptive evidence of presence of material
U Material was analyzed for but not detected. The number given is the MQL.
(1) Tentatively identified compound. This compound is not on Target Compound List and is reported only as detected in individual samples; MQL not determined.

TABLE 3

SUMMARY OF ORGANIC ANALYTICAL RESULTS
SUBSURFACE SOIL AND SEDIMENT SAMPLES
HEYWOOD WAKEFIELD CO.
NEWPORT, COCKE COUNTY, TENNESSEE

PARAMETERS (ug/kg)	Background	On Site			Background	On Site		
	HW-SB-01	HW-SB-02	HW-SB-03	HW-SB-04	HW-SD 01	HW-SD-02	HW-SD-03	HW-SD-04
PURGEABLE COMPOUNDS								
TRICHLOROFLUOROMETHANE	52U	10J	-	-	28J	31J	20J	12J
EXTRACTABLE COMPOUNDS								
FLUORANTHENE	-	-	-	-	810U	-	110J	-
PYRENE	-	-	-	-	810U	-	92J	-
CHRYSENE	-	-	-	-	810U	-	100J	-
BENZO(B AND/OR K)FLUORANTHENE	-		-	-	810U	-	170J	-
HEXADECANOIC ACID(1)						6000JN		
HEXADECENOIC ACID(1)						8000JN		
OCTADECANOIC ACID(1)						1000JN		
PETROLEUM PRODUCT(1)						N	N	N
DICHLOROISOCYANATOBENZENE(1)						300JN		
TETRADECANOIC ACID(1)						600JN		
UNIDENTIFIED COMPOUND/NO (1)						8000J/1		

- Material analyzed for but not detected above minimum quantitation limit (MQL).
J Estimated value.
N Presumptive evidence of presence of material.
U Material was analyzed for but not detected. The number given is the MQL.
(1) Tentatively identified compound. This compound is not on Target Compound List and is reported only as detected in individual samples; MQL not determined.

TABLE 4

SUMMARY OF INORGANIC ANALYTICAL RESULTS
SURFACE SOIL SAMPLES
HEYWOOD WAKEFIELD CO.
NEWPORT, COCKE COUNTY, TENNESSEE

	Background	On Site				
PARAMETERS (mg/kg)	HW-SS-01	HW-SS-02	HW-SS-03	HW-SS-04	HW-SS-05	HW-SS-06
ALUMINUM	34,000	15,000	19,000	17,000	3400	14,000
ARSENIC	4.2	2.5	2.8	-	-	-
BARIUM	230	170	240	180	100	180
CALCIUM	1600	1800	1600	2000	4600	1900
CHROMIUM	84J	18J	25J	24J	95J	280J
COBALT	22	9.8	12	11	-	11
COPPER	27	13	-	-	-	170
IRON	38,000	19,000	23,000	20,000	25,000	19,000
LEAD	21	13	24	15	230	26
MAGNESIUM	4800	3800	4600	4800	690	3600
MANGANESE	990	470	650	470	140	480
NICKEL	18	11	20	13	36	140
POTASSIUM	3400	2500	3400	3200	-	2900
VANADIUM	48	25	28	28	-	22
ZINC	100U	-	-	-	450	630

- Material analyzed for but not detected above minimum quantitation limit (MQL).
J Estimated value.
U Material was analyzed for but not detected. The number given is the MQL.

TABLE 5

SUMMARY OF INORGANIC ANALYTICAL RESULTS
SUBSURFACE SOIL AND SEDIMENT SAMPLES
HEYWOOD WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

	Background	On Site			Background	On Site		
PARAMETERS (mg/kg)	HW-SB-01	HW-SB-02	HW-SB-03	HW-SB-04	HW-SD-01	HW-SD-02	HW-SD-03	HW-SD-04
ALUMINUM	26,000	19,000	21,000	18,000	21,000	3000	14,000	14,000
ARSENIC	3	3 6	-	-	2U	5 1	2 5	-
BARIUM	160	270	280	190	210	52	160	200
BERYLLIUM	2 5	-	1 7	-	-	-	-	-
CALCIUM	990	2500	1500	2000	2900	41,000	38,000	23,000
CHROMIUM	69J	18J	29J	23J	51J	380J	53J	40J
COBALT	15	11	14	10	14	-	8 9	8 7
COPPER	30U	-	-	-	20U	-	24	-
IRON	33,000	28,000	27,000	21,000	26,000	4400	17,000	17,000
LEAD	13	16	20	15	27	140	47	38
MAGNESIUM	5100	3400	5400	4900	5100	5100	14,000	8100
MANGANESE	710	420	550	490	720	88	420	450
NICKEL	15	13	23	12	44	840	39	86
POTASSIUM	3700	1700	3600	3200	3200	490	2500	2900
VANADIUM	47	32	31	25	32	-	19	23
ZINC	82	-	130	82	100U	200	420	-

- Material analyzed for but not detected above minimum quantitation limit (MQL).
J Estimated value.
U Material was analyzed for but not detected. The number given is the MQL.

No elevated concentrations of organics on the Target Compound List were detected in sediment samples. Sediment sample HW-SD-02 (from the drainage ditch on the north side of the site) contained presumptive evidence of five miscellaneous extractables at a concentration of range of 3000 to 8,000J ug/kg. Presumptive evidence of a petroleum product was found in all sediment samples except the background sample (HW-SS-01) (Table 3).

4.3.3.2 Summary of Inorganic Analytical Results

Inorganic analytical results are shown in Tables 4 and 5. Lead (230 mg/kg, 11 times background) and zinc (450 mg/kg, 4.5 times background) were detected in HW-SS-05. The following inorganic constituents were detected in HW-SS-06: chromium (200J mg/kg, 3 times background), zinc (450 mg/kg, 6 times background), copper (170 mg/kg, 6 times background), and nickel (140 mg/kg, 8 times background) (Table 4). No elevated concentrations of inorganic constituents were found in subsurface soil samples (Table 5).

The following constituents were found in HW-SD-02: lead (140 mg/kg, 5 times background), chromium (380J mg/kg, 7 times background), and nickel (840 mg/kg, 19 times background). Zinc (420 mg/kg, 4 times background) was found in HW-SD-03. Calcium was also observed at elevated levels in sediment samples (Table 5).

Inorganic contaminants detected at Heywood-Wakefield Company can generally be attributed to the metal plating operations of the plant.

5.0 SUMMARY

The main waste associated with the Heywood-Wakefield Company facility is wastewater treatment sludge from electroplating operations, containing the hazardous constituents chromium, lead, copper, zinc, and nickel.

Analysis of surface soil samples indicated the presence of lead, zinc, chromium, copper, and nickel at elevated levels. Sediment sample analysis indicated the presence of lead, chromium, nickel, and zinc at elevated levels. Calcium was also observed at elevated levels in the sediment samples. One surface soil sample contained an elevated level of bis(2-ethylhexyl)phthalate (a common plasticizer). No elevated levels of organic or inorganic constituents were detected in subsurface soil samples.

Inorganic contaminants detected at Heywood-Wakefield Company can generally be attributed to the metal plating operations of the plant.

The onsite exposure and air pathways are of greatest concern at the Heywood-Wakefield Company site. The site is not fenced and easily accessible, allowing direct contact with surface soils with elevated levels of heavy metal constituents. The surface water pathway is of concern because surface water from the north side of the site eventually drains into the Pigeon River. The groundwater pathway is of concern because there are 2,010 persons within 4 miles of the site that obtain water from private wells. The nearest private well is located approximately 0.8 mile north of the site. Based upon the results of the field investigation, FIT 4 recommends that the Heywood-Wakefield Company site be evaluated using the HRS (effective March 14, 1991).

REFERENCES

1. History of Heywood-Wakefield Company and map, Newport, Tennessee, obtained from Tennessee Department of Health and Environment (TDH&E) files in Knoxville, Tennessee.

2. Rick Brown, TDH&E, Division of Solid Waste Management, Hazardous Waste Inspection Report, dated March 9, 1984.

3. Tennessee Department of Public Health, Request for Order Civil Penalty and Damage Assessment for Heywood-Wakefield Company, Case Number 82-344 before the Tennessee Solid Waste Disposal Control Board, April 15, 1983.

4. HALLIBURTON NUS Environmental Corporation Field Logbook No. F4-2521. Documentation of Field Sampling Activity, Heywood-Wakefield Company, TDD No. F4-9008-32, September 11-13, 1990.

5. Michael Mullaney, Eastern Plating Company, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, June 6, 1991. Subject: Property ownership.

6. EPA Hazardous Waste Permit Application (EPA Form 3510-1) for Heywood-Wakefield Company. Filed by E.G. Chartier, Vice President, September 16, 1980.

7. Jennifer Powers, Division of Solid Waste Management, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, July 10, 1991. Subject: RCRA status of Heywood-Wakefield Company at the time of bankruptcy.

8. Michael Mullaney and Tom McNealy, Eastern Plating Company, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, June 25, 1991. Subject: Wastewater treatment procedures for Heywood-Wakefield Company and Eastern Plating Company.

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13. Carol Proffitt, Newport Wastewater Treatment Plant, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, June 21, 1991. Subject: Dates of building wastewater treatment plants.

14. Lisa Mullins, Tennessee Department of Environment and Conservation, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, June 21, 1991. Subject: NPDES permits for Heywood-Wakefield Company and Eastern Plating Company.

15. Earl C. Leming, Manager, TDH&E Division of Water Pollution Control, letter to Tom McNealy, Plant Manager, Eastern Plating, January 26, 1989. Subject: Notice of noncompliance, illegal discharges.

16. Jennifer Powers, Division of Solid Waste Management, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, July 31, 1991. Subject: RCRA status of Eastern Plating Company.

17. Potential Hazardous Waste Site Preliminary Assessment, (EPA Form 2070-12), for Heywood-Wakefield Company. Filed by Charles R. Rush, TDH&E, September 9, 1986.

18. E.W. Kuemmerle, Jr., Ph.D., Chief Chemist, Atek Labs, Inc., letter to Walter O'Neil, Heywood-Wakefield Company, July 6, 1978. Subject: Physical and chemical characteristics of wastewater treatment sludge.

19. E.W. Kuemmerle, Jr., Ph.D., Chief Chemist, Kenwill, Inc., letter to Walter O'Neil, Heywood-Wakefield Company, August 7, 1981. Subject: Certificate of analysis of electroplating sludge.

20. Walter O'Neil, Heywood-Wakefield Company, letter to Larry K. Ledford, Tennessee Department of Public Health, July 13, 1978. Subject: Air pollution control equipment waste disposal practices.

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34. Leonard Allen, Newport Water Department, telephone conversation with Wendell C. McLendon, NUS Corporation, April 3, 1991. Subject: Areas served by the Newport water department.

[redacted]

REFERENCE NO. 19

[redacted]

MINERAL EXPLORATION • MINING CONSULTANTS
LABORATORY SERVICES (COAL/WATER/GEOLOGIC)
505 EAST BROADWAY • MARYVILLE, TENNESSEE 37801
615/984-6100

CERTIFICATE OF ANALYSIS

August 7, 1981

Heywood-Wakefield Company
Rankin Road
Newport, TN 37821

Attention: Mr. Walter O'Neil

Dear Mr. O'Neil:

The results of the Electroplating Sludge from filter press taken 6/15/81 at 1430 hrs. are as follows:

	ppm, Dry Weight Basis	ppm, As Received
As	22.5	5.35
Pb	700	166
Cu	1,400	333
Ti	<63	<15
Ba	<100	<24
Se	1.00	0.24
Zn	41,000	9,745
Cd	<6.2	<1.5
Ag	<12.5	<3.0
Ni	125,000	29,700
Fe	36,000	8,550
Sb	500	120
Mn	1,300	310
Co	80.0	19.0
Cr^{+3}	25,000	5,940
Cr^{+6}	3.75	0.89

Sincerely yours,

KENWILL, INC.

Wm. J. Carter, Jr.
for Edgar W. Kuemmerle, Jr., Ph.D.
Vice President, Laboratory Division

EWK/sl

REFERENCE NO. 20

STATE OF TENNESSEE
DEPARTMENT OF HEALTH AND ENVIRONMENT
2700 Middlebrook Pike
Suite 220
Knoxville, Tennessee 37921

January 26, 1989

Certified Mail
P 825 958 712

Mr. Tom McNealy, Plant Manager
Eastern Plating
Route # 7, Box 26
Chemwood Drive
Newport, TN 37821

RE: Notice of Noncompliance
Illegal Discharges
Eastern Plating
Cocke County

Dear Mr. McNealy:

Samples collected at your facility by the Division of Water Pollution Control indicate illegal discharges of industrial wastes into waters, and a location from which they are likely to move into waters, have occurred. High concentrations of chromium, nickel, and lead in sediment and stormwater runoff from this facility are indicated by the samples. Reports of the analyses are enclosed (KI 582 B and KI 885).

The Tennessee Water Quality Control Act, TCA 69-3-101, et. seq., states, in part, that it shall be unlawful for any person to discharge industrial wastes into waters or a well, or a location from which it is likely that the discharged substance will move into waters or a well, except in accordance with the conditions of a valid permit.

The Division advises that Eastern Plating propose a plan to investigate the possible presence of pollutants in groundwater, soils, and stormwater runoff at this facility, to be submitted no later than April 24, 1989. A Compliance Review Meeting will be conducted on Thursday, February 23, 1989, at 10:00 a.m. at our offices on 2700 Middlebrook Pike, Knoxville. Your cooperation is expected. You should bring all information pertinent to your past and present waste management, including, but not limited to, waste characterizations, quantities and dates generated, and methods of treatment/disposal.

If there are questions regarding this correspondence, please contact Burl Maupin at 594-6444.

Sincerely,

Earl C. Leming, Manager
Knoxville Basin Office
Division of Water Pollution Control

ECL:BHM:bb

Enclosures: Laboratory Analyses KI 582 B and KI 885

cc: Jack Crabtree, DSWM
Ken Church, DSF
Enforcement Section - Nashville
Cocke County Health Department

Fran Disk

TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT
ENVIRONMENTAL LABORATORIES

KI 582 B

Sample Source: Eastern Plating
I.D.: ditch in front
Stream Mile: ____ Depth: 0-3 inches
County: Cocke Field No.: 1
Collected: Date: 10-24-88 Time: 11:30am By: BMM
Potential Hazard: Ni, Cr, Pb, CN
Signature of Sampler: Bruce M Maupin

Inorganic Analysis, Solids

Sample type: ☑ Sediment ☐ Tissue ☐ Air

Sample Priority: ☐ Emergency ☐ Legal ☑ Routine ☐ Ambient

Date priority requested: ____

Laboratory Number: KI 582 B
Received: Date: 881024 Time: 1250 by: WER
Sampling Agency: ☐ APC ☐ SWM ☑ WM ☐ Other ____
If SWM: ☐ SW ☐ SS ☐ SIU ☐ Other ____
If WM: ☐ GW ☑ WP ☐ WS ☐ Other ____
Send Report to: WPC - Knoxville

code	✓	Sediment	Unit	value
01108		aluminum, Al	mg/kg	
01003		arsenic, As	mg/kg	
01008		barium, Ba	mg/kg	
01023		boron, B	mg/kg	
01028		cadmium, Cd	mg/kg	
00917		calcium, Ca	mg/kg	
01029	✓	chromium, Cr	mg/kg	902.0
01038		cobalt, Co	mg/kg	
01013		copper, Cu	mg/kg	
01170		iron, Fe	mg/kg	
01052	✓	lead, Pb	mg/kg	178.2
00924		magnesium, Mg	mgk/g	
01053		manganese, Mn	mg/kg	
71921		mercury, Hg	mg/kg	
01068	✓	nickel, Ni	mg/kg	5440
00938		potassium, K	mg/kg	
01148		selenium, Se	mg/kg	
01078		silver, Ag	mg/kg	
00934		sodium, Na	mg/kg	
01093		zinc, Zn	mg/kg	
00721	✓	cyanide, CN	mg/kg	0.02
		nitrogen, ammonia	mg/kg	
00633		nitrogen, NO2 & NO3	mg/kg	
		nitrogen, total kjeldahl	mg/kg	
		oil and grease	mg/g	
		hydrocarbons, total	mg/g	
		percent solids	%	
32731		phenols	mg/kg	
00668		phosphate, total	mg/kg	

code	✓	Tissue	Unit	value
81666		aluminum, Al	mg/kg	
01004		arsenic, As	mg/kg	
81658		barium, Ba	mg/kg	
81657		boron, B	mg/kg	
71940		cadmium, Cd	mg/kg	
71939		chromium, Cr	mg/kg	
81659		cobalt, Co	mg/Kg	
71937		copper, Cu	mg/kg	
81660		iron, Fe	mg/kg	
71936		lead, Pb	mg/kg	
81741		manganese, Mn	mg/kg	
71930		mercury, Hg	mg/kg	
01069		nickel, Ni	mg/kg	
01149		selenium, Se	mg/kg	
81742		silver, Ag	mg/kg	
71938		zinc, Zn	mg/kg	
34326		cyanide, CN	mg/kg	
34468		phenols	mg/kg	
		Coal		
		ash	%	
		heat content	BTU	
		Moisture	%	
		sulfur	%	

code	✓	EP Toxicity	Unit	value
01000		arsenic, As	µg/L	
01005		barium, Ba	µg/L	
01025		cadmium, Cd	µg/L	
01030		chromium, total Cr	µg/L	
01049		lead, Pb	µg/L	
71890		mercury, Hg	µg/L	
01065		nickel, Ni	µg/L	
01145		selenium, Se	µg/L	
01075		silver, Ag	µg/L	
00723		cyanide, CN	µg/L	

		Other		

Signature of Unit Supervisor: Edward M. McCrary Date: NOV 16 1988
Signature of supervisor indicates that the work was performed in accordance with federally approved procedures where available and in compliance with current quality assurance criteria except as qualified below.
Comments: ____

* please designate desired analyses by placing a check mark before the appropriate parameter.

411.xls (rev. 7/88)

TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT
ENVIRONMENTAL LABORATORIES
Inorganic Analysis, Liquids

Laboratory Number K1885 KI 885
Received: Date 881221 Time 1600 by WJK
Sampling Agency: ☐ APC ☐ SWM ☐ WM ☒ Other
If SWM: ☐ SW ☐ SS ☐ SIU ☐ Other
If WM: ☐ GW ☒ WP ☐ WS ☐ Other
Send Report to WPC-Knoxville

Sample Priority
☐ Emergency ☒ Legal ☐ Routine ☐ Ambient

Date priority needed

Sample Source Eastern Plating stormwater
D. runoff from ditch at driveway
Stream Mile Depth
County Cocke Field No. 1
Collected: Date 12-21-88 Time 1:00pm by BHM
Potential Hazard metals
Signature of Sampler Burl H. Maupin

Code	✓	Field Determinations	Units	Value
00095		conductivity	µmho	
00300		dissolved oxygen	mg/L	
00061		flow	CFS	
00400		pH	Units	
00545		residue, settleable	mg/L	
00077		Secchi disc	M	
00010		temperature	°C	
		Microbiology		
31616		coliform, fecal	# /100 mL	
31501		coliform, total	# /100 mL	
31679		streptococci, fecal	# /100 mL	
		Physical Characteristics		
00081		color, apparent	PtCoU	
00080		color, true	PtCoU	
		flash point	°C	
00403		pH, lab	Units	
00515		residue, dissolved	mg/L	
00545		residue, settleable	ml/L	
00530		residue, suspended	mg/L	
00500		residue, total	mg/L	
00095		specific cond. 25°C	µmho	
00070		turbidity	NTU	
		Organics		
00310		BOD, 5-day, 20°C	mg/L	
00335		COD (low)	mg/L	
00340		COD (high)	mg/L	
		Hydrocarbons	mg/L	

Code	✓	Organics	Units	Value
		formaldehyde, air impinger	µg	
38260		MBAS	mg/L	
00550		oil and grease	mg/L	
32730		phenols	µg/L	
00690		TOC	mg/L	
		Non-metallic Inorganics		
00437		acidity	mg/L	
00410		alkalinity, total	mg/L	
00415		alkalinity, phenolphthalein	mg/L	
01022		boron	ug/L	
00940		chloride	mg/L	
50060		chlorine, residual total	mg/L	
00720		cyanide	mg/L	
00290		dissolved oxygen	mg/L	
00950		fluoride	mg/L	
00900		hardness, total	mg/L	
82395		hardness, calcium	mg/L	
00635		nitrogen, total kjeldahl	mg/L	
00610		nitrogen, ammonia	mg/L	
00605		nitrogen, total organic	mg/L	
00630		nitrogen, NO3 & NO2	mg/L	
00615		nitrogen, nitrite (NO2)	mg/L	
00620		nitrogen, nitrate (NO3)	mg/L	
70507		orthophosphate, total	mg/L	
00666		phosphate, dissolved	mg/L	
00665		phosphate, total	mg/L	
00955		silica	mg/L	
00945		sulfate	mg/L	
00745		sulfide, total	mg/L	
00746		sulfide, dissolved	mg/L	

Code	✓	Metals	Units	Value
01105	✓	aluminum, Al	µg/L	2770
01097		antimony, Sb	µg/L	
01002		arsenic, As	µg/L	
01007		barium, Ba	µg/L	
01012		beryllium, Be	µg/L	
01027		cadmium, Cd	µg/L	
00910		calcium, Ca	mg/L	
01034	✓	chromium, Cr, total	µg/L	15,540
01032		chromium, Cr, hex.	µg/L	
01037		cobalt, Co	µg/L	
01042		copper, Cu	µg/L	
01045		iron, Fe	µg/L	
01051		lead, Pb	µg/L	
00927		magnesium, Mg	mg/L	
01055		manganese, Mn	µg/L	
71900		mercury, Hg	µg/L	
01067	✓	nickel, Ni	µg/L	1081
00937		potassium, K	mg/L	
01147		selenium, Se	µg/L	
01077		silver, Ag	µg/L	
00929		sodium, Na	mg/L	
01059		thallium, Tl	µg/L	
01102		tin, Sn	µg/L	
01152		titanium, Ti	µg/L	
01092	✓	zinc, Zn	µg/L	101
		Other		

please designate desired analyses by placing a check mark before the appropriate parameter.

Signature of Unit Supervisor: Edward McGrary Date JAN 11 1989
Signature of supervisor indicates that the work was performed in accordance with federally approved procedures where available and in compliance with current quality assurance criteria except as qualified below
Comments:

PH-3012 LAB (rev 7/88)

REFERENCE NO. 21

NUS CORPORATION AN[redacted] **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	07/31/91	11:30

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN: Jennifer Powers	OF: Division of Solid Waste Management	PHONE: (615)741-3424

AND:
Wendell C. McLendon Wendell C McLendon 7/31/91

DISCUSSION:

Ms. Powers stated that Eastern Plating Company was classified as a large generator.

REFERENCE NO. 22

NUS CORPORATION AND S— — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	06/21/91	14:20

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Cocke County, Tennessee

BETWEEN: Lisa Mullins	OF: Dept of Environment and Conservation	PHONE: (615)594-6444

AND:
Wendell C. McLendon

Wendell C. McLendon 6/21/91

DISCUSSION:

Ms. Mullins stated that Eastern Plating Company did not have an NPDES permit.

REFERENCE NO. 23

State of Tennessee

DEPARTMENT OF CONSERVATION

DIVISION OF GEOLOGY

BULLETIN 58

PART I

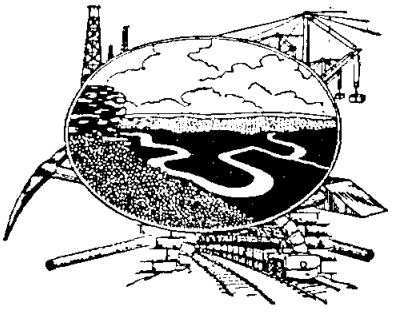
GROUND-WATER RESOURCES OF EAST TENNESSEE

By

G. D. DeBUCHANANNE

and

R. M. RICHARDSON



Prepared in cooperation with the U. S. Geological Survey

NASHVILLE, TENNESSEE

1956

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TABLE 4.–GEOLOGIC FORMATIONS IN EAST TENNESSEE

Era or system	Series	Group	Subdivisions	Thickness (feet)	Physical character	Water-bearing properties
Quaternary	Recent		Alluvium	0–50	Silty sand or loam, containing pebbles and boulders of quartzite and other rocks.	Yields small supplies to dug wells. Thicker stratified deposits may be good aquifers.
	Pleistocene(?)		High terrace deposits	0–50	Alluvial material underlying terraces up to 400 feet above present streams.	Yield small supplies to dug wells.
Tertiary(?)			Residual material	0–150	Deep uniform clay residuum overlying pure limestone and dolomite. Shallow soil overlying shale is full of shale chips. Sandy soil overlies sandstone and siltstone.	Yields small supplies to dug wells.
Late(?) Paleozoic			Paleozoic intrusive rocks	?	Mica-peridotite and metadiorite.	Not known; rock limited in occurrence.
Pennsylvanian			Pennsylvanian rocks undifferentiated	3,500	Sandstone and shale, with coal beds.	Yield variable quantities of water to wells. Quality of water varies greatly.
Mississippian			Pennington formation	150–2,250	Varicolored shale and sandstone.	Yields small supplies to domestic wells. Springs are of small yield.
			Newman limestone	1,200–2,500	Limestone, massive to northwest, shaly to southeast.	Water occurs in joints and bedding planes enlarged by solution. Yields of wells are variable. Supplies many springs, some very large.
			Fort Payne chert / Grainger formation	100–1,100	Fort Payne: Very cherty limestone. Grainger: Siltstone, sandstone, and shale.	Fort Payne yields small to moderate supplies to wells. Springs are small to moderate yield. Grainger yields small supplies to wells. Spring yields are small.
Mississippian and Devonian	Lower Mississippian and Upper Devonian		Chattanooga shale	12–400	Black carbonaceous fissile shale with thin sandstone beds in lower part.	Yields small supplies to wells. Quality of water generally poor.
Devonian and Silurian	Lower Devonian and Upper Silurian		Hancock limestone	300	Sandy limestone and dolomite.	Yields small supplies to wells. Not important as aquifer.
Silurian	Middle and Lower Silurian		Silurian sandstone and shale undivided / Rockwood formation / Clinch sandstone	250–800	Silurian undivided: Siltstone and shale with beds of iron ore in upper part. Rockwood: Shale and siltstone with beds of iron ore. Clinch: White thick-bedded sandstone.	Water occurs in joints and bedding planes. Yield small supplies to wells and springs. Quality of water varies.

TABLE 4.—GEOLOGIC FORMATIONS IN EAST TENNESSEE—Continued

Era or system	Series	Group	Subdivisions				Thickness (feet)	Physical character		Water-bearing properties
Ordovician	Upper Ordovician		Sequatchie formation / Juniata formation				200–400	Sequatchie: Maroon and blue shaly limestone and shale. Juniata: Maroon siltstone and shale.		Yield small supplies to wells and springs.
	Middle Ordovician		Upper part of Chickamauga limestone	Reedsville shale	Martinsburg shale		700–1,000	Upper part of Chickamauga: Blue, crystalline well-bedded limestone; upper part shaly limestone. Reedsville shale: Bluish calcareous shale. Martinsburg shale: Bluish calcareous shale.		Limestones yield small to moderate quantities of water to wells and springs. Where limestones are interbedded in shale, the limestone commonly contains well-developed solution cavities. Quality of water varies. Shale generally yields larger quantities of water to drilled wells than limestone. Quality of water varies.
				Chickamauga limestone Unit 4						
			Lower and middle parts of Chickamauga limestone	Unit 3	Moccasin formation / Bays formation		700–1,000	Moccasin: Maroon limy shale and shaly limestone and blue flaggy limestone. Bays: Maroon siltstone and shale.		
				Unit 2	Ottosee shale	Sevier shale	2,500–4,000	Units of Chickamauga limestone: Blue generally well-bedded limestone, in part silty and shaly. *Ottosee*: Bluish calcareous shale containing crystalline limestone lenses. Holston: Red crystalline limestone (marble), quartzose crystalline limestone and limy sandstone. Lenoir: Blue nodular and massive limestone. Sevier: Blue calcareous shale with sandstone beds, blue limestone at base. Athens: Bluish calcareous shale and shaly limestone, blue limestone at base, some sandstone.		
				Unit 1	Holston formation					
					Lenoir limestone / Athens shale					
	Lower Ordovician	Knox	Newala, Longview and Chepultepec formations undivided	Newala formation	Mascot dolomite	Jonesboro limestone	400–800	Siliceous dolomite	Jonesboro limestone: Dark, blue weathering limestone	Water occurs in joints and solution channels. Yield small to large supplies to wells. Water generally of good quality. Sandstone beds in Chepultepec dolomite serve as aquifers for small supplies. Numerous large springs are found in these rocks.
					Kingsport formation		200	Siliceous dolomite, thick limestone near base.		
				Longview dolomite			250	Very siliceous dolomite, limestone beds near top.		
				Chepultepec dolomite			700–750	Siliceous dolomite, sandstone beds near base.		

Cambrian	Upper Cambrian		Copper Ridge dolomite		Conococheague limestone	900–1,100	Copper Ridge: Dark crystalline siliceous dolomite. Conococheague: Limestone.	
		Conasauga	Upper Cambrian part of Conasauga shale or Conasauga group	Maynardville limestone member of Nolichucky shale		150–350	Limestone below, dolomite above.	Limestone and dolomite yield small to large quantities of water to springs and wells. Shale-limestone contacts produce springs at surface. In subsurface these contacts are frequently water bearing.
				Nolichucky shale		400–750	Greenish shale.	
	Middle Cambrian		Middle Cambrian part of Conasauga shale or Conasauga group	Honaker dolomite	Maryville limestone	260–650	Blue limestone, mostly ribboned with dolomite.	Shale yields small supplies to dug and drilled wells. Wells in shale near streams occasionally yield moderate to large quantities of water. Pumpkin Valley shale is very poor aquifer.
					Rogersville shale	0–250	Light-green shale.	
					Rutledge limestone	100–500	Blue limestone, mostly ribboned with dolomite.	
				Pumpkin Valley shale		200–400	Greenish silty shale.	
	Lower Cambrian		Rome formation	Sandstone-bearing member		700	Varicolored shale, siltstone, and sandstone.	Yield small quantities of water to dug and drilled wells. Water occurs in closely spaced joints. Upper member of the Rome formation is a better aquifer than the lower member.
				Apison shale member			Bright-red and green shale.	
			Shady dolomite			1,000	Blue-gray and white dolomite.	Water occurs in joints and bedding planes.
		Chilhowee	Erwin formation	Helenmode member		1,000–1,500		Yield small to moderately large supplies to drilled wells and springs.
				Hesse sandstone			White sandstone.	
				Murray shale			Greenish silty shale.	
				Nebo sandstone			White sandstone.	
			Hampton formation	Nichols shale		500–2,500	Hampton: Greenish silty shale and siltstone with feldspathic sandstone layers. Nichols: Greenish silty shale.	
			Unicoi formation	Cochran conglomerate		1,000–5,000	Feldspathic sandstone and conglomerate.	

it does in ordinary limestone, which is discussed under sedimentary rocks.

In less resistant metamorphic rocks also, such as slates and schists, ground water occurs in fractures. These rocks frequently have a deep mantle of soil overlying them that is permeable enough to permit the downward percolation of water. Domestic water supplies usually can be derived from wells dug to the soil-bedrock contact. Where it is necessary to drill a well into the bedrock, small quantities of water are usually obtained from fractures. Wells in these rocks are usually not as deep as wells in the more resistant types of metamorphic and igneous rocks.

In East Tennessee, metamorphic rocks are restricted to the Blue Ridge province. They are of only local importance as aquifers.

Sedimentary Rocks

Sedimentary rocks are formed by the weathering of igneous, metamorphic, and other sedimentary rocks and the subsequent transportation and deposition of the weathered products. These rocks provide storage for large amounts of ground water.

Unconsolidated sediments, such as gravel, sand, silt, clay, and mixtures of these materials, vary in their water-bearing properties but on the whole include the most important aquifers in the world, though not in East Tennessee. Well-sorted gravel deposits are excellent aquifers. Wells in these deposits frequently yield water at rates of thousands of gallons per minute. Sand that is well sorted and not too fine grained also makes a good aquifer. Deposits of gravel or sand that contain much clay or silt yield little water to wells. Silt and clay are poor aquifers and generally act as confining beds rather than aquifers in series of unconsolidated rocks.

In East Tennessee, unconsolidated sediments are found principally along streams. As these deposits are usually quite thin, they are of little importance as sources of water.

Consolidated sediments, such as limestone, dolomite, shale, and sandstone, also are quite variable in their water-bearing properties. As most of East Tennessee is underlain by consolidated sedimentary rocks, they are the most important aquifers of the area.

The openings in which ground water is found in limestone and dolomite may be classified as to origin into primary and secondary types, or those formed at the time the containing rock itself was formed and those which had a later origin. Secondary openings largely control the movement of ground water in the carbonate rocks of East Tennessee. These openings, mainly fractures and openings along bedding planes, permit the entrance of chemically reactive water, which can modify

profoundly the size and shape of the openings through which it passes. Because the acidity of water moving through limestone decreases as calcium carbonate is dissolved, the rate of solution decreases with depth. This results in the enlargement of fractures by solution near the surface, and, under certain conditions, in the closing of fractures by precipitation at depth.

The yield of wells in limestone is dependent upon the size and number of solution cavities encountered in drilling. It is known, from records of water wells and other borings in East Tennessee, that solution cavities containing water are present at depths of as much as 900 to 1,000 feet below the surface. However, most of such openings usually are confined to the first 350 feet. If sufficient water is not obtained in 350 feet of drilling, it generally is not advisable to drill deeper, as the chance of obtaining additional water decreases with depth.

The problem of determining the location for a well to be drilled into a limestone or dolomite then becomes one of predicting the presence of solution cavities. There is no positive way to locate these cavities except by drilling.

Many sinkholes caused by the collapse of caverns may be found in areas where extensive solution of the underlying limestone has taken place. In such areas, few surface streams are found. Most of the drainage is through a well-developed underground drainage system, and the water table is likely to be deeper than in other areas. The reason for this is that the subsurface drainage pattern is so well developed that water falling on the surface quickly percolates downward to the subsurface drainage system where it moves rapidly in solution channels laterally to points of discharge. Such systems drain the water so rapidly that little is retained in storage above the grade of the subsurface drainage. In areas where subsurface drainage is not so well developed, water is held in storage for a longer time before discharging.

There is evidence that solution has been more active near perennial streams than elsewhere. Industries close to rivers are more successful in obtaining large supplies of ground water than those in other locations. It is possible that, in some places, solution along zones of weakness in the rocks has determined the location of the stream. In any event, it is probable that in many places solution channels are connected with surface streams and that these connections allow river water to flow into wells.

Shale is formed by the compaction and consolidation of sediments composed chiefly of particles of clay or silt size. Shales have very little primary pore space, and, unless secondary openings are formed by fracturing, will yield very little water to wells. The rocks of East Tennessee have been folded and faulted extensively, hence, shales that are

hard and brittle enough to support fractures are among the better aquifers of the area.

Shales containing appreciable quantities of calcium carbonate yield more water than noncalcareous shales, as the fractures in such rock are susceptible to enlargement by the solvent action of water. In general, fractures in shale are much more closely spaced than those in limestone and dolomite. As a result, the hydrologic properties of shales are relatively uniform and practically all wells drilled in shale in East Tennessee yield water at moderate depths.

Sandstones and noncalcareous shales are composed of particles of minerals and rock more or less firmly cemented together. Rocks of these types found in East Tennessee contain practically no primary openings. Openings capable of transmitting water are secondary and consist of joints and other fractures formed after the sediments were deposited. Unlike limestone, dolomite, and calcareous shale, the openings in sandstone are not readily susceptible to enlargement by solution by water. Sandstones are not as widely distributed in East Tennessee as limestones, dolomites, and calcareous shales. However, rocks of this type, because of fracturing, will usually yield small supplies of water.

In an attempt to evaluate quantitatively the water-bearing properties of the various rock types, well data collected during the investigation were analyzed as follows:

All wells were grouped according to the geologic formation into which they were drilled. The wells in each formation were grouped according to depth. This information was plotted on coordinate paper, with cumulative frequency of occurrence as the ordinate and depth as the abscissa. It was observed that similar curves were obtained from well data for formations that were similar in their physical properties. Therefore, the wells were regrouped into three classes—calcareous shale, noncalcareous shale and sandstone, and limestone and dolomite—and reanalyzed. Data summarized from curves for these three rock types are shown in table 5.

Table 5 indicates that the chance of obtaining a domestic supply from a well within the first 100 feet is about 30 percent better in formations composed predominantly of calcareous shale than in limestone or dolomite. If a choice were to be made between a calcareous shale and a noncalcareous shale or sandstone, the chances of obtaining water in the first 100 feet are reduced to about a 5-percent difference in favor of the calcareous shale location. The curve for the noncalcareous shale-sandstone aquifers is less reliable than the curves for the other two aquifers, because fewer wells were available for analysis.

beds of limestone occur. The purple shale contains more silt than the green shale. The formation weathers to a thin acid soil full of shale chips.

The one water sample collected from the Nolichucky shale was of good quality and had a hardness of 123 ppm.

Maynardville limestone member.—The Maynardville limestone member of the Nolichucky shale consists of 150 to 350 feet of massive blue limestone, with thin irregular layers of silty dolomite. Interbedded in the limestone are layers of oolitic limestone and some edgewise conglomerate. The member weathers to a deep orange-red or red chert-free soil.

The occurrence of water in these rocks is restricted to solution channels developed along fractures and bedding planes. Three of five scheduled springs from this member were estimated to have yields of more than 450 gpm. Springs generally appear at the base of the Maynardville limestone member, indicating that the part of the Nolichucky shale below is less permeable. Domestic water supplies from wells in this member are usually obtained in the first 150 feet of drilling. Wells of moderately large yield are developed from the lower portion of this member where it lies within 300 feet of the surface.

An analysis of water from one spring issuing from the Maynardville indicates that the water is of good chemical quality. The hardness was 105 ppm.

Cambrian and Ordovician Systems

Upper Cambrian and Lower Ordovician Series

Knox dolomite or Knox group

The Knox dolomite or Knox group, which underlies more of East Tennessee than any other similar unit, is the most important aquifer in the area. This unit changes from a cherty dolomite in the northwest side of the valley to an essentially chert-free limestone in the southeast side of the valley. Detailed geologic work on the dolomitic phases of the Knox has resulted in its subdivision into numerous formations (table 4). Where such work has been done the Knox is considered a group; elsewhere it is considered a formation.

The Knox, where undivided, consists of 2,500 to 3,500 feet of thick-bedded siliceous dolomite and interbedded limestone. A quartz-sandstone zone about 700 feet above the base of the formation is the boundary between Cambrian and Ordovician rocks in the Knox. The Knox weathers to produce a thick residual clay which commonly accumulates to thickness of more than 100 feet. Chert in the dolomite is resistant to weathering and is scattered through and over the clay residuum. The soil overlying the Knox is generally good.

The occurrence of water in the Knox dolomite is controlled by fractures that are usually enlarged by solution. The Knox is one of the most competent strata in East Tennessee and has been fractured as a result of folding and faulting. The fracture pattern of joints is usually hidden by the deep residuum overlying the formation and cannot be used as a guide in locating well sites. However, general areas that contain more fractures due to greater crustal deformation can be delineated. The yield of wells in such areas is usually large. Generally, the largest fractures are found in the first few hundred feet of drilling. Attempts to obtain larger yields by drilling excessively deep wells have usually been unsuccessful. Where wells have penetrated major thrust faults in the Knox dolomite at depths greater than 350 feet, the fault zones have been tightly cemented by secondary calcite, and little water has been obtained.

During field investigations in East Tennessee 416 springs issuing from the Knox dolomite were inventoried. Of these, 86 were estimated to yield more than 450 gpm and 82 were estimated to yield between 100 and 450 gpm. The relatively high yield of these springs and their wide geographic distribution indicate that the Knox dolomite is a good aquifer.

The yields of wells in this formation are unpredictable, as they are in many aquifers consisting of carbonate rocks. Dry wells are not unknown but are less common than wells that yield more than 100 gpm. Many industrial wells in the Knox, yielding several hundred gallons per minute, are located near permanent streams. In such locations, the temperature and chemical quality of the water indicate that many of these wells obtain water from the streams. Even in favorable locations, wells have low yields if the rocks are not fractured.

In areas characterized by many sinkholes and few surface streams, wells are generally deep. The well-developed solution pattern that drains these areas is nearly everywhere more than 100 feet below the land surface, and many domestic wells are more than 300 feet deep. In such areas, many of the inhabitants use cisterns.

The deep clay residuum overlying the Knox dolomite supplies water to many domestic dug wells. Chert in the residuum, which often accumulates in definite zones and layers, forms permeable zones. If no chert is encountered when a well is dug, the well is extended down to bedrock, where water is almost always found. In the fall, many of these wells go dry. The rapid rise of water in wells shortly after a heavy rain indicates that the recharge area of the aquifer is close by.

The quality of water from wells and springs in the Knox dolomite is similar to that from other carbonate aquifers. The hardness, which is usually the most objectionable characteristic, ranges from about 50 to 250 ppm. The hardness of water varies with the seasons. In late

summer and fall, when ground-water recharge is low, the water contains more dissolved solids than in wet weather, when ground-water recharge is high. Water from the residuum overlying the Knox is softer than water from the bedrock and generally has a pH of less than 7.

Copper Ridge dolomite.—The Copper Ridge dolomite consists of 900 to 1,100 feet of dark crystalline, knotty dolomite interbedded with light-gray fine-grained dolomite. Asphaltic material accounts for the dark color. Limestone beds are virtually unknown, except near rocks of the Conococheague limestone to the southeast. Layers of dolomitic sandstone occur near the top and, locally in the east, near the base, but rarely in the rest of the formation. Dark chert nodules and thin layers of oolitic chert are common. Thicker layers of light-colored oolitic chert are diagnostic of the upper portion of the formation. Weathering produces a reddish-orange to dark-red clay residuum that contains much dark jagged, rough chert.

Ground water in this formation is restricted to fractures and bedding-plane openings. Sixteen of 94 springs scheduled in this formation had yields estimated at more than 450 gpm. Sixty-four springs had yields estimated at more than 10 gpm. The yields of wells in this formation are dependent upon the size and number of fractures encountered in drilling. Many domestic wells and a few low-yield industrial wells obtain water from this formation.

Hardness ranged from 24 to 396 ppm in water samples collected from 14 locations in the Copper Ridge dolomite. Most of the samples, however, had a hardness of less than 180 ppm. The water sample having a hardness of 24 ppm was from a dug well.

Conococheague limestone.—The Conococheague limestone is the eastern equivalent of the Copper Ridge dolomite. This formation is about 1,100 feet thick and consists of dark-blue-weathering limestone and thin layers of silty light-gray dolomite. Beds of crossbedded coarse-grained sandstone are found near the top and base of the formation. Dark chert nodules occur in the limestone but are more apparent in the residuum overlying the formation along with light-colored angular chert. Blocks of sandstone are found in the residuum overlying the sandstone beds. The clay residuum grades upward to a deep orange-red to dark-red soil.

Fractures control the occurrence of ground water in this formation. Only six springs were scheduled, none of which had yields estimated at more than 100 gpm. Five, however, had yields estimated at more than 10 gpm. The aquifer supplies many domestic and a few industrial wells.

Chepultepec dolomite.—The Chepultepec dolomite consists of 700 to 750 feet of light-colored well-bedded fine- to medium-grained dolomite including occasional layers of silty dolomite and dark dolomite. Sand-

stone layers up to 10 feet thick are usually found in the lower third of the formation. Chert nodules are common in the dolomite, especially in certain layers. Weathering of the formation produces a clay containing a porous, locally massive, light-colored and fine-grained chert of dull luster. The weathering of the basal sand members produces blocks of sandstone.

Ground water occurs in fractures in the Chepultepec dolomite and in the thicker sandstone layers in the lower third of the formation. These sandstones produce some water, but only domestic and small industrial water supplies can be developed from them. Of 30 springs scheduled in the Chepultepec dolomite, only two had discharges that were estimated in excess of 450 gpm. Twenty-three of the springs were estimated to flow less than 100 gpm. Wells drilled in this formation generally yield water supplies adequate for domestic use. Yields in excess of 100 gpm are not common.

Three water samples were collected from the Chepultepec dolomite. The hardness of these samples was 88, 103, and 151 ppm. As in waters from other formations of the Knox group, hardness is the most undesirable characteristic.

Longview dolomite.—The Longview dolomite consists of about 250 feet of well-bedded, fine- to medium-grained dolomite. In the upper half of the formation the dolomite is commonly interbedded with a light-gray to brown fine-grained limestone. Sand is common as isolated grains in some beds and, locally, forms beds a few inches thick. Weathering of the siliceous beds in the Longview dolomite produces large blocks of light-colored massive fine-grained chert that are rarely porous. This chert, which occurs in the soil and clay of the weathered Longview dolomite, is diagnostic of the formation.

As in the other formations of the Knox group, ground water occurs in fractures in the moderately soluble dolomite. Analyses were made of six samples of ground water from the Longview dolomite, which indicated a hardness of 20 to 199 ppm.

Kingsport formation.—The Kingsport formation, which lies immediately above the Longview dolomite, consists of about 200 feet of massive light-colored dolomite. Parts of the formation are slightly darker, coarser, and better bedded. Near the base is usually found about 50 feet of light-gray to brown limestone containing little dolomite except where the limestone has been altered to dolomite since deposition. The Kingsport formation weathers to form a light-tan to dark-orange residual clay containing chert. The clay grades upward to a thick cherty soil. The weathered chert is blocky and white but is usually iron stained and appears porous.

The thinness of the Kingsport, which has a narrow outcrop belt because the beds dip steeply, prevents it from being an important

aquifer. As in other carbonate rocks, water occurs in fractures. During field investigations eight springs from this formation were scheduled. Of these, two were estimated to yield more than 450 gpm. The wells scheduled were all domestic, but it may be possible to develop small industrial or municipal supplies from these rocks. Wells for industrial or municipal supplies should be located as near as practicable to permanent streams. Most wells in the Kingsport formation have to be drilled deeper than 100 feet to obtain a supply. As the size and number of fractures decrease with depth, it is usually not advisable to drill deeper than 350 feet.

Analyses of four water samples collected from the Kingsport formation indicate that the water is of good quality except for hardness. The hardness ranged from 102 to 198 ppm.

Mascot dolomite.—Where the Knox group is fully subdivided, the Mascot dolomite is the uppermost formation. The Mascot consists of 400 to 800 feet of well-bedded light-gray dolomite. The lower portion of the formation is somewhat darker in color and coarser in texture than the upper portion. Thin beds of gray limestone, which weathers blue, are quite common in the southeastern outcrops, whereas in the northwestern outcrops they occur only locally. The upper part of the formation is usually more siliceous than the lower part, but in places the lower part also is very siliceous. The Mascot dolomite weathers to a residual clay that grades upward to a light-tan to dark-orange soil. The chert produced by weathering of the siliceous members accumulates in the clay and in the surface soil. This accumulation of chert retards erosion and accounts for the scarcity of outcrops.

Ground water occurs in fractures in these rocks. Of 37 springs inventoried that issued from the Mascot dolomite, 11 had yields estimated in excess of 450 gpm. Only 10 of the springs yielded less than 10 gpm. Wells are successful only if fractures are encountered. Domestic wells usually must be drilled deeper than 100 feet to obtain an adequate water supply, but drilling deeper than 350 feet generally is not worthwhile.

In chemical analyses of four water samples collected from sources in the Mascot dolomite the hardness ranged from 101 to 280 ppm.

Newala formation.—In areas where the Kingsport formation and the Mascot dolomite have not been divided, the name Newala formation is applied to these rocks. This formation has been described as that portion of the Knox dolomite overlying the Longview dolomite. It weathers to produce a clay soil containing massive chert.

The occurrence and chemical quality of ground water in this formation are similar to those in the Mascot dolomite and Kingsport formation.

Jonesboro limestone.—The Jonesboro limestone is about 2,000 feet thick and represents the limestone phase of the Ordovician part of the Knox group. Less work has been done in subdividing the Knox group in the southeast limestone phase than in the northwest dolomite phase. The Jonesboro limestone is a pure, massive dark-blue-weathering limestone containing thin layers of silty dolomite. Sandstone beds occur in the lower 400 feet. Thin sandstone layers also occur in the lower part of the upper third of this formation. Chert is rare, even in the residuum. The limestone weathers to a deep residual clay which forms red- to orange-colored soil. Where sandstone beds were present, weathered blocks of sandstone are found in the soil.

Ground water occurs in fractures in this formation. Of 13 springs scheduled, all had yields estimated in excess of 10 gpm, but only 4 had yields estimated in excess of 100 gpm. Most of the wells drilled in this formation furnish domestic supplies. Under favorable conditions, industrial or municipal supplies may be obtained.

Two water samples were collected from this formation. The hardness was high in both (183 and 212 ppm), but other chemical characteristics were not objectionable.

Ordovician System

Middle Ordovician Series

Lower and middle parts of Chickamauga limestone

The lower and middle parts of the Chickamauga limestone have been divided into several units in some locations. In others, they have been mapped as one unit.

These rocks consist of blue-weathering limestone, which is generally fine grained, fairly light colored, and slightly silty and which contains scattered, though locally abundant, fossils. About 100 feet below the upper part of the Chickamauga limestone are two persistent beds of altered volcanic ash a foot or more thick. Greenish chert, 1 or 2 inches thick, underlies each of the ash beds. The lower and middle parts of the Chickamauga limestone produce a rather thin rich soil through which appear pinnacles of limestone.

Ground water in these rocks is restricted to fractures that have been enlarged by solution. The presence of silty layers and shaly partings frequently provides impervious layers through which water will not percolate. Where such partings occur within the more massive limestones, bedding-plane solution cavities commonly develop. The fracturing of the limestone by folding and faulting has resulted in a more or less interconnected system of cavities. Many small springs develop

at shale-limestone contacts. Where bedding-plane solution cavities or fractures extend to the surface at topographic lows, large springs are found. The success of wells drilled into these rocks depends on the number and size of cavities encountered. Most wells yield at least a domestic supply of water. Several small industries obtain their water supply from these rocks, though it is usually necessary to drill at least two wells to obtain 100 gpm. The lower and middle parts of the Chickamauga limestone are a better aquifer than the upper part.

Water from these rocks usually has a hardness of more than 200 ppm.

Units 1, 2, and 3 of Chickamauga limestone

In places, the lower and middle parts of the Chickamauga limestone have been divided into three units to which formational names have not been assigned. In general, these units can be separated by means of fossil horizons or other geologic guides. The rocks consist of shale and limestone interbedded with silty nodular limestone. The soil produced by weathering is usually a thin yellow moderately rich soil containing many shale chips.

Water in these rocks is restricted to fractures and bedding-plane openings. Small springs are common, and several yielding more than 450 gpm were scheduled. The springs usually issue from or near shale-limestone contacts, indicating that bedding-plane solution cavities are well developed. Wells in these rocks usually have low yields when located on hills or other topographic highs. Wells of larger yield are usually located near permanent streams.

The quality of the water is generally good.

Lenoir limestone and Athens shale

The Lenoir limestone and Athens shale are of the same age. The two units grade into each other south of Knoxville.

The Lenoir limestone, which varies in character, consists of dark-bluish argillaceous nodular limestone about 500 feet thick. Locally, the lowest beds consist of a pure limestone called the Mosheim member, but in other places the lowest beds of the Lenoir are silty. This formation in its pure limestone phase weathers to a moderately rich silty clay soil that is frequently removed by erosion, exposing the underlying rock. The soil from the shaly phase is shallow and poor, with many limestone outcrops.

As in other limestones, ground water occurs in fractures. Of eight springs scheduled from this formation, three were estimated to flow more than 450 gpm. Many domestic water supplies are obtained from wells in this formation.

Analyses of eight water samples indicate that water from this formation has a hardness of less than 200 ppm. Concentration of ions

other than calcium and magnesium is usually low enough not to cause any difficulty in the use of the water.

The Athens shale is about 800 to 1,000 feet thick. It is in part shaly, nodular limestone and in part bluish, yellow-weathering calcareous shale. It weathers to produce a thin acid soil containing many shale chips.

Analysis of depths of wells in Athens shale indicates that the formation behaves hydrologically as a shale rather than a limestone. In East Tennessee, calcareous shales with interbedded limestones are generally good aquifers. The solubility of both the calcareous shale and the limestone tends to make such formations quite permeable. Three springs scheduled in the Athens had yields of more than 450 gpm. Most wells produce at least domestic quantities of water.

Samples of water from 10 sources in this formation were analyzed. The hardness ranged from 46 to 404 ppm and averaged 210 ppm.

Holston formation

The Holston formation ranges in thickness from 200 to 500 feet and contains several different types of rock, including reddish-colored limestone and limy sandstone. The upper members are usually coarsely crystalline and contain quartz sand, whereas the lower portion is thinly bedded and contains more limy shale. In places, members of this formation may contain as much as 50 percent quartz sand. Fossils in the limestone indicate that parts of this formation were formed as reefs. The Holston formation weathers very deeply, producing a dark-red residuum. The members that have a high quartz content form a deep sandy soil with chips and blocks of ferruginous sandstone from which the calcium carbonate has been leached. This formation generally forms knobby red-colored hills.

Water in this formation is restricted to fractures. No large springs were scheduled, but one estimated to yield more than 100 gpm was recorded. The yield of wells drilled in the Holston formation is dependent upon the size and number of fractures intercepted. No large industrial water supply is known to be obtained from this formation, but it furnishes many domestic supplies.

Analyses of water from this formation indicate hardness of less than 150 ppm. The water is generally of good quality.

Ottosee shale

The Ottosee shale consists of about 1,000 feet of blue, yellow-weathering carbonate shale and shaly siltstone with lenses of massive crystalline limestone that becomes thin bedded at the edges. In the northwestern belt of rocks the Ottosee shale consists of a shaly nodular limestone, whereas in the southeastern belts the Ottosee is predominantly shale containing limestone lenses. The soil overlying the Ottosee

shale is rather thin and acid, except where limestone weathers to a thicker clay soil. In soil overlying the shaly phases of these rocks, chips of shale can be found. In locations underlain by limestones the soil is somewhat deeper and more fertile.

Ground water occurs in fractures in the limestone. Springs are common in the outcrop areas of these rocks. Of 24 springs scheduled, 5 were estimated to have yields of more than 450 gpm, and 11 were estimated to have yields of less than 10 gpm. The relatively pure limestone lenses in the shaly phase of the Ottosee shale may contain well-developed solution channels. The carbonate shale of the Ottosee shale also has been subjected to solution and is frequently water bearing. Of 129 wells scheduled in the Ottosee shale, 70 wells yielded at least a domestic supply of water within 100 feet. This indicates that, though the weathered Ottosee shale resembles a shale, the unweathered portion of the rock hydrologically resembles a limestone. No industrial or municipal wells are known to have been drilled in the Ottosee shale.

In chemical quality, water from the Ottosee shale resembles that from limestone formations more closely than water from shale formations. Water from the Ottosee can be expected to have a hardness of more than 100 ppm.

Sevier shale

The Sevier shale and its equivalents range in thickness from 2,500 to 4,000 feet and consist largely of blue, yellow-weathering silty to sandy calcareous shale. Locally, beds of blue shaly, nodular limestone; black carbonaceous, slightly calcareous fissile shale; blue or gray, brown-weathering sandstone; and conglomerate are found. These different rock types represent the changes in facies shown on figure 4 opposite page 66 of part II of this report. The Sevier shale usually forms rough, knobby, intricately dissected topography known locally as "slate knobs." Sandstone underlies the knobs, whereas shale free of sandstone frequently forms very flat ground. The soil is thin and full of shale chips.

Ground water in the Sevier shale is restricted to fractures. The formation has been shattered by past earth movements, making the shale rather permeable and therefore one of the better aquifers in East Tennessee. As the shale is calcareous, the fractures have been enlarged by solution to such an extent that numerous wells yield more than 150 gpm. About 50 percent of the wells scheduled in the Sevier shale obtained at least a domestic supply of water within the first 50 feet of drilling. As figures on yields are available for only a part of the wells in the Sevier shale, no conclusion can be drawn as to increase in yield with depth. Examination of cuttings from wells in the Sevier shale indicates that, though fractures are present at depth, they are usually sealed by calcium carbonate deposited from circulating ground waters.

This condition exists also where limestones overlie the Sevier shale. Even where a fault contact is only 50 to 75 feet below the surface, the shale usually is tightly sealed with secondary calcite. If the desired quantity of water has not been obtained within the first 300 feet, it is generally not worthwhile to drill deeper.

Forty springs were scheduled in the Sevier shale. Sixteen had yields estimated to be less than 10 gpm. Two springs had yields estimated to be more than 450 gpm.

Many wells in the Sevier shale located near streams or lakes yield more than 150 gpm. Water levels in wells on valley floors are usually less than 20 feet below the land surface, whereas on the slopes and tops of hills the water level is deeper and usually the yield of wells is less. In general, the best locations for large-yield wells in the Sevier shale are in valleys near permanent streams.

The quality of water from the Sevier shale is generally good. From 24 analyses available, it appears that water from this formation contains less calcium bicarbonate and is lower in hardness than water from limestone. Where the shale contains black carbonaceous material, the water usually has a high sulfate and iron content. The less desirable water is usually obtained from wells of small yield, indicating that in areas of higher yield the undesirable constituents have been removed by circulating ground water.

Moccasin and Bays formations

The Moccasin and Bays formations, though different in lithology, are equivalent in age. The Moccasin formation is found northwest of the center of the Valley and Ridge province; the Bays formation is found southeast of the center. These formations were originally thought to be different in age.

The Moccasin formation is 800 to 1,000 feet thick and is composed of maroon calcareous shale, siltstone, and alternating silty and bluish nonsilty limestone. The formation changes in character from one area to another. The Moccasin formation weathers to a thin limy soil full of reddish shale chips.

In the Moccasin formation, ground water is restricted to fractures. The siltstone and shale often form impermeable members along the top of which bedding-plane solution cavities develop. These horizons give rise to small springs at the foot of hill slopes. Springs yielding up to 100 gpm are occasionally found. This formation is not considered a good aquifer except for domestic supplies. The chemical quality of water is good except for high hardness.

The Bays formation, which ranges from 700 to 1,000 feet in thickness, consists of maroon shale, siltstone, and silty sandstone. The sandstone is predominantly coarse grained but locally grades into fine-

wet months, but during the dry months of September, October, and November they have very low flows, which indicate little natural discharge of ground water.

The best wells in these formations are near major streams. The alluvial material in the valleys, which is primarily quartz pebbles, boulders, and sand, is a permeable medium that permits the downward flow of water to fractures in the bedrock. Where faulting or folding is present, fractures in the rocks are more numerous, and such locations are favorable sites for wells. Wells yielding more than 300 gpm have been drilled in highly fractured sandstone, whereas the usual yield of wells in these formations is less than 40 gpm. As most of the sandstones are tightly cemented, there is little advantage in drilling to depths greater than 300 feet.

The quality of water in these formations is quite variable. Some wells in a given area yield water of good quality, whereas other wells in the same area yield water that is unfit for municipal use without suitable treatment. Water derived from these rocks is usually high in sulfate and iron, the iron content frequently exceeding 1 ppm. The presence of coal and carbonaceous material is also a cause of poor chemical quality.

Late(?) Paleozoic Intrusive Rocks

Igneous rocks of late Paleozoic age, consisting of mica-peridotite and metadiorite, crop out in Sevier and Union Counties. The outcrops have a very limited areal extent, and the rocks therefore do not have any importance as aquifers. The age of these rocks is uncertain.

Tertiary (?) System

Residual deposits

Overlying the rocks of East Tennessee is a nearly continuous mantle of unconsolidated material, varying in chemical and physical character and reflecting the underlying geology. This mantle or residuum, which ranges in thickness from less than a foot to more than 100 feet, serves as an aquifer supplying many domestic wells and as the recharge area for the underlying consolidated rocks. The residuum, produced by weathering of different rock types, is diagnostic of the original rock and frequently has been used to identify the formation from which it was derived.

Residuum overlying relatively pure limestone and dolomite may accumulate to thicknesses of more than a hundred feet. In some cases the weathering is very irregular and the residuum may be a few feet thick in one location, whereas a short distance away horizontally it may be more than a hundred feet thick. Where such conditions are exposed

by hydraulic mining, as in the barite and manganese districts, the bedrock is shown to be composed of numerous pinnacles irregularly spaced and of varying size and shape. Each pinnacle is completely surrounded by the residuum except at its base, where it is still attached to the bedrock.

The residuum derived from siliceous limestone and dolomite contains a high percentage of chert. This chert and the numerous buried pinnacles of unweathered bedrock frequently deflect drilling tools, making difficult the drilling of a straight well. Frequently chert in the residuum occurs in stratified layers or zones which form permeable zones in the clay. Bodies of perched water in these chert zones within the residuum frequently supply water to dug wells. How these zones of chert are formed is not fully understood, as there is evidence that the residuum has not been transported horizontally, except possibly by soil creep on the steeper slopes. The presence of chert in the residuum and the pinnacles of bedrock extending upward undoubtedly aid in recharging the underlying aquifers. Many dug wells in the residuum obtain their water at the residuum-bedrock contact.

The soil overlying the calcareous shale formations of East Tennessee is generally relatively thin. This material has been leached of most of the calcium carbonate it contains but usually retains features of the parent rock, such as bedding. The soil grades downward from the surface into the bedrock, with no sharp break. The surface is generally covered with shale chips. Interbedded limestone in these shale formations is frequently weathered so deeply that it appears only as clay seams in the typical shale soil.

The residuum overlying the shales of East Tennessee has little importance as an aquifer. It is thin and seldom extends downward to the water table. Dug wells usually penetrate the unweathered shale before obtaining water. Water-level fluctuations in dug wells indicate that the weathered shale readily allows the downward percolation of water. Where the permeability of the underlying shale bedrock is low, the residuum may be waterlogged.

The crystalline rocks of East Tennessee, such as granite, gneiss, and schist, weather deeply though somewhat irregularly. The residuum retains the original structures of the parent rock but lacks cohesion and is very soft. In this material, dug wells usually intercept quantities of water sufficient for domestic supplies in the lower portion of the residuum at or near the unweathered rock.

Siltstone and impure sandstone weather into a residuum somewhat similar to that derived from shale. The material grades, with no abrupt change, from the surface downward to the unweathered rock. Such material contains more quartz than the shale residuum. Calcareous sandstones weather to form a clay containing sand grains or a porous

friable material known as "rottenstone." Pure quartz sandstone and conglomerate resist chemical weathering, but the products of physical weathering form talus slopes of blocks varying in size. Most of this material, with the possible exception of talus, has no importance as an aquifer. Talus along the base of mountain slopes frequently supplies small quantities of water to springs.

Quaternary System

Pleistocene (?) Series

High terrace deposits

Deposits of material very similar to that described later under Alluvial deposits are found along the larger streams of East Tennessee, but at elevations much higher than the present flood plains. These deposits, which range up to 50 feet in thickness, occur at elevations up to several hundred feet above the nearby rivers and are evidently remnants of former flood-plain deposits. The material is usually very heterogeneous and poorly bedded.

The occurrence of water in these deposits is restricted to small bodies of perched water in the more permeable zones. In wet weather, seepage springs frequently develop at the contact of the terrace material and the underlying material. Owing to their restricted areal extent and high silt content, these deposits do not make good aquifers.

Recent Series

Alluvial deposits

The alluvial material found along the smaller streams of East Tennessee is predominantly local in origin. As the streams become larger, the alluvium contains more and more material derived from localities farther away. The flood plains of the major streams are underlain by alluvium in thicknesses ranging from a thin veneer to about 40 feet.

This material has a wide range in particle size. Much of it is silty sand and silty loam, reflecting very closely the character of the underlying rocks, yet it may contain conspicuous foreign pebbles from areas farther away. This heterogeneous material generally does not make a good aquifer, as its permeability is low. Where the deposits are better sorted, the permeability is higher.

Ground water generally occurs under water-table conditions in these deposits. Exceptions would be where the permeability is low near the top of the deposit and high near the bottom of the deposit, thereby establishing an artesian system. Where water-table conditions exist, water is frequently found a short distance below the surface, but where

artesian conditions exist, it may be necessary to dig a well to the contact between the alluvium and bedrock before the well produces enough water for a domestic supply. No known industrial or municipal supplies have been developed by wells in these deposits in East Tennessee. Test drilling in such deposits near some of the larger streams might yield information indicating the possibility of developing moderately large ground-water supplies. In such locations, wells designed for these types of aquifers or infiltration galleries should be used to develop the maximum amount of water.

The occurrence of large springs in these deposits is not unusual. Several municipalities in East Tennessee have developed water supplies from such sources.

Cocke County

(Area 434 square miles, population 22,991)

General Features

Cocke County lies in the eastern part of the region covered by this report. The county is somewhat triangular in outline and is bounded on the northwest, north, and part of the northeast side by the Nolichucky River and Douglas Reservoir. The southeast boundary is the Tennessee-North Carolina State line. It is adjacent to Sevier, Jefferson, Hamblen, and Greene Counties.

Newport, the county seat, is about 40 miles east of Knoxville. It has a population of 3,892 and is the largest town in the county. Parrottsville, the second largest town, has a population of 115. Other communities are Bridgeport, Bybee, Cosby, Del Rio, French Broad, Hartford, and Wolf Creek.

The area is served by a branch line of the Southern Railway System, which in general follows the valley of the French Broad River. U. S. Highways 70 and 25E cross the county from the east. State Highways 35 and 32 cross the county from the north.

The county is principally agricultural. Industries which are mainly concentrated in the vicinity of Newport, include canneries, hosiery mills, a leather tannery, numerous small establishments dealing in wood products, and some barite mines.

Geology

About half of Cocke County lies in the Blue Ridge province and half in the Valley and Ridge province. The boundary separating these two provinces is usually considered as the line of numerous faults connecting the Great Smoky fault with the Holston Mountain fault.

The youngest rocks exposed in the Blue Ridge province are those represented by the Rome formation of Early Cambrian age. The oldest formation is the Great Smoky conglomerate of pre-Cambrian (?) age. These rocks include clayey and silty sandstone, conglomerate, shale, and graywackes that are much more resistant to erosion than the younger rocks found in the Valley and Ridge province. They have been so metamorphosed and faulted that in many cases little evidence is left of their original form and sequence.

That part of Cocke County which is in the Valley and Ridge province is underlain by limestone, dolomite, and calcareous shale with a few thin sandstone members. The rocks range in age from the Rome formation of Early Cambrian age to the Sevier shale of Ordovician age. Although somewhat subdued, the typical Valley and Ridge topography is still apparent.

Ground Water

Ground water in Cocke County occurs chiefly in fractures in the underlying rocks. In the calcareous rocks, the fractures are usually somewhat enlarged by solution in the upper two hundred to three hundred feet, but, in the less soluble rocks, few fractures are enlarged. Some ground water occurs in the residuum overlying the carbonate rocks, but yields of wells in the clayey soil are usually less than 5 gpm. Drilled wells and springs supply most of the rural population. The city of Newport, which has the only municipal public water supply in the county, uses three wells each of which has a reported yield of 250 gpm. Several industrial wells with yields up to 300 gpm have been reported. Most of the larger yield wells obtain their water from the Sevier shale.

Unlike most counties in East Tennessee, Cocke County does not have many large springs. Of the springs scheduled in the course of investigations for this report, no spring with a reported discharge of more than 250 gpm was scheduled. It is probable that such springs do occur in Cocke County, but they are not as numerous as in some of the other counties. Springs with high discharges, if present, would be in areas underlain by limestones or dolomites. No large springs should be expected in areas underlain by calcareous shales or in the valleys of the Blue Ridge province section of the county, where ground water occurs in the alluvium overlying bedrock.

Analyses of representative ground waters from Cocke County are given in table 25.

TABLE 21.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY

Shown on Plates 3, 4, 10, and 11

Method of lift: A, air lift; B, bucket; C, centrifugal; J, jet pump; L, lift pump; P, pitcher pump; T, turbine pump.
Use of water: Ab, abandoned; D, domestic; In, industrial; Ir, irrigation; P, public supply; S, stock

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds: Character of material	Probable water-bearing beds: Geologic horizon	Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
	NEWPORT																
1-1	In town	City of Newport	John Arnet	Valley	1,080	325	110	6	Dolomite	O Ꞓk	20	.....	T	250	....	P	
1-2	do.	do.	.....	do.	1,080	360	110	6	do.	O Ꞓk	....	.....	T	250	....	P	
1-3	½ mi. N.	do.	.....	do.	1,100	450	.....	....	Shale	Osv	50	....	T	125	...	....	Water used to fill swimming pool.
1-4	1 mi. SE.	do.	A. B. DeArmand	do.	1,070	250	65	6	Dolomite	O Ꞓk	23	.....	T	250	60	P	
1-5	½ mi. SW.	do.	.....	Slope	1,240	575	.....	...	do.	O Ꞓk	.....	.....	T	125	...	Ab	Well abandoned due to cost of pumping against excessive head.
1-6	1 mi. W.	do.	A. E. Calfey	Valley	1,165	800	.....	....	do.	O Ꞓk	.....	.....	...	.....	...	Ab	Dry hole.
1-7	do.	do.	Henry Thornton	Sinkhole	1,135	400	.....	....	do.	O Ꞓk	.....	.....	...	.....	...	Ab	Do.
2-1	½ mi. E.	Stokely Bros.	S. W. Cole	Valley	1,090	300	55	6	do.	O Ꞓk	60	.....	T	125	....	In	Reported drawdown of 12 feet after pumping 10 hours at 125 gpm.
2-2	do.	do.	John Arnet	do.	1,090	310	45	6	do.	O Ꞓk	55	.....	T	180	...	In	Reported drawdown of 15 feet after pumping 10 hours at 180 gpm.
2-3	do.	do.	do.	do.	1,090	280	40	8	do.	O Ꞓk	60	.....	T	300	....	In	Reported drawdown of 20 feet after pumping 10 hours at 300 gpm.
2-4	do.	do.	do.	do.	1,080	205	60	8	do.	O Ꞓk	60	.....	T	200	...	In	Reported drawdown of 20 feet after pumping 10 10 hours at 200 gpm.

2-5	do.	do.	.....	do.	1,070	....	.....	4	do.	O Ꞓk	.....	.....	A	200	...	In	
3	1½ mi. NE.	R. D. Kilpatrick	Mack Lingo	do.	1,270	135	30	6	Shale	Osv	15	.....	J	60	....	In	Water sample analyzed.
4-1	1 mi. SE.	H. C. Lawrence Leather Co.	.....	do.	1,070	91	.....	5	Dolomite	O Ꞓk	16	.....	T	250	..	In	
4-2	do.	do.	.....	Ridge	1,140	352	.....	5	do.	O Ꞓk	120	.....	T	150	....	P,In	
4-3	do.	do.	.....	Valley	1,070	31	34	48	do.	O Ꞓk	15	7/48	L	.....	...	In	
5	2½ mi. SE.	T. C. Hale	.....	Slope	1,120	100	30	8	do.	O Ꞓk	.....	.....	J	.....	...	D,S	
6	3½ mi. S.	J. B. Allen	.....	Valley	1,100	67	30	6	do.	O Ꞓk	20	.....	P	.....	...	D,S	
	BRIDGE-PORT																
7	4½ mi. SW.	Carl Wood	A. V. Smith	do.	1,155	11	11	6	do.	O Ꞓk	6	.....	P	.....	...	D	
	HARTFORD																
8	5½ mi. NW.	Ed Simmons	Sample	Slope	1,210	55	36	7	do.	O Ꞓk	38	.....	L	.....	..	D	
9	5 mi. NW.	James Wood	.....	Valley	1,180	53	36	36	Shale	Osv	.....	.....	L	.....	...	D	
	COSBY																
10-S	4½ mi. N.	C. S. Fancher	.....	do.	1,210	.....	.....	...	Dolomite	O Ꞓk	.....	.....	...	3	59	D	
	NEWPORT																
11-S	5 mi. SW.	Mr. Niasbreeden	.....	Slope	1,220	.....	.....	...	do.	O Ꞓk	.....	.....	...	2	67	D	
12	do.	R. V. Denton	.....	Valley	1,180	100	.....	6	do.	O Ꞓk	80	.....	J	5	...	D	
13	4 mi. SW.	Landon Bryant	Reed	do.	1,130	25	15	6	do.	O Ꞓk	18	.....	J	.....	...	D	
14	1½ mi. SW.	Ed L. Wilson	Dawson & Fowler	Slope	1,210	116	27	6	do.	O Ꞓk	30	.....	L	.....	...	D,S	
15	1½ mi. S.	R. E. Wilson	do.	do.	1,200	67	10	6	do.	O Ꞓk	27	.....	J	.....	..	D	
16	1½ mi. SW.	Raymond Taylor	.....	Valley	1,180	25	.....	36	do.	O Ꞓk	24	6/48	B	.....	58	D	
17-1	2½ mi. SW.	W. M. Prowe	Dawson & Fowler	Slope	1,275	78	46	6	do.	O Ꞓk	53	.....	J	5	...	D	
17-2	do.	do.	do.	do.	1,275	70	35	6	do.	O Ꞓk	50	6/48	...	.....	...	Ab	Water too turbid to use.
18	3 mi. SW.	C. A. Baxter	.....	Valley	1,235	32	.....	30	do.	O Ꞓk	28	6/48	L	.....	..	D	
19-S	5½ mi. SW.	T. V. Lillard	.....	do.	1,180	.....	.....	...	do.	O Ꞓk	.....	.....	...	10	58	D	
	COSBY																
20	5½ mi. N.	James Breeden	.....	Ridge	1,270	56	.....	...	do.	O Ꞓk	51	6/48	L	.....	...	D	
21	4½ mi. N.	A. L. Benjamin	.....	Slope	1,305	197	30	...	do.	O Ꞓk	.....	.....	L	.....	..	D	
22	5 mi. N.	Reuben Williamson	.....	Valley	1,290	43	.....	36	do.	O Ꞓk	36	6/48	B	.....	59	D	

TABLE 24.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY—Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds: Character of material	Probable water-bearing beds: Geologic horizon	Depth of water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
	NEWPORT																
23-1	4½ mi. S.	A. M. Wilson	.....	Slope	1,320	301	20	6	Dolomite	O Ck	160	.....	J	.....	...	D,S	Water occasionally turbid. Water sample analyzed.
23-2	do.	do.	.....	Valley	1,240	27	.....	27	do.	O Ck	22	6/48	L	.....	...	Ab	
24	3½ mi. S.	Bruce Gray	Ransler Barnes	do.	1,110	23	23	24	do.	O Ck	16	6/48	L	.....	...	D	Well goes dry occasionally.
25	½ mi. S.	Pet Milk Co.	.....	do.	1,180	327	60	6	do.	O Ck	26	.....	T	.....	...	In	
26-1	2 mi. S.	H. N. Justus	.....	do.	1,070	20	20	48	do.	O Ck	15	.....	P	.....	...	D	
26-2	do.	do.	.....	do.	1,070	20	20	48	do.	O Ck	18	.....	P	.....	...	D	
	BRIDGEPORT																
27	2 mi. SW.	James A. T. Woods	.....	do.	1,200	149	80	6	do.	O Ck	80	.....	J	.....	...	D,S	Water occasionally turbid
28	1½ mi. SW.	E. E. Wilds	Dawson & Fowler	do.	1,170	101	19	6	do.	O Ck	41	.....	L	.....	...	D	Do.
29	½ mi. SW.	H. D. C. Brooks	do.	Valley	1,200	150	106	6	do.	O Ck	103	.....	L	3	...	D,S	
30	In town	Lane	do.	do.	1,080	51	.....	6	do.	O Ck	32	.....	...	.....	...	...	
31	½ mi. W.	Ben McNabb	do.	Slope	1,130	109	100	6	do.	O Ck	79	.....	J	.....	...	D,S	
32	2 mi. W.	George Sweeten	.....	Valley	1,240	352	50	8	do.	O Ck	99	.....	L	.....	...	P	Well supplies 25 tourist cabins and 3 dwellings.
	NEWPORT																
33	1½ mi. SE.	G. H. Murray	Porter Sartin	do.	1,220	49	14	6	do.	O Ck	22	6/48	...	300	...	Ab	Well tested with air lift and weir. Water too muddy for use.
34	1 mi. NE.	Cecil Lindsay	Dawson & Fowler	Slope	1,190	115	60	6	do.	O Ck	75	6/48	...	.....	...	D	
35	1½ mi. NE.	Clayton Cooper	do.	Valley	1,120	50	20	6	Shale	O Ck	23	...	J	.....	...	D,S	
36	2 mi. E.	Charlie Moore	.....	do.	1,120	20	20	18	Dolomite	O Ck	20	6/48	L	.....	...	D	

35	1½ mi. NE.	Clayton Cooper	do.	Valley	1,120	53	20	6	Shale	Osv	23	.....	J	.....	.....	D,S	
36	2 mi. E.	Charlie Moore	.....	do.	1,120	26	26	48	Dolomite	O Ꞓk	23	6/48	L	.....	.....	D	
	BRIDGEPORT																
37	2½ mi. N.	Joe Carpenter	Kyker	Ridge	1,220	215	.....	6	do.	O Ꞓk	155	.....	T	.....	.....	S	
38	2½ mi. NW.	I. L. Bryant	Smith & Lingo	Valley	1,160	88	8	6	do.	O Ꞓk	53	.....	L	.....	.....	D,S	
	NEWPORT																
39	2½ mi. NE.	Goldie Woods	Lewis Buckner	do.	1,040	30	10	6	do.	O Ꞓk	15	.....	L	.....	.....	D,S	
	BRIDGEPORT																
40	3½ mi. N.	Mrs. J. D. Hurley	.....	do.	1,080	33	33	30	do.	O Ꞓk	26	6/48	B	.....	.....	D	
	NEWPORT																
41	2½ mi. NE.	Edward Hughes	Ed Holdway	do.	1,140	31	8	6	Shale	Osv	7	.....	L	.....	.....	D	
42-1	2 mi. NE.	Hugh R. Holder	Hayes	do.	1,135	35	19	6	do.	Osv	7	6/48	L	5	.....	D,S	
42-2	do.	do.	.....	do.	1,133	23	19	6	do.	Osv	8	6/48	.....	.....	.....	Ab	
43	2 mi. N.	V. S. Andys	.....	do.	1,110	80	.....	6	do.	Osv	71	6/48	B	.....	.....	D	
44	1½ mi. N.	Chas. Sechorn	.....	do.	1,060	20	.....	48	do.	Osv	.....	.....	P	.....	.....	D	
45	2 mi. NW.	Sindy Shelton	.....	Ridge	1,120	54	.....	6	do.	Osv	22	.....	L	.....	.....	D,S	
46-1	do.	County Poor Farm	.....	Valley	1,040	152	.....	6	do.	Osv	20	6/48	.....	.....	.....	D	
46-2	do.	do.	.....	do.	1,040	32	.....	36	do.	Osv	.....	.....	L	.....	.....	D	Well goes dry occasionally.
46-3	do.	do.	.....	Slope	1,155	35	.....	6	do.	Osv	.....	.....	L	.....	.....	D	
46-4	do.	do.	.....	Valley	1,035	51	.....	6	do.	Osv	44	.....	L	.....	.....	D,S	
47	2 mi. NW.	C. C. Hance	Porter Sartin	Slope	1,120	142	10	6	do.	Osv	18	.....	J	8	.....	D	
48	1½ mi. W.	Shell Oil Co.	do.	Valley	1,160	152	30	6	do.	Osv	12	.....	T	300	.....	In	
49-1	3 mi. W.	C. S. Runnion	Dawson & Fowler	do.	1,160	35	17	6	do.	Osv	20	.....	B	.....	.....	D	
49-2	do.	do.	do.	do.	1,130	40	9	6	do.	Osv	8	7/48	T	120	.....	Ir	Reported drawdown of 4.3 feet after 1 hour pumping at 120 gpm.
	BRIDGEPORT																
50	1 mi. E.	Glen Blanchard	.....	do.	1,100	23	23	48	Dolomite	O Ꞓk	21	6/48	B	.....	58	D,S	
51-S	3 mi. E.	.....	.....	do.	1,110	.....	.....	.....	Sandstone	Ꞓc	.....	.....	.....	3	.....	D	

TABLE 24.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY—Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds: Character of material	Probable water-bearing beds: Geologic horizon	Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
	DEL RIO																
52	1½ mi. NE.	Frank Huff	.....	Valley	1,260	38	.....	6	Sandstone	Ꞓu	11	.....	P	.....	.....	D,S	
53	½ mi. N.	John A. Jones	.....	do.	1,165	43	.....	6	do.	Ꞓu	21	6/48	...	.....	59	D	
	WOLF CREEK																
54	2 mi. E.	Maynard	.....	do.	1,510	101	.....	6	do.	Ꞓu	13	6/48	...	5	.....	D	
55	In town	Wm. M. Walker	.....	do.	1,200	15	.....	36	do.	Ꞓu	9	6/48	J	.....	57	D	
	FRENCH BROAD																
56	1½ mi. NE.	Charlie Cashieu	.....	do.	1,170	22	22	36	do.	Ꞓu	17	6/48	...	.....	...	Ab	
57	2 mi. S.	C. V. Finchum	.....	do.	1,435	13	.....	36	Shale	ocss	.....	.....	L	.....	...	D	
58	1½ mi. S.	Harmony Grove School	.....	do.	1,330	63	.....	6	do.	ocss	.....	.....	...	.....	...	D	
59	1 mi. S.	Walter Stokely	.....	do.	1,320	42	.....	6	do.	ocss	.....	.....	L	.....	...	D	
60	do.	E. E. Ponder	.....	do.	1,355	51	18	6	do.	ocss	9	.....	L	.....	...	D	Water sample analyzed.
	DEL RIO																
61	½ mi. S.	Ed. Burnett	.....	do.	1,200	30	.....	...	do.	ocss	22	6/48	P	.....	...	D	
62	2½ mi. SE.	Robert Seay	.....	do.	1,260	11	.....	...	do.	ocss	6	.....	L	.....	...	D	
63	3 mi. S.	W. C. Turner	.....	Slope	1,400	71	8	6	Siltstone	ocsb	10	.....	J	.....	...	D	
64	1 mi. S.	Mrs. Nathan Pack	.....	Ridge	1,290	81	.....	6	Shale	ocss	.....	.....	L	.....	...	D	
65	1½ mi. SW.	David Carver	.....	Slope	1,280	93	.....	6	do.	ocss	11	6/48	L	.....	...	D	
	WOLF CREEK																
66	3 mi. N.	Wyman Tweed	.....	Valley	1,720	24	.....	24	do.	Ꞓr	18	.....	L	.....	...	D	

67	BRIDGEPORT 3 mi. W.	Craw Barger	.....	Sinkhole	1,280	78	.....	6	Dolomite	O Ck	68	6/48	B	.....	.....	D	Supply inadequate. Water muddy after rain.
68	PARROTTSVILLE 1½ mi. SW.	Joe Bacon	.....	Slope	1,250	230	40	6	do.	O Ck	90	.....	J	.....	.....	D,S	
69	1 mi. E.	Greer Ottinger	Dawson & Fowler	Valley	1,210	25	12	6	Shale	Osv	6	.....	P	.....	.....	S	
70	In town	Doyle Ottinger	do.	Slope	1,200	61	.....	6	do.	Osv	.....	.....	J	.....	.....	D	
71	3 mi. E.	W. L. Ottinger	Samples & Chaney	Valley	1,250	87	6	6	Dolomite	O Ck	4	.....	L	.....	.....	D	
72	do.	do.	.....	do.	1,250	20	6	6	Shale	Osv	4	.....	P	.....	.....	D	
73	4 mi. NE.	Jeff LaFollette	.....	Slope	1,340	57	.....	6	Dolomite	O Ck	35	6/48	.....	.....	.....	Ab	Water has strong sulfur taste.
74	5 mi. E.	L. Burnett	.....	Ridge	1,400	135	.....	6	do.	O Ck	.....	.....	L	.....	.....	D	
75	BRIDGEPORT 1 mi. NE.	C. L. Baley	Dawson & Fowler	Valley	1,110	79	12	6	do.	O Ck	12	.....	J	.....	.....	D	
76	2 mi. NE.	Doc Gregg	.....	Ridge	1,320	74	.....	48	do.	O Ck	70	6/48	L	.....	.....	S	
77	3 mi. NE.	R. J. Parks	Dawson & Fowler	Valley	1,480	174	30	6	do.	O Ck	92	.....	L	.....	.....	D,S	
78	DEL RIO 3½ mi. NW.	Jess Huff	.....	Slope	1,240	58	2	6	do.	Ꞓs	33	6/48	B	.....	58	D	
79	PARROTTSVILLE 4½ mi. SE.	Sherman Brown	Dawson & Fowler	Valley	1,300	105	28	6	do.	Ꞓk	30	.....	J	.....	.....	D	Water sample analyzed.
80	4 mi. E.	Mrs. Laura Critselous	do.	Slope	1,320	91	12	6	do.	Ꞓk	20	.....	J	.....	.....	D	
81	CEDAR CREEK 4½ mi. N.	Rabbit Hill School	do.	do.	1,450	201	.....	6	do.	Ꞓk	.....	.....	L	.....	.....	P	Well can be pumped dry.

TABLE 24.--TYPICAL WELLS AND SPRINGS IN COCKE COUNTY—Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds: Character of material	Probable water-bearing beds: Geologic horizon	Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
82	5 mi. W.	Ted Winters	Carpenter Well Co.	Slope	1,400	420	60	7	Limestone	Єcu	40	.....	J	.....	.....	D,S	Water sample analyzed.
83	do.	Mrs. Ollie Ottinger	.....	Ridge	1,510	110	.....	6	Dolomite	Єbk	.....	.....	J	.....	.....	D,S	
84	5½ mi. W.	M. F. Ottinger	Alvin Kyker	Slope	1,420	112	30	6	do.	O Єk	.....	.....	L	.....	.....	D	
85	BRIDGEPORT 2 mi. E.	M. E. Edwards	Samples & Chaney	do.	1,170	105	.....	6	do.	O Єk	20	.....	J	.....	.....	D	
86	PARROTTSVILLE 2 mi. S.	Jakie Williams	.....	Sinkhole	1,210	85	.....	48	do.	O Єk	30	.....	J	.....	.....	D,S	
87	1½ mi. S.	Allen Chapel	.....	Slope	1,340	195	.....	6	do.	O Єk	.....	.....	.....	.....	.....	Ab	Dry hole.
88	1 mi. SE.	Frank Hommel	.....	do.	1,270	65	.....	6	do.	O Єk	45	7/48	B	.....	.....	D,S	
89	2½ mi. E.	Aubrey Rader	.....	Valley	1,330	38	38	30	do.	O Єk	21	.....	J	.....	58	D,S	
90	2 mi. E.	Clarence Scott	.....	Slope	1,335	50	.....	48	do.	O Єk	38	.....	L	.....	.....	D,S	
91	2½ mi. SE.	M. L. Freshour	Dawson & Fowler	Valley	1,300	45	10	6	do.	O Єk	10	7/48	B	.....	58	D	
92	3 mi. SE.	Waddell	Dawson & Fowler	Ridge	1,365	76	.....	6	do.	O Єk	38	.....	L	.....	.....	D,S	
93	3 mi. E.	Bob Parks	do.	Slope	1,080	33	.....	5	do.	O Єk	29	7/48	L	.....	.....	D,S	
94	4 mi. E.	A. J. Hawke	.....	do.	1,335	37	.....	6	do.	O Єk	22	7/48	L	.....	.....	D	
95	1½ mi. N.	Crawford & Borger	Dawson & Fowler	Valley	1,215	31	10	6	Shale	Osv	7	7/48	J	.....	.....	D	Water sample analyzed.
96	2 mi. NW.	Walter Turner	.....	do.	1,105	41	.....	6	do.	Osv	13	7/48	B	.....	59	D	Do.
97	2 mi. E.	McAfee Park	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
98	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

97	2 mi. N.	McAfee Park	.....	Slope	1,180	41	.....	6	do.	Osv	15	7/48	P	.....	63	D,S	
98	3 mi. N.	Hal Bitner	Mac Lingo	Valley	1,165	55	.....	6	Dolomite	O Ck	45	.....	J	.....	.....	D	
99	do.	John Smith	.....	Ridge	1,200	48	.....	6	Shale	Osv	25	7/48	B	.....	58	D	
	BYBEE																
100	3 mi. E.	Homer Palmer	.....	Valley	1,120	34	.....	6	do.	Osv	10	7/48	B	.....	60	D	
	PARROTTS-VILLE																
101	3 mi. N.	Emitt Dyke	.....	do.	1,170	26	.....	6	do.	Osv	17	7/48	B	.....	59	D	
102	2½ mi. N.	J. A. Henry	Hayes & Dawson	do.	1,210	24	.....	6	do.	Osv	6	7/48	B	.....	.....	D	
103	3 mi. N.	Mattie Golden	.....	do.	1,200	13	.....	36	do.	Osv	7	7/48	P	.....	.....	D	
104	4 mi. N.	Mrs Henry Dawson	.....	Slope	1,215	31	.....	6	do.	Osv	14	7/48	P	.....	58	D	
105	4½ mi. N.	Roy Owensby	.....	Valley	1,140	28	.....	6	do.	Osv	16	7/48	P	.....	.....	D	Water occasionally muddy.
106	5½ mi. N.	T. E. Smith	Joe Reams	do.	1,095	27	.....	6	do.	Osv	23	7/48	B	.....	.....	D	
107	4 mi. NE.	H. E. Blazer	Alvin Kyker	Slope	1,210	65	25	6	Dolomite	O Ck	33	.....	J	.....	.....	D	
108	2 mi. NE.	Estel Blazer	.....	Valley	1,235	31	.....	6	Shale	Osv	9	7/48	B	.....	62	D	
109	2 mi. E.	Lester F. Wilds	.....	do	1,215	45	.....	6	do.	Osv	16	.....	J	.....	.....	D,S	
110	3½ mi. NE.	Athan Smith	Joe Reams	do.	1,280	39	.....	6	do.	Osv	17	7/48	B	.....	58	D	
111	4½ mi. NE.	Johnie Ottinger	.....	Slope	1,315	61	.....	6	Dolomite	O Ck	39	7/48	L	.....	.....	D,S	
	BYBEE																
112	3½ mi. NE.	Bob Quentin	.....	do.	1,115	23	.....	5	Shale	Osv	4	7/48	L	.....	.....	D	
113	5 mi. NE.	G. T. Carmichael	.....	Valley	1,170	25	.....	6	do.	Osv	5	7/48	B	.....	64	D,S	
	PARROTTS VILLE																
114-1	6½ mi. N.	C. E. Busler	.....	Slope	1,145	65	.....	6	do.	Osv	47	7/48	L	.....	.....	D	
114-2	do.	do.	Busler & Regan	Ridge	1,140	68	.....	6	do.	Osv	54	.....	L	.....	.....	S	
	BYBEE																
115	5½ mi. NE.	Walter Shaver	Willard Hayes	Valley	1,140	23	.....	6	do.	Osv	10	7/48	B	.....	.....	D	
116	do.	Howard Step	.....	Slope	1,070	27	..	6	do.	Osv	20	7/48	B	.....	56	D	
117	4½ mi. NE.	Milton Hope	.....	do.	1,120	20	.....	36	do.	Osv	15	7/48	L	.....	.....	D,S	

TABLE 24.–TYPICAL WELLS AND SPRINGS IN COCKE COUNTY–Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds		Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
									Character of material	Geologic horizon							
118	4 mi. N.	J. A. Allison	.....	Slope	1,090	42	.....	6	Shale	Osv	22	.....	L	.....	.....	D,S	
119	5 mi. NE.	D. S. Miller	.....	Valley	1,080	13	.....	18	do.	Osv	3	7/48	J	.....	.....	D,S	
	LOWLAND																
120–1	4½ mi. SE.	Mrs. Eunice Sawyer	.....	Ridge	1,215	80	.....	6	do.	Osv	48	7 48	J	.....	.....	D,S	
120–2	do.	do.	.....	do.	1,220	91	.....	5	do.	Osv	65	7/48	.....	.....	.....	Ab	
121	3½ mi. SE.	Mrs Duncan	.....	Slope	1,020	34	.....	6	do.	Osv	23	7/48	B	.....	.....	D	
	BYBEE																
122	3 mi. NE.	Clinton Reed	.....	Valley	1,180	41	.....	5	do.	Osv	27	7/48	B	.....	59	D	
123	2½ mi. N.	Hobert Reed	.....	Ridge	1,190	74	3	6	do.	Osv	50	7/48	B	.....	.....	D,S	Water often muddy.
124	1½ mi. N.	Mrs. Bill Kellar	.....	do.	1,200	47	.....	5	do.	Osv	26	7/48	B	.....	59	D	
125	In town	E. T. Fowler	.....	Valley	1,125	47	.....	6	do.	Osv	19	7/48	J	.....	61	D	Water sample analyzed
126	do.	Mrs. J. C. Arms	.....	Slope	1,125	33	.....	30	do.	Osv	18	7/48	J	.....	60	D,S	
127	do.	Haywood Butler	.....	do.	1,120	20	.....	30	do.	Osv	14	7/48	B	.....	59	D,S	
128	1½ mi. S.	J. M. Heritage	.....	Ridge	1,070	54	.....	6	do.	Osv	16	7/48	B	.....	59	D	
	NEWPORT																
129	2 mi. NE.	Clemon Horton	.....	Valley	1,040	152	63	6	Dolomite	O Ck	75	.....	.....	.....	.....	D	
	BYBEE																
130–1	2½ mi. S.	Lou Worth	.....	Slope	1,170	48	.....	6	Shale	Osv	.....	.....	L	.....	.....	D,S	
130–2	3 mi. S.	do.	.....	do.	1,165	18	.....	6	do.	Osv	8	.....	L	.....	.....	D	
131	2 mi. SE.	J. F. Walker	.....	do.	1,190	55	.....	6	do.	Osv	33	7/48	L	.....	.....	D,S	
132	do.	H. A. Bible	.....	Valley	1,070	48	.....	6	do.	Osv	19	7/48	B	.....	60	D,S	
133	2½ mi. E.	Fowler Grove School	.....	Slope	1,120	38	.....	6	do.	Osv	21	7/48	L	.....	.....	P	
134	1½ mi. E.	Holcomb Ramsey	.....	do.	1,125	44	.....	6	do.	Osv	31	7/48	B	.....	60	D,S	

135	2 mi. NE.	J. H. Holt	Buck Hayes	Ridge	1,190	96	.....	6	do.	Osv	49	7/48	L	.....	.....	D	
136	do.	Haskel Dyke	.....	Slope	1,210	24	.....	6	do.	Osv	6	7/48	B	.....	61	D	
	WHITE PINE																
137	3 mi. E.	J. D. Holt	.....	Valley	1,035	36	.....	6	do.	Osv	12	7/48	B	.....	59	D	
	LOWLAND																
138	3 mi. S.	Rube Bradey	.....	Ridge	1,065	68	.....	5	do.	Osv	37	7/48	B	.....	59	D	
139	3½ mi. S.	Point Pleasant Baptist Church	.....	Slope	1,030	28	.....	5	do.	Osv	27	7/48	.....	.....	.....	Ab	
	WHITE PINE																
140	4 mi. E.	Ruel Caffey	.....	do.	1,045	71	.....	5	do.	Osv	32	7/48	B	.....	59	D	
	BYBEE																
141	3½ mi. N.	Laura Turner	.....	do.	1,120	45	.....	5	do.	Osv	17	7/48	B	.....	58	D,S	
142	4 mi. N.	Leonard Reed	.....	do.	1,155	75	.....	6	do.	Osv	51	7/48	B	.....	.....	D	
143-1	2 mi. NW.	Christian Smith	.....	Ridge	1,105	47	.....	6	do.	Osv	41	7/48	B	.....	.....	D	
143-2	do.	do.	.....	Slope	1,080	50	.....	6	do.	Osv	13	.....	P	.....	.....	S	
143-3	do.	do.	.....	Ridge	1,160	43	.....	5	do.	Osv	35	7/48	.....	.....	.....	D	
144-1	3 mi. NW.	Frank Spurgeon	.....	Slope	1,010	59	.....	5	do.	Osv	38	7/48	L	.....	.....	D,S	Water sample analyzed.
144-2	do.	do.	.....	Valley	990	28	.....	24	do.	Osv	18	7/48	.....	.....	.....	Ab	
145	1½ mi. S.	Chandler Jones	.....	Ridge	1,130	35	.....	6	do.	Osv	10	8/48	L	.....	.....	D	
146	1½ mi. W.	Jim Clark	.....	Slope	1,130	40	.....	6	do.	Osv	25	8/48	.....	.....	.....	Ab	
147	2½ mi. W.	Rankin School	.....	Valley	1,010	62	.....	6	do.	Osv	20	8/48	L	.....	.....	P	
	WHITE PINE																
148	3 mi. SE.	.....	.....	Slope	1,030	31	.....	6	do.	Osv	22	8/48	.....	.....	.....	Ab	
	BYBEE																
149	3 mi. SW.	Clifford Hale	.....	Valley	1,025	25	.....	30	do.	Osv	.....	.....	P	.....	.....	D	
150	2½ mi. SW.	Mrs. Charles Nelson	.....	Slope	1,170	41	.....	24	do.	Osv	30	8/48	J	.....	.....	D	
151	1 mi. SW.	H. B. Walker	.....	do.	1,045	21	.....	24	do.	Osv	17	8/48	L	.....	.....	D	
152-1	2½ mi. W.	Burl Moss	.....	Ridge	1,190	43	.....	24	do.	Osv	36	8/48	B	.....	58	D	
152-2	do.	do.	.....	do.	1,190	65	.....	6	do.	Osv	46	8/48	B	.....	60	D,S	
153-1	3½ mi. W.	Glen Chambers	.....	do.	1,220	160	.....	6	do.	Osv	.....	.....	L	.....	59	D,S	

TABLE 24.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY—Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds: Character of material	Probable water-bearing beds: Geologic horizon	Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
153-2	3½ mi. W.	Glen Chambers	.....	Ridge	1,220	63	.....	6	Shale	Osv	46	8/48	B	.....	59	D,S	
154	4 mi. SW.	Stokely Bros. Farm	.....	Valley	1,010	96	.....	6	do.	Osv	9	8/48	L	.....	60	D	
155	3½ mi. SW.	J. B. O'Dell	.....	do.	1,100	20	.....	24	do.	Osv	10	.....	P	.....	.....	D,S	
	NEWPORT																
156	4 mi. NW.	Lon Moore	.....	Slope	1,030	111	.....	6	do.	Osv	81	8/48	J	.....	.....	D	
	WHITE PINE																
157	5½ mi. NW.	Arthur McCrary	.....	Valley	1,100	108	.....	6	do.	Osv	78	.....	L	.....	.....	D,S	
	PARROTTSVILLE																
158	In town	Burnett Thomas	.....	do.	1,180	30	.....	6	do.	Osv	6	8/48	L	.....	.....	Ab	
159-S	½ mi. SE.	T. S. Ellison	.....	do.	1,180	.....	.....	.....	do.	Osv	.....	.....	.....	50	59	P	Supplies five dwellings and two school buildings.
160	In town	J. W. Etherton	.....	do.	1,170	37	.....	6	do.	Osv	4	8/48	J	.....	.....	D	
161-S	do.	Samuel Easterly	.....	do.	1,170	.....	.....	.....	do.	Osv	.....	.....	.....	20	58	D	
	NEWPORT																
162	4 mi. W.	Henry Clevenger	.....	Slope	1,485	28	.....	36	do.	Osv	31	.....	L	.....	.....	D	
163-S	5 mi. SW.	Ben W. Hooper, Jr.	.....	Valley	1,860	.....	.....	.....	do.	Ꞓni	.....	.....	.....	3	58	D	
164-S	4 mi. W.	Ben W. Hooper	.....	do.	.....	.....	.....	.....	do.	Ꞓr	.....	.....	.....	5	.....	P	Supplies, from 15,000-gallon reservoir, 12 families.
165	4 mi. W.	Roy Barnes	.....	do.	1,305	26	.....	24	do.	Osv	11	8/48	B	.....	68	D	
166	do.	Aurry McGaha	.....	Slope	1,250	34	.....	36	do.	Osv	11	8/48	J	.....	.....	D	
167-1	5 mi. W.	Flint Ray	Dawson & Fowler	Valley	1,220	86	31	6	do.	Osv	31	.....	L	.....	.....	D,S	

167-2	do.	do.	.....	do.	1,220	26	.....	5	do.	Osv	18	8/48	P	.....	62	S	
168	4½ mi. NW.	Jim Clark and Misses Huff	.....	Slope	1,020	47	.....	5	do.	Osv	37	8/48	B	.....	60	D	Water turbid.
169	4½ mi. W.	Ray Hall	Evans	Valley	1,040	45	10	6	do.	Osv	10	8/48	P	.....	57	D	Water has strong taste and odor of sulfur. Water sample analyzed.
170-1	4½ mi. SW.	Tomplin Garland	Samples	Ridge	1,280	75	66	6	Dolomite	O Ꞓk	40	.....	L	.....	.....	Ab	Water too turbid to use.
170-2	do.	do.	.....	Valley	1,260	17	.....	36	do.	O Ꞓk	1	8/48	P	.....	58	D,S	
171	5½ mi. SW.	L. O. Carrell	.....	Slope	1,540	43	43	21	do.	O Ꞓk	40	8/48	B	.....	58	D	
	COSBY																
172	5 mi. N.	Lucila Ambrose	.....	Valley	1,305	60	.....	5	do.	O Ꞓk	28	8/48	...	.....	.....	Ab	
173	do.	Rebecca Huff	.....	do.	1,335	39	24	....	do.	O Ꞓk	32	8/48	B	.....	57	D	
174	4½ mi. N.	Ross Bryant	.....	do.	1,390	79	.....	6	Shale	ocss	21	8/48	...	.....	.....	Ab	
	NEWPORT																
175	5 mi. E.	C. D. Fine	.....	Slope	1,420	70	.....	24	Dolomite	O Ꞓk	57	8/48	B	.....	57	D	
	FRENCH BROAD																
176-S	3½ mi. S.	G. U. Stokely	.....	do.	1,620	.....	.....	...	Siltstone	ocsb	.....	.....	...	2	52	D	
177-S	4½ mi. S.	W. G. Greene	.....	Valley	1,960	.....	.....	...	do.	ocsb	.....	.....	...	15	56	D	
178-S	4½ mi. S.	J. C. Stokely	.....	Slope	2,060	.....	.....	...	do.	ocsb	.....	.....	...	15	51	D	
179	3½ mi. S.	Junior Stokely	.....	Valley	1,550	30	.....	24	do.	ocsb	.....	.....	L	.....	.....	D	Well goes dry in summer.
180-S	2½ mi. S.	Kenneth Runion	.....	Slope	1,575	.....	.....	..	do.	ocsb	.....	.....	...	30	57	D	
	DEL RIO																
181-S	3½ mi. S.	C. G. Green	.....	do.	1,500	.....	.....	...	do.	ocsb	.....	.....	...	20	54	D	
182-S	4½ mi. S.	Bern Woody	.....	do.	1,790	.....	.....	...	do.	ocsb	.....	.....	...	1	55	D	
183-S	5 mi. S.	John Coaldwell	.....	Valley	1,910	.....	.....	...	do.	ocsb	.....	.....	...	10	55	D	
	HARTFORD																
184-S	5 mi. E.	U. Smith	.....	do.	2,120	.....	.....	...	do.	ocsb	.....	.....	...	1	55	D	
185-S	3 mi. E.	Kin Holt	.....	Slope	2,000	.....	.....	..	do.	ocsb	.....	.....	..	100	57	D	
186	3 mi. NE.	J. S. McCaba	Freddie Laws	do.	1,900	36	20	4	do.	ocsb	0	12/48	L	20	...	D	
187	do.	John O. Laws	do.	do.	1,810	47	20	4	do.	ocf	12	.....	B	.....	...	D	

TABLE 24.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY—Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds: Character of material	Probable water-bearing beds: Geologic horizon	Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
188	3½ mi. NE.	E. A. Freeman	.....	Valley	1,750	23	21	36	Siltstone	ocsb	18	.....	L	.....	.....	Ab	Water too muddy to drink.
	COSBY																
189	4 mi. N.	Haskell Ballentine	.....	do.	1,190	48	25	6	Shale	Osv	8	.....	J	.....	.....	D	
190	3 mi. NE.	G. W. Allen	.....	do.	1,190	13	13	36	do.	ocss	8	12/48	J	.....	55	D	
191-S	2 mi. NE.	M. G. Roberts	.....	do.	1,320	.....	.....	.....	Dolomite	Ꞓs	.....	.....	.....	250	.....	D	
192	do.	Mrs. Susie Templin	.....	do.	1,350	60	.....	36	do.	Ꞓc	4	.....	L	.....	.....	D	
193	do.	Cosby School	.....	Slope	1,280	125	.....	6	do.	Ꞓs	90	.....	L	.....	.....	D	Well supplies 300 students.
194	½ mi. S.	W. C. Lange	Mac Lingo	Valley	1,350	47	8	6	Sandstone	Ꞓc	13	.....	J	.....	.....	D	
195-S	In town	Proffit Spring	.....	Slope	1,360	.....	.....	.....	do.	Ꞓc	.....	.....	.....	100	52	D	
196-S	½ mi. NE.	Charlie Allen	.....	do.	1,400	.....	.....	.....	Dolomite	Ꞓs	.....	.....	.....	100	56	D	
197-S	3 mi. SE.	Willie Black	.....	do.	1,710	.....	.....	.....	Siltstone	ocf	.....	.....	.....	15	56	D	
	HARTFORD																
198-S	2½ mi. SW.	J. S. Hembree	.....	do.	2,580	.....	.....	.....	do.	ocf	.....	.....	.....	5	53	D	
199-S	3 mi. SE.	Fletcher Ford	.....	do.	1,900	.....	.....	.....	do.	ocf	.....	.....	.....	2	52	D	
200-S	2½ mi. S.	Caywood Messer	.....	do.	2,000	.....	.....	.....	do.	ocf	.....	.....	.....	2	55	D	
201	In town	R. J. Breeding	.....	Valley	1,260	25	.....	6	do.	ocf	.....	.....	L	.....	52	D	
202	3½ mi. NW.	Carl Spence	.....	do.	1,190	15	.....	24	Dolomite	Ꞓs	0	12/48	.....	.....	52	D	Water sample analyzed.
203-S	4½ mi. NW.	Don and Cleo McNabb	.....	do.	1,150	.....	.....	.....	do.	O Ꞓk	.....	.....	.....	100	54	D	
	COSBY																
204	2 mi. SE.	Annie McMinn	.....	do.	1,540	45	.....	36	Siltstone	ocf	.....	.....	B	.....	.....	D	
	HARTFORD																
205-S	2½ mi. W.	Noah Coughran	.....	do.	1,300	.....	.....	.....	do.	ocf	.....	.....	.....	15	52	D	
	COSBY																
206	3½ mi. SW.	L. Maddron	Joe Lingo	Hilltop	1,890	75	21	6	do.	ocp	30	.....	B	.....	.....	D	
207	1 mi. W.	Mel McMahan	.....	Slope	1,340	90	87	6	Shale	ocss	.....	.....	L	.....	.....	D S	

TABLE 25.—ANALYSES OF GROUND WATER IN COCKE COUNTY

TABLE 25.—ANALYSES OF GROUND WATER IN COCKE COUNTY

(Chemical constituents in parts per million)

Well or spring No.	Owner or name of spring or well	Geologic horizon	Date of collection	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na & K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Hardness as $CaCO_3$	Specific Conductance (Micromhos at 25°C.)	pH
3	R. D. Kilpatrick	Osu	8/12/48	32	217	64	107	10	205	812	5.5	.....	801	1545	7.8
23-1	A. M. Wilson	O€k	8/13/48	.93	65	10	1.2	15	130	3	4.2	14	203	376	8.2
60	E. E. Ponder	ocsa	8/12/48	.80	17	8.6	10	8	88	9	4.2	.....	75	205	8.2
79	Sherman Brown	€hk	8/12/48	.36	55	46	9.7	32	337	11	4.5	.....	326	600	8.6
82	Ted Winters	€cu	8/12/48	.36	48	11	2.6	14	174	2	1.8	.....	165	306	8.4
95	Crawford & Borger	Osv	9/ /48	1.7	78	18	30	0	244	115	10	.....	268	587	7.7
96	Walter Turner	Osv	9/ /48	2.2	51	10	7.8	0	170	58	16	.....	205	407	8.1
125	E. T. Fowler	Osv	9/ /48	.60	71	7.3	21	0	248	26	16	.....	207	456	7.2
144-1	Frank Spurgeon	Osv	9/ /48	.45	72	26	56	0	350	74	27	.....	288	778	7.6
169	Ray Hall	Osv	9/ /48	.25	50	14	69	0	355	28	9.0	.....	182	586	7.6
202	Carl Spence	€s	2/12/49	.05	8.0	4.2	.7	0	41	2	1.8	.6	37	69.7	7.8

REFERENCE NO. 24

PRELIMINARY DELINEATION AND DESCRIPTION OF THE REGIONAL AQUIFERS OF TENNESSEE—THE EAST TENNESSEE AQUIFER SYSTEM

By John V. Brahana, Dolores Mulderink, Jo Ann Macy, and Michael W. Bradley

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U.S. GEOLOGICAL SURVEY

Water-Resources Investigations 82-4091

Prepared in cooperation with the

U.S. ENVIRONMENTAL PROTECTION AGENCY

Nashville, Tennessee
1986

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(1955); Swingle (1959); King (1964); Neuman and Nelson (1965); LeGrand (1967); McMaster and Hubbard (1970); Harris and Milici (1977); Milici and Wedow (1977); and Milici, Hassis, and Statler (1979).

HYDROLOGY

The general hydrology of the Blue Ridge province is distinct from the Valley and Ridge province as shown by figures 5 and 6. Most of the water in the sedimentary, metasedimentary, and crystalline rocks of the Blue Ridge province occurs in the upper 200 feet, in interconnected fractures in the rock and in the pore spaces of overlying soil and regolith (fig. 5). Below several hundred feet, the weight of the overlying rock tends to keep the fractures closed, and regional ground-water flow below this depth is not considered to be significant.

Ground-water occurrence in the Blue Ridge is thus determined by the number, size, and degree of interconnection of the openings in the rocks and by the thickness of the saturated overburden (McMaster and Hubbard, 1970; and Zurawski, 1979). Ground-water circulation patterns tend to be localized rather than regional in extent, with relatively shallow flow paths (LeGrand, 1967). Recharge is areally distributed and discharge areas are local seeps, springs, and streams. Reported well yields and spring discharge are consistent with this interpretation, as is the water-quality distribution. It should be noted that few data exist from depths greater than 300 feet in the Blue Ridge.

In the Valley and Ridge province, it is known from records of water wells and other borings that solution cavities containing water are present at depths 900 to 1,000 feet below the surface (DeBuchanne and Richardson, 1956). Most solution openings, however, are confined to the upper 300 feet. Large spring discharges indicate a more active ground-water system at shallow depths than in the Blue Ridge. However, the highly variable well yields of the Valley and Ridge indicate this aquifer is more anisotropic and nonhomogeneous than the Blue Ridge province. In addition to solution cavities, ground water in the Valley and Ridge province occurs in fractures and, in some instances, along bedding planes of the carbonates and shales (fig. 6). The complexity of the structure and sparse data makes interpretation of the deep regional flow system not possible at this time.

In addition to the importance of structure in the Valley and Ridge province, rock type plays an important role in the hydrology. Carbonates are the most productive water-bearing formations in this area. According to DeBuchananne and Richardson (1956), many sinkholes and other karst features are common in the Valley and Ridge province where extensive solution of the underlying limestone and dolomite has taken place. In such areas, few surface streams are found; most of the drainage is through a well-developed underground drainage system, and the water table is likely to be deeper than in other areas.

There is evidence that solution is more extensive near perennial streams than elsewhere (DeBuchananne and Richardson, 1956). Industries close to rivers are more successful in obtaining large supplies of ground water than those in other locations. It is also likely that solution along zones of weakness in the rocks has determined the stream position in some areas.

Shales may be important water-bearing formations in the East Tennessee aquifer system, unlike in other areas of the State. Normally, shales have little effective primary porosity, and unless secondary openings are formed by fracturing, shales will yield little

Table 4.--Description of contamination sites--Continued

Site identification No.	Location	Type of contamination	Documentation	Stratigraphic interval	Comments
12	Cocke County, Newport.	Laboratory wastewater	a	Knox Group	Laboratory wastewater was discharged into a sinkhole which resulted in the degradation of the ground-water quality. Studies indicated severe degradation of the ground water in the area of a spray irrigation system.
13	Unicoi County, Bumpass Cove.	Hazardous wastes	d	Shady Dolomite.	The illegal dumping of hazardous waste into an approved sanitary landfill resulted in the contamination of area ground water. Methylene chloride and trichloroethylene were found in a resident's well.
14	Unicoi County, Erwin.	Industrial and radiological wastes	a	Honaker ? Dolomite.	The disposal of industrial and radiological wastes has resulted in the contamination of ground water locally.
15	Washington County, Telford.	Industrial wastes	a	Knox Group	The discharge of industrial wastes into an unlined earthen pond resulted in the contamination of surface and ground water by fluoride and nitrate.
16	Carter County, Elizabethton.	Industrial wastes	a	Homaker Dolomite.	Waste disposal and solid residues have caused ground-water contamination by copper and zinc.

REFERENCE NO. 25

TELEPHONE CONTACT SUMMARY

CALL MADE BY: Rick Jardine
DYNAMAC CORPORATION

REGIONIV

DATE: 7 February 1992

Rick Jardine 2-7-92

SITE: Wall Tube and Metal Products Newport, TN

TIME: 8:00 a.m. est

EPA ID#: TND002028637

PERSON CONTACTED: NAME Leonard Allen
TITLE Water Superintendent
PHONE NO. (615) 623-3074
ORGANIZATION Newport Utility Company
ADDRESS P.O. Box 519 Newport, TN

SUBJECT: Water Supply for Residents of Newport Area

CONVERSATION SUMMARY: Mr. Allen stated that he is in a year-long process of compiling a water service location map for the Newport area. Newport Utility Company is the only municipal supplier in Cocke County. Mr. Allen agreed to update and complete any water service map that I might send to him. He stated that he has no information pertaining to private well supply. Also, the French Broad River intake is the only intake for the Newport system. The L.W. Hooper service is being taken over by the city. The wells will be abandoned.

REFERENCE NO. 26

TELEPHONE CONTACT SUMMARY

CALL MADE BY: Rick Jardine
DYNAMAC CORPORATION

REGION IV

SIGNED: Rick Jardine

DATE: 8 April 1992 4/8/92

SITE: Wall Tube and Metal Products

TIME: 9:15 am edst

EPA ID#: TND002028637

PERSON CONTACTED: NAME: Leonard Allen
TITLE: Water Department Manager
PHONE NO: (615) 623-7074
ORGANIZATION: Newport Utilities Board (NUB)
ADDRESS: P.O. Box 519 Newport, TN

SUBJECT: Water Distribution System - Cocke County, TN

CONVERSATION SUMMARY: I spoke with Mr. Allen to clarify conflicting information concerning the L.W. Hooper Water System. Mr. Allen informed me that NUB bought out the L.W. Hooper Service and is currently supplying all but about a dozen of the former Hooper customers. I specifically asked about the Edgemont elementary school. Mr. Allen said that the school was supplied from the Newport System. He said that NUB has installed parallel lines along those of the Hooper Service and that the services were never mixed. He further stated that the Hooper well has been abandoned.

REFERENCE NO. 27

PROJECT NOTE: Richard J. Jardine 7-2-92

FROM: Richard J. Jardine, Civil Engineer, Dynamac Corporation

TO: File for Heywood-Wakefield Company

DATE: 2 July 1992

SUBJECT: Private Well Supply

On 11 February 1992, I sent a copy of the USGS, Topographic maps of Newport and the surrounding area to Mr. Leonard Allen, Water Manager of the Newport Utilities Board.

The maps were sent to enable Mr. Allen to delineate the service area of the Newport potable water system. Mr. Allen marked the map illustrating the pipeline locations. From this edited map, a house count was performed including only those houses that were over 1,000 feet from the water lines and within the four mile radius of influence of the facility. Also included in this count is the one confirmed private well user, Charles Crowder.

The conversion factor of 2.58 for Cocke County (as obtained from the U.S. Dept. of Commerce Summary Population and Housing Characteristics, attached) was applied to the number of dwellings to arrive at the estimated population count of 813 people.

U.S. Department of Commerce, Proof Copy of table generated for CPH-1: Summary Population and Housing Characteristics, issued by Bureau of the Census (April 1991).

Table 6. Household, Family, and Group Quarters Characteristics: 1990

[For definitions of terms and meanings of symbols, see text]

State County Place and [In Selected States] County Subdivision	Persons in households	All households	Family households: Total	Family households: Married-couple family	Family households: Female householder, no husband present	Nonfamily households: Total	Householder living alone: Total	Householder living alone, 65 years and over: Total	Householder living alone, 65 years and over: Female	Persons per—: Household	Persons per—: Family	Persons in group quarters: Total	Persons in group quarters: Institutionalized persons	Persons in group quarters: Other persons in group quarters
The State	4 748 064	1 853 725	1 348 019	1 058 480	232 890	505 706	442 238	178 877	143 106	2.56	3.04	129 121	65 381	63 740
COUNTY														
Anderson County	67 595	27 384	19 846	16 181	2 958	7 538	6 811	3 117	2 547	2.47	2.96	655	578	77
Bedford County	30 031	11 408	8 784	7 087	1 289	2 640	2 536	1 290	1 017	2.59	3.01	380	343	37
Benton County	14 255	5 784	4 333	3 732	465	1 451	1 348	751	603	2.46	2.90	264	223	41
Bledsoe County	8 604	3 261	2 522	2 104	300	739	670	320	240	2.64	3.08	1 061	1 051	10
Blount County	84 463	33 624	25 344	21 294	3 237	8 280	7 400	3 287	2 661	2.51	2.94	1 506	1 044	462
Bradley County	72 043	27 804	21 157	17 518	2 841	6 647	5 714	2 277	1 826	2.61	3.02	1 669	539	1 130
Campbell County	34 783	13 150	10 154	8 036	1 702	2 996	2 789	1 496	1 192	2.65	3.07	296	285	11
Cannon County	10 354	3 980	3 035	2 574	351	945	872	470	375	2.60	3.03	111	111	–
Carroll County	26 860	10 727	8 013	6 412	1 092	2 714	2 521	1 435	1 144	2.50	2.95	654	388	266
Carter County	50 225	20 189	14 879	12 283	2 114	5 310	4 779	2 314	1 838	2.49	2.94	1 280	749	531
Cheatham County	26 840	9 515	7 748	6 679	778	1 767	1 524	587	436	2.82	3.15	300	180	120
Chester County	11 791	4 558	3 505	2 933	446	1 053	963	514	422	2.59	3.01	1 028	187	841
Claiborne County	25 533	9 629	7 579	6 286	1 007	2 050	1 810	835	772	2.65	3.05	804	210	594
Clay County	7 158	2 855	2 144	1 748	301	711	648	318	214	2.51	2.83	80	71	9
Cocke County	28 840	11 191	8 483	6 551	1 500	2 708	2 470	1 138	882	2.58	3.00	301	270	31
Coffee County	39 855	15 500	11 727	9 883	1 556	3 773	3 431	1 568	1 264	2.57	3.01	484	452	32
Crockett County	13 103	5 143	3 816	3 141	567	1 327	1 257	764	623	2.53	3.00	273	273	–
Cumberland County	34 207	13 426	10 451	8 842	1 285	2 975	2 686	1 299	1 028	2.55	2.92	529	529	–
Davidson County	489 869	207 530	131 395	95 592	29 555	76 135	62 830	18 264	14 969	2.36	2.97	21 095	10 317	10 778
Decatur County	10 330	4 216	3 108	2 603	391	1 107	1 032	607	461	2.45	2.81	142	142	–
DeKalb County	14 237	5 496	4 316	3 574	584	1 180	1 093	692	563	2.59	2.93	123	106	17
Dickson County	34 532	13 019	10 099	8 186	1 510	2 920	2 648	1 285	1 007	2.65	3.08	529	389	140
Dyer County	34 343	13 617	9 923	7 869	1 643	3 694	3 380	1 773	1 435	2.52	3.01	511	474	37
Fayette County	25 110	8 453	6 717	5 008	1 504	1 736	1 578	783	558	2.97	3.40	451	438	13
Fentress County	14 559	5 511	4 258	3 415	665	1 253	1 165	545	438	2.64	3.07	110	110	–
Franklin County	33 429	12 660	9 883	8 412	1 135	2 777	2 530	1 312	1 081	2.64	3.04	1 296	314	982
Gibson County	45 564	18 361	13 472	10 708	2 244	4 889	4 573	2 560	2 114	2.48	2.94	747	644	103
Giles County	25 336	9 802	7 434	6 004	1 118	2 368	2 218	1 166	891	2.58	3.02	405	205	200
Grainger County	16 912	6 394	5 078	4 281	591	1 316	1 217	590	459	2.64	3.02	181	144	37
Greene County	54 175	21 482	16 280	13 290	2 295	5 202	4 747	2 120	1 687	2.52	2.94	1 678	727	951
Grundy County	13 157	4 784	3 743	3 044	534	1 041	978	522	412	2.75	3.18	205	193	12
Hamblen County	49 750	19 429	14 795	11 895	2 314	4 634	4 138	1 829	1 313	2.56	2.97	730	525	205
Hamilton County	279 044	111 799	78 964	60 790	15 042	32 835	29 025	11 541	9 444	2.50	3.02	6 492	3 622	2 870
Hancock County	6 571	2 484	1 924	1 505	321	560	532	281	212	2.65	3.07	164	164	–
Hardeman County	22 569	8 278	6 190	4 534	1 354	2 088	1 887	984	751	2.73	3.22	784	770	14
Hardin County	22 250	8 726	6 633	5 490	882	2 093	1 940	978	784	2.56	3.00	283	263	20
Hawkins County	44 232	17 167	13 223	11 100	1 624	3 944	3 636	1 671	1 334	2.58	2.99	333	299	34
Haywood County	19 240	7 014	5 150	3 566	1 320	1 864	1 708	905	703	2.74	3.29	192	58	134
Henderson County	21 630	8 527	6 466	5 393	820	2 061	1 922	975	765	2.54	2.97	214	212	2
Henry County	27 454	11 362	8 218	6 743	1 128	3 144	2 902	1 619	1 282	2.42	2.89	432	388	44
Hickman County	15 715	5 978	4 608	3 843	526	1 370	1 229	618	505	2.63	3.04	1 039	1 039	–
Houston County	6 642	2 683	2 039	1 705	261	644	604	335	248	2.55	2.98	176	163	13
Humphreys County	15 551	6 063	4 593	3 844	561	1 470	1 373	665	514	2.56	3.01	244	110	134
Jackson County	9 179	3 642	2 782	2 303	334	860	806	475	358	2.52	2.94	121	119	2
Jefferson County	31 415	12 329	9 510	8 018	1 144	2 819	2 530	1 192	940	2.55	2.94	1 601	445	1 156
Johnson County	13 609	5 406	4 081	3 280	599	1 325	1 230	616	464	2.52	2.95	157	145	12
Knox County	323 400	133 639	90 561	71 679	15 478	43 078	36 661	12 962	10 642	2.42	2.97	12 349	3 298	9 051
Lake County	6 057	2 418	1 775	1 328	323	643	625	343	263	2.50	3.03	1 072	1 051	21
Lauderdale County	22 564	8 423	6 351	4 846	1 258	2 072	1 898	1 058	842	2.68	3.15	893	884	9
Lawrence County	34 992	13 338	10 265	8 665	1 295	3 073	2 864	1 596	1 317	2.62	3.06	311	302	9
Lewis County	9 054	3 533	2 606	2 179	326	927	858	451	353	2.56	3.06	149	136	13
Lincoln County	27 910	10 841	8 010	6 912	1 097	2 831	2 433	1 378	1 090	2.57	3.01	247	243	4
Loudon County	30 926	12 155	9 289	7 667	1 301	2 866	2 635	1 237	1 005	2.54	2.98	329	329	–
McMinn County	41 710	16 351	12 458	10 275	1 751	3 893	3 600	1 755	1 425	2.55	2.98	673	446	227
McNairy County	22 160	8 834	6 678	5 592	824	2 156	2 014	1 073	863	2.51	2.95	242	242	–
Macon County	15 817	6 159	4 711	4 027	522	1 448	1 356	707	577	2.57	3.00	89	56	33
Madison County	75 515	29 609	21 301	15 950	4 504	8 308	7 307	3 206	2 554	2.55	3.08	2 467	841	1 626
Marion County	24 645	9 215	7 171	5 838	1 032	2 044	1 873	983	781	2.67	3.08	215	205	10
Marshall County	21 248	8 264	6 120	4 950	841	2 144	1 954	989	779	2.57	3.04	291	229	62
Maury County	54 073	20 608	15 552	12 290	2 622	5 056	4 554	2 052	1 680	2.62	3.07	739	688	51
Meigs County	7 921	2 998	2 333	1 958	281	665	592	255	194	2.64	3.03	112	112	–
Monroe County	29 940	11 363	8 781	7 231	1 183	2 582	2 385	1 167	917	2.63	3.08	601	317	284
Montgomery County	93 518	34 345	26 914	22 284	3 712	7 431	6 208	2 071	1 628	2.72	3.09	6 982	472	6 510
Moore County	4 714	1 734	1 391	1 222	112	343	327	189	136	2.72	3.11	7	7	–
Morgan County	16 011	5 841	4 621	3 745	660	1 220	1 119	554	432	2.74	3.13	1 299	1 299	–
Obion County	31 399	12 412	9 219	7 824	1 279	3 193	2 950	1 598	1 290	2.53	3.00	318	298	20
Overton County	17 435	6 734	5 270	4 404	645	1 464	1 364	745	581	2.59	2.99	201	192	9
Perry County	6 460	2 512	1 905	1 650	194	607	568	300	232	2.57	3.02	152	152	–
Pickett County	4 494	1 786	1 330	1 105	168	456	430	239	184	2.52	2.98	54	49	5
Polk County	13 534	5 092	4 010	3 373	455	1 082	990	518	418	2.66	3.05	105	105	–
Putnam County	44 419	18 753	13 994	11 578	1 913	5 759	4 737	1 945	1 583	2.37	2.93	2 954	534	2 420
Rhea County	23 634	9 185	6 985	5 606	1 068	2 200	2 022	984	779	2.57	3.03	706	410	296
Roane County	46 747	18 453	13 967	11 612	1 831	4 486	4 126	1 970	1 592	2.53	2.96	480	434	46
Robertson County	41 045	14 801	11 886	9 903	1 537	2 915	2 623	1 283	990	2.77	3.14	449	449	–
Rutherford County	113 372	42 118	31 225	25 678	4 272	10 893	8 545	2 671	2 136	2.69	3.14	5 198	1 455	3 743
Scott County	18 149	6 534	5 128	4 150	785	1 406	1 311	644	553	2.78	3.21	169	169	–
Sequatchie County	8 778	3 287	2 555	2 087	353	732	656	322	252	2.67	3.08	85	85	–
Sevier County	50 394	19 520	15 091	12 708	1 653	4 429	3 854	1 561	1 239	2.58	2.94	649	582	67
Shelby County	803 085	303 571	212 076	144 773	56 404	91 495	77 998	25 362	20 245	2.65	3.22	23 245	12 180	11 065
Smith County	13 994	5 358	4 151	3 578	447	1 207	1 127	643	512	2.61	3.03	145	134	11
Stewart County	9 295	3 678	2 812	2 452	251	866	783	444	344	2.53	2.93	184	95	89
Sullivan County	141 449	56 729	42 516	35 372	5 632	14 213	13 046	5 674	4 660	2.49	2.93	2 147	1 351	796
Sumner County	102 065	36 850	29 511	24 907	3 545	7 339	6 384	2 579	2 093	2.77	3.13	1 216	637	579
Tipton County	37 301	13 033	10 345	8 119	1 780	2 688	2 410	1 198	924	2.86	3.27	267	267	–
Trousdale County	5 795	2 261	1 715	1 402	241	546	512	285	207	2.56	3.01	125	100	25
Unicoi County	16 318	6 621	4 938	4 074	653	1 683	1 565	868	703	2.46	2.81	231	220	11
Union County	13 573	4 932	3 992	3 325	508	940	841	385	300	2.75	3.10	121	90	31
Van Buren County	4 841	1 799	1 451	1 199	190	348	322	149	105	2.69	3.05	5	5	–
Warren County	32 587	12 661	9 601	7 861	1 365	3 060	2 834	1 404	1 152	2.57	3.01	355	341	14
Washington County	87 691	35 823	25 375	20 537	3 798	10 448	9 004	3 632	2 945	2.45	2.95	4 424	2 017	2 407
Wayne County	13 709	5 174	4 079	3 448	482	1 095	1 011	531	448	2.65	3.03	226	204	22
Weakley County	29 569	11 992	8 589	7 194	1 078	3 403	2 828	1 475	1 203	2.47	2.95	2 403	479	1 924
White County	19 660	7 722	5 986	4 989	785	1 736	1 622	915	725	2.57	2.94	210	192	18
Williamson County	80 204	27 928	23 096	20 255	2 225	4 832	4 148	1 389	1 117	2.84	3.20	713	699	14
Wilson County	67 110	24 070	19 610	16 710	2 248	4 460	3 910	1 666	1 335	2.79	3.13	565	271	294

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TSP.CENSUS90*82 06/20/91 10:20 AS UTF.CENSUS90*F3 06/20/91 10:20:43 META:CENSUS90*PH1TABLE147 06/20/91 09:28:24

NOTE: The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

U.S. Department of Commerce, Proof Copy of table generated for 1990 CPH-1: Summary Population and Housing Characteristics, issued by Bureau of the Census (April 1991).

Table 6. Household, Family, and Group Quarters Characteristics: 1990 —Con.

[For definitions of terms and meanings of symbols, see text]

State County Place and [In Selected States] County Subdivision	Persons in households	All households	Family households			Nonfamily households	Householder living alone			Persons per—		Persons in group quarters		
			Total	Married-couple family	Female householder, no husband present	Total	Total	65 years and over: Total	65 years and over: Female	Household	Family	Total	Institutionalized persons	Other persons in group quarters
PLACE AND COUNTY SUBDIVISION														
Adams city, Robertson County	552	213	154	135	17	55	52	34	32	2.59	3.11	35	35	–
Adamsville town, McNairy County	1 604	706	484	391	78	218	210	127	115	2.27	2.78	141	141	–
Alamo town, Crockett County	2 283	994	650	502	123	344	330	204	180	2.30	2.82	143	143	–
Alcoa city, Blount County	6 400	2 692	1 909	1 424	404	783	716	365	301	2.38	2.86	–	–	–
Alexandria town, De Kalb County	730	321	212	157	35	109	105	70	61	2.27	2.80	–	–	–
Algood town, Putnam County	2 234	938	655	502	135	283	264	149	123	2.36	2.83	165	165	–
Allardt city, Fentress County	609	244	195	163	24	49	49	23	20	2.50	2.86	–	–	–
Altamont town, Grundy County	668	232	196	158	27	36	34	16	12	2.88	3.18	11	11	–
Ardmore city	796	335	251	204	38	84	80	44	32	2.38	2.78	70	70	–
Giles County	756	319	238	194	35	81	77	42	30	2.37	2.79	70	70	–
Lincoln County	40	16	13	10	3	3	3	2	2	2.50	2.77	–	–	–
Arlington town, Shelby County	1 052	356	283	234	42	73	66	31	22	2.96	3.37	489	489	–
Ashland City town, Cheatham County	2 447	1 009	717	518	164	292	263	137	118	2.48	2.96	65	65	–
Athens city, McMinn County	11 545	4 844	3 381	2 518	752	1 463	1 358	627	523	2.38	2.92	509	282	227
Atoka town, Tipton County	658	233	192	161	23	41	38	23	18	2.83	3.18	–	–	–
Atwood town, Carroll County	1 068	422	323	268	47	99	95	65	54	2.53	2.95	–	–	–
Auburntown town, Cannon County	240	101	74	66	7	27	27	18	15	2.38	2.86	–	–	–
Baileyton town, Greene County	308	128	94	80	18	34	30	20	18	2.41	2.84	–	–	–
Baneberry city, Jefferson County	218	90	68	67	1	22	20	4	3	2.42	2.85	–	–	–
Banner Hill CDP, Unicoi County	1 717	690	521	418	76	169	162	104	78	2.49	2.94	–	–	–
Bartlett town, Shelby County	26 437	8 456	7 639	6 787	664	817	773	223	190	3.15	3.34	352	352	–
Baxter town, Putnam County	1 274	527	372	300	63	155	143	90	78	2.42	2.95	15	15	–
Beersheba Springs town, Grundy County	598	231	177	141	25	54	48	32	28	2.54	2.87	–	–	–
Belinda City CDP, Wilson County	2 094	673	578	494	75	94	74	5	4	3.12	3.37	–	–	–
Bell Buckle town, Bedford County	326	132	100	80	16	32	29	17	14	2.47	2.83	–	–	–
Belle Meade city, Davidson County	2 839	1 099	878	825	42	221	199	105	93	2.54	2.92	–	–	–
Bells town, Crockett County	1 518	622	430	318	100	192	183	104	83	2.44	3.04	124	124	–
Benton town, Polk County	965	360	271	211	48	89	80	48	42	2.68	3.14	27	27	–
Berry Hill city, Davidson County	756	402	171	119	36	231	198	42	37	1.88	2.73	43	28	15
Bethel Springs town, McNairy County	755	312	228	184	35	84	80	39	35	2.42	2.90	–	–	–
Big Sandy town, Benton County	505	246	148	114	32	87	84	59	48	2.05	2.70	–	–	–
Blaine city, Grainger County	1 328	470	390	315	52	80	74	28	22	2.82	3.12	–	–	–
Bloomingdale CDP, Sullivan County	10 953	4 232	3 345	2 815	423	887	788	292	239	2.59	2.95	–	–	–
Blountville CDP, Sullivan County	2 296	879	712	610	73	167	154	86	72	2.61	2.95	309	309	–
Bluff City city, Sullivan County	1 390	544	414	330	57	130	121	67	51	2.56	2.97	–	–	–
Bolivar city, Hardeman County	5 331	2 000	1 419	905	461	581	513	261	209	2.67	3.24	634	634	–
Braden town, Fayette County	354	137	109	90	17	28	28	17	10	2.58	2.98	–	–	–
Bradford town, Gibson County	1 154	472	344	286	52	128	122	88	78	2.44	2.94	–	–	–
Brentwood city, Williamson County	16 304	5 278	4 748	4 400	283	528	464	120	104	3.09	3.29	86	86	–
Brighton town, Tipton County	717	275	208	163	40	67	63	41	35	2.61	3.05	–	–	–
Bristol city, Sullivan County	22 862	9 745	6 609	5 244	1 100	3 136	2 865	1 280	1 031	2.35	2.91	558	118	440
Brownsville city, Haywood County	9 681	3 698	2 628	1 641	870	1 070	978	523	421	2.67	3.26	134	–	134
Bruceton town, Carroll County	1 498	640	440	369	58	200	187	124	102	2.34	2.87	84	84	–
Bulls Gap town, Hawkins County	659	271	193	161	23	78	75	43	34	2.43	2.98	–	–	–
Burlison town, Tipton County	394	161	118	99	12	43	37	22	18	2.45	2.86	–	–	–
Burns town, Dickson County	1 127	408	325	261	51	82	73	50	42	2.78	3.14	–	–	–
Byrdstown town, Pickett County	949	390	272	183	74	118	116	89	57	2.43	2.99	49	49	–
Calhoun town, McMinn County	552	204	163	140	18	41	39	21	15	2.71	3.08	–	–	–
Camden town, Benton County	3 428	1 532	1 015	427	164	517	488	274	230	2.24	2.80	215	215	–
Carthage town, Smith County	2 241	993	626	477	131	367	350	203	180	2.28	2.94	145	134	11
Caryville town, Campbell County	1 740	677	532	424	80	145	139	64	55	2.57	2.96	11	–	11
Cedar Hill town, Robertson County	347	126	91	65	17	35	31	14	9	2.75	3.31	–	–	–
Celina town, Clay County	1 422	641	410	287	104	231	214	112	83	2.22	2.82	71	71	–
Centertown town, Warren County	332	109	92	81	8	17	17	12	8	3.05	3.42	–	–	–
Centerville town, Hickman County	3 415	1 481	1 006	813	155	475	448	285	234	2.31	2.86	201	201	–
Central CDP, Carter County	2 635	1 056	785	645	101	271	236	102	79	2.50	2.93	–	–	–
Chapel Hill town, Marshall County	833	325	238	200	31	87	83	56	46	2.56	3.11	–	–	–
Charleston city, Bradley County	653	252	186	150	31	66	61	34	25	2.59	3.12	–	–	–
Charlotte town, Dickson County	854	355	255	188	47	100	95	52	43	2.41	2.91	–	–	–
Chattanooga city, Hamilton County	147 497	62 177	40 300	27 774	10 626	21 877	19 330	7 898	6 251	2.37	2.90	4 969	3 017	1 952
Church Hill town, Hawkins County	4 712	1 889	1 437	1 197	204	452	410	187	151	2.49	2.92	122	122	–
Clarksburg town, Carroll County	300	128	97	84	10	31	30	17	13	2.34	2.78	21	–	21
Clarksville city, Montgomery County	64 596	25 442	19 471	15 925	2 905	5 971	4 944	1 475	1 168	2.73	3.10	6 898	420	6 478
Cleveland city, Bradley County	28 968	11 996	8 285	6 471	1 452	3 711	3 282	1 404	1 151	2.41	2.94	1 386	519	867
Clifton city, Wayne County	600	240	171	132	31	69	63	39	34	2.50	3.01	20	20	–
Clinton town, Anderson County	8 694	3 786	2 636	2 028	515	1 150	1 080	504	418	2.34	2.86	78	78	–
Coalmont city, Grundy County	813	283	229	188	32	54	51	28	23	2.67	3.27	–	–	–
Collegedale city, Hamilton County	4 113	1 518	1 172	984	182	344	287	89	78	2.71	3.11	935	24	911
Collierville town, Shelby County	14 313	4 429	3 879	3 389	406	550	448	192	155	3.23	3.50	114	114	–
Collinwood city, Wayne County	1 014	405	302	233	51	103	96	62	53	2.50	2.98	–	–	–
Colonial Heights CDP, Sullivan County	6 711	2 538	2 080	1 868	164	458	418	143	120	2.64	2.96	5	–	5
Columbia city, Maury County	27 954	11 267	7 961	5 921	1 712	3 306	2 980	1 283	1 075	2.48	2.99	629	589	40
Cookeville city, Putnam County	19 117	8 563	5 173	4 082	868	3 390	2 613	957	803	2.23	2.82	2 627	227	2 400
Copperhill city, Polk County	362	174	114	86	21	60	54	31	27	2.08	2.56	–	–	–
Cornersville town, Marshall County	664	285	208	181	18	77	71	46	41	2.33	2.77	18	18	–
Cottage Grove town, Henry County	85	36	22	18	3	14	14	11	10	2.36	3.23	–	–	–
Covington city, Tipton County	7 245	2 729	1 928	1 221	623	801	755	402	324	2.65	3.25	242	242	–
Cowan city, Franklin County	1 738	676	507	389	96	169	159	93	79	2.57	3.05	–	–	–
Crab Orchard city, Cumberland County	878	328	245	188	43	83	73	31	25	2.67	3.11	–	–	–
Cross Plains city, Robertson County	1 025	355	298	255	35	57	50	21	14	2.89	3.16	–	–	–
Crossville city, Cumberland County	6 662	2 837	1 901	1 400	421	936	853	393	325	2.35	2.92	268	258	–
Crump city, Hardin County	2 028	782	620	537	58	162	151	89	51	2.59	2.96	–	–	–
Cumberland City town, Stewart County	319	131	97	72	17	34	30	12	7	2.44	2.84	–	–	–
Cumberland Gap town, Claiborne County	210	91	55	45	8	36	30	13	11	2.31	3.05	–	–	–
Dandridge town, Jefferson County	1 294	558	396	318	64	162	149	79	62	2.32	2.70	248	248	–
Dayton city, Rhea County	5 235	2 129	1 513	1 088	358	616	574	292	240	2.46	2.97	436	147	289
Decatur town, Meigs County	1 254	505	352	283	67	153	140	87	53	2.48	3.02	105	105	–
Decaturville town, Decatur County	857	339	257	201	51	82	78	52	42	2.53	2.97	22	22	–
Decherd town, Franklin County	2 193	847	616	478	121	231	208	120	104	2.58	3.09	3	3	–
Dickson city, Dickson County	8 478	3 523	2 453	1 727	627	1 070	999	541	435	2.41	2.95	312	302	10
Dover city, Stewart County	1 246	564	365	309	45	199	184	123	105	2.21	2.78	95	95	–
Dowelltown town, De Kalb County	308	141	88	66	18	53	51	37	30	2.18	2.85	–	–	–

TPS# [POSTSCRIPT] CPH147 CENSUS90 72142000 06/20/91 10:28 AM MACHINE: C DATACENSUS90*PH1TPS DAT47, 06/20/91 10:20:28 OUTPUTONSITE-P8791 PAGE: 64
TAF CENSUS90*83 05/20/91 10:20:43 UTF CENSUS90*83 06/20/91 10:20:43 METACENSUS90*PH1TABLE347, 06/20/91 10:28:24

NOTE: The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

[redacted]

REFERENCE NO. 28

TENNESSEE DEPARTME

OFFICE CORRESPONDENCE

FROM	TO	DATE

DATE: 16 May 1988

TO: SIU Files (15508)

FROM: G. S. Caruthers

SUBJECT: Groundwater Use in Vicinity of Wall Tube and Metal Site

On 12 May 1988, SIU investigators T. A. Moss and G. S. Caruthers conducted a groundwater use survey in the vicinity of the Wall Tube & Metal site in Newport, Cocke County, Tennessee.

Mr. Leonard Allen of the Newport Utilities Department was interviewed at the downtown office of the utility service. Mr. Allen marked the location of the water lines in the area of concern on our work map. He indicated that there were an unknown number of holdouts in some areas where PWS was available. Mr. Allen also stated that a small private water system operated by Mr. L. W. Hooper served a small area southwest of Newport within the 3-mile radius area of concern, and that except for this system, there were no other public water supply systems serving the area.

All roads not served by a public water supply system were driven and a house count performed. A total of 331 residences were counted. Using the standard planning factor of 3.8 persons per household, this results in an estimated 1,258 persons utilizing water from private wells for domestic supply. The location of the areas not served by PWS is shown on the attached map.

Mr. L. W. Hooper, owner of the private utility system in the Edgemont community, was interviewed. The location of his service area is marked in green on the attached map. Mr. Hooper's system serves approximately 350 persons in the Edgemont community.

The total estimated number of persons using groundwater within the 3-mile radius area of concern from the Wall Tube and Metal site is 1,608 persons.

An effort was made to locate the nearest domestic well in the area around the site. Conversations with local residents indicated that domestic wells were in use at two residences located approximately 750 feet from the site. Names and addresses of these residents are:

FROM	DATE
GSC	[illegible]

TO
WJF
GAT
TKC
GSC
File
15508

(b)(6) [redacted]

PH 000
SR 3/77

(b)(6)

No one was at home at the (b)(6) (b)(6) residence so we were unable to confirm domestic use of a well at that location, but use of a well for domestic supply was confirmed at the (b)(6) (b)(6) residence. Both these houses are located on the old Knoxville Highway directly across from the site, as shown on the attached map. A large spring was also located at the residence of (b)(6)(b)(6)(b)(6), (b)(6)(b)(6)(b)(6)(b)(6)(b)(6) (b)(6) This spring is not used for domestic water supply, but would be an ideal sampling location since it is easily accessible and appears to be directly downgradient from the site.

GSC/F4268147

Newport Tenn
173 NW
Wall Tube & Metal Site
TND002028637
2000 ft
Gum Spring
Nichols Cem
Nichols Chapel
Creek
Sinking
Water
Allen Cem
BM TGS 606
Wilsonville
BM TGS 605
O'Neil
Branch
Creek
Fair grounds
Race track
Drive-in theater
West End
Substation
Radio tower (WLIK)
Mile 5
BROADWAY
PROPOSED
40
Jaybird
Tanner Sch
Center View Ch
Hollow
Trantham
Swimming pool
Hearst Cem
Garage
McSween Spring
Morell Springs

REFERENCE NO. 29

TELEPHONE CONTACT SUMMARY

Charlotte M. Boulind 6 Feb. 92

CALL MADE BY: Charlotte Boulind
DYNAMAC CORPORATION

REGION IV

DATE: 6 February 1992

SITE: Wall Tube and Metal Products
Newport, TN

TIME: 3:00 p.m.est

EPA ID#: TND002028637

PERSON CONTACTED: NAME Shane Bunch
TITLE Wildlife Officer
PHONE NO. (615)623-0045
ORGANIZATION Cocke County
ADDRESS ...

SUBJECT: Fishing in Sinking Creek and Pigeon River.

CONVERSATION SUMMARY: He confirmed the fish kill that Wayne Shoacher talked about. He said that when he helped clean the creek, the people who lived around it told him that they & their children had fished it. However, he said that it was not a popular place because of Douglas Lake. No one travels there to fish, rather they travel to Douglas Lake. He said that this is also the case with Pigeon River. The creek is a long one and it has "good" flow. He did not know what it was exactly.

REFERENCE NO. 30

TENNESSEE'S WATER QUALITY CRITERIA AND STREAM USE CLASSIFICATIONS FOR INTERSTATE AND INTRASTATE STREAMS

FEBRUARY 1987

Tennessee Water Quality Control Board
Department of Health and Environment
150 - 9th Avenue, North
Nashville, Tennessee 37203

(10) French Broad River Basin

STREAM	DESCRIPTION	DOM	IND	FISH	REC	IRR	LW&W	NAV
French Broad River	Mile 0.0 to 102.2 (N. Carolina-Tenn Line)	X	X	X	X	X	X	
Hines Creek	Mile 0.0 to Origin		X	X	X	X	X	
Unnamed Tributary	At Hines Creek (Mile 1.7)			X			X	
Unnamed Tributary	At Hines Creek (Mile 3.7)			X			X	
Cement Mill Creek	Mile 0.0 to Origin		X	X	X	X	X	
Boyds Creek	Mile 0.0 to Origin		X	X	X	X	X	
Unnamed Tributary	At Boyds Creek (Mile 9.7)			X			X	
Unnamed Tributary	At Boyds Creek (Mile 11.5)			X			X	
Little Pigeon River	Mile 0.0 to 2.9	X	X	X	X	X	X	
Gist (Guess) Creek	Mile 0.0 to Origin			X	X	X	X	
Little Pigeon River	Mile 2.9 to 4.8		X	X	X	X	X	
W.F. Little Pigeon R.	Mile 0.0 to 7.9	X	X	X	X	X	X	
W.F. Little Pigeon R.	Mile 7.9 to 8.8		X	X	X	X	X	
W.F. Little Pigeon R.	Mile 8.8 to 13.0	X	X	X	X	X	X	
W.F. Little Pigeon R.	Mile 13.0 to 19.0		X	X	X	X	X	
W.F. Little Pigeon R.	Mile 19.0 to Origin	X	X	X	X	X	X	
Little Pigeon River	Mile 4.8 to Origin	X	X	X	X	X	X	
E.F. Little Pigeon R.	Mile 0.0 to Origin	X	X	X	X	X	X	
Dunn Creek	Mile 0.0 to Origin	X	X	X	X	X	X	
Ogle Springs Branch	Mile 0.0 to Origin			X	X	X	X	
Bird Creek	Mile 0.0 to Origin			X	X	X	X	
Muddy Creek	Mile 0.0 to Origin			X	X	X	X	
Clear Creek	Mile 0.0 to Origin			X	X	X	X	
City Spring Tributary	Mile 0.0 to 1.0			X	X	X	X	
City Spring Tributary	Mile 1.0 to 1.4			X		X	X	
Indian Creek	Mile 0.0 to Origin			X	X	X	X	
Ball Creek	Mile 0.0 to Origin			X	X	X	X	
Unnamed Tributary	At Ball Creek (Mile 2.9); Mile 0.0 to Origin			X			X	
Leadvale Creek	Mile 0.0 to 1.0			X		X	X	
Leadvale Creek	Mile 1.0 to Origin			X	X	X	X	

(10) French Broad River Basin

STREAM	DESCRIPTION	DOM	IND	FISH	REC	IRR	LW&W	NAV
Clear Creek	Mile 0.0 to 6.7			X	X	X	X	
Clear Creek	Mile 6.7 to 6.9			X		X	X	
Clear Creek	Mile 6.9 to Origin			X	X	X	X	
Nolichucky River	Mile 0.0 to 5.3	X	X	X	X	X	X	
Long Creek	Mile 0.0 to Origin			X	X	X	X	
Sinking Creek	Mile 0.0 to Origin			X	X	X	X	
Nolichucky River	Mile 5.3 to 7.7		X	X		X	X	
Nolichucky River	Mile 7.7 to 100.8 (N. Carolina-Tenn Line)	X	X	X	X	X	X	
Slate Creek	Mile 0.0 to 3.3			X	X	X	X	
Slate Creek	Mile 3.3 to 3.5			X		X	X	
Slate Creek	Mile 3.5 to Origin			X	X	X	X	
Bent Creek	Mile 0.0 to Origin			X	X	X	X	
Mud Creek	Mile 0.0 to Origin			X	X	X	X	
Williams Branch	Mile 0.0 to 0.3			X		X	X	
Williams Branch	Mile 0.3 to Origin			X	X	X	X	
Lick Creek	Mile 0.0 to 49.0		X	X	X	X	X	
Lick Creek	Mile 49.0 to Origin	X	X	X	X	X	X	
Black Creek	Mile 0.0 to Origin			X	X	X	X	
War Branch	Mile 0.0 to 0.5			X		X	X	
Unnamed Tributary	At Lick Creek (Mile 36.1); Mile 0.0 to Origin			X			X	
Little Chucky Creek	Mile 0.0 to Origin			X	X	X	X	
Mosheim Branch	Mile 0.0 to Origin			X	X	X	X	
Unnamed Trib.	At Mosheim Branch (Mile 2.0); Mile 0.0 to Origin			X	X		X	
Unnamed Tributary	At Little Chucky Creek (Mile 17.2); Mile 0.0 to Origin			X	X	X	X	
Gap Creek	Mile 0.0 to Origin			X	X	X	X	

(10) French Broad River Basin

STREAM	DESCRIPTION	DOM	IND	FISH	REC	IRR	LW&W	NAV
Furness Branch	Mile 0.0 to 4.4			X	X	X	X	
Furness Branch	Mile 4.4 to 4.6			X		X	X	
Furness Branch	Mile 4.6 to Origin			X	X	X	X	
Cove Creek	Mile 0.0 to Origin			X	X	X	X	
Flag Branch	Mile 0.0 to 1.0			X	X	X	X	
Flag Branch	Mile 1.0 to 1.2			X		X	X	
Flag Branch	Mile 1.2 to Origin			X	X	X	X	
Richland Creek	Mile 0.0 to Origin		X	X	X	X	X	
Crazy Creek	Sinkhole to Origin			X	X	X	X	
Unnamed Tributary	At Crazy Creek (Mile 1.3); Mile 0.0 to 0.5			X	X	X	X	
Unnamed Tributary	Mile 0.5 to Origin			X			X	
Camp Creek	Mile 0.0 to Origin		X	X	X	X	X	
Dry Creek	Mile 0.0 to Origin			X	X	X	X	
College Creek	Mile 0.0 to 2.6			X	X	X	X	
College Creek	Mile 2.6 to 2.8			X		X	X	
College Creek	Mile 2.8 to Origin			X	X	X	X	
Moon Creek	Mile 0.0 to 2.6			X	X	X	X	
Moon Creek	Mile 2.6 to 2.8			X		X	X	
Moon Creek	Mile 2.8 to Origin			X	X	X	X	
Sinking Creek	Mile 0.0 to 1.0			X	X	X	X	
Sinking Creek	Mile 1.0 to 1.3			X		X	X	
Sinking Creek	Mile 1.3 to 2.4			X	X	X	X	
Sinking Creek	Mile 2.4 to 2.6			X	X	X	X	
Sinking Creek	Mile 2.6 to Origin		X	X	X	X	X	
Little Limestone Creek	Mile 0.0 to 12.0			X	X	X	X	
Little Limestone Creek	Mile 12.0 to 12.5			X		X	X	
Little Limestone Creek	Mile 12.5 to Origin			X	X	X	X	

(3)

(10) French Broad River Basin

STREAM	DESCRIPTION	DOM	IND	FISH	REC	IRR	LW&W	NAV
North Indian Creek	Mile 0.0 to Origin	X	X	X	X	X	X	
Pigeon River	Mile 0.0 to 25.9 (Tenn-N. Car. Line)		X	X	X	X	X	
Sinking Creek	Mile 0.0 to 5.2		X	X		X	X	
Sinking Creek	Mile 5.2 to Origin			X	X	X	X	
Cosby Creek	Mile 0.0 to 4.0			X	X	X	X	
Cosby Creek	Mile 4.0 to 4.3			X		X	X	
Cosby Creek	Mile 4.3 to Origin			X	X	X	X	
All tributaries in the French Broad River Basin, Named and Unnamed, which have not been specifically noted shall be classified				X	X	X	X	

(Trout Streams)

Little Pigeon River	From Confluence of Middle Prong Porters Creek to 5 Miles Below Smokey Mountains National Park Line
Webb Creek	Entire Length
Soak Ash Creek	Entire Length
Timothy Creek	Entire Length
Redwine Creek	Entire Length
Noisy Creek	Entire Length
Texas Creek	Entire Length
Copeland Creek	Entire Length
Injun Creek	Entire Length
Rhoddendron Creek	Entire Length
Porters Creek	Entire Length
False Gap Prong	Entire Length
Kalanu Prong	Entire Length
Long Branch	Entire Length
Cannon Creek	Entire Length
Lowes Creek	Entire Length
Boulevard Prong	Entire Length
Middle Prong	Entire Length

(10) French Broad River Basin (Trout Streams)

STREAM	DESCRIPTION
Ramsay Prong	Entire Length
Chapman Prong	Entire Length
Lost Prong	Entire Length
Eagle Rocks Branch	Entire Length
Buck Fork	Entire Length
Matthew Creek	Entire Length
West Prong Little Pigeon	From Headwaters to 5 Miles Below Smokey Mountain National Park Line
Dudley Creek	Entire Length
Little Dudley Creek	Entire Length
Roaring Fork Creek	Entire Length
Baskins Creek	Entire Length
Leconte Creek	Entire Length
Fighting Creek	Entire Length
Sugarland Branch	Entire Length
Big Branch	Entire Length
Road Prong	Entire Length
Cole Branch	Entire Length
Alum Cave Creek	Entire Length
Walker Camp Prong	Entire Length
French Broad River	
Big Creek	Entire Length
Tom Creek	Entire Length
Bailey Branch	Entire Length
Dry Fork Creek	Entire Length
Trail Fork Creek	Entire Length
Bear Branch	Entire Length

(10) French Broad River Basin (Trout Streams)

STREAM	DESCRIPTION
Laurel Fork Branch	Entire Length
Deep Gap Creek	Entire Length
Moss Camp Creek	Entire Length
Middle Prong	Entire Length
Gulf Creek	Entire Length
Laurel Creek	Entire Length
Brown Gap Creek	Entire Length
Wolf Creek	Mile 0.0 to 2.0
Brush Creek	Mile 0.0 to 1.0
Nolichuchy River	
Camp Creek	Entire Length
Jennings Creek	Entire Length
Dry Creek	Entire Length
Davis Creek	Entire Length
Horse Creek	Entire Length
Squibb Creek	Entire Length
Cassi Creek, East & West Forks	Entire Length
Clarks Creek	Entire Length
Long Arm Branch	Entire Length
Devil Fork Branch	Entire Length
Chigger Branch	Entire Length
Broad Shoal Creek	Entire Length
California Creek	Entire Length
North Indian Creek	Entire Length
Rock Creek	Entire Length
Duck Creek	Entire Length
Red Fork Creek	Entire Length
Clear Fork Branch	Entire Length

(10) French Broad River Basin (Trout Streams)

STREAM	DESCRIPTION	
South Indian Creek	Entire Length	
Mill Creek	Entire Length	
Granny Lewis Creek	Entire Length	
Big Branch	Entire Length	
Little Higgins Creek	Entire Length	
Birch Field Camp Creek	Entire Length	
Spivey Creek	Entire Length	
Coffee Ridge Creek	Entire Length	
Watts Branch	Entire Length	
Tumbling Creek	Entire Length	
Big Branch	Entire Length	
Rocky Fork Creek	Entire Length	
Flint Creek	Entire Length	
Devil Fork Creek	Entire Length	
Sams Creek	Entire Length	
Big Higgins Creek	Entire Length	
East Fork Higgins Creek	Entire Length	
Rice Creek	Entire Length	
Jones Branch	Entire Length	
Long Branch	Entire Length	
Pigeon River		
Sinking Creek	Mile 0.0 to 5.0	
Cosby Creek	Mile 0.0 to 5.0	
North Fork Bogard Creek	Entire Length	
Indian Camp Creek	Entire Length	
West Prong Little Pigeon River	Sevier Co.	Mile 4.5 to Origin

REFERENCE NO. 31

TELEPHONE CONTACT SUMMARY

CALL MADE BY: Charlotte M. Boulind Charlotte M. Boulind 02.06.92
DATE: 6 February 1992
TIME: 2:45 p.m.

SITE: Newport Dump
CERCLIS NO.: TND980709497

PERSON CONTACTED:

NAME	Wayne Shacher
TITLE	Aquatic Habitat Biologist
PHONE NO.	(615) 587-7037
ORGANIZATION	Tennessee Wildlife Resources Agency
ADDRESS	6032 W. Andrew Johnson Hwy. Talbott, TN 37877

GENERAL SUBJECT: Surface Water Use

CONVERSATION SUMMARY:

Mr. Shacher was not sure if people fish from Sinking Creek and Pigeon River which have both had pollution problems. On May 30, 1991, there was a large fish kill at Sinking Creek for approximately 1.5 miles, starting at the State Highway Route 411, 25 and 70 intersection. A truck carrying avaiation fuel spilled 6,000 gallons out of 8,500 gallons it was holding, into a sewer which drained into the creek. Mr. Shane Bunch, a Wildlife Officer of Cocke County would know the uses of Sinking Creek. Mr. Shacher said that people do fish from Douglas Lake. It is very popular for commercial and private fishing, and other recreational activities. He said that he would mail me the latest annual report of Douglas Lake.

DEFINITIONS OF STATE STATUS FOR THE OFFICIAL LIST OF TENNESSEE'S RARE PLANTS[1]

E - ENDANGERED, Species now in danger of becoming extinct in Tennessee because of:

(a) their rarity throughout their range, or

(b) their rarity in Tennessee as a result of sensitive habitat destruction or restricted area of distribution.

E* - TAXA considered to be endangered in Tennessee due to evidence of large numbers being taken from the wild and lack of commercial success with propagation or transplantation.

T - THREATENED, Species likely to become endangered in the immediately foreseeable future as a result of rapid habitat destruction or commercial exploitation.

S - SPECIAL CONCERN, Species requiring special concern because of:

(a) their rarity in Tennessee because the State represents the limit or near-limit of their geographic range, or

(b) their status is undetermined because of insufficient information.

P - POSSIBLY EXTIRPATED, Species that have not been seen in Tennessee within the past 20 years.

1. Adapted from the Committee for Tennessee Rare Plants. 1978. The rare and vascular plants of Tennessee. J. Tenn. Acad. Sci. 53(4):128-133.

STATE STATUS OF TENNESSEE'S RARE WILDLIFE
(Designated by Tennessee Wildlife Resource Agency)

STATUS DESIGNATIONS

P	-	Possibly extirpated
E	-	Endangered
T	-	Threatened
S	-	Special Concern
I	-	Inactive
D	-	Deemed in Need of Management
*	-	Species Proposed for Federal Protection
ESD	-	Designated by the Ecological Services Division

```
EOR............. SNAME:............................ LAT:... LONG:... QUADNAME:.....

IMBIV16181*013*TN EPIOBLASMA TORULOSA GUBERNACULUM    360526N 0831338W RANKIN
IMBIV17050*020*TN FUSCONAIA CUNEOLUS                  360526N 0831338W RANKIN
IMGASK3010*050*TN IO FLUVIALIS                        360515N 0831415W RANKIN
IMGASK3010*051*TN IO FLUVIALIS                        360526N 0831338W RANKIN
IMGASK5100*002*TN LEPTOXIS PRAEROSA                   360720N 0830733W RANKIN

5 Records Processed
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LIST OF RARE AND ENDANGERED SPECIES FOR RANKIN QUAD
06 MAR 1992

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	ESO STATUS	
INVERTEBRATES					
EPIOBLASMA TORULOSA GUBERNACULUM	GREEN-BLOSSOM	LE	E	E	NOLICHUCKY R 3/4 MILE FROM FRE.
FUSCONAIA CUNEOLUS	FINE-RAYED PIGTOE	LE	E	E	NOLICHUCKY
IO FLUVIALIS	SPINY RIVERSNAIL	C1		E	FRENCH BROAD RIVER 4 MILE
LEPTOXIS PRAEROSA	ONYX ROCKSNAIL	C2	E	E	NOLICHUCKY

4 Records Processed

PAGE 1 12:03:07 06 MAR 1992

EOR..... SNAME:..... LAT:... LONG:... QUADNAME:.....

AFCJC01030*009*TN CARPIODES VELIFER * 355900N 0830945W NEWPORT — FRENCH BROAD RIVER @ MILE 77

POSAXDE0L1*009*TN HEUCHERA LONGIFLORA VAR ACEROIDES 355323N 0830738W NEWPORT — STONE MOUNTAIN

AMACC01040*084*TN MYOTIS GRISESCENS * 355738N 0831010W NEWPORT — EAST PORT @ JOHN W. FISHER BRIDGE

3 Records Processed

* - IN 4 MILE RANGE

LIST OF RARE AND ENDANGERED SPECIES FOR NEWPORT QUAD
06 MAR 1992

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	ESO STATUS	
PLANTS					
HEUCHERA LONGIFLORA VAR ACEROIDES	MAPLE-LEAF ALUMROOT		S		
VERTEBRATES					
CARPIODES VELIFER	HIGHFIN CARPSUCKER		D	S	FRENCH BROAD RIVER @ MILE 77.5
MYOTIS GRISESCENS	GRAY BAT	LE	E	E	EAST PORT @ JOHN W. FISHER BRIDGE

3 Records Processed

GEMS>

Enter program execution mode: B (batch) or I (interactive)
GEMS> I

HEYWOOD - WAKEFIELD

LATITUDE 35:59:10 LONGITUDE 83:12: 7 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
	0-¼	¼-½	½-1	1-2	2-3	3-4	TOTAL
S 1	0	0	0	0	942	0	942
S 2	44	0	0	0	0	513	557
S 3	0	0	0	1900	1838	0	3738
S 4	0	0	0	1416	3405	0	4821
S 5	0	0	0	0	1575	0	1575
S 6	0	0	0	0	0	0	0
RING TOTALS	44	0	0	3316	7760	513	11633

ress RETURN to continue

Alt-Z FOR HELP| VT102 | FDX | 2400 E71 | LOG CLOSED | PRINT OFF | ON-LINE

OVERSIZED

DOCUMENT

APPENDIX B

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50142 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1205 STOP: 00/00/00
MD NUMBER: X705

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
20UR	ANTIMONY
[redacted]	[redacted]
[redacted]	[redacted]
2.9	BERYLLIUM
1.2U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
22	COBALT
[redacted]	[redacted]
[redacted]	IRON
[redacted]	LEAD
[redacted]	MAGNESIUM

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
0.4U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
0.98U	SELENIUM
[redacted]	[redacted]
750U	SODIUM
1.5U	THALLIUM
NA	TIN
[redacted]	[redacted]
100U	ZINC
18	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50148 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1600 STOP: 00/00/00
MD NUMBER: X711

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
20UR	ANTIMONY
[redacted]	[redacted]
[redacted]	[redacted]
2U	BERYLLIUM
1.1U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	COPPER
[redacted]	IRON
[redacted]	LEAD
[redacted]	MAGNESIUM

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
0.3U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
0.87U	SELENIUM
1.7UR	SILVER
670U	SODIUM
1.3U	THALLIUM
NA	TIN
[redacted]	[redacted]
70U	ZINC
08	PERCENT MOISTURE

(2)

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

11/02/90

METALS DATA REPORT

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***************************************************************************
**  PROJECT NO. 90-798    SAMPLE NO. 50153  SAMPLE TYPE: SOIL      PROG ELEM: NSF   COLLECTED BY: A HARVEY                **
**  SOURCE: HEYWOOD-WAKEFIELD DU                                   CITY: NEWPORT          ST: TN                        **
**  STATION ID: SS-03                                              COLLECTION START: 09/13/90  1005   STOP: 00/00/00      **
**  CASE NUMBER: 14852          SAS NUMBER:                         MD NUMBER: X716                                     **
**                                                                                                                         **
***************************************************************************
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MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]	[redacted]	[redacted]SE
20UR	ANTIMONY	0.12U	MERCURY
[redacted]	[redacted]C	[redacted]	[redacted]EL
[redacted]	[redacted]	[redacted]	[redacted]
2U	BERYLLIUM	9.8U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
[redacted]	[redacted]	760U	SODIUM
[redacted]	[redacted]	1.5U	THALLIUM
[redacted]	[redacted]	NA	TIN
20U	COPPER	[redacted]	[redacted]
[redacted]	[redacted]	80U	ZINC
[redacted]	[redacted]	18	PERCENT MOISTURE
[redacted]	[redacted]		

(W)

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

METALS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50152 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1000 STOP: 00/00/00
MD NUMBER: X715

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
20UR	ANTIMONY
2U	ARSENIC
[redacted]	[redacted]
1U	BERYLLIUM
1.2U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
30U	COPPER
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
0.12U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
9.8U	SELENIUM
2UR	SILVER
750U	SODIUM
1.5U	THALLIUM
NA	TIN
[redacted]	[redacted]
70U	ZINC
18	PERCENT MOISTURE

④

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50150 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-05
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1530 STOP: 00/00/00
MD NUMBER: X713

ANALYTICAL RESULTS

MG/KG	
[redacted]	[redacted]
40UR	ANTIMONY
6U	ARSENIC
[redacted]	[redacted]
1.5U	BERYLLIUM
3.8U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
20U	COBALT
80U	COPPER
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

ANALYTICAL RESULTS

MG/KG	
[redacted]	[redacted]
0.7U	MERCURY
[redacted]	[redacted]
710U	POTASSIUM
3.1U	SELENIUM
6.1UR	SILVER
2400U	SODIUM
4.6U	THALLIUM
NA	TIN
20U	VANADIUM
[redacted]	[redacted]
74	PERCENT MOISTURE

(5)

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50151 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-06
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00
MD NUMBER: X714

ANALYTICAL RESULTS

MG/KG	
[redacted]	[redacted]
20UR	ANTIMONY
1U	ARSENIC
[redacted]	[redacted]
0.68U	BERYLLIUM
1.7U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	IRON
[redacted]	[redacted]
[redacted]	[redacted]

ANALYTICAL RESULTS

MG/KG	
[redacted]	[redacted]
0.17U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
20U	SELENIUM
2.7UR	SILVER
1100U	SODIUM
2U	THALLIUM
NA	TIN
[redacted]	[redacted]
[redacted]	ZINC
41	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50143 SAMPLE TYPE:
SOURCE:
STATION ID: SB-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1315 STOP: 00/00/00
MD NUMBER: X706

MG/KG	ANALYTICAL RESULTS
~~20000~~	~~ALUMINUM~~
20UR	ANTIMONY
3	~~ARSENIC~~
~~100~~	~~BARIUM~~
2.5	BERYLLIUM
1.2U	CADMIUM
~~900~~	~~CALCIUM~~
~~60J~~	~~CHROMIUM~~
~~15~~	~~COBALT~~
30U	COPPER
~~33000~~	~~IRON~~
~~10~~	~~LEAD~~
~~5100~~	~~MAGNESIUM~~

MG/KG	ANALYTICAL RESULTS
~~710~~	~~MANGANESE~~
0.4U	MERCURY
~~15~~	~~NICKEL~~
~~3700~~	~~POTASSIUM~~
1U	SELENIUM
2UR	SILVER
770U	SODIUM
1.5U	THALLIUM
NA	TIN
~~47~~	~~VANADIUM~~
~~92~~	~~ZINC~~
20	PERCENT MOISTURE

L

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50149 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1625 STOP: 00/00/00
MD NUMBER: X712

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]	[redacted]	[redacted]
20UR	ANTIMONY	0.3U	MERCURY
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
2U	BERYLLIUM	20UJ	SELENIUM
1.3U	CADMIUM	2.1UR	SILVER
[redacted]	CALCIUM	800U	SODIUM
[redacted]	[redacted]	1.6U	THALLIUM
[redacted]	[redacted]	NA	TIN
20U	COPPER	[redacted]	[redacted]
[redacted]	[redacted]	70U	ZINC
[redacted]	[redacted]	23	PERCENT MOISTURE
[redacted]	MAGNESIUM		

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50155 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00
MD NUMBER: X718

MG/KG	ANALYTICAL RESULTS
[redacted]	ALUMINUM
20UR	ANTIMONY
2U	ARSENIC
[redacted]	BARIUM
[redacted]	BERYLLIUM
1.3U	CADMIUM
[redacted]	CALCIUM
[redacted]	CHROMIUM
[redacted]	COBALT
20U	COPPER
[redacted]	IRON
[redacted]	LEAD
[redacted]	MAGNESIUM

MG/KG	ANALYTICAL RESULTS
[redacted]	SE
0.3U	MERCURY
[redacted]	NICKEL
[redacted]	POTASSIUM
20U	SELENIUM
2.1UR	SILVER
790U	SODIUM
1.5U	THALLIUM
NA	TIN
[redacted]	VANADIUM
[redacted]	ZINC
22	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50154 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1015 STOP: 00/00/00
MD NUMBER: X717

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]	[redacted]	[redacted]
20UR	ANTIMONY	0.2U	MERCURY
2U	ARSENIC	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
2U	BERYLLIUM	9.8U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
[redacted]	[redacted]	750U	SODIUM
[redacted]	[redacted]	1.5U	THALLIUM
[redacted]	[redacted]	NA	TIN
20U	COPPER	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	18	PERCENT MOISTURE
[redacted]	[redacted]		

10

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50144 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1445 STOP: 00/00/00
MD NUMBER: X707

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
20UR	ANTIMONY
2U	ARSENIC
[redacted]	[redacted]
2U	BERYLLIUM
1.2U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
20U	COPPER
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
0.3U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
9.9U	SELENIUM
2UR	SILVER
760U	SODIUM
1.5U	THALLIUM
NA	TIN
[redacted]	[redacted]
100U	ZINC
19	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50145 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1450 STOP: 00/00/00
MO NUMBER: X708

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
20UR	ANTIMONY
[redacted]	[redacted]
[redacted]	[redacted]
0.61U	BERYLLIUM
1.5U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
5U	COBALT
40U	COPPER
[redacted]	[redacted]
[redacted]	LEAD
[redacted]	[redacted]

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
0.5U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
20U	SELENIUM
2.4UR	SILVER
930U	SODIUM
1.8U	THALLIUM
NA	TIN
7.3U	VANADIUM
[redacted]	[redacted]
34	PERCENT MOISTURE

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REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50146 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00
MD NUMBER: X709

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]	[redacted]	[redacted]
20UR	ANTIMONY	0.3U	MERCURY
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
2U	BERYLLIUM	10U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
[redacted]	[redacted]	770U	SODIUM
[redacted]	[redacted]	1.5U	THALLIUM
[redacted]	[redacted]	NA	TIN
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	LEAD	20	PERCENT MOISTURE
[redacted]	[redacted]		

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REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50147 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1520 STOP: 00/00/00
MD NUMBER: X710

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]	[redacted]	[redacted]
20UR	ANTIMONY	0.3U	MERCURY
2U	ARSENIC	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
0.47U	BERYLLIUM	0.95U	SELENIUM
1.2U	CADMIUM	1.9UR	SILVER
[redacted]	[redacted]	730U	SODIUM
[redacted]	[redacted]	1.4U	THALLIUM
[redacted]	[redacted]	NA	[redacted]
30U	COPPER	[redacted]	[redacted]
[redacted]	[redacted]	80U	ZINC
[redacted]	[redacted]	16	PERCENT MOISTURE
[redacted]	[redacted]		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50142 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: IN
COLLECTION START: 09/12/90 1205 STOP: 00/00/00
D. NUMBER: X705

UG/KG	ANALYTICAL RESULTS
9.6U	ALPHA-BHC
9.6U	BETA-BHC
9.6U	DELTA-BHC
9.6U	GAMMA-BHC (LINDANE)
9.6U	HEPTACHLOR
9.6U	ALDRIN
9.6U	HEPTACHLOR EPOXIDE
9.6U	ENDOSULFAN I (ALPHA)
19U	DIELDRIN
19U	4,4'-DDE (P,P'-DDE)
19U	ENDRIN
19U	ENDOSULFAN II (BETA)
19U	4,4'-DDD (P,P'-DDD)
19U	ENDOSULFAN SULFATE
19U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
96U	METHOXYCHLOR
19U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
96U	GAMMA-CHLORDANE /2
96U	ALPHA-CHLORDANE /2
190U	TOXAPHENE
96U	PCB-1016 (AROCLOR 1016)
96U	PCB-1221 (AROCLOR 1221)
96U	PCB-1232 (AROCLOR 1232)
96U	PCB-1242 (AROCLOR 1242)
96U	PCB-1248 (AROCLOR 1248)
190U	PCB-1254 (AROCLOR 1254)
190U	PCB-1260 (AROCLOR 1260)
17	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAT-INTERFERENCES *J ESTIMATED VALUE *N PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49864 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SS-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/12/90 1205 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
47U	CHLOROMETHANE
47U	VINYL CHLORIDE
47U	BROMOMETHANE
47U	CHLOROETHANE
47U	TRICHLOROFLUOROMETHANE
47U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
470U	ACETONE
470U	CARBON DISULFIDE
47U	METHYLENE CHLORIDE
47U	TRANS-1,2-DICHLOROETHENE
47U	1,1-DICHLOROETHANE
470U	VINYL ACETATE
47U	CIS-1,2-DICHLOROETHENE
47U	2,2-DICHLOROPROPANE
470U	METHYL ETHYL KETONE
47U	BROMOCHLOROMETHANE
47U	CHLOROFORM
47U	1,1,1-TRICHLOROETHANE
47U	1,1-DICHLOROPROPENE
47U	CARBON TETRACHLORIDE
47U	1,2-DICHLOROETHANE
47U	BENZENE
47U	TRICHLOROETHENE(TRICHLOROETHYLENE)
47U	1,2-DICHLOROPROPANE
47U	DIBROMOMETHANE
47U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
47U	CIS-1,3-DICHLOROPROPENE
470U	METHYL ISOBUTYL KETONE
47U	TOLUENE
47U	TRANS-1,3-DICHLOROPROPENE
47U	1,1,2-TRICHLOROETHANE
47U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
47U	1,3-DICHLOROPROPANE
470U	METHYL BUTYL KETONE
47U	DIBROMOCHLOROMETHANE
47U	CHLOROBENZENE
47U	1,1,1,2-TETRACHLOROETHANE
47U	ETHYL BENZENE
47U	(M- AND/OR P-)XYLENE
47U	O-XYLENE
47U	STYRENE
47U	BROMOFORM
47U	BROMOBENZENE
47U	1,1,2,2-TETRACHLOROETHANE
47U	1,2,3-TRICHLOROPROPANE
47U	O-CHLOROTOLUENE
47U	P-CHLOROTOLUENE
47U	1,3-DICHLOROBENZENE
47U	1,4-DICHLOROBENZENE
47U	1,2-DICHLOROBENZENE
17.9	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49864 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1205 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
790U	BIS(2 CHLOROETHYL) ETHER
790U	BIS(2-CHLOROISOPROPYL) ETHER
790U	N-NITROSODI-N-PROPYLAMINE
790U	HEXACHLOROETHANE
790U	NITROBENZENE
790U	ISOPHORONE
790U	BIS(2-CHLOROETHOXY) METHANE
790U	1,2,4-TRICHLOROBENZENE
790U	NAPHTHALENE
790U	4-CHLOROANILINE
790U	HEXACHLOROBUTADIENE
790U	2-METHYLNAPHTHALENE
790U	HEXACHLOROCYCLOPENTADIENE (HCCP)
790U	2 CHLORONAPHTHALENE
790U	2-NITROANILINE
790U	DIMETHYL PHTHALATE
790U	ACENAPHTHYLENE
790U	2,6-DINITROTOLUENE
790U	3-NITROANILINE
790U	ACENAPHTHENE
790U	DIBENZOFURAN
790U	2,4-DINITROTOLUENE
790U	DIETHYL PHTHALATE
790U	FLUORENE
790U	4-CHLOROPHENYL PHENYL ETHER
790U	4 NITROANILINE
790U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
790U	4-BROMOPHENYL PHENYL ETHER
790U	HEXACHLOROBENZENE (HCB)
790U	PHENANTHRENE
790U	ANTHRACENE
790U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
790U	FLUORANTHENE
790U	PYRENE
790U	BENZYL BUTYL PHTHALATE
790U	3,3'-DICHLOROBENZIDINE
790U	BENZO(A)ANTHRACENE
790U	CHRYSENE
790U	BIS(2-ETHYLHEXYL) PHTHALATE
790U	DI-N-OCTYLPHTHALATE
790U	BENZO(B AND/OR K)FLUORANTHENE
790U	BENZO-A-PYRENE
790U	INDENO (1,2,3 CD) PYRENE
790U	DIBENZO(A,H)ANTHRACENE
790U	BENZO(GHI)PERYLENE
790U	PHENOL
790U	2-CHLOROPHENOL
1600U	BENZYL ALCOHOL
790U	2-METHYLPHENOL
790U	(3-AND/OR 4-)METHYLPHENOL
790U	2-NITROPHENOL
790U	2,4-DIMETHYLPHENOL
1600U	BENZOIC ACID
790U	2,4-DICHLOROPHENOL
790U	4-CHLORO-3-METHYLPHENOL
790U	2,4,6-TRICHLOROPHENOL
790U	2,4,5-TRICHLOROPHENOL
1600U	2,4-DINITROPHENOL
1600U	4-NITROPHENOL
790U	2,3,4,6-TETRACHLOROPHENOL
1600U	2-METHYL-4,6-DINITROPHENOL
1600U	PENTACHLOROPHENOL
17.9	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49870 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1600 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
47U	CHLOROMETHANE
47U	VINYL CHLORIDE
47U	BROMOMETHANE
47U	CHLOROETHANE
[redacted]	[redacted]E
47U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
470U	ACETONE
470U	CARBON DISULFIDE
47U	METHYLENE CHLORIDE
47U	TRANS-1,2-DICHLOROETHENE
47U	1,1-DICHLOROETHANE
470U	VINYL ACETATE
47U	CIS-1,2-DICHLOROETHENE
47U	2,2 DICHLOROPROPANE
470U	METHYL ETHYL KETONE
47U	BROMOCHLOROMETHANE
47U	CHLOROFORM
47U	1,1,1-TRICHLOROETHANE
47U	1,1-DICHLOROPROPENE
47U	CARBON TETRACHLORIDE
47U	1,2-DICHLOROETHANE
47U	BENZENE
47U	TRICHLOROETHENE(TRICHLOROETHYLENE)
47U	1,2-DICHLOROPROPANE
47U	DIBROMOMETHANE
47U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
47U	CIS 1,3-DICHLOROPROPENE
470U	METHYL ISOBUTYL KETONE
47U	TOLUENE
47U	TRANS-1,3-DICHLOROPROPENE
47U	1,1,2-TRICHLOROETHANE
47U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
47U	1,3-DICHLOROPROPANE
470U	METHYL BUTYL KETONE
47U	DIBROMOCHLOROMETHANE
47U	CHLOROBENZENE
47U	1,1,1,2 TETRACHLOROETHANE
47U	ETHYL BENZENE
47U	(M- AND/OR P-)XYLENE
47U	O-XYLENE
47U	STYRENE
47U	BROMOFORM
47U	BROMOBENZENE
47U	1,1,2,2-TETRACHLOROETHANE
47U	1,2,3-TRICHLOROPROPANE
47U	O-CHLOROTOLUENE
47U	P-CHLOROTOLUENE
47U	1,3-DICHLOROBENZENE
47U	1,4-DICHLOROBENZENE
47U	1,2-DICHLOROBENZENE
11.4	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49872 SAMPLE TYPE: SOIL
SOURCE: HLYWOOD-WAKEFIELD
STATION ID: SS-05

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1530 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
380U	CHLOROMETHANE
380U	VINYL CHLORIDE
380U	BROMOMETHANE
380U	CHLOROETHANE
380U	TRICHLOROFLUOROMETHANE
380U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
3800U	ACETONE
3800U	CARBON DISULFIDE
380U	METHYLENE CHLORIDE
380U	TRANS-1,2-DICHLOROETHENE
380U	1,1-DICHLOROETHANE
3800U	VINYL ACETATE
380U	CIS-1,2-DICHLOROETHENE
380U	2,2-DICHLOROPROPANE
3800U	METHYL ETHYL KETONE
380U	BROMOCHLOROMETHANE
380U	CHLOROFORM
380U	1,1,1-TRICHLOROETHANE
380U	1,1-DICHLOROPROPENE
380U	CARBON TETRACHLORIDE
380U	1,2-DICHLOROETHANE
380U	BENZENE
380U	TRICHLOROETHENE(TRICHLOROETHYLENE)
380U	1,2-DICHLOROPROPANE
380U	DIBROMOMETHANE
380U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
380U	CIS-1,3-DICHLOROPROPENE
3800U	METHYL ISOBUTYL KETONE
[redacted]	
380U	TRANS-1,3-DICHLOROPROPENE
380U	1,1,2-TRICHLOROETHANE
380U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
380U	1,3-DICHLOROPROPANE
3800U	METHYL BUTYL KETONE
380U	DIBROMOCHLOROMETHANE
380U	CHLOROBENZENE
380U	1,1,1,2 TETRACHLOROETHANE
380U	ETHYL BENZENE
380U	(M- AND/OR P-)XYLENE
380U	O-XYLENE
380U	STYRENE
380U	BROMOFORM
380U	BROMOBENZENE
380U	1,1,2,2-TETRACHLOROETHANE
380U	1,2,3-TRICHLOROPROPANE
380U	O-CHLOROTOLUENE
380U	P-CHLOROTOLUENE
380U	1,3-DICHLOROBENZENE
380U	1,4-DICHLOROBENZENE
380U	1,2-DICHLOROBENZENE
73.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49872 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SS-05

PROG ELEM: NSF COLLECTED BY. A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1530 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
2500U	BIS(2 CHLOROETHYL) ETHER
2500U	BIS(2-CHLOROISOPROPYL) ETHER
2500U	N-NITROSODI-N-PROPYLAMINE
2500U	HEXACHLOROETHANE
2500U	NITROBENZENE
2500U	ISOPHORONE
2500U	BIS(2-CHLOROETHOXY) METHANE
2500U	1,2,4-TRICHLOROBENZENE
2500U	NAPHTHALENE
2500U	4-CHLOROANILINE
2500U	HEXACHLOROBUTADIENE
2500U	2-METHYLNAPHTHALENE
2500U	HEXACHLOROCYCLOPENTADIENE (HCCP)
2500U	2 CHLORONAPHTHALENE
2500U	2-NITROANILINE
2500U	DIMETHYL PHTHALATE
2500U	ACENAPHTHYLENE
2500U	2,6-DINITROTOLUENE
2500U	3-NITROANILINE
2500U	ACENAPHTHENE
2500U	DIBENZOFURAN
2500U	2,4-DINITROTOLUENE
2500U	DIETHYL PHTHALATE
2500U	FLUORENE
2500U	4-CHLOROPHENYL PHENYL ETHER
2500U	4-NITROANILINE
2500U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
2500U	4-BROMOPHENYL PHENYL ETHER
2500U	HEXACHLOROBENZENE (HCB)
2500U	PHENANTHRENE
2500U	ANTHRACENE
2500U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
2500U	FLUORANTHENE
2500U	PYRENE
2500U	BENZYL BUTYL PHTHALATE
2500U	3,3'-DICHLOROBENZIDINE
2500U	BENZO(A)ANTHRACENE
[redacted]	CHRYSENE
[redacted]	[redacted]
2500U	DI-N-OCTYLPHTHALATE
[redacted]	[redacted]
2500U	BENZO-A-PYRENE
2500U	INDENO (1,2,3 CD) PYRENE
2500U	DIBENZO(A,H)ANTHRACENE
2500U	BENZO(GHI)PERYLENE
2500U	PHENOL
2500U	2-CHLOROPHENOL
5000U	BENZYL ALCOHOL
2500U	2-METHYLPHENOL
2500U	(3-AND/OR 4-)METHYLPHENOL
2500U	2-NITROPHENOL
2500U	2,4-DIMETHYLPHENOL
5000U	BENZOIC ACID
2500U	2,4-DICHLOROPHENOL
2500U	4-CHLORO-3-METHYLPHENOL
2500U	2,4,6-TRICHLOROPHENOL
2500U	2,4,5-TRICHLOROPHENOL
5000U	2,4-DINITROPHENOL
5000U	4-NITROPHENOL
2500U	2,3,4,6-TETRACHLOROPHENOL
5000U	2-METHYL-4,6-DINITROPHENOL
[redacted]	[redacted]
73.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/04/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

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**    PROJECT NO. 90-883    SAMPLE NO. 49872  SAMPLE TYPE: SOIL        PROG ELEM: NSF   COLLECTED BY: A HARVEY                    **
**    SOURCE: HEYWOOD-WAKEFIELD                                        CITY: NEWPORT                ST: TN                          **
**    STATION ID: SS-05                                                COLLECTION START: 09/12/90  1530   STOP: 00/00/00          **
**                                                                                                                                  **
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ANALYTICAL RESULTS UG/KG

[redacted]
N   PETROLEUM PRODUCT

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50142 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-01
CASE.NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1205 STOP: 00/00/00
D. NO.: X705 MD NO: X705

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49870 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1600 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
750U	BIS(2 CHLOROETHYL) ETHER
750U	BIS(2-CHLOROISOPROPYL) ETHER
750U	N-NITROSODI-N-PROPYLAMINE
750U	HEXACHLOROETHANE
750U	NITROBENZENE
750U	ISOPHORONE
750U	BIS(2-CHLOROETHOXY) METHANE
750U	1,2,4-TRICHLOROBENZENE
750U	NAPHTHALENE
750U	4-CHLOROANILINE
750U	HEXACHLOROBUTADIENE
750U	2-METHYLNAPHTHALENE
750U	HEXACHLOROCYCLOPENTADIENE (HCCP)
750U	2 CHLORONAPHTHALENE
750U	2-NITROANILINE
750U	DIMETHYL PHTHALATE
750U	ACENAPHTHYLENE
750U	2,6-DINITROTOLUENE
750U	3-NITROANILINE
750U	ACENAPHTHENE
750U	DIBENZOFURAN
750U	2,4-DINITROTOLUENE
750U	DIETHYL PHTHALATE
750U	FLUORENE
750U	4-CHLOROPHENYL PHENYL ETHER
750U	4-NITROANILINE
750U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
750U	4-BROMOPHENYL PHENYL ETHER
750U	HEXACHLOROBENZENE (HCB)
750U	PHENANTHRENE
750U	ANTHRACENE
750U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
750U	FLUORANTHENE
750U	PYRENE
750U	BENZYL BUTYL PHTHALATE
750U	3,3'-DICHLOROBENZIDINE
750U	BENZO(A)ANTHRACENE
750U	CHRYSENE
750U	BIS(2-ETHYLHEXYL) PHTHALATE
750U	DI-N-OCTYLPHTHALATE
750U	BENZO(B AND/OR K)FLUORANTHENE
750U	BENZO-A-PYRENE
750U	INDENO (1,2,3 CD) PYRENE
750U	DIBENZO(A,H)ANTHRACENE
750U	BENZO(GHI)PERYLENE
750U	PHENOL
750U	2-CHLOROPHENOL
1500U	BENZYL ALCOHOL
750U	2-METHYLPHENOL
750U	(3-AND/OR 4-)METHYLPHENOL
750U	2-NITROPHENOL
750U	2,4-DIMETHYLPHENOL
1500U	BENZOIC ACID
750U	2,4-DICHLOROPHENOL
750U	4-CHLORO-3-METHYL PHENOL
750U	2,4,6-TRICHLOROPHENOL
750U	2,4,5-TRICHLOROPHENOL
1500U	2,4-DINITROPHENOL
1500U	4-NITROPHENOL
750U	2,3,4,6-TETRACHLOROPHENOL
1500U	2-METHYL-4,6-DINITROPHENOL
1500U	PENTACHLOROPHENOL
11.4	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50148 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1600 STOP: 00/00/00
D. NUMBER: X711

UG/KG	ANALYTICAL RESULTS
8.9U	ALPHA-BHC
8.9U	BETA-BHC
8.9U	DELTA-BHC
8.9U	GAMMA-BHC (LINDANE)
8.9U	HEPTACHLOR
8.9U	ALDRIN
8.9U	HEPTACHLOR EPOXIDE
8.9U	ENDOSULFAN I (ALPHA)
18U	DIELDRIN
18U	4,4'-DDE (P,P'-DDE)
18U	ENDRIN
18U	ENDOSULFAN II (BETA)
18U	4,4'-DDD (P,P'-DDD)
18U	ENDOSULFAN SULFATE
18U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
89U	METHOXYCHLOR
32N	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
89U	GAMMA-CHLORDANE /2
89U	ALPHA-CHLORDANE /2
180U	TOXAPHENE
89U	PCB-1016 (AROCLOR 1016)
89U	PCB-1221 (AROCLOR 1221)
89U	PCB-1232 (AROCLOR 1232)
89U	PCB-1242 (AROCLOR 1242)
89U	PCB-1248 (AROCLOR 1248)
180U	PCB-1254 (AROCLOR 1254)
180U	PCB-1260 (AROCLOR 1260)
10	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA NOT ANALYZED *NAI-INTERFERENCES *J ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50148 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-02
CASE.NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1600 STOP: 00/00/00
D. NO.: X711 MD NO: X711

RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49875 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1005 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
51UJ	CHLOROMETHANE
51UJ	VINYL CHLORIDE
51UJ	BROMOMETHANE
51UJ	CHLOROETHANE
51UJ	TRICHLOROFLUOROMETHANE
51UJ	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
510UJ	ACETONE
510UJ	CARBON DISULFIDE
100UJ	METHYLENE CHLORIDE
51UJ	TRANS-1,2-DICHLOROETHENE
51UJ	1,1-DICHLOROETHANE
510UJ	VINYL ACETATE
51UJ	CIS-1,2-DICHLOROETHENE
51UJ	2,2-DICHLOROPROPANE
510UJ	METHYL ETHYL KETONE
51UJ	BROMOCHLOROMETHANE
51UJ	CHLOROFORM
51UJ	1,1,1-TRICHLOROETHANE
51UJ	1,1-DICHLOROPROPENE
51UJ	CARBON TETRACHLORIDE
51UJ	1,2-DICHLOROETHANE
51UJ	BENZENE
51UJ	TRICHLOROETHENE(TRICHLOROETHYLENE)
51UJ	1,2-DICHLOROPROPANE
51UJ	DIBROMOMETHANE
51UJ	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
51UJ	CIS-1,3-DICHLOROPROPENE
510UJ	METHYL ISOBUTYL KETONE
51UJ	TOLUENE
51UJ	TRANS-1,3-DICHLOROPROPENE
51UJ	1,1,2-TRICHLOROETHANE
51UJ	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
51UJ	1,3-DICHLOROPROPANE
510UJ	METHYL BUTYL KETONE
51UJ	DIBROMOCHLOROMETHANE
51UJ	CHLOROBENZENE
51UJ	1,1,1,2-TETRACHLOROETHANE
51UJ	ETHYL BENZENE
51UJ	(M- AND/OR P-)XYLENE
51UJ	O-XYLENE
51UJ	STYRENE
51UJ	BROMOFORM
51UJ	BROMOBENZENE
51UJ	1,1,2,2-TETRACHLOROETHANE
51UJ	1,2,3-TRICHLOROPROPANE
51UJ	O-CHLOROTOLUENE
51UJ	P-CHLOROTOLUENE
51UJ	1,3-DICHLOROBENZENE
51UJ	1,4-DICHLOROBENZENE
51UJ	1,2-DICHLOROBENZENE
18.5	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49875 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SS-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/13/90 1005 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
790U	BIS(2 CHLOROETHYL) ETHER
790U	BIS(2-CHLOROISOPROPYL) ETHER
790U	N-NITROSODI-N-PROPYLAMINE
790U	HEXACHLOROETHANE
790U	NITROBENZENE
790U	ISOPHORONE
790U	BIS(2-CHLOROETHOXY) METHANE
790U	1,2,4-TRICHLOROBENZENE
790U	NAPHTHALENE
790U	4-CHLOROANILINE
790U	HEXACHLOROBUTADIENE
790U	2-METHYLNAPHTHALENE
790U	HEXACHLOROCYCLOPENTADIENE (HCCP)
790U	2 CHLORONAPHTHALENE
790U	2-NITROANILINE
790U	DIMETHYL PHTHALATE
790U	ACENAPHTHYLENE
790U	2,6-DINITROTOLUENE
790U	3-NITROANILINE
790U	ACENAPHTHENE
790U	DIBENZOFURAN
790U	2,4-DINITROTOLUENE
790U	DIETHYL PHTHALATE
790U	FLUORENE
790U	4-CHLOROPHENYL PHENYL ETHER
790U	4-NITROANILINE
790U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
790U	4-BROMOPHENYL PHENYL ETHER
790U	HEXACHLOROBENZENE (HCB)
790U	PHENANTHRENE
790U	ANTHRACENE
790U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
790U	FLUORANTHENE
790U	PYRENE
790U	BENZYL BUTYL PHTHALATE
790U	3,3'-DICHLOROBENZIDINE
790U	BENZO(A)ANTHRACENE
790U	CHRYSENE
790U	BIS(2-ETHYLHEXYL) PHTHALATE
790U	DI-N-OCTYL PHTHALATE
790U	BENZO(B AND/OR K)FLUORANTHENE
790U	BENZO-A-PYRENE
790U	INDENO (1,2,3 CD) PYRENE
790U	DIBENZO(A,H)ANTHRACENE
790U	BENZO(GHI)PERYLENE
790U	PHENOL
790U	2-CHLOROPHENOL
1600U	BENZYL ALCOHOL
790U	2-METHYLPHENOL
790U	(3-AND/OR 4-)METHYLPHENOL
790U	2-NITROPHENOL
790U	2,4-DIMETHYLPHENOL
1600U	BENZOIC ACID
790U	2,4-DICHLOROPHENOL
790U	4-CHLORO-3-METHYLPHENOL
790U	2,4,6-TRICHLOROPHENOL
790U	2,4,5-TRICHLOROPHENOL
1600U	2,4-DINITROPHENOL
1600U	4-NITROPHENOL
790U	2,3,4,6-TETRACHLOROPHENOL
1600U	2-METHYL-4,6-DINITROPHENOL
1600U	PENTACHLOROPHENOL
18.5	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50153 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1005 STOP: 00/00/00
D. NUMBER: X716

UG/KG	ANALYTICAL RESULTS
9.9U	ALPHA-BHC
9.9U	BETA-BHC
9.9U	DELTA-BHC
9.9U	GAMMA-BHC (LINDANE)
9.9U	HEPTACHLOR
9.9U	ALDRIN
9.9U	HEPTACHLOR EPOXIDE
9.9U	ENDOSULFAN I (ALPHA)
20U	DIELDRIN
20U	4,4'-DDE (P,P'-DDE)
20U	ENDRIN
20U	ENDOSULFAN II (BETA)
20U	4,4'-DDD (P,P'-DDD)
20U	ENDOSULFAN SULFATE
20U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
99U	METHOXYCHLOR
20U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
99U	GAMMA-CHLORDANE /2
99U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
99U	PCB-1016 (AROCLOR 1016)
99U	PCB-1221 (AROCLOR 1221)
99U	PCB-1232 (AROCLOR 1232)
99U	PCB-1242 (AROCLOR 1242)
99U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
19	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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*R-QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50153 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-03
CASE NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1005 STOP: 00/00/00
D. NO.: X716 MD NO: X716

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49874 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1000 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
53U	CHLOROMETHANE
53U	VINYL CHLORIDE
53U	BROMOMETHANE
53U	CHLOROETHANE
53U	TRICHLOROFLUOROMETHANE
53U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
530U	ACETONE
530U	CARBON DISULFIDE
53U	METHYLENE CHLORIDE
53U	TRANS-1,2-DICHLOROETHENE
53U	1,1-DICHLOROETHANE
530U	VINYL ACETATE
53U	CIS-1,2-DICHLOROETHENE
53U	2,2-DICHLOROPROPANE
530U	METHYL ETHYL KETONE
53U	BROMOCHLOROMETHANE
53U	CHLOROFORM
53U	1,1,1-TRICHLOROETHANE
53U	1,1-DICHLOROPROPENE
53U	CARBON TETRACHLORIDE
53U	1,2-DICHLOROETHANE
53U	BENZENE
53U	TRICHLOROETHENE(TRICHLOROETHYLENE)
53U	1,2-DICHLOROPROPANE
53U	DIBROMOMETHANE
53U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
53U	CIS-1,3-DICHLOROPROPENE
530U	METHYL ISOBUTYL KETONE
53U	TOLUENE
53U	TRANS-1,3-DICHLOROPROPENE
53U	1,1,2-TRICHLOROETHANE
53U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
53U	1,3-DICHLOROPROPANE
530U	METHYL BUTYL KETONE
53U	DIBROMOCHLOROMETHANE
53U	CHLOROBENZENE
53U	1,1,1,2-TETRACHLOROETHANE
53U	ETHYL BENZENE
53U	(M- AND/OR P-)XYLENE
53U	O-XYLENE
53U	STYRENE
53U	BROMOFORM
53U	BROMOBENZENE
53U	1,1,2,2-TETRACHLOROETHANE
53U	1,2,3-TRICHLOROPROPANE
53U	O-CHLOROTOLUENE
53U	P-CHLOROTOLUENE
53U	1,3-DICHLOROBENZENE
53U	1,4-DICHLOROBENZENE
53U	1,2-DICHLOROBENZENE
5.4	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49874 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SS-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/13/90 1000 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
690U	BIS(2 CHLOROETHYL) ETHER
690U	BIS(2-CHLOROISOPROPYL) ETHER
690U	N-NITROSODI N-PROPYLAMINE
690U	HEXACHLOROETHANE
690U	NITROBENZENE
690U	ISOPHORONE
690U	BIS(2-CHLOROETHOXY) METHANE
690U	1,2,4-TRICHLOROBENZENE
690U	NAPHTHALENE
690U	4-CHLOROANILINE
690U	HEXACHLOROBUTADIENE
690U	2-METHYLNAPHTHALENE
690U	HEXACHLOROCYCLOPENTADIENE (HCCP)
690U	2-CHLORONAPHTHALENE
690U	2-NITROANILINE
690U	DIMETHYL PHTHALATE
690U	ACENAPHTHYLENE
690U	2,6-DINITROTOLUENE
690U	3-NITROANILINE
690U	ACENAPHTHENE
690U	DIBENZOFURAN
690U	2,4-DINITROTOLUENE
690U	DIETHYL PHTHALATE
690U	FLUORENE
690U	4-CHLOROPHENYL PHENYL ETHER
690U	4-NITROANILINE
690U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
690U	4-BROMOPHENYL PHENYL ETHER
690U	HEXACHLOROBENZENE (HCB)
690U	PHENANTHRENE
690U	ANTHRACENE
690U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
690U	FLUORANTHENE
690U	PYRENE
690U	BENZYL BUTYL PHTHALATE
690U	3,3'-DICHLOROBENZIDINE
690U	BENZO(A)ANTHRACENE
690U	CHRYSENE
690U	BIS(2-ETHYLHEXYL) PHTHALATE
690U	DI-N-OCTYL PHTHALATE
690U	BENZO(B AND/OR K)FLUORANTHENE
690U	BENZO-A-PYRENE
690U	INDENO (1,2,3 CD) PYRENE
690U	DIBENZO(A,H)ANTHRACENE
690U	BENZO(GHI)PERYLENE
690U	PHENOL
690U	2-CHLOROPHENOL
1400U	BENZYL ALCOHOL
690U	2-METHYLPHENOL
690U	(3-AND/OR 4-)METHYLPHENOL
690U	2-NITROPHENOL
690U	2,4-DIMETHYLPHENOL
1400U	BENZOIC ACID
690U	2,4-DICHLOROPHENOL
690U	4-CHLORO-3-METHYLPHENOL
690U	2,4,6-TRICHLOROPHENOL
690U	2,4,5-TRICHLOROPHENOL
1400U	2,4-DINITROPHENOL
1400U	4-NITROPHENOL
690U	2,3,4,6-TETRACHLOROPHENOL
1400U	2-METHYL-4,6-DINITROPHENOL
1400U	PENTACHLOROPHENOL
5.4	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50152 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1000 STOP: 00/00/00
D. NUMBER: X715

UG/KG	ANALYTICAL RESULTS
9.8U	ALPHA-BHC
9.8U	BETA-BHC
9.8U	DELTA-BHC
9.8U	GAMMA-BHC (LINDANE)
9.8U	HEPTACHLOR
9.8U	ALDRIN
9.8U	HEPTACHLOR EPOXIDE
9.8U	ENDOSULFAN I (ALPHA)
20U	DIELDRIN
20U	4,4'-DDE (P,P'-DDE)
20U	ENDRIN
20U	ENDOSULFAN II (BETA)
20U	4,4'-DDD (P,P'-DDD)
20U	ENDOSULFAN SULFATE
20U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
98U	METHOXYCHLOR
20U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
98U	GAMMA-CHLORDANE /2
98U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
98U	PCB-1016 (AROCLOR 1016)
98U	PCB-1221 (AROCLOR 1221)
98U	PCB-1232 (AROCLOR 1232)
98U	PCB-1242 (AROCLOR 1242)
98U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
18	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS /1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50152 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-04
CASE.NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1000 STOP: 00/00/00
D. NO.: X715 MD NO: X715

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50150 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-05
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1530 STOP: 00/00/00
D. NUMBER: X713

UG/KG	ANALYTICAL RESULTS
480U	ALPHA-BHC
480U	BETA-BHC
480U	DELTA-BHC
480U	GAMMA-BHC (LINDANE)
480U	HEPTACHLOR
480U	ALDRIN
480U	HEPTACHLOR EPOXIDE
480U	ENDOSULFAN I (ALPHA)
960U	DIELDRIN
960U	4,4'-DDE (P,P'-DDE)
960U	ENDRIN
960U	ENDOSULFAN II (BETA)
960U	4,4'-DDD (P,P'-DDD)
960U	ENDOSULFAN SULFATE
960U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
4800U	METHOXYCHLOR
960U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
4800U	GAMMA-CHLORDANE /2
4800U	ALPHA-CHLORDANE /2
9600U	TOXAPHENE
4800U	PCB-1016 (AROCLOR 1016)
4800U	PCB-1221 (AROCLOR 1221)
4800U	PCB-1232 (AROCLOR 1232)
4800U	PCB-1242 (AROCLOR 1242)
4800U	PCB-1248 (AROCLOR 1248)
9600U	PCB-1254 (AROCLOR 1254)
9600U	PCB-1260 (AROCLOR 1260)
75	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50150 SAMPLE TYPE: SOIL	PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU	CITY: NEWPORT ST: TN
STATION ID: SS-05	COLLECTION START: 09/12/90 1530 STOP: 00/00/00
CASE.NO.: 14852 SAS NO.:	D. NO.: X713 MD NO: X713

RESULTS	UNITS	PARAMETER
3.8U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49873 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-06

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
80U	CHLOROMETHANE
80U	VINYL CHLORIDE
80U	BROMOMETHANE
80U	CHLOROETHANE
80U	TRICHLOROFLUOROMETHANE
80U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
800U	ACETONE
800U	CARBON DISULFIDE
80U	METHYLENE CHLORIDE
80U	TRANS-1,2-DICHLOROETHENE
80U	1,1-DICHLOROETHANE
800U	VINYL ACETATE
80U	CIS-1,2-DICHLOROETHENE
80U	2,2 DICHLOROPROPANE
800U	METHYL ETHYL KETONE
80U	BROMOCHLOROMETHANE
80U	CHLOROFORM
80U	1,1,1-TRICHLOROETHANE
80U	1,1-DICHLOROPROPENE
80U	CARBON TETRACHLORIDE
80U	1,2-DICHLOROETHANE
80U	BENZENE
80U	TRICHLOROETHENE(TRICHLOROETHYLENE)
80U	1,2-DICHLOROPROPANE
80U	DIBROMOMETHANE
80U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
80U	CIS-1,3-DICHLOROPROPENE
800U	METHYL ISOBUTYL KETONE
80U	TOLUENE
80U	TRANS-1,3-DICHLOROPROPENE
80U	1,1,2-TRICHLOROETHANE
80U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
80U	1,3-DICHLOROPROPANE
800U	METHYL BUTYL KETONE
80U	DIBROMOCHLOROMETHANE
80U	CHLOROBENZENE
80U	1,1,1,2-TETRACHLOROETHANE
80U	ETHYL BENZENE
80U	(M- AND/OR P-)XYLENE
80U	O-XYLENE
80U	STYRENE
80U	BROMOFORM
80U	BROMOBENZENE
80U	1,1,2,2-TETRACHLOROETHANE
80U	1,2,3-TRICHLOROPROPANE
80U	O-CHLOROTOLUENE
80U	P CHLOROTOLUENE
80U	1,3-DICHLOROBENZENE
80U	1,4-DICHLOROBENZENE
80U	1,2-DICHLOROBENZENE
37.7	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49873 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-06

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/13/90 0950 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
1100U	BIS(2 CHLOROETHYL) ETHER
1100U	BIS(2-CHLOROISOPROPYL) ETHER
1100U	N-NITROSODI-N-PROPYLAMINE
1100U	HEXACHLOROETHANE
1100U	NITROBENZENE
1100U	ISOPHORONE
1100U	BIS(2-CHLOROETHOXY) METHANE
1100U	1,2,4-TRICHLOROBENZENE
1100U	NAPHTHALENE
1100U	4-CHLOROANILINE
1100U	HEXACHLOROBUTADIENE
1100U	2-METHYLNAPHTHALENE
1100U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1100U	2-CHLORONAPHTHALENE
1100U	2-NITROANILINE
1100U	DIMETHYL PHTHALATE
1100U	ACENAPHTHYLENE
1100U	2,6-DINITROTOLUENE
1100U	3-NITROANILINE
1100U	ACENAPHTHENE
1100U	DIBENZOFURAN
1100U	2,4-DINITROTOLUENE
1100U	DIETHYL PHTHALATE
1100U	FLUORENE
1100U	4-CHLOROPHENYL PHENYL ETHER
1100U	4-NITROANILINE
1100U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1100U	4-BROMOPHENYL PHENYL ETHER
1100U	HEXACHLOROBENZENE (HCB)
1100U	PHENANTHRENE
1100U	ANTHRACENE
1100U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
1100U	FLUORANTHENE
1100U	PYRENE
1100U	BENZYL BUTYL PHTHALATE
1100U	3,3'-DICHLOROBENZIDINE
1100U	BENZO(A)ANTHRACENE
1100U	CHRYSENE
1100U	BIS(2-ETHYLHEXYL) PHTHALATE
1100U	DI-N-OCTYLPHTHALATE
1100U	BENZO(B AND/OR K)FLUORANTHENE
1100U	BENZO-A-PYRENE
1100U	INDENO (1,2,3-CD) PYRENE
1100U	DIBENZO(A,H)ANTHRACENE
1100U	BENZO(GHI)PERYLENE
1100U	PHENOL
1100U	2-CHLOROPHENOL
2100U	BENZYL ALCOHOL
1100U	2-METHYLPHENOL
1100U	(3-AND/OR 4-)METHYLPHENOL
1100U	2-NITROPHENOL
1100U	2,4-DIMETHYLPHENOL
2100U	BENZOIC ACID
1100U	2,4-DICHLOROPHENOL
1100U	4-CHLORO-3-METHYLPHENOL
1100U	2,4,6-TRICHLOROPHENOL
1100U	2,4,5-TRICHLOROPHENOL
2100U	2,4-DINITROPHENOL
2100U	4-NITROPHENOL
1100U	2,3,4,6-TETRACHLOROPHENOL
2100U	2-METHYL-4,6-DINITROPHENOL
2100U	PENTACHLOROPHENOL
37.7	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/04/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

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**   PROJECT NO. 90-883   SAMPLE NO. 40873  SAMPLE TYPE: SOIL       PROG ELEM: NSF   COLLECTEDY: A HARVEY                   **
**   SOURCE: HEYWOOD-WAKEFIELD                                       CITY: NEWPORT               ST: TN                       **
**   STATION ID: SS-06                                               COLLECTION START: 09/13/90  0950   STOP: 00/00/00        **
**                                                                                                                            **
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ANALYTICAL RESULTS UG/KG

[redacted] —H/T

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*R QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50151 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-06
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00
D. NUMBER: X714

UG/KG	ANALYTICAL RESULTS
14U	ALPHA-BHC
14U	BETA-BHC
14U	DELTA-BHC
14U	GAMMA-BHC (LINDANE)
14U	HEPTACHLOR
14U	ALDRIN
14U	HEPTACHLOR EPOXIDE
14U	ENDOSULFAN I (ALPHA)
27U	DIELDRIN
27U	4,4'-DDE (P,P'-DDE)
27U	ENDRIN
27U	ENDOSULFAN II (BETA)
27U	4,4'-DDD (P,P'-DDD)
27U	ENDOSULFAN SULFATE
27U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
140U	METHOXYCHLOR
27U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
140U	GAMMA-CHLORDANE /2
140U	ALPHA-CHLORDANE /2
270U	TOXAPHENE
140U	PCB-1016 (AROCLOR 1016)
140U	PCB-1221 (AROCLOR 1221)
140U	PCB-1232 (AROCLOR 1232)
140U	PCB-1242 (AROCLOR 1242)
140U	PCB-1248 (AROCLOR 1248)
270U	PCB-1254 (AROCLOR 1254)
270U	PCB-1260 (AROCLOR 1260)
41	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED. SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50151 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-06
CASE.NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00
D. NO.: X714 MD NO: X714

RESULTS	UNITS	PARAMETER
1.7U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49863 SAMPLE TYPE: SEDIMBLK PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD CITY: NEWPORT ST: TN
STATION ID: TB-01S COLLECTION START: 09/10/90 0815 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
40U	CHLOROMETHANE	40U	CIS-1,3-DICHLOROPROPENE
40U	VINYL CHLORIDE	400U	METHYL ISOBUTYL KETONE
40U	BROMOMETHANE	40U	TOLUENE
40U	CHLOROETHANE	40U	TRANS-1,3-DICHLOROPROPENE
40U	TRICHLOROFLUOROMETHANE	40U	1,1,2-TRICHLOROETHANE
40U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)	40U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
400U	ACETONE	40U	1,3-DICHLOROPROPANE
400U	CARBON DISULFIDE	400U	METHYL BUTYL KETONE
40U	METHYLENE CHLORIDE	40U	DIBROMOCHLOROMETHANE
40U	TRANS-1,2-DICHLOROETHENE	40U	CHLOROBENZENE
40U	1,1-DICHLOROETHANE	40U	1,1,1,2-TETRACHLOROETHANE
400U	VINYL ACETATE	40U	ETHYL BENZENE
40U	CIS-1,2-DICHLOROETHENE	40U	(M- AND/OR P-)XYLENE
40U	2,2-DICHLOROPROPANE	40U	O-XYLENE
400U	METHYL ETHYL KETONE	40U	STYRENE
40U	BROMOCHLOROMETHANE	40U	BROMOFORM
40U	CHLOROFORM	40U	BROMOBENZENE
40U	1,1,1-TRICHLOROETHANE	40U	1,1,2,2-TETRACHLOROETHANE
40U	1,1-DICHLOROPROPENE	40U	1,2,3-TRICHLOROPROPANE
40U	CARBON TETRACHLORIDE	40U	O-CHLOROTOLUENE
40U	1,2-DICHLOROETHANE	40U	P-CHLOROTOLUENE
40U	BENZENE	40U	1,3-DICHLOROBENZENE
40U	TRICHLOROETHENE(TRICHLOROETHYLENE)	40U	1,4-DICHLOROBENZENE
40U	1,2-DICHLOROPROPANE	40U	1,2-DICHLOROBENZENE
40U	DIBROMOMETHANE	10.0	PERCENT MOISTURE
40U	BROMODICHLOROMETHANE		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49865 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1315 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
810U	BIS(2 CHLOROETHYL) ETHER
810U	BIS(2-CHLOROISOPROPYL) ETHER
810U	N-NITROSODI-N-PROPYLAMINE
810U	HEXACHLOROETHANE
810U	NITROBENZENE
810U	ISOPHORONE
810U	BIS(2-CHLOROETHOXY) METHANE
810U	1,2,4-TRICHLOROBENZENE
810U	NAPHTHALENE
810U	4-CHLOROANILINE
810U	HEXACHLOROBUTADIENE
810U	2-METHYLNAPHTHALENE
810U	HEXACHLOROCYCLOPENTADIENE (HCCP)
810U	2 CHLORONAPHTHALENE
810U	2-NITROANILINE
810U	DIMETHYL PHTHALATE
810U	ACENAPHTHYLENE
810U	2,6-DINITROTOLUENE
810U	3-NITROANILINE
810U	ACENAPHTHENE
810U	DIBENZOFURAN
810U	2,4-DINITROTOLUENE
810U	DIETHYL PHTHALATE
810U	FLUORENE
810U	4-CHLOROPHENYL PHENYL ETHER
810U	4-NITROANILINE
810U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
810U	4-BROMOPHENYL PHENYL ETHER
810U	HEXACHLOROBENZENE (HCB)
810U	PHENANTHRENE
810U	ANTHRACENE
810U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
810U	FLUORANTHENE
810U	PYRENE
810U	BENZYL BUTYL PHTHALATE
810U	3,3'-DICHLOROBENZIDINE
810U	BENZO(A)ANTHRACENE
810U	CHRYSENE
810U	BIS(2-ETHYLHEXYL) PHTHALATE
810U	DI-N-OCTYLPHTHALATE
810U	BENZO(B AND/OR K)FLUORANTHENE
810U	BENZO-A-PYRENE
810U	INDENO (1,2,3 CD) PYRENE
810U	DIBENZO(A,H)ANTHRACENE
810U	BENZO(GHI)PERYLENE
810U	PHENOL
810U	2-CHLOROPHENOL
1600U	BENZYL ALCOHOL
810U	2-METHYLPHENOL
810U	(3-AND/OR 4-)METHYLPHENOL
810U	2-NITROPHENOL
810U	2,4-DIMETHYLPHENOL
1600U	BENZOIC ACID
810U	2,4-DICHLOROPHENOL
810U	4-CHLORO-3-METHYLPHENOL
810U	2,4,6-TRICHLOROPHENOL
810U	2,4,5-TRICHLOROPHENOL
1600U	2,4-DINITROPHENOL
1600U	4-NITROPHENOL
810U	2,3,4,6-TETRACHLOROPHENOL
1600U	2-METHYL-4,6-DINITROPHENOL
1600U	PENTACHLOROPHENOL
19.1	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50143 SAMPLE TYPE:
SOURCE:
STATION ID: SB-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1315 STOP: 00/00/00
D. NUMBER: X706

UG/KG	ANALYTICAL RESULTS
9.9U	ALPHA-BHC
9.9U	BETA-BHC
9.9U	DELTA-BHC
9.9U	GAMMA-BHC (LINDANE)
9.9U	HEPTACHLOR
9.9U	ALDRIN
9.9U	HEPTACHLOR EPOXIDE
9.9U	ENDOSULFAN I (ALPHA)
20U	DIELDRIN
20U	4,4'-DDE (P,P'-DDE)
20U	ENDRIN
20U	ENDOSULFAN II (BETA)
20U	4,4'-DDD (P,P'-DDD)
20U	ENDOSULFAN SULFATE
20U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
99U	METHOXYCHLOR
20U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
99U	GAMMA-CHLORDANE /2
99U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
99U	PCB-1016 (AROCLOR 1016)
99U	PCB-1221 (AROCLOR 1221)
99U	PCB-1232 (AROCLOR 1232)
99U	PCB-1242 (AROCLOR 1242)
99U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
19	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50143 SAMPLE TYPE:	PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE:	CITY: NEWPORT ST: TN
STATION ID: SB-01	COLLECTION START: 09/12/90 1315 STOP: 00/00/00
CASE NO.: 14852 SAS NO.:	D. NO.: X706 MD NO: X706

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49871 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SB-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1625 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
770U	BIS(2 CHLOROETHYL) ETHER
770U	BIS(2-CHLOROISOPROPYL) ETHER
770U	N-NITROSODI-N-PROPYLAMINE
770U	HEXACHLOROETHANE
770U	NITROBENZENE
770U	ISOPHORONE
770U	BIS(2-CHLOROETHOXY) METHANE
770U	1,2,4-TRICHLOROBENZENE
770U	NAPHTHALENE
770U	4-CHLOROANILINE
770U	HEXACHLOROBUTADIENE
770U	2-METHYLNAPHTHALENE
770U	HEXACHLOROCYCLOPENTADIENE (HCCP)
770U	2-CHLORONAPHTHALENE
770U	2-NITROANILINE
770U	DIMETHYL PHTHALATE
770U	ACENAPHTHYLENE
770U	2,6-DINITROTOLUENE
770U	3-NITROANILINE
770U	ACENAPHTHENE
770U	DIBENZOFURAN
770U	2,4-DINITROTOLUENE
770U	DIETHYL PHTHALATE
770U	FLUORENE
770U	4-CHLOROPHENYL PHENYL ETHER
770U	4-NITROANILINE
770U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
770U	4-BROMOPHENYL PHENYL ETHER
770U	HEXACHLOROBENZENE (HCB)
770U	PHENANTHRENE
770U	ANTHRACENE
770U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
770U	FLUORANTHENE
770U	PYRENE
770U	BENZYL BUTYL PHTHALATE
770U	3,3'-DICHLOROBENZIDINE
770U	BENZO(A)ANTHRACENE
770U	CHRYSENE
770U	BIS(2-ETHYLHEXYL) PHTHALATE
770U	DI-N-OCTYLPHTHALATE
770U	BENZO(B AND/OR K)FLUORANTHENE
770U	BENZO-A-PYRENE
770U	INDENO (1,2,3 CD) PYRENE
770U	DIBENZO(A,H)ANTHRACENE
770U	BENZO(GHI)PERYLENE
770U	PHENOL
770U	2-CHLOROPHENOL
1500U	BENZYL ALCOHOL
770U	2-METHYLPHENOL
770U	(3-AND/OR 4-)METHYLPHENOL
770U	2-NITROPHENOL
770U	2,4-DIMETHYLPHENOL
1500U	BENZOIC ACID
770U	2,4-DICHLOROPHENOL
770U	4-CHLORO-3-METHYLPHENOL
770U	2,4,6-TRICHLOROPHENOL
770U	2,4,5-TRICHLOROPHENOL
1500U	2,4-DINITROPHENOL
1500U	4-NITROPHENOL
770U	2,3,4,6-TETRACHLOROPHENOL
1500U	2-METHYL-4,6 DINITROPHENOL
1500U	PENTACHLOROPHENOL
23.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50149 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1625 STOP: 00/00/00
D. NUMBER: X712

UG/KG	ANALYTICAL RESULTS
11U	ALPHA-BHC
11U	BETA-BHC
11U	DELTA-BHC
11U	GAMMA-BHC (LINDANE)
11U	HEPTACHLOR
11U	ALDRIN
11U	HEPTACHLOR EPOXIDE
11U	ENDOSULFAN I (ALPHA)
21U	DIELDRIN
21U	4,4'-DDE (P,P'-DDE)
21U	ENDRIN
21U	ENDOSULFAN II (BETA)
21U	4,4'-DDD (P,P'-DDD)
21U	ENDOSULFAN SULFATE
21U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
110U	METHOXYCHLOR
21U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
110U	GAMMA-CHLORDANE /2
110U	ALPHA-CHLORDANE /2
210U	TOXAPHENE
110U	PCB-1016 (AROCLOR 1016)
110U	PCB-1221 (AROCLOR 1221)
110U	PCB-1232 (AROCLOR 1232)
110U	PCB-1242 (AROCLOR 1242)
110U	PCB-1248 (AROCLOR 1248)
210U	PCB-1254 (AROCLOR 1254)
210U	PCB-1260 (AROCLOR 1260)
24	PERCENT MOISTURE

FOOTNOTES
*A AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
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*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

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PROJECT NO. 90-798    SAMPLE NO. 50149  SAMPLE TYPE: SOIL        PROG ELEM: NSF   COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU                                     CITY: NEWPORT                ST: TN
STATION ID. SB-02                                                COLLECTION START: 09/12/90  1625   STOP: 00/00/00
CASE.NO.: 14852          SAS NO.:                                D. NO.: X712                MD NO: X712
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RESULTS	UNITS	PARAMETER
1.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49876 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
55UJ	CHLOROMETHANE
55UJ	VINYL CHLORIDE
55UJ	BROMOMETHANE
55UJ	CHLOROETHANE
55UJ	TRICHLOROFLUOROMETHANE
55UJ	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
550UJ	ACETONE
550UJ	CARBON DISULFIDE
110UJ	METHYLENE CHLORIDE
55UJ	TRANS-1,2-DICHLOROETHENE
55UJ	1,1-DICHLOROETHANE
550UJ	VINYL ACETATE
55UJ	CIS-1,2-DICHLOROETHENE
55UJ	2,2 DICHLOROPROPANE
550UJ	METHYL ETHYL KETONE
55UJ	BROMOCHLOROMETHANE
55UJ	CHLOROFORM
55UJ	1,1,1-TRICHLOROETHANE
55UJ	1,1-DICHLOROPROPENE
55UJ	CARBON TETRACHLORIDE
55UJ	1,2-DICHLOROETHANE
55UJ	BENZENE
55UJ	TRICHLOROETHENE(TRICHLOROETHYLENE)
55UJ	1,2-DICHLOROPROPANE
55UJ	DIBROMOMETHANE
55UJ	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
55UJ	CIS-1,3-DICHLOROPROPENE
550UJ	METHYL ISOBUTYL KETONE
55UJ	TOLUENE
55UJ	TRANS-1,3-DICHLOROPROPENE
55UJ	1,1,2-TRICHLOROETHANE
55UJ	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
55UJ	1,3-DICHLOROPROPANE
550UJ	METHYL BUTYL KETONE
55UJ	DIBROMOCHLOROMETHANE
55UJ	CHLOROBENZENE
55UJ	1,1,1,2 TETRACHLOROETHANE
55UJ	ETHYL BENZENE
55UJ	(M- AND/OR P-)XYLENE
55UJ	O-XYLENE
55UJ	STYRENE
55UJ	BROMOFORM
55UJ	BROMOBENZENE
55UJ	1,1,2,2-TETRACHLOROETHANE
55UJ	1,2,3-TRICHLOROPROPANE
55UJ	O-CHLOROTOLUENE
55UJ	P CHLOROTOLUENE
55UJ	1,3-DICHLOROBENZENE
55UJ	1,4-DICHLOROBENZENE
55UJ	1,2-DICHLOROBENZENE
24.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49876 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SB-03

PROG ELEM: NSF COLLECTED BY. A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
840U	BIS(2 CHLOROETHYL) ETHER
840U	BIS(2-CHLOROISOPROPYL) ETHER
840U	N-NITROSODI-N-PROPYLAMINE
840U	HEXACHLOROETHANE
840U	NITROBENZENE
840U	ISOPHORONE
840U	BIS(2-CHLOROETHOXY) METHANE
840U	1,2,4-TRICHLOROBENZENE
840U	NAPHTHALENE
840U	4-CHLOROANILINE
840U	HEXACHLOROBUTADIENE
840U	2-METHYLNAPHTHALENE
840U	HEXACHLOROCYCLOPENTADIENE (HCCP)
840U	2 CHLORONAPHTHALENE
840U	2-NITROANILINE
840U	DIMETHYL PHTHALATE
840U	ACENAPHTHYLENE
840U	2 6-DINITROTOLUENE
840U	3-NITROANILINE
840U	ACENAPHTHENE
840U	DIBENZOFURAN
840U	2,4-DINITROTOLUENE
840U	DIETHYL PHTHALATE
840U	FLUORENE
840U	4-CHLOROPHENYL PHENYL ETHER
840U	4-NITROANILINE
840U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
840U	4-BROMOPHENYL PHENYL ETHER
840U	HEXACHLOROBENZENE (HCB)
840U	PHENANTHRENE
840U	ANTHRACENE
840U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
840U	FLUORANTHENE
840U	PYRENE
840U	BENZYL BUTYL PHTHALATE
840U	3,3'-DICHLOROBENZIDINE
840U	BENZO(A)ANTHRACENE
840U	CHRYSENE
840U	BIS(2-ETHYLHEXYL) PHTHALATE
840U	DI-N-OCTYLPHTHALATE
840U	BENZO(B AND/OR K)FLUORANTHENE
840U	BENZO-A-PYRENE
840U	INDENO (1,2,3 CD) PYRENE
840U	DIBENZO(A,H)ANTHRACENE
840U	BENZO(GHI)PERYLENE
840U	PHENOL
840U	2-CHLOROPHENOL
1700U	BENZYL ALCOHOL
840U	2-METHYLPHENOL
840U	(3-AND/OR 4-)METHYLPHENOL
840U	2-NITROPHENOL
840U	2,4-DIMETHYLPHENOL
1700U	BENZOIC ACID
840U	2,4-DICHLOROPHENOL
840U	4-CHLORO-3-METHYLPHENOL
840U	2,4,6-TRICHLOROPHENOL
840U	2,4,5-TRICHLOROPHENOL
1700U	2,4-DINITROPHENOL
1700U	4-NITROPHENOL
840U	2,3,4,6-TETRACHLOROPHENOL
1700U	2-METHYL-4,6-DINITROPHENOL
1700U	PENTACHLOROPHENOL
24.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50155 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY. A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00
D. NUMBER: X718

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
11U	ALPHA-BHC	110U	METHOXYCHLOR
11U	BETA-BHC	21U	ENDRIN KETONE
11U	DELTA-BHC		CHLORDANE (TECH. MIXTURE) /1
11U	GAMMA-BHC (LINDANE)	110U	GAMMA-CHLORDANE /2
11U	HEPTACHLOR	110U	ALPHA-CHLORDANE /2
11U	ALDRIN	210U	TOXAPHENE
11U	HEPTACHLOR EPOXIDE	110U	PCB-1016 (AROCLOR 1016)
11U	ENDOSULFAN I (ALPHA)	110U	PCB-1221 (AROCLOR 1221)
21U	DIELDRIN	110U	PCB-1232 (AROCLOR 1232)
21U	4,4'-DDE (P,P'-DDE)	110U	PCB-1242 (AROCLOR 1242)
21U	ENDRIN	110U	PCB-1248 (AROCLOR 1248)
21U	ENDOSULFAN II (BETA)	210U	PCB-1254 (AROCLOR 1254)
21U	4,4'-DDD (P,P'-DDD)	210U	PCB-1260 (AROCLOR 1260)
21U	ENDOSULFAN SULFATE	24	PERCENT MOISTURE
21U	4,4'-DDT (P,P'-DDT)		

FOOTNOTES
*A-AVERAGE VALUE *NA NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50155 SAMPLE TYPE: SOIL | PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU | CITY: NEWPORT ST: TN
STATION ID: SB-03 | COLLECTION START: 09/13/90 1020 STOP: 00/00/00
CASE.NO.: 14852 SAS NO.: | D. NO.: X718 MD NO: X718

RESULTS	UNITS	PARAMETER
1.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90 883 SAMPLE NO. 49877 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SB-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1015 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
44U	CHLOROMETHANE
44U	VINYL CHLORIDE
44U	BROMOMETHANE
44U	CHLOROETHANE
44U	TRICHLOROFLUOROMETHANE
44U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
440U	ACETONE
440U	CARBON DISULFIDE
88U	METHYLENE CHLORIDE
44U	TRANS-1,2-DICHLOROETHENE
44U	1,1-DICHLOROETHANE
440U	VINYL ACETATE
44U	CIS-1,2-DICHLOROETHENE
44U	2,2-DICHLOROPROPANE
440U	METHYL ETHYL KETONE
44U	BROMOCHLOROMETHANE
44U	CHLOROFORM
44U	1,1,1-TRICHLOROETHANE
44U	1,1-DICHLOROPROPENE
44U	CARBON TETRACHLORIDE
44U	1,2-DICHLOROETHANE
44U	BENZENE
44U	TRICHLOROETHENE(TRICHLOROETHYLENE)
44U	1,2-DICHLOROPROPANE
44U	DIBROMOMETHANE
44U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
44U	CIS 1,3-DICHLOROPROPENE
440U	METHYL ISOBUTYL KETONE
44U	TOLUENE
44U	TRANS-1,3-DICHLOROPROPENE
44U	1,1,2-TRICHLOROETHANE
44U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
44U	1,3-DICHLOROPROPANE
440U	METHYL BUTYL KETONE
44U	DIBROMOCHLOROMETHANE
44U	CHLOROBENZENE
44U	1,1,1,2 TETRACHLOROETHANE
44U	ETHYL BENZENE
44U	(M- AND/OR P-)XYLENE
44U	O-XYLENE
44U	STYRENE
44U	BROMOFORM
44U	BROMOBENZENE
44U	1,1,2,2-TETRACHLOROETHANE
44U	1,2,3-TRICHLOROPROPANE
44U	O-CHLOROTOLUENE
44U	P CHLOROTOLUENE
44U	1,3-DICHLOROBENZENE
44U	1,4-DICHLOROBENZENE
44U	1,2-DICHLOROBENZENE
5.7	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49877 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1015 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
700U	BIS(2 CHLOROETHYL) ETHER
700U	BIS(2-CHLOROISOPROPYL) ETHER
700U	N-NITROSODI N-PROPYLAMINE
700U	HEXACHLOROETHANE
700U	NITROBENZENE
700U	ISOPHORONE
700U	BIS(2-CHLOROETHOXY) METHANE
700U	1,2,4-TRICHLOROBENZENE
700U	NAPHTHALENE
700U	4-CHLOROANILINE
700U	HEXACHLOROBUTADIENE
700U	2-METHYLNAPHTHALENE
700U	HEXACHLOROCYCLOPENTADIENE (HCCP)
700U	2 CHLORONAPHTHALENE
700U	2-NITROANILINE
700U	DIMETHYL PHTHALATE
700U	ACENAPHTHYLENE
700U	2 6-DINITROTOLUENE
700U	3-NITROANILINE
700U	ACENAPHTHENE
700U	DIBENZOFURAN
700U	2,4-DINITROTOLUENE
700U	DIETHYL PHTHALATE
700U	FLUORENE
700U	4-CHLOROPHENYL PHENYL ETHER
700U	4-NITROANILINE
700U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
700U	4-BROMOPHENYL PHENYL ETHER
700U	HEXACHLOROBENZENE (HCB)
700U	PHENANTHRENE
700U	ANTHRACENE
700U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
700U	FLUORANTHENE
700U	PYRENE
700U	BENZYL BUTYL PHTHALATE
700U	3,3'-DICHLOROBENZIDINE
700U	BENZO(A)ANTHRACENE
700U	CHRYSENE
700U	BIS(2-ETHYLHEXYL) PHTHALATE
700U	DI-N-OCTYLPHTHALATE
700U	BENZO(B AND/OR K)FLUORANTHENE
700U	BENZO-A-PYRENE
700U	INDENO (1,2,3 CD) PYRENE
700U	DIBENZO(A,H)ANTHRACENE
700U	BENZO(GHI)PERYLENE
700U	PHENOL
700U	2-CHLOROPHENOL
1400U	BENZYL ALCOHOL
700U	2-METHYLPHENOL
700U	(3-AND/OR 4-)METHYLPHENOL
700U	2-NITROPHENOL
700U	2,4-DIMETHYLPHENOL
1400U	BENZOIC ACID
700U	2,4-DICHLOROPHENOL
700U	4-CHLORO-3-METHYLPHENOL
700U	2,4,6-TRICHLOROPHENOL
700U	2 4 5-TRICHLOROPHENOL
1400U	2,4-DINITROPHENOL
1400U	4-NITROPHENOL
700U	2,3,4,6-TETRACHLOROPHENOL
1400U	2-METHYL-4,6-DINITROPHENOL
1400U	PENTACHLOROPHENOL
5.7	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50154 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1015 STOP: 00/00/00
D. NUMBER: X717

UG/KG	ANALYTICAL RESULTS
8.5U	ALPHA-BHC
8.5U	BETA-BHC
8.5U	DELTA-BHC
8.5U	GAMMA-BHC (LINDANE)
8.5U	HEPTACHLOR
8.5U	ALDRIN
8.5U	HEPTACHLOR EPOXIDE
8.5U	ENDOSULFAN I (ALPHA)
17U	DIELDRIN
17U	4,4'-DDE (P,P'-DDE)
17U	ENDRIN
17U	ENDOSULFAN II (BETA)
17U	4,4'-DDD (P,P'-DDD)
17U	ENDOSULFAN SULFATE
17U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
85U	METHOXYCHLOR
17U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
85U	GAMMA-CHLORDANE /2
85U	ALPHA-CHLORDANE /2
170U	TOXAPHENE
85U	PCB-1016 (AROCLOR 1016)
85U	PCB-1221 (AROCLOR 1221)
85U	PCB-1232 (AROCLOR 1232)
85U	PCB-1242 (AROCLOR 1242)
85U	PCB-1248 (AROCLOR 1248)
170U	PCB-1254 (AROCLOR 1254)
170U	PCB-1260 (AROCLOR 1260)
6	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50154 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-04
CASE.NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1015 STOP: 00/00/00
D. NO.: X717 MD NO: X717

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49866 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SD-01

PROG ELEM: NSF COLLECTED BY. A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/12/90 1445 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
810U	BIS(2 CHLOROETHYL) ETHER
810U	BIS(2-CHLOROISOPROPYL) ETHER
810U	N-NITROSODI-N-PROPYLAMINE
810U	HEXACHLOROETHANE
810U	NITROBENZENE
810U	ISOPHORONE
810U	BIS(2-CHLOROETHOXY) METHANE
810U	1,2,4-TRICHLOROBENZENE
810U	NAPHTHALENE
810U	4-CHLOROANILINE
810U	HEXACHLOROBUTADIENE
810U	2-METHYLNAPHTHALENE
810U	HEXACHLOROCYCLOPENTADIENE (HCCP)
810U	2-CHLORONAPHTHALENE
810U	2-NITROANILINE
810U	DIMETHYL PHTHALATE
810U	ACENAPHTHYLENE
810U	2,6-DINITROTOLUENE
810U	3-NITROANILINE
810U	ACENAPHTHENE
810U	DIBENZOFURAN
810U	2,4-DINITROTOLUENE
810U	DIETHYL PHTHALATE
810U	FLUORENE
810U	4-CHLOROPHENYL PHENYL ETHER
810U	4-NITROANILINE
810U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
810U	4-BROMOPHENYL PHENYL ETHER
810U	HEXACHLOROBENZENE (HCB)
810U	PHENANTHRENE
810U	ANTHRACENE
810U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
810U	FLUORANTHENE
810U	PYRENE
810U	BENZYL BUTYL PHTHALATE
810U	3,3'-DICHLOROBENZIDINE
810U	BENZO(A)ANTHRACENE
810U	CHRYSENE
810U	BIS(2-ETHYLHEXYL) PHTHALATE
810U	DI-N-OCTYLPHTHALATE
810U	BENZO(B AND/OR K)FLUORANTHENE
810U	BENZO-A-PYRENE
810U	INDENO (1,2,3 CD) PYRENE
810U	DIBENZO(A,H)ANTHRACENE
810U	BENZO(GHI)PERYLENE
810U	PHENOL
810U	2-CHLOROPHENOL
1600U	BENZYL ALCOHOL
810U	2-METHYLPHENOL
810U	(3-AND/OR 4-)METHYLPHENOL
810U	2-NITROPHENOL
810U	2,4-DIMETHYLPHENOL
1600U	BENZOIC ACID
810U	2,4-DICHLOROPHENOL
810U	4-CHLORO-3-METHYLPHENOL
810U	2,4,6-TRICHLOROPHENOL
810U	2,4,5-TRICHLOROPHENOL
1600U	2,4-DINITROPHENOL
1600U	4-NITROPHENOL
810U	2,3,4,6-TETRACHLOROPHENOL
1600U	2-METHYL-4,6-DINITROPHENOL
1600U	PENTACHLOROPHENOL
19.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50144 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID. SD-01
CASE NUMBER 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1445 STOP: 00/00/00
D. NUMBER: X707

UG/KG	ANALYTICAL RESULTS
100U	ALPHA-BHC
100U	BETA-BHC
100U	DELTA-BHC
100U	GAMMA-BHC (LINDANE)
100U	HEPTACHLOR
100U	ALDRIN
100U	HEPTACHLOR EPOXIDE
100U	ENDOSULFAN I (ALPHA)
200U	DIELDRIN
200U	4,4'-DDE (P,P'-DDE)
200U	ENDRIN
200U	ENDOSULFAN II (BETA)
200U	4,4'-DDD (P,P'-DDD)
200U	ENDOSULFAN SULFATE
200U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
1000U	METHOXYCHLOR
200U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
1000U	GAMMA-CHLORDANE /2
1000U	ALPHA-CHLORDANE /2
2000U	TOXAPHENE
1000U	PCB-1016 (AROCLOR 1016)
1000U	PCB-1221 (AROCLOR 1221)
1000U	PCB-1232 (AROCLOR 1232)
1000U	PCB-1242 (AROCLOR 1242)
1000U	PCB-1248 (AROCLOR 1248)
2000U	PCB-1254 (AROCLOR 1254)
2000U	PCB-1260 (AROCLOR 1260)
21	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50144 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-01
CASE.NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1445 STOP: 00/00/00
D. NO.: X707 MD NO: X707

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49867 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SD-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/12/90 1450 STOP 00/00/00

UG/KG	ANALYTICAL RESULTS
980U	BIS(2 CHLOROETHYL) ETHER
980U	BIS(2-CHLOROISOPROPYL) ETHER
980U	N-NITROSODI N-PROPYLAMINE
980U	HEXACHLOROETHANE
980U	NITROBENZENE
980U	ISOPHORONE
980U	BIS(2-CHLOROETHOXY) METHANE
980U	1,2,4-TRICHLOROBENZENE
980U	NAPHTHALENE
980U	4-CHLOROANILINE
980U	HEXACHLOROBUTADIENE
980U	2-METHYLNAPHTHALENE
980U	HEXACHLOROCYCLOPENTADIENE (HCCP)
980U	2 CHLORONAPHTHALENE
980U	2-NITROANILINE
980U	DIMETHYL PHTHALATE
980U	ACENAPHTHYLENE
980U	2,6-DINITROTOLUENE
980U	3-NITROANILINE
980U	ACENAPHTHENE
980U	DIBENZOFURAN
980U	2,4-DINITROTOLUENE
980U	DIETHYL PHTHALATE
980U	FLUORENE
980U	4-CHLOROPHENYL PHENYL ETHER
980U	4-NITROANILINE
980U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
980U	4-BROMOPHENYL PHENYL ETHER
980U	HEXACHLOROBENZENE (HCB)
980U	PHENANTHRENE
980U	ANTHRACENE
980U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
980U	FLUORANTHENE
980U	PYRENE
980U	BENZYL BUTYL PHTHALATE
980U	3,3'-DICHLOROBENZIDINE
980U	BENZO(A)ANTHRACENE
980U	CHRYSENE
980U	BIS(2-ETHYLHEXYL) PHTHALATE
980U	DI-N-OCTYL PHTHALATE
980U	BENZO(B AND/OR K)FLUORANTHENE
980U	BENZO-A-PYRENE
980U	INDENO (1,2,3-CD) PYRENE
980U	DIBENZO(A,H)ANTHRACENE
980U	BENZO(GHI)PERYLENE
980U	PHENOL
980U	2-CHLOROPHENOL
2000U	BENZYL ALCOHOL
980U	2-METHYLPHENOL
980U	(3-AND/OR 4-)METHYLPHENOL
980U	2-NITROPHENOL
980U	2,4-DIMETHYLPHENOL
2000U	BENZOIC ACID
980U	2,4-DICHLOROPHENOL
980U	4-CHLORO-3-METHYLPHENOL
980U	2,4,6-TRICHLOROPHENOL
980U	2,4,5-TRICHLOROPHENOL
2000U	2,4-DINITROPHENOL
2000U	4-NITROPHENOL
980U	2,3,4,6-TETRACHLOROPHENOL
2000U	2-METHYL-4,6-DINITROPHENOL
2000U	PENTACHLOROPHENOL
32.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50145 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1450 STOP: 00/00/00
D. NUMBER: X708

UG/KG	ANALYTICAL RESULTS
12U	ALPHA-BHC
12U	BETA-BHC
12U	DELTA-BHC
12U	GAMMA-BHC (LINDANE)
12U	HEPTACHLOR
12U	ALDRIN
12U	HEPTACHLOR EPOXIDE
12U	ENDOSULFAN I (ALPHA)
24U	DIELDRIN
24U	4,4'-DDE (P,P'-DDE)
24U	ENDRIN
24U	ENDOSULFAN II (BETA)
24U	4,4'-DDD (P,P'-DDD)
24U	ENDOSULFAN SULFATE
24U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
120U	METHOXYCHLOR
24U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
120U	GAMMA-CHLORDANE /2
120U	ALPHA-CHLORDANE /2
240U	TOXAPHENE
120U	PCB-1016 (AROCLOR 1016)
120U	PCB-1221 (AROCLOR 1221)
120U	PCB-1232 (AROCLOR 1232)
120U	PCB-1242 (AROCLOR 1242)
120U	PCB-1248 (AROCLOR 1248)
240U	PCB-1254 (AROCLOR 1254)
240U	PCB-1260 (AROCLOR 1260)
33	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI INTERFERENCES *J ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*P ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50145 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-02
CASE NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1450 STOP: 00/00/00
D. NO.: X708 MD NO: X708

RESULTS	UNITS	PARAMETER
1.5U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50146 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00
D. NUMBER: X709

UG/KG	ANALYTICAL RESULTS
150U	ALPHA-BHC
150U	BETA-BHC
150U	DELTA-BHC
150U	GAMMA-BHC (LINDANE)
150U	HEPTACHLOR
150U	ALDRIN
150U	HEPTACHLOR EPOXIDE
150U	ENDOSULFAN I (ALPHA)
310U	DIELDRIN
310U	4,4'-DDE (P,P'-DDE)
310U	ENDRIN
310U	ENDOSULFAN II (BETA)
310U	4,4'-DDD (P,P'-DDD)
310U	ENDOSULFAN SULFATE
310U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
1500U	METHOXYCHLOR
310U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
1500U	GAMMA-CHLORDANE /2
1500U	ALPHA-CHLORDANE /2
3100U	TOXAPHENE
1500U	PCB-1016 (AROCLOR 1016)
1500U	PCB-1221 (AROCLOR 1221)
1500U	PCB-1232 (AROCLOR 1232)
1500U	PCB-1242 (AROCLOR 1242)
1500U	PCB-1248 (AROCLOR 1248)
3100U	PCB-1254 (AROCLOR 1254)
3100U	PCB-1260 (AROCLOR 1260)
22	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA NOT ANALYZED *NAI-INTERFERENCES *J ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA. 11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50146 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN
STATION ID: SD-03 COLLECTION START: 09/12/90 1500 STOP: 00/00/00
CASE.NO.: 14852 SAS NO.: D. NO.: X709 MD NO: X709

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49869 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY. A HARVEY
SOURCE: HEYWOOD-WAKEFIELD CITY: NEWPORT ST: TN
STATION ID: SD-04 COLLECTION START. 09/12/90 1520 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
750U	BIS(2 CHLOROETHYL) ETHER
750U	BIS(2-CHLOROISOPROPYL) ETHER
750U	N-NITROSODI N-PROPYLAMINE
750U	HEXACHLOROETHANE
750U	NITROBENZENE
750U	ISOPHORONE
750U	BIS(2-CHLOROETHOXY) METHANE
750U	1,2,4-TRICHLOROBENZENE
750U	NAPHTHALENE
750U	4-CHLOROANILINE
750U	HEXACHLOROBUTADIENE
750U	2-METHYLNAPHTHALENE
750U	HEXACHLOROCYCLOPENTADIENE (HCCP)
750U	2 CHLORONAPHTHALENE
750U	2-NITROANILINE
750U	DIMETHYL PHTHALATE
750U	ACENAPHTHYLENE
750U	2,6-DINITROTOLUENE
750U	3-NITROANILINE
750U	ACENAPHTHENE
750U	DIBENZOFURAN
750U	2,4-DINITROTOLUENE
750U	DIETHYL PHTHALATE
750U	FLUORENE
750U	4-CHLOROPHENYL PHENYL ETHER
750U	4-NITROANILINE
750U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
750U	4-BROMOPHENYL PHENYL ETHER
750U	HEXACHLOROBENZENE (HCB)
750U	PHENANTHRENE
750U	ANTHRACENE
750U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
750U	FLUORANTHENE
750U	PYRENE
750U	BENZYL BUTYL PHTHALATE
750U	3,3'-DICHLOROBENZIDINE
750U	BENZO(A)ANTHRACENE
750U	CHRYSENE
750U	BIS(2-ETHYLHEXYL) PHTHALATE
750U	DI-N-OCTYLPHTHALATE
750U	BENZO(B AND/OR K)FLUORANTHENE
750U	BENZO-A-PYRENE
750U	INDENO (1,2,3 CD) PYRENE
750U	DIBENZO(A,H)ANTHRACENE
750U	BENZO(GHI)PERYLENE
750U	PHENOL
750U	2-CHLOROPHENOL
1500U	BENZYL ALCOHOL
750U	2-METHYLPHENOL
750U	(3-AND/OR 4-)METHYLPHENOL
750U	2-NITROPHENOL
750U	2,4-DIMETHYLPHENOL
1500U	BENZOIC ACID
750U	2,4-DICHLOROPHENOL
750U	4-CHLORO-3-METHYLPHENOL
750U	2,4,6-TRICHLOROPHENOL
750U	2,4,5-TRICHLOROPHENOL
1500U	2,4-DINITROPHENOL
1500U	4-NITROPHENOL
750U	2,3,4,6-TETRACHLOROPHENOL
1500U	2-METHYL-4,6-DINITROPHENOL
1500U	PENTACHLOROPHENOL
12.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50147 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1520 STOP: 00/00/00
D. NUMBER: X710

UG/KG	ANALYTICAL RESULTS
9.4U	ALPHA-BHC
9.4U	BETA-BHC
9.4U	DELTA-BHC
9.4U	GAMMA-BHC (LINDANE)
9.4U	HEPTACHLOR
9.4U	ALDRIN
9.4U	HEPTACHLOR EPOXIDE
9.4U	ENDOSULFAN I (ALPHA)
19U	DIELDRIN
19U	4,4'-DDE (P,P'-DDE)
19U	ENDRIN
19U	ENDOSULFAN II (BETA)
19U	4,4'-DDD (P,P'-DDD)
19U	ENDOSULFAN SULFATE
19U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
94U	METHOXYCHLOR
19U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
94U	GAMMA-CHLORDANE /2
94U	ALPHA-CHLORDANE /2
190U	TOXAPHENE
94U	PCB-1016 (AROCLOR 1016)
94U	PCB-1221 (AROCLOR 1221)
94U	PCB-1232 (AROCLOR 1232)
94U	PCB-1242 (AROCLOR 1242)
94U	PCB-1248 (AROCLOR 1248)
190U	PCB-1254 (AROCLOR 1254)
190U	PCB-1260 (AROCLOR 1260)
15	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50147 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-04
CASE NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1520 STOP: 00/00/00
D. NO.: X710 MD NO: X710

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49865 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1315 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
52U	CHLOROMETHANE
52U	VINYL CHLORIDE
52U	BROMOMETHANE
52U	CHLOROETHANE
52U	TRICHLOROFLUOROMETHANE
52U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
520U	ACETONE
520U	CARBON DISULFIDE
52U	METHYLENE CHLORIDE
52U	TRANS-1,2-DICHLOROETHENE
52U	1,1-DICHLOROETHANE
520U	VINYL ACETATE
52U	CIS-1,2-DICHLOROETHENE
52U	2,2-DICHLOROPROPANE
520U	METHYL ETHYL KETONE
52U	BROMOCHLOROMETHANE
52U	CHLOROFORM
52U	1,1,1-TRICHLOROETHANE
52U	1,1-DICHLOROPROPENE
52U	CARBON TETRACHLORIDE
52U	1,2-DICHLOROETHANE
52U	BENZENE
52U	TRICHLOROETHENE(TRICHLOROETHYLENE)
52U	1,2-DICHLOROPROPANE
52U	DIBROMOMETHANE
52U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
52U	CIS-1,3-DICHLOROPROPENE
520U	METHYL ISOBUTYL KETONE
52U	TOLUENE
52U	TRANS-1,3-DICHLOROPROPENE
52U	1,1,2-TRICHLOROETHANE
52U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
52U	1,3-DICHLOROPROPANE
520U	METHYL BUTYL KETONE
52U	DIBROMOCHLOROMETHANE
52U	CHLOROBENZENE
52U	1,1,1,2 TETRACHLOROETHANE
52U	ETHYL BENZENE
52U	(M- AND/OR P-)XYLENE
52U	O-XYLENE
52U	STYRENE
52U	BROMOFORM
52U	BROMOBENZENE
52U	1,1,2,2-TETRACHLOROETHANE
52U	1,2,3-TRICHLOROPROPANE
52U	O-CHLOROTOLUENE
52U	P-CHLOROTOLUENE
52U	1,3-DICHLOROBENZENE
52U	1,4-DICHLOROBENZENE
52U	1,2-DICHLOROBENZENE
19.1	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49871 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/12/90 1625 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
55U	CHLOROMETHANE
55U	VINYL CHLORIDE
55U	BROMOMETHANE
55U	CHLOROETHANE
[redacted]	[redacted]
55U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
550U	ACETONE
550U	CARBON DISULFIDE
55U	METHYLENE CHLORIDE
55U	TRANS-1,2-DICHLOROETHENE
55U	1,1-DICHLOROETHANE
550U	VINYL ACETATE
55U	CIS-1,2-DICHLOROETHENE
55U	2,2 DICHLOROPROPANE
550U	METHYL ETHYL KETONE
55U	BROMOCHLOROMETHANE
55U	CHLOROFORM
55U	1,1,1-TRICHLOROETHANE
55U	1,1-DICHLOROPROPENE
55U	CARBON TETRACHLORIDE
55U	1,2-DICHLOROETHANE
55U	BENZENE
55U	TRICHLOROETHENE(TRICHLOROETHYLENE)
55U	1,2-DICHLOROPROPANE
55U	DIBROMOMETHANE
55U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
55U	CIS-1,3-DICHLOROPROPENE
550U	METHYL ISOBUTYL KETONE
55U	TOLUENE
55U	TRANS-1,3-DICHLOROPROPENE
55U	1,1,2-TRICHLOROETHANE
55U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
55U	1,3-DICHLOROPROPANE
550U	METHYL BUTYL KETONE
55U	DIBROMOCHLOROMETHANE
55U	CHLOROBENZENE
55U	1,1,1,2 TETRACHLOROETHANE
55U	ETHYL BENZENE
55U	(M- AND/OR P-)XYLENE
55U	O-XYLENE
55U	STYRENE
55U	BROMOFORM
55U	BROMOBENZENE
55U	1,1,2,2-TETRACHLOROETHANE
55U	1,2,3-TRICHLOROPROPANE
55U	O-CHLOROTOLUENE
55U	P CHLOROTOLUENE
55U	1,3-DICHLOROBENZENE
55U	1,4-DICHLOROBENZENE
55U	1,2-DICHLOROBENZENE
23.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90 883 SAMPLE NO. 49866 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SD-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1445 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
52U	CHLOROMETHANE
52U	VINYL CHLORIDE
52U	BROMOMETHANE
52U	CHLOROETHANE
[redacted]	[redacted]
52U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
520U	ACETONE
520U	CARBON DISULFIDE
52U	METHYLENE CHLORIDE
52U	TRANS-1,2-DICHLOROETHENE
52U	1,1-DICHLOROETHANE
520U	VINYL ACETATE
52U	CIS-1,2-DICHLOROETHENE
52U	2,2-DICHLOROPROPANE
520U	METHYL ETHYL KETONE
52U	BROMOCHLOROMETHANE
52U	CHLOROFORM
52U	1,1,1-TRICHLOROETHANE
52U	1,1-DICHLOROPROPENE
52U	CARBON TETRACHLORIDE
52U	1,2-DICHLOROETHANE
52U	BENZENE
52U	TRICHLOROETHENE(TRICHLOROETHYLENE)
52U	1,2-DICHLOROPROPANE
52U	DIBROMOMETHANE
52U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
52U	CIS-1,3-DICHLOROPROPENE
520U	METHYL ISOBUTYL KETONE
52U	TOLUENE
52U	TRANS-1,3-DICHLOROPROPENE
52U	1,1,2-TRICHLOROETHANE
52U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
52U	1,3-DICHLOROPROPANE
520U	METHYL BUTYL KETONE
52U	DIBROMOCHLOROMETHANE
52U	CHLOROBENZENE
52U	1,1,1,2 TETRACHLOROETHANE
52U	ETHYL BENZENE
52U	(M- AND/OR P-)XYLENE
52U	O-XYLENE
52U	STYRENE
52U	BROMOFORM
52U	BROMOBENZENE
52U	1,1,2,2-TETRACHLOROETHANE
52U	1,2,3-TRICHLOROPROPANE
52U	O-CHLOROTOLUENE
52U	P-CHLOROTOLUENE
52U	1,3-DICHLOROBENZENE
52U	1,4-DICHLOROBENZENE
52U	1,2-DICHLOROBENZENE
19.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49867 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SD-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1450 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
62U	CHLOROMETHANE
62U	VINYL CHLORIDE
62U	BROMOMETHANE
62U	CHLOROETHANE
[redacted]	[redacted]
62U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
620U	ACETONE
620U	CARBON DISULFIDE
62U	METHYLENE CHLORIDE
62U	TRANS-1,2-DICHLOROETHENE
62U	1,1 DICHLOROETHANE
620U	VINYL ACETATE
62U	CIS-1,2-DICHLOROETHENE
62U	2,2 DICHLOROPROPANE
620U	METHYL ETHYL KETONE
62U	BROMOCHLOROMETHANE
62U	CHLOROFORM
62U	1,1,1-TRICHLOROETHANE
62U	1,1-DICHLOROPROPENE
62U	CARBON TETRACHLORIDE
62U	1,2-DICHLOROETHANE
62U	BENZENE
62U	TRICHLOROETHENE(TRICHLOROETHYLENE)
62U	1,2-DICHLOROPROPANE
62U	DIBROMOMETHANE
62U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
62U	CIS-1,3-DICHLOROPROPENE
620U	METHYL ISOBUTYL KETONE
62U	TOLUENE
62U	TRANS-1,3-DICHLOROPROPENE
62U	1,1,2-TRICHLOROETHANE
62U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
62U	1,3-DICHLOROPROPANE
620U	METHYL BUTYL KETONE
62U	DIBROMOCHLOROMETHANE
62U	CHLOROBENZENE
62U	1,1,1,2 TETRACHLOROETHANE
62U	ETHYL BENZENE
62U	(M- AND/OR P-)XYLENE
62U	O-XYLENE
62U	STYRENE
62U	BROMOFORM
62U	BROMOBENZENE
62U	1,1,2,2-TETRACHLOROETHANE
62U	1,2,3-TRICHLOROPROPANE
62U	O-CHLOROTOLUENE
62U	P-CHLOROTOLUENE
62U	1,3-DICHLOROBENZENE
62U	1,4-DICHLOROBENZENE
62U	1,2-DICHLOROBENZENE
32.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/04/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

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** PROJECT NO 90-883    SAMPLE NO. 49867  SAMPLE TYPE: SOIL        PROG ELEM: NSF   COLLECTED BY: A HARVEY          **
** SOURCE: HEYWOOD-WAKEFIELD                                       CITY: NEWPORT                ST: TN             **
** STATION ID: SD-02                                               COLLECTION START: 09/12/90  1450   STOP: 00/00/00  **
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ANALYTICAL RESULTS UG/KG

[redacted]E
[redacted]D
[redacted]ID
[redacted]CID
1000UN [redacted]6 ACID
[redacted]OUND.
[redacted] PRODUCT — H.T.C.

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49868 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SD-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
58U	CHLOROMETHANE
58U	VINYL CHLORIDE
58U	BROMOMETHANE
58U	CHLOROETHANE
[illegible]	TRICHLOROFLUOROMETHANE
58U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
580U	ACETONE
580U	CARBON DISULFIDE
58U	METHYLENE CHLORIDE
58U	TRANS-1,2-DICHLOROETHENE
58U	1,1-DICHLOROETHANE
580U	VINYL ACETATE
58U	CIS-1,2-DICHLOROETHENE
58U	2,2-DICHLOROPROPANE
580U	METHYL ETHYL KETONE
58U	BROMOCHLOROMETHANE
58U	CHLOROFORM
58U	1,1,1-TRICHLOROETHANE
58U	1,1-DICHLOROPROPENE
58U	CARBON TETRACHLORIDE
58U	1,2-DICHLOROETHANE
58U	BENZENE
58U	TRICHLOROETHENE(TRICHLOROETHYLENE)
58U	1,2-DICHLOROPROPANE
58U	DIBROMOMETHANE
58U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
58U	CIS-1,3-DICHLOROPROPENE
580U	METHYL ISOBUTYL KETONE
58U	TOLUENE
58U	TRANS-1,3-DICHLOROPROPENE
58U	1,1,2-TRICHLOROETHANE
58U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
58U	1,3-DICHLOROPROPANE
580U	METHYL BUTYL KETONE
58U	DIBROMOCHLOROMETHANE
58U	CHLOROBENZENE
58U	1,1,1,2 TETRACHLOROETHANE
58U	ETHYL BENZENE
58U	(M- AND/OR P-)XYLENE
58U	O-XYLENE
58U	STYRENE
58U	BROMOFORM
58U	BROMOBENZENE
58U	1,1,2,2-TETRACHLOROETHANE
58U	1,2,3-TRICHLOROPROPANE
58U	O-CHLOROTOLUENE
58U	P-CHLOROTOLUENE
58U	1,3-DICHLOROBENZENE
58U	1,4-DICHLOROBENZENE
58U	1,2-DICHLOROBENZENE
21.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90 883 SAMPLE NO. 49868 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SD-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
830U	BIS(2 CHLOROETHYL) ETHER
830U	BIS(2-CHLOROISOPROPYL) ETHER
830U	N-NITROSODI-N-PROPYLAMINE
830U	HEXACHLOROETHANE
830U	NITROBENZENE
830U	ISOPHORONE
830U	BIS(2-CHLOROETHOXY) METHANE
830U	1,2,4-TRICHLOROBENZENE
830U	NAPHTHALENE
830U	4-CHLOROANILINE
830U	HEXACHLOROBUTADIENE
830U	2-METHYLNAPHTHALENE
830U	HEXACHLOROCYCLOPENTADIENE (HCCP)
830U	2 CHLORONAPHTHALENE
830U	2-NITROANILINE
830U	DIMETHYL PHTHALATE
830U	ACENAPHTHYLENE
830U	2,6-DINITROTOLUENE
830U	3-NITROANILINE
830U	ACENAPHTHENE
830U	DIBENZOFURAN
830U	2,4-DINITROTOLUENE
830U	DIETHYL PHTHALATE
830U	FLUORENE
830U	4-CHLOROPHENYL PHENYL ETHER
830U	4-NITROANILINE
830U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
830U	4-BROMOPHENYL PHENYL ETHER
830U	HEXACHLOROBENZENE (HCB)
830U	PHENANTHRENE
830U	ANTHRACENE
830U	DI-N-BUTYLPHTHALATE

REMARKS

UG/KG	ANALYTICAL RESULTS
[redacted]	
[redacted]	
830U	BENZYL BUTYL PHTHALATE
830U	3,3'-DICHLOROBENZIDINE
830U	BENZO(A)ANTHRACENE
[redacted]	
830U	BIS(2-ETHYLHEXYL) PHTHALATE
830U	DI-N-OCTYLPHTHALATE
[redacted]	
830U	BENZO-A-PYRENE
830U	INDENO (1,2,3 CD) PYRENE
830U	DIBENZO(A,H)ANTHRACENE
830U	BENZO(GHI)PERYLENE
830U	PHENOL
830U	2-CHLOROPHENOL
1700U	BENZYL ALCOHOL
830U	2-METHYLPHENOL
830U	(3-AND/OR 4-)METHYLPHENOL
830U	2-NITROPHENOL
830U	2,4-DIMETHYLPHENOL
1700U	BENZOIC ACID
830U	2,4-DICHLOROPHENOL
830U	4-CHLORO-3-METHYLPHENOL
830U	2,4,6-TRICHLOROPHENOL
830U	2,4,5-TRICHLOROPHENOL
1700U	2,4-DINITROPHENOL
1700U	4-NITROPHENOL
830U	2,3,4,6-TETRACHLOROPHENOL
1700U	2-METHYL-4,6-DINITROPHENOL
1700U	PENTACHLOROPHENOL
21.3	PERCENT MOISTURE

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/04/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-883 SAMPLE NO. 49868 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SD-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

N PETROLEUM PRODUCT

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49869 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SD-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1520 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
57U	CHLOROMETHANE
57U	VINYL CHLORIDE
57U	BROMOMETHANE
57U	CHLOROETHANE
[redacted]	[redacted]
57U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
570U	ACETONE
570U	CARBON DISULFIDE
57U	METHYLENE CHLORIDE
57U	TRANS-1,2-DICHLOROETHENE
57U	1,1-DICHLOROETHANE
570U	VINYL ACETATE
57U	CIS-1,2-DICHLOROETHENE
57U	2,2 DICHLOROPROPANE
570U	METHYL ETHYL KETONE
57U	BROMOCHLOROMETHANE
57U	CHLOROFORM
57U	1,1,1-TRICHLOROETHANE
57U	1,1-DICHLOROPROPENE
57U	CARBON TETRACHLORIDE
57U	1,2-DICHLOROETHANE
57U	BENZENE
57U	TRICHLOROETHENE(TRICHLOROETHYLENE)
57U	1,2-DICHLOROPROPANE
57U	DIBROMOMETHANE
57U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
57U	CIS-1,3-DICHLOROPROPENE
570U	METHYL ISOBUTYL KETONE
57U	TOLUENE
57U	TRANS-1,3-DICHLOROPROPENE
57U	1,1,2-TRICHLOROETHANE
57U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
57U	1,3-DICHLOROPROPANE
570U	METHYL BUTYL KETONE
57U	DIBROMOCHLOROMETHANE
57U	CHLOROBENZENE
57U	1,1,1,2 TETRACHLOROETHANE
57U	ETHYL BENZENE
57U	(M- AND/OR P-)XYLENE
57U	O-XYLENE
57U	STYRENE
57U	BROMOFORM
57U	BROMOBENZENE
57U	1,1,2,2-TETRACHLOROETHANE
57U	1,2,3-TRICHLOROPROPANE
57U	O-CHLOROTOLUENE
57U	P-CHLOROTOLUENE
57U	1,3-DICHLOROBENZENE
57U	1,4-DICHLOROBENZENE
57U	1,2-DICHLOROBENZENE
12.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/04/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-883 SAMPLE NO. 49869 SAMPLE TYPE. SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD CITY: NEWPORT ST: TN
STATION ID: SD-04 COLLECTION START: 09/12/90 1520 STOP. 00/00/00

ANALYTICAL RESULTS UG/KG

N PETROLEUM PRODUCT

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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APPENDIX C

APPENDIX C

SUMMARY OF GEOPHYSICAL METHODS

The following sections are from "Geophysical Techniques for Sensing Buried Wastes and Waste Migration" by Glaccum, R. A., and M. R. Noel, August, 1983, Technos, Inc., for Environmental Monitoring Systems Laboratory, ORD., USEPA, Las Vegas, Nevada.

ELECTROMAGNETICS (EM)*

The electromagnetic (EM) method provides a means of measuring the electrical conductivity of subsurface soil, rock, and ground water. Electrical conductivity is a function of the type of soil and rock, its porosity, its permeability, and the fluids which fill the pore space. In most cases the conductivity (specific conductance) of the pore fluids will dominate the measurement. Accordingly, the EM method is applicable both to assessment of natural geohydrologic conditions and to mapping of many types of contaminant plumes. Additionally, trench boundaries, buried wastes and drums, as well as metallic utility lines can be located with EM techniques.

Natural variations in subsurface conductivity may be caused by changes in soil moisture content, ground water specific conductance, depth of soil cover over rock, and thickness of soil and rock layers. Changes in basic soil or rock types, and structural features such as fractures or voids may also produce changes in conductivity. Localized deposits of natural organic, clay, sand, gravel, or saltrich zones will also affect subsurface conductivity.

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*The term electromagnetic has been used in contemporary literature as a descriptive term for other geophysical methods, including GPR and metal detectors which are based on electromagnetic principles. However, this document will use electromagnetic (EM) to specifically imply the measurement of subsurface conductivities by low-frequency electromagnetic induction. This is in keeping with the traditional use of the term in the geophysical industry from which the EM methods originated. While the authors recognize that there are many electromagnetic systems and manufacturers, the discussion in this section is based solely on instruments which are calibrated to read in electrical conductivity units and which have been effectively and extensively used at hazardous waste sites. There is only one manufacturer of such instruments at the time of this writing.

Many contaminants will produce an increase in free ion concentration when introduced into the soil or ground water systems. This increase over background conductivity enables detection and mapping of contaminated soil and ground water at Hazardous Waste Sites (HWS), landfills, and impoundments. Large amounts of organic fluids such as diesel fuel can displace the normal soil moisture, causing a decrease in conductivity which may also be mapped, although this is not commonly done. The mapping of a plume will usually define the local flow direction of contaminants. Contaminant migration rates can be established by comparing measurements taken at different times.

The absolute values of conductivity for geologic materials (and contaminants) are not necessarily diagnostic in themselves, but the variations in conductivity, laterally and with depth, are significant. It is these variations which enable the investigator to rapidly find anomalous conditions.

Since the EM method does not require ground contact, measurements may be made quite rapidly. Lateral variations in conductivity can be detected and mapped by a field technique called profiling. Profiling measurements may be made to depths ranging from 0.75 to 60 meters. The data is recorded using strip chart and magnetic tape recorders. This continuous measurement allows increased rates of data acquisition and improved resolution for mapping small geohydrologic features. Further, recorded data enhanced by computer processing has proved invaluable in the evaluation of complex hazardous waste sites. The excellent lateral resolution obtained from EM profiling data has been used to advantage in efforts to outline closely-spaced burial pits, to reveal the migration of contaminants into the surrounding soil, and to delineate fracture patterns.

Vertical variations in conductivity can also be detected by the EM method. A station measurement technique called sounding is employed for this purpose. Data can be acquired from depths by combining results from a variety of EM instruments, each requiring different field application techniques. Other EM systems are capable of sounding to depth of one-thousand feet or more, but have not yet been used at HWS and are not adaptable to continuous measurements.

Profiling is the most cost-effective use of the EM method. Continuous profiling can be used in many applications to increase resolution, data density, and permit total site coverage at critical sites.

At HWS, applications of EM can provide:

- Assessment of natural geohydrologic conditions;
- Locating and mapping of burial trenches and pits containing drums and/or bulk wastes;
- Determination of flow direction in both unsaturated and saturated zones;
- Rate of plume movement by comparing measurement taken at different times;
- Locating and mapping of utility pipes and cables which may affect other geophysical measurements, or whose trench may provide a permeable pathway for contaminant flow.

Although there is available a wide variety of EM equipment, most of it is intended for geophysical exploration of mineral deposits. These units have not been used at HWS and do not provide a simple conductivity reading. This document discusses only those instruments which are designed and calibrated to read directly in units of conductivity.

Conductance is measured with electronic instrumentation consisting of a transmitter coil and receiver coil. The transmitter coil radiates an electromagnetic field which induces eddy currents in the earth below the instrument. Each of these eddy current loops, in turn, generates a secondary electromagnetic field which is proportional to the magnitude of the current flowing within that loop. A part of the secondary magnetic field from each loop is intercepted by the receiver coil and produces an output voltage which (within limits) is linearly related to subsurface conductivity. This reading is a bulk measurement of conductivity, e.g., the cumulative response to subsurface conditions ranging all the way from the surface to the effective depth of the instrument.

The sampling depth of EM equipment is related to the instrument's coil spacing. Instruments with coil spacings of one, four, ten, twenty, and forty meters are commercially available. The nominal sampling depth of an EM system is taken to be approximately 1.5 times the coil spacing.

The EM sounding method can rarely identify more than two or three layers with reasonable confidence. The greater the contrast in the conductivity values of each layer, the better the results. Often, the more detailed resistivity sounding method is used to complement EM profiling data.

The results of sounding analysis are usually presented as a vertical section, in which the conductivity layers are identified as a function of depth. The analyst may be able to correlate these layers to geohydrologic units believed to exist at the site.

Although the EM technique can be used for profiling or sounding, profiling is the most effective use of the EM method. Profiling makes possible the rapid mapping of subsurface conductivity changes, and the location, delineation, and assessment of spatial variables resulting from changes in the natural setting or from many contaminants.

EM is a very effective reconnaissance tool. The use of qualitative non-recorded data can provide initial interpretation in the field. If site conditions are complex, the use of a high-density survey grid, continuously-recording instruments, and computer processing may be necessary, in order to properly evaluate subsurface conditions. When continuously-recording instruments are used, total site coverage is feasible. More quantitative information can be obtained by using conductivity data from different depth ranges. At present, three different systems must be used to acquire data from 0.75 to 60 meters. Very often, however, data from two standard depths, e.g. six and fifteen meters, is adequate to furnish depth information.

Capabilities

- The EM profile method permits rapid data acquisition, resulting in high-density and high-resolution surveys.
- Profiling data may be acquired from various discrete depths, ranging from 0.75 meters to 60 meters.
- Continuously-recording instruments (to fifteen meter depth) can increase survey speed, density, and resolution permitting total site coverage, if required.
- EM reads directly in conductivity units (mm/m) permitting use of raw data in the field, and correlation to specific conductance of ground water samples.
- EM can map local and general changes in the natural geohydrologic setting.
- EM can detect and measure the boundaries of a conductivity plume.
- Direction of plume flow can be determined from an EM conductivity map.
- EM measurements taken at different times can provide the means to compute movement rates of conservative contaminants.
- EM can detect and map burial pits and trenches of both bulk and drummed wastes.
- EM can detect and map the location of buried metallic utility lines.

Limitations

- EM has less sounding (vertical) resolution than the resistivity method due to its limited number of depth intervals.
- The acquisition of data from depths of 0.75 to 60 meters requires the use of three different EM systems.
- Continuous data can be obtained only to depths up to approximately fifteen meters.
- An EM measurement is influenced by the shallower materials more than the deeper ones; this must be considered when evaluating the data.
- EM measurements become non-linear in zones of very high conductivity.
- The EM method is susceptible to noise from a number of sources, including natural atmospheric noise, powerlines, radio transmitters, buried metallic trash, pipes, cables, nearby fences, vehicles, and buildings.

MAGNETOMETER

Magnetic measurements are commonly used to map regional geologic structure and to explore for minerals. They are also used to locate pipes and survey stakes or to map archeological sites. They are commonly used at HWS to locate buried drums and trenches.

A magnetometer measures the intensity of the earth's magnetic field. The presence of ferrous metals creates variations in the local strength of that field, permitting their detection. A magnetometer's response is proportional to the mass of the ferrous target. Typically, a single drum can be detected at distances up to six meters, while massive piles of drums can be detected at distances up to twenty meters or more.

Some magnetometers require the operator to stop and take discrete measurements; other instruments permit the acquisition of continuous data as the magnetometer is moved across the site. This continuous coverage is much more suitable for high resolution requirements and the mapping of extensive areas.

The effectiveness of a magnetometer can be reduced or totally inhibited by noise or interference from time-variable changes in the earth's field and spatial variations caused by magnetic minerals in the soil, or iron and steel debris, ferrous pipes, fences, buildings, and vehicles. Many of these problems can be avoided by careful selection of instruments and field techniques.

At HWS, magnetometers may be used to:

- Locate buried steel containers, such as 55-gallon drums;
- Define boundaries of trenches filled with ferrous containers;
- Locate ferrous underground utilities, such as iron piles or tanks, and the permeable pathways often associated with them;
- Select drilling locations that are clear of buried drums, underground utilities, and other obstructions.

A magnetometer measures the intensity of the earth's magnetic field. Variations in this field may be caused by the natural distribution of iron oxides within the soil and rock or by the presence of buried iron or steel objects. (The magnetometer does not respond to nonferrous metals such as aluminum, copper, tin, and brass).

The earth's magnetic field behaves much as if there were a large bar magnet embedded in the earth. Although the earth's field intensity varies considerably throughout the United States, its average value is approximately 50,000 gammas.* The angle of the magnetic field with respect to the earth's surface also varies. In the U.S., this angle of inclination ranges approximately sixty to seventy-five degrees from the horizontal.

The intensity of the earth's magnetic field changes daily with sunspots and ionospheric conditions which can cause large and sometimes rapid variations. With time, these variations produce unwanted signals (noise) and can substantially affect magnetic measurements.

If the magnetic properties of the soil and rock were perfectly uniform, there would be no local magnetic anomalies; however, a concentration of natural iron minerals, or a buried iron object, will cause a local magnetic anomaly which can be detected at the surface.

Typical magnetic anomalies at HWS will range from one to hundreds of gammas for small discrete targets, depending on their depth. Massive piles of buried drums will result in anomalies of from one-hundred to one-thousand gammas or more.

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*The unit of magnetic measurement is the gamma. Recently, the gamma unit has been renamed the Nano Tesla. At this time, most instruments are still labeled in gammas, as are specification sheets, existing literature, and field data; hence all references to magnetic data in this document are expressed in gammas.

While several factors influence the response of a magnetometer, the mass of a buried target and its depth are the most important. A magnetometer's response is directly proportional to the mass of ferrous metal present and varies by one over the distance cubed ($1/d^3$) for total measurements. If a gradiometer is used, the response falls off even faster, as one over the distance to the fourth power ($1d^4$). With sensors of equal sensitivity, the total field system provides the greater working range. Typically a single drum can be detected at distances up to six meters or more. There is a wide variety of magnetometers available commercially; specific performance is highly dependent upon the type of magnetometer and the field conditions. Theoretically, the number of drums may be calculated, however, such results should be considered only approximations because of the number of variables associated with targets, site conditions, and calculations. Actual results may vary considerably.

A magnetometer with continuous recording capabilities can be used to produce a strip chart of the field data, which is helpful in assessing signal-to-noise ratio, anomaly shape, target location, and provides a means of exercising quality control over field data. This continuous coverage is much more suitable for high-resolution requirements and the mapping of extensive areas.

The effectiveness of a magnetometer can be reduced or totally inhibited by noise or interference from time-variable changes in the earth's field and spatial variations caused by magnetic minerals in the soil, or iron and steel debris, ferrous pipes, fences, buildings, and vehicles. Many of these problems can be avoided by careful selection of instruments and field techniques.

Capabilities

- Magnetometers respond to ferrous metals (iron or steel) only.
- Individual drums can be detected at depths up to six meters.
- Large masses of drums can be detected at depths of six to twenty meters.
- Magnetometers can provide a greater depth range than metal detectors.
- Interpretation of their data may be used to provide estimates of the number and depth of buried drums.
- They can provide a continuous response along a traverse line.
- They may be mounted on vehicles for coverage of a large site.

Limitations

- In general, magnetometers are susceptible to noise from many different sources, including steel fences, vehicles, buildings, iron debris, natural soil minerals, and underground utilities.
- Low cost units are limited in depth range (but their limitations make them insensitive to many of the above sources of noise).
- Total field instruments are also sensitive to fluctuations in the earth's magnetic field which can seriously affect data.
- Data is of limited use in determining the number and depth of targets.
- Complex site conditions may require the use of highly skilled operators, special equipment, and the recording and processing of data, along with skilled interpretation.

MAG FIELD DATA SHEET

STATION		Reading	Reading	Reading	Average (gammas)	Comments
X	Y					
0	0	53,657	53,657	53,657	53,657	
1	0	647	647	647	647	
2	0	658	658	658	658	
3	0	625	625	625	625	
4	0	362	366	362	363	
4	1	626	626	626	626	
3	1	646	646	646	646	
2	1	658	658	658	658	
1	1	659	659	659	659	
0	1	652	652	652	652	
0	2	658	657	657	657	
1	2	669	669	669	669	
2	2	655	655	655	655	
3	2	641	641	641	641	
4	2	623	623	622	623	
4	3	637	637	637	637	
3	3	651	652	651	651	
2	3	659	659	659	659	
1	3	666	666	666	666	
0	3	673	672	672	672	
0	4	662	662	662	662	
1	4	672	672	672	672	
2	4	668	668	668	668	
3	4	659	659	660	659	
4	4	645	645	646	645	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 1

MAG FIELD DATA SHEET

STATION		Reading	Reading	Reading	Average (gammas)	Comments
X	Y					
4	5	53,632	53,632	53,631	53,632	Close to powerline
3	5	655	655	655	655	
2	5	661	661	661	661	
1	5	666	666	666	666	
0	5	656	656	656	656	
0	6	671	671	670	671	
1	6	668	667	667	667	
2	6	659	659	659	659	
3	6	639	639	639	639	
4	6	612	612	613	612	Close to powerline
4	7	527	524	524	525	Close to powerline
3	7	476	476	479	477	Close to truck
2	7	641	641	641	641	
1	7	659	659	659	659	
0	7	669	669	669	669	
0	8	654	654	654	654	
1	8	660	660	660	660	
2	8	641	641	641	641	
4	9	618	618	618	618	Gravel area, powerline
3	9	632	633	632	632	
2	9	651	651	650	651	
1	9	661	662	661	661	
0	9	659	659	659	659	

* Field data sheet is an extension of Geophysical Logbook F4-2528

Location Grid Area 1

MAG FIELD DATA SHEET

STATION		Reading	Reading	Reading	Average (gammas)	Comments
X	Y					
0	0	53,660	53,661	53,664	53,662	Close to powerline
0	1	657	656	657	657	
0	2	650	650	650	650	
0	3	646	646	646	646	
0	4	641	641	641	641	
0	5	637	636	636	636	
1	5	629	628	628	625	
1	4	594	595	594	594	
1	3	657	656	656	656	
1	2	649	649	649	649	
1	1	653	653	653	633	
1	0	660	660	660	660	Close to powerline
2	0	633	633	633	633	Close to powerline
2	1	650	650	650	650	
2	2	648	648	648	648	
2	3	645	645	645	645	
2	4	640	640	640	640	
2	5	617	617	617	617	
3	5	639	640	640	640	
3	4	634	634	634	634	
3	3	642	642	642	642	
3	2	656	656	656	656	
3	1	642	641	641	641	
3	0	621	621	622	621	Close to powerline
4	0	581	581	582	583	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 2

MAG FIELD DATA SHEET

STATION		Reading	Reading	Reading	Average (gammas)	Comments
X	Y					
4	1	53,643	53,643	53,643	53,643	Close to powerline
4	2	650	650	650	650	
4	3	648	648	648	648	
4	4	643	643	642	643	
4	5	624	624	624	624	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 2

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
0	0	0.60	10	6.0	
1	0	0.68	10	6.8	Under powerline
2	0	0.76	10	7.6	Under powerline
3	0	0.74	10	7.4	
4	0	0.54	10	5.6	
4	1	0.52	10	5.2	
3	1	0.42	10	4.2	
2	1	0.38	10	3.8	
1	1	0.36	10	3.6	
0	1	0.36	10	3.6	
0	2	0.38	10	3.8	
1	2	0.34	10	3.4	
2	2	0.36	10	3.6	
3	2	0.39	10	3.9	
4	2	0.54	10	5.4	
4	3	0.65	10	6.5	
3	3	0.44	10	4.4	
2	3	0.38	10	3.8	
1	3	0.34	10	3.4	
0	3	0.42	10	4.2	
0	4	0.72	10	7.2	
1	4	0.46	10	4.6	
2	4	0.36	10	3.6	
3	4	0.38	10	3.8	
4	4	0.54	10	6.5	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 1

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
4	5	0.66	10	6.6	
3	5	0.44	10	4.4	
2	5	0.42	10	4.2	
1	5	0.59	10	5.9	
0	5	0.62	10	6.2	
0	6	0.52	10	5.2	
1	6	0.66	10	6.6	
2	6	0.46	10	4.6	
3	6	0.47	10	4.7	
4	6	0.66	10	6.6	
4	7	0.90	10	9.0	Adjacent to gas tank
3	7	0.38	10	3.8	
2	7	0.66	10	6.6	
1	7	0.64	10	6.4	
0	7	0.42	10	4.2	
0	8	0.48	10	4.8	
1	8	0.58	10	5.8	
2	8	0.75	10	7.5	
3	8	0.44	10	4.4	Adjacent to gas tank
4	8	0.32	30	9.6	
4	9	0.78	10	7.8	
3	9	0.66	10	6.6	
2	9	0.78	10	7.8	
1	9	0.68	10	6.8	
0	9	0.84	10	8.4	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 1

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
0	10	0.34	30	10.2	
1	10	0.88	10	8.8	
2	10	0.76	10	7.6	
3	10	0.90	10	9.0	
4	10	0.76	10	7.6	Close to powerline
4	11	0.38	30	11.4	Close to powerline
3	11	0.32	30	9.6	
2	11	0.30	30	9.0	
1	11	0.40	30	12.0	
0	11	0.46	30	13.8	
0	12	0.50	30	15.0	
1	12	0.48	30	14.4	
2	12	0.38	30	11.4	
3	12	0.35	30	10.5	
4	12	0.52	30	15.6	Close to powerline
4	13	0.48	30	14.4	
3	13	0.46	30	13.8	
2	13	0.48	30	14.4	
1	13	0.54	30	16.2	
0	13	0.48	30	14.4	
0	14	0.37	30	11.1	
1	14	0.41	30	12.3	
2	14	0.46	30	13.8	
3	14	0.48	30	14.4	
4	14	0.54	30	16.2	Close to powerline

* Field data sheet is an extension of Geophysical Logbook F4-2528

Location Grid Area 1

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
4	15	0.69	30	20.7	Close to powerline
3	15	0.68	30	20.4	
2	15	0.48	30	14.4	
1	15	0.32	30	9.6	
0	15	0.79	10	7.9	
0	16	0.86	10	8.6	
1	16	0.54	10	5.4	
2	16	0.80	10	8.0	
3	16	0.68	30	20.4	Edge of gravel parking lot
4	16	0.82	30	24.6	In gravel lot
4	17	0.80	30	24.0	In gravel lot
3	17	0.50	30	15.0	Edge of gravel lot
2	17	0.50	10	5.0	
1	17	0.44	10	4.4	
0	17	0.70	10	7.0	
0	18	0.62	10	6.2	
1	18	0.50	10	5.0	
2	18	0.47	10	4.7	
3	18	0.96	10	7.6	Gravel lot
4	18	0.52	30	15.6	
4	19	0.36	30	10.8	
3	19	0.80	10	8.0	Gravel lot
2	19	0.50	10	5.0	Gravel lot
1	19	0.48	10	4.8	
0	19	0.64	10	6.4	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 1

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
0	0	0.40	10	4.0	Close to powerlines
0	1	0.30	10	3.0	
0	2	0.48	10	4.8	
0	3	0.32	30	9.6	
0	4	0.66	10	6.6	
0	5	0.94	10	9.4	
1	5	0.60	10	6.0	
1	4	0.72	3	2.2	Negative value for 90°
1	3	0.32	10	3.2	
1	2	0.70	3	2.1	
1	1	0.75	3	2.3	
1	0	0.34	10	3.4	Close to powerline
2	0	0.32	10	3.2	Close to powerline
2	1	0.70	3	2.1	
2	2	0.72	3	2.2	
2	3	0.78	3	2.3	
2	4	0.94	3	2.8	
2	5	0.70	10	7.0	
3	5	0.34	10	3.4	
3	4	0.66	10	6.6	
3	3	0.72	3	2.2	
3	2	0.66	3	1.9	
3	1	0.72	3	2.2	
3	0	0.30	10	3.0	
4	0	0.32	10	3.2	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 2

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
4	1	0.80	3	2.4	
4	2	0.70	3	2.1	
4	3	0.70	3	2.1	
4	4	0.80	3	2.4	
4	5	0.30	10	3.0	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 2

APPENDIX D

Site Inspection Report

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER			
HEYWOOD-WAKEFIELD COMPANY	CHEMWOOD DRIVE			
03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE
NEWPORT	TN	37821	COCKE	

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
35 59 20.0	083 12 27.0	☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION (Month Day Year)	02 SITE STATUS	03 YEARS OF OPERATION
9 0	☒ ACTIVE ☐ INACTIVE	1957 / 1982 (Beginning Year / Ending Year) ☐ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☒ B. EPA CONTRACTOR NUS CORPORATION (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ____ (Name of firm)
☐ E. STATE ☐ F. STATE CONTRACTOR ____ (Name of firm) ☐ G. OTHER ____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
ANDREW HARVEY	GEOLOGIST	NUS CORP	(404) 938-7710
09 OTHER INSPECTORS	**10 TITLE**	**11 ORGANIZATION**	**12 TELEPHONE NO.**
WENDELL C. MCLENDON	FIELD TECHNICIAN	NUS CORP.	(404) 938-7710
TRISHA HARRIS	ENVIRONMENTAL SPECIALIST	NUS CORP.	(404) 938-7710
RON WILDE	ENVIRONMENTAL SCIENTIST	NUS CORP	(404) 938-7710
MARK HITCHCOCK	FIELD TECHNICIAN	NUS CORP	(404) 938-7710
GREG THOMAS	GEOLOGIST	NUS CORP	(404) 938-7710

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
MIKE MULLANEY	PRESIDENT EASTERN OPERATIONS	NEWPORT, TN	(615) 623-0062
TOM MCNEALY	PLANT MANAGER	NEWPORT, TN	(615) 623-0062
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	SEPTEMBER 11-13, 1990	HOT, HAZY, PARTLY CLOUDY WITH CHANCE OF RAIN

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
RAMONA KLEIN	U.S. ENVIRONMENTAL PROTECTION AGENCY	(404) 347-5065

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
WENDELL C. MCLENDON	—	NUS CORPORATION	(404) 938-7710	04 11 91 (Month Day Year)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check)

- A SOLID
- X B POWDER, FINES
- X C SLUDGE
- E SLURRY
- X F LIQUID
- G GAS
- D OTHER _____ (Specify)

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

- TONS _____
- CUBIC YARDS _____
- NO. OF DRUMS 77

03 WASTE CHARACTERISTICS (Check all that apply)

- X A TOXIC
- B CORROSIVE
- C RADIOACTIVE
- X D PERSISTENT
- E SOLUBLE
- F INFECTIOUS
- G FLAMMABLE
- H IGNITABLE
- I HIGHLY VOLATILE
- J EXPLOSIVE
- K REACTIVE
- L INCOMPATIBLE
- M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	2255 +	GALLONS	
OLW	OILY WASTE			
SOL	SOLVENTS	UNKNOWN		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	UNKNOWN		

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU	ELECTROPLATING SLUDGE	999	DRUMS	UNKNOWN	
SOL	SPENT ELECTROPLATING SOLVENTS	999	TANKS	UNKNOWN	
MES	LEAD	—	DRUMS	230	mg/kg
MES	ZINC	—	DRUMS	450	mg/kg
MES	CHROMIUM	7440413	DRUMS	200	mg/kg
MES	NICKEL	7440020	DRUMS	140	mg/kg
MES	COPPER	—	DRUMS	170	mg/kg

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
TN	0003382330

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Spills from wastewater treatment plant could possibly contaminate groundwater.

01 [X] B. SURFACE WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Remote potential. The site is located in an artificially enclosed basin, but surface water that drains from north side of plant travels approximately 0.4 miles to the Holston River.

01 [X] C. CONTAMINATION OF AIR — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Remote potential

01 [X] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Remote potential

01 [X] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Workers could come in contact with contaminated soils.

01 [X] F. CONTAMINATION OF SOIL — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [X] ALLEGED
03 AREA POTENTIALLY AFFECTED ≈ 1 (Acres) — 04 NARRATIVE DESCRIPTION

Chromium, zinc, nickel, copper and lead were found in surface soil samples

01 [X] G. DRINKING WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Remote potential

01 [X] H. WORKER EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Workers could come in contact with contaminated soils.

01 [ ] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

The site is easily accessible and not fenced.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE: TN | 02 SITE NUMBER: D003382330

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] J DAMAGE TO FLORA — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [X] ALLEGED
04 NARRATIVE DESCRIPTION

THERE ARE SEVERAL SMALL AREAS OF STRESSED VEGETATION ON THE EASTERN PORTION OF THE SITE

01 [X] K DAMAGE TO FAUNA — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION (Species affected)

NOT DOCUMENTED

01 [X] L CONTAMINATION OF FOOD CHAIN — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

NOT DOCUMENTED

01 [X] M UNSTABLE CONTAINMENT OF WASTES (Spills, Runoff, Standing liquids, Leaking drums) — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

NONE OBSERVED.

01 [X] N DAMAGE TO OFFSITE PROPERTY — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

NONE OBSERVED.

01 [X] O CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

REMOTE POTENTIAL. WATER FLOWS TO THE EASTERN PORTION OF THE PROPERTY AND PERCOLATES INTO THE GROUND OR EVAPORATES.

01 [ ] P ILLEGAL/UNAUTHORIZED DUMPING — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

NOT DOCUMENTED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

NONE OBSERVED

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE, EPA FILE MATERIAL, FIELD NOTES

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003352330

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
A NPDES	TN 000 1392	6-13-74	10-16-83	FOR DISCHARGE INTO PAGEL RIVER
B UIC				
C AIR				
D RCRA LARGE GENERATOR				EASTERN PLATING COMPANY
E RCRA INTERIM STATUS				
F SPCC PLAN				
G STATE (Specify)				
H LOCAL (Specify)				
I OTHER (Specify)				
J NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
A SURFACE IMPOUNDMENT		
B PILES		
X C DRUMS, ABOVE GROUND	77	
D TANK, ABOVE GROUND		
E TANK, BELOW GROUND		
F LANDFILL		
G LANDFARM		
H OPEN DUMP		
I OTHER (Specify)		

04 TREATMENT (Check all that apply)
A INCINERATION
B UNDERGROUND INJECTION
C CHEMICAL/PHYSICAL
D BIOLOGICAL
E WASTE OIL PROCESSING
F SOLVENT RECOVERY
G OTHER RECYCLING/RECOVERY
X H OTHER (Specify) SENT OFFSITE TO PERMITTED FACILITY

05 OTHER

X A BUILDINGS ON SITE

3

06 AREA OF SITE

≈ 39

07 COMMENTS

IN 1984, DURING A RCRA CLOSURE INSPECTION, CHEMICAL WASTE MANAGEMENT REMOVED 77 DRUMS OF SLUDGE AND FREE LIQUIDS FROM KEYSTONE-WAKEFIELD CO.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

X A. ADEQUATE, SECURE B. MODERATE X C. INADEQUATE, POOR D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE YES NO

02 COMMENTS ~~THE SITE~~ ACCESS TO THE SITE IS NOT RESTRICTED BY GATES OR FENCES.

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

STATE, EPA FILE MATERIAL, FIELD NOTES

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A ☒	B ☐
NON-COMMUNITY	C ☒	

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A ☐	B ☐	C ☐
D ☐	E ☐	F ☐

03 DISTANCE TO SITE

A UPGRADIENT (mi)

B _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☒ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 779 HOMES, 2010 PERSONS

03 DISTANCE TO NEAREST DRINKING WATER WELL 0.8 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
≈15 (ft)	EAST	1 (ft)	_____ (gpd)	☐ YES ☒ NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

ALL PRIVATE WELLS ARE LOCATED UPGRADIENT OF THE SITE.

10 RECHARGE AREA

☒ YES ☐ NO

COMMENTS RECHARGE BY PERCOLATION OF PRECIPITATION

11 DISCHARGE AREA

☐ YES ☐ NO

COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION, DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
PIGEON RIVER	☐	0.4 (mi)
FRENCH BROAD RIVER, DOUGLAS LAKE	☐	4.1 (mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A 292 (NO. OF PERSONS)	B 3608 (NO. OF PERSONS)	C 11,368 (NO. OF PERSONS)

02 DISTANCE TO NEAREST POPULATION 0.4 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE _____

04 DISTANCE TO NEAREST OFF-SITE BUILDING >0.1 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site (e.g., rural, village, densely populated urban area))

THE SITE IS LOCATED IN AN INDUSTRIAL AREA. POPULATION INCREASES AS DISTANCE FROM SITE INCREASES.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

A 10^{-6} – 10^{-4} cm/sec X B 10^{-4} – 10^{-2} cm/sec ☐ C 10^{-4} – 10^{-3} cm/sec ☐ D GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A IMPERMEABLE (Less than 10^{-6} cm/sec) X B RELATIVELY IMPERMEABLE (10^{-4} – 10^{-6} cm/sec) ☐ C RELATIVELY PERMEABLE (10^{-2} – 10^{-4} cm/sec) ☐ D VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
≈ 6 (ft)	? (ft)	UNKNOWN

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
11 (in)	2.8 (in)	1 %	SE	2 %

09 FLOOD POTENTIAL

SITE IS IN ___ YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A — (mi) OTHER: B — (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES: SEVERAL

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AG LAND
A 0 (mi)	B ≈ 0.7 (mi)	C _____ (mi)	D _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

THE SITE OCCUPIES APPROXIMATELY 38 ACRES OF LAND AT AN ELEVATION OF ABOUT 1,030 FEET ABOVE MEAN SEA LEVEL (amsl). THE SITE APPEARS TO BE LEVEL. TOPOGRAPHY OF THE SURROUNDING AREA CONSISTS OF DISCONTINUOUS NORTHEAST TRENDING MOUNTAINOUS RIDGES AND BROAD, FLAT STREAM VALLEYS. ELEVATIONS IN THE AREA RANGE BETWEEN 1,009 AND 2,420 FEET amsl.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE, EPA FILES.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	0		
SURFACE WATER	0		
WASTE	0		
AIR	0	FOR ALL SAMPLES:	
RUNOFF SEDIMENT	4	ORGANICS: GULF SOUTH ENVIRONMENTAL LABS	
SPILL		NEW ORLEANS, LA	
SOIL	10	INORGANIC: CHEMTECH CONSULTING GROUP, LTD.	
VEGETATION	0	NEW YORK, NY	
OTHER			

III. FIELD MEASUREMENTS TAKEN N/A

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF NUS CORPORATION FILES
Name of organization or individual

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS NUS CORPORATION FILES

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

A GEOPHYSICAL SURVEY WAS COMPLETED ON THE PROPERTY (SEE SSI REPORT).

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE, EPA FILES, NUS CORPORATION LOGBOOKS FOR HEYWOOD-WAKEFIELD CO.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
EASTERN PLATING CO.	

03 STREET ADDRESS	04 SIC CODE
CHEMWOOD DR	

05 CITY	06 STATE	07 ZIP CODE
NEWPORT	TN	37821

01 NAME	02 D+B NUMBER
VIRCO MANUFACTURING	

03 STREET ADDRESS	04 SIC CODE
CHEMWOOD DR	

05 CITY	06 STATE	07 ZIP CODE
NEWPORT	TN	37821

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER

10 STREET ADDRESS	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER
HEYWOOD-WAKEFIELD CO.	

03 STREET ADDRESS	04 SIC CODE
CHEMWOOD DR.	

05 CITY	06 STATE	07 ZIP CODE
NEWPORT	TN	37821

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IN	D003382330

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	14 CITY	15 STATE / 16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER		

OPERATOR'S PARENT COMPANY (If applicable)

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	14 CITY	15 STATE / 16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	14 CITY	15 STATE / 16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	14 CITY	15 STATE / 16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
EASTERN PLATING CO.	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
CHEMWOOD DRIVE	

05 CITY	06 STATE	07 ZIP CODE
NEWPORT, TN	TN	37821

LARGE GENERATOR STATUS

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SEE SI REPORT.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
TN	D003382330

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☒ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION WASTE WAS SHIPPED TO SCA SERVICES HAZARDOUS WASTE LANDFILL AT PINEWOOD, S.C.

01 ☐ H. ON SITE BURIAL — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ L. ENCAPSULATION — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ N. CUTOFF WALLS — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ 03 AGENCY _____
04 DESCRIPTION
N/A

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
TN	D003582330

II. PAST RESPONSE ACTIVITIES (Continued)

01 [ ] R BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 [ ] S CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 [ ] T BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 [ ] U GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 [ ] V BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 [ ] W GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 [ ] X FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 [ ] Y LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
UNKNOWN

01 [ ] Z AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 [ ] 1 ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 [ ] 2 POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
UNKNOWN

01 [ ] 3 OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE, EPA FILE MATERIAL

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IN	D003382330

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION ✓ YES NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY ENFORCEMENT ACTION

A "REQUEST FOR ORDER CIVIL PENALTY AND DAMAGE ASSESSMENT" WAS ENTERED ON APRIL 15, 1983 FOR RCRA STORAGE OF HAZARDOUS WASTE AT THE SITE AFTER THE PLANT CEASED OPERATIONS. HEYWOOD-WAKEFIELD COMPANY CEASED OPERATIONS IN 1982 AND DECLARED A CHAPTER 1 BANKRUPTCY.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE, EPA FILE MATERIAL

EPA FORM 2070-13 (7-81)

APPENDIX

I. FEEDSTOCKS

CAS Number	Chemical Name
1. 7664-41-7	Ammonia
2. 7440-36-0	Antimony
3. 1309-64-4	Antimony Trioxide
4. 7440-38-2	Arsenic
5. 1327-53-3	Arsenic Trioxide
6. 21109-95-5	Barium Sulfide
7. 7726-95-6	Bromine
8. 106-99-0	Butadiene
9. 7440-43-9	Cadmium
10. 7782-50-5	Chlorine
11. 12737-27-8	Chromite
12. 7440-47-3	Chromium
13. 7440-48-4	Cobalt
14. 1317-38-0	Cupric Oxide
15. 7758-98-7	Cupric Sulfate
16. 1317-39-1	Cuprous Oxide
17. 74-85-1	Ethylene
18. 7647-01-0	Hydrochloric Acid
19. 7664-39-3	Hydrogen Fluoride
20. 1335-25-7	Lead Oxide
21. 7439-97-6	Mercury
22. 74-82-8	Methane
23. 91-20-3	Napthalene
24. 7440-02-0	Nickel
25. 7697-37-2	Nitric Acid
26. 7723-14-0	Phosphorus
27. 7778-50-9	Potassium Dichromate
28. 1310-58-3	Potassium Hydroxide
29. 115-07-1	Propylene
30. 10588-01-9	Sodium Dichromate
31. 1310-73-2	Sodium Hydroxide
32. 7646-78-8	Stannic Chloride
33. 7772-99-8	Stannous Chloride
34. 7664-93-9	Sulfuric Acid
35. 108-88-3	Toluene
36. 1330-20-7	Xylene
37. 7646-85-7	Zinc Chloride
38. 7733-02-0	Zinc Sulfate

II. HAZARDOUS SUBSTANCES

CAS Number	Chemical Name
1. 75-07-0	Acetaldehyde
2. 64-19-7	Acetic Acid
3. 108-24-7	Acetic Anhydride
4. 75-86-5	Acetone Cyanohydrin
5. 506-96-7	Acetyl Bromide
6. 75-36-5	Acetyl Chloride
7. 107-02-8	Acrolein
8. 107-13-1	Acrylonitrile
9. 124-04-9	Adipic Acid
10. 309-00-2	Aldrin
11. 10043-01-3	Aluminum Sulfate
12. 107-18-6	Allyl Alcohol
13. 107-05-1	Allyl Chloride
14. 7664-41-7	Ammonia
15. 631-61-8	Ammonium Acetate
16. 1863-63-4	Ammonium Benzoate
17. 1066-33-7	Ammonium Bicarbonate
18. 7789-09-5	Ammonium Bichromate
19. 1341-49-7	Ammonium Bifluoride
20. 10192-30-0	Ammonium Bisulfite
21. 1111-78-0	Ammonium Carbamate
22. 12125-02-9	Ammonium Chloride
23. 7788-98-9	Ammonium Chromate
24. 3012-65-5	Ammonium Citrate, Dibasic
25. 13826-83-0	Ammonium Fluoborate
26. 12125-01-8	Ammonium Fluoride
27. 1336-21-6	Ammonium Hydroxide
28. 6009-70-7	Ammonium Oxalate
29. 16919-19-0	Ammonium Silicofluoride
30. 7773-06-0	Ammonium Sulfamate
31. 12135-76-1	Ammonium Sulfide
32. 10196-04-0	Ammonium Sulfite
33. 14307-43-8	Ammonium Tartrate
34. 1762-95-4	Ammonium Thiocyanate
35. 7783-18-8	Ammonium Thiosulfate
36. 628-63-7	Amyl Acetate
37. 62-53-3	Aniline
38. 7647-18-9	Antimony Pentachloride
39. 7789-61-9	Antimony Tribromide
40. 10025-91-9	Antimony Trichloride
41. 7783-56-4	Antimony Trifluoride
42. 1309-64-4	Antimony Trioxide
43. 1303-32-8	Arsenic Disulfide
44. 1303-28-2	Arsenic Pentoxide
45. 7784-34-1	Arsenic Trichloride
46. 1327-53-3	Arsenic Trioxide
47. 1303-33-9	Arsenic Trisulfide
48. 542-62-1	Barium Cyanide
49. 71-43-2	Benzene
50. 65-85-0	Benzoic Acid
51. 100-47-0	Benzonitrile
52. 98-88-4	Benzoyl Chloride
53. 100-44-7	Benzyl Chloride
54. 7440-41-7	Beryllium
55. 7787-47-5	Beryllium Chloride
56. 7787-49-7	Beryllium Fluoride
57. 13597-99-4	Beryllium Nitrate
58. 123-86-4	Butyl Acetate
59. 84-74-2	n-Butyl Phthalate
60. 109-73-9	Butylamine
61. 107-92-6	Butyric Acid
62. 543-90-8	Cadimium Acetate
63. 7789-42-6	Cadmium Bromide
64. 10108-64-2	Cadmium Chloride
65. 7778-44-1	Calcium Arsenate
66. 52740-16-6	Calcium Arsenite
67. 75-20-7	Calcium Carbide
68. 13765-19-0	Calcium Chromate
69. 592-01-8	Calcium Cyanide
70. 26264-06-2	Calcium Dodecylbenzene Sulfonate
71. 7778-54-3	Calcium Hypochlorite
72. 133-06-2	Captan
73. 63-25-2	Carbaryl
74. 1563-66-2	Carbofuran
75. 75-15-0	Carbon Disulfide
76. 56-23-5	Carbon Tetrachloride
77. 57-74-9	Chlordane
78. 7782-50-5	Chlorine
79. 108-90-7	Chlorobenzene
80. 67-66-3	Chloroform
81. 7790-94-5	Chlorosulfonic Acid
82. 2921-88-2	Chlorpyrifos
83. 1066-30-4	Chromic Acetate
84. 7738-94-5	Chromic Acid
85. 10101-53-8	Chromic Sulfate
86. 10049-05-5	Chromous Chloride
87. 544-18-3	Cobaltous Formate
88. 14017-41-5	Cobaltous Sulfamate
89. 56-72-4	Coumaphos
90. 1319-77-3	Cresol
91. 4170-30-3	Crotonaldehyde
92. 142-71-2	Cupric Acetate
93. 12002-03-8	Cupric Acetoarsenite
94. 7447-39-4	Cupric Chloride
95. 3251-23-8	Cupric Nitrate
96. 5893-66-3	Cupric Oxalate
97. 7758-98-7	Cupric Sulfate
98. 10380-29-7	Cupric Sulfate Ammoniated
99. 815-82-7	Cupric Tartrate
100. 506-77-4	Cyanogen Chloride
101. 110-82-7	Cyclohexane
102. 94-75-7	2,4-D Acid
103. 94-11-1	2,4-D Esters
104. 50-29-3	DDT
105. 333-41-5	Diazinon
106. 1918-00-9	Dicamba
107. 1194-65-6	Dichlobenil
108. 117-80-6	Dichlone
109. 25321-22-6	Dichlorobenzene (all isomers)
110. 266-38-19-7	Dichloropropane (all isomers)
111. 26952-23-8	Dichloropropene (all isomers)
112. 8003-19-8	Dichloropropene-Dichloropropane Mixture
113. 75-99-0	2,2-Dichloropropionic Acid
114. 62-73-7	Dichlorvos
115. 60-57-1	Dieldrin
116. 109-89-7	Diethylamine
117. 124-40-3	Dimethylamine
118. 25154-54-6	Dinitrobenzene (all isomers)
119. 51-28-5	Dinitrophenol
120. 25321-14-6	Dinitrotoluene (all isomers)
121. 85-00-7	Diquat
122. 298-04-4	Disulfoton
123. 330-54-1	Diuron
124. 27176-87-0	Dodecylbenzenesulfonic Acid
125. 115-29-7	Endosulfan (all isomers)
126. 72-20-8	Endrin and Metabolites
127. 106-89-8	Epichlorohydrin
128. 563-12-2	Ethion
129. 100-41-4	Ethyl Benzene
130. 107-15-3	Ethylenediamine
131. 106-93-4	Ethylene Dibromide
132. 107-06-2	Ethylene Dichloride
133. 60-00-4	EDTA
134. 1185-57-5	Ferric Ammonium Citrate
135. 2944-67-4	Ferric Ammonium Oxalate
136. 7705-08-0	Ferric Chloride

II. HAZARDOUS SUBSTANCES

CAS Number	Chemical Name
137. 7783-50-8	Ferric Fluoride
138. 10421-48-4	Ferric Nitrate
139. 10028-22-5	Ferric Sulfate
140. 10045-89-3	Ferrous Ammonium Sulfate
141. 7758-94-3	Ferrous Chloride
142. 7720-78-7	Ferrous Sulfate
143. 206-44-0	Fluoranthene
144. 50-00-0	Formaldehyde
145. 64-18-6	Formic Acid
146. 110-17-8	Fumaric Acid
147. 98-01-1	Furfural
148. 86-50-0	Guthion
149. 76-44-8	Heptachlor
150. 118-74-1	Hexachlorobenzene
151. 87-68-3	Hexachlorobutadiene
152. 67-72-1	Hexachloroethane
153. 70-30-4	Hexachlorophene
154. 77-47-4	Hexachlorocyclopentadiene
155. 7647-01-0	Hydrochloric Acid (Hydrogen Chloride)
156. 7664-39-3	Hydrofluoric Acid (Hydrogen Fluoride)
157. 74-90-8	Hydrogen Cyanide
158. 7783-06-4	Hydrogen Sulfide
159. 78-79-5	Isoprene
160. 42504-46-1	Isopropanolamine Dodecylbenzenesulfonate
161. 115-32-2	Kelthane
162. 143-50-0	Kepone
163. 301-04-2	Lead Acetate
164. 3687-31-8	Lead Arsenate
165. 7758-95-4	Lead Chloride
166. 13814-96-5	Lead Fluoborate
167. 7783-46-2	Lead Fluoride
168. 10101-63-0	Lead Iodide
169. 18256-98-9	Lead Nitrate
170. 7428-48-0	Lead Stearate
171. 15739-80-7	Lead Sulfate
172. 1314-87-0	Lead Sulfide
173. 592-87-0	Lead Thiocyanate
174. 58-89-9	Lindane
175. 14307-35-8	Lithium Chromate
176. 121-75-5	Malthion
177. 110-16-7	Maleic Acid
178. 108-31-6	Maleic Anhydride
179. 2032-65-7	Mercaptodimethur
180. 592-04-1	Mercuric Cyanide
181. 10045-94-0	Mercuric Nitrate
182. 7783-35-9	Mercuric Sulfate
183. 592-85-8	Mercuric Thiocyanate
184. 10415-75-5	Mercurous Nitrate
185. 72-43-5	Methoxychlor
186. 74-93-1	Methyl Mercaptan
187. 80-62-6	Methyl Methacrylate
188. 298-00-0	Methyl Parathion
189. 7786-34-7	Mevinphos
190. 315-18-4	Mexacarbate
191. 75-04-7	Monoethylamine
192. 74-89-5	Monomethylamine
193. 300-76-5	Naled
194. 91-20-3	Naphthalene
195. 1338-24-5	Naphthenic Acid
196. 7440-02-0	Nickel
197. 15699-18-0	Nickel Ammonium Sulfate
198. 37211-05-5	Nickel Chloride
199. 12054-48-7	Nickel Hydroxide
200. 14216-75-2	Nickel Nitrate
201. 7786-81-4	Nickel Sulfate
202. 7697-37-2	Nitric Acid
203. 98-95-3	Nitrobenzene
204. 10102-44-0	Nitrogen Dioxide
205. 25154-55-6	Nitrophenol (all isomers)
206. 1321-12-6	Nitrotoluene
207. 30525-89-4	Paraformaldehyde
208. 56-38-2	Parathion
209. 608-93-5	Pentachlorobenzene
210. 87-86-5	Pentachlorophenol
211. 85-01-8	Phenanthrene
212. 108-95-2	Phenol
213. 75-44-5	Phosgene
214. 7664-38-2	Phosphoric Acid
215. 7723-14-0	Phosphorus
216. 10025-87-3	Phosphorus Oxychloride
217. 1314-80-3	Phosphorus Pentasulfide
218. 7719-12-2	Phosphorus Trichloride
219. 7784-41-0	Potassium Arsenate
220. 10124-50-2	Potassium Arsenite
221. 7778-50-9	Potassium Bichromate
222. 7789-00-6	Potassium Chromate
223. 7722-64-7	Potassium Permanganate
224. 2312-35-8	Propargite
225. 79-09-4	Propionic Acid
226. 123-62-6	Propionic Anhydride
227. 1336-36-3	Polychlorinated Biphenyls
228. 151-50-8	Potassium Cyanide
229. 1310-58-3	Potassium Hydroxide
230. 75-56-9	Propylene Oxide
231. 121-29-9	Pyrethrins
232. 91-22-5	Quinoline
233. 108-46-3	Resorcinol
234. 7446-08-4	Selenium Oxide
235. 7761-88-8	Silver Nitrate
236. 7631-89-2	Sodium Arsenate
237. 7784-46-5	Sodium Arsenite
238. 10588-01-9	Sodium Bichromate
239. 1333-83-1	Sodium Bifluoride
240. 7631-90-5	Sodium Bisulfite
241. 7775-11-3	Sodium Chromate
242. 143-33-9	Sodium Cyanide
243. 25155-30-0	Sodium Dodecylbenzene Sulfonate
244. 7681-49-4	Sodium Fluoride
245. 16721-80-5	Sodium Hydrosulfide
246. 1310-73-2	Sodium Hydroxide
247. 7681-52-9	Sodium Hypochlorite
248. 124-41-4	Sodium Methylate
249. 7632-00-0	Sodium Nitrate
250. 7558-79-4	Sodium Phosphate, Dibasic
251. 7601-54-9	Sodium Phosphate, Tribasic
252. 10102-18-8	Sodium Selenite
253. 7789-06-2	Strontium Chromate
254. 57-24-9	Strychnine and Salts
255. 100-420-5	Styrene
256. 12771-08-3	Sulfur Monochloride
257. 7664-93-9	Sulfuric Acid
258. 93-76-5	2,4,5-T Acid
259. 2008-46-0	2,4,5-T Amines
260. 93-79-8	2,4,5-T Esters
261. 13560-99-1	2,4,5-T Salts
262. 93-72-1	2,4,5-TP Acid
263. 32534-95-5	2,4,5-TP Acid Esters
264. 72-54-8	TDE
265. 95-94-3	Tetrachlorobenzene
266. 127-18-4	Tetrachloroethane
267. 78-00-2	Tetraethyl Lead
268. 107-49-3	Tetraethyl Pyrophosphate
269. 7446-18-6	Thallium (I) Sulfate
270. 108-88-3	Toluene
271. 8001-35-2	Toxaphene
272. 12002-48-1	Trichlorobenzene (all isomers)
273. 52-68-6	Trichlorfon
274. 25323-89-1	Trichloroethane (all isomers)
275. 79-01-6	Trichloroethylene
276. 25167-82-2	Trichlorophenol (all isomers)
277. 27323-41-7	Triethanolamine Dodecylbenzenesulfonate
278. 121-44-8	Triethylamine
279. 75-50-3	Trimethylamine
280. 541-09-3	Uranyl Acetate
281. 10102-06-4	Uranyl Nitrate
282. 1314-62-1	Vanadium Pentoxide
283. 27774-13-6	Vanadyl Sulfate
284. 108-05-4	Vinyl Acetate
285. 75-35-4	Vinylidene Chloride
286. 1300-71-6	Xylenol
287. 557-34-6	Zinc Acetate
288. 52628-25-8	Zinc Ammonium Chloride
289. 1332-07-6	Zinc Borate
290. 7699-45-8	Zinc Bromide
291. 3486-35-9	Zinc Carbonate
292. 7646-85-7	Zinc Chloride
293. 557-21-1	Zinc Cyanide
294. 7783-49-3	Zinc Fluoride
295. 557-41-5	Zinc Formate
296. 7779-86-4	Zinc Hydrosulfite
297. 7779-88-6	Zinc Nitrate
298. 127-82-2	Zinc Phenolsulfonate
299. 1314-84-7	Zinc Phosphide
300. 16871-71-9	Zinc Silicofluoride
301. 7733-02-0	Zinc Sulfate
302. 13746-89-9	Zirconium Nitrate
303. 16923-95-8	Zirconium Potassium Fluoride
304. 14644-61-2	Zirconium Sulfate
305. 10026-11-6	Zirconium Tetrachloride

R-586-10-1-2

FINAL REPORT

SITE INSPECTION
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE
EPA ID NO.: TND003382330

Prepared Under
TDD No. F4-9008-32
Contract No. 68-01-7346

Revision 0

FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

OCTOBER 2, 1991

HALLIBURTON NUS ENVIRONMENTAL CORPORATION
SUPERFUND DIVISION

Prepared By	Reviewed By	Approved By
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EXECUTIVE SUMMARY

The Heywood-Wakefield Company is located in an industrial park on the south side of Chemwood Drive approximately 1 mile northwest of the city of Newport, Cocke County, Tennessee. The facility began hand production of school desks and various metal seatings in 1957. In 1963, implementation of automation added an electroplating line to the manufacturing process. Heywood-Wakefield Company ceased operations in 1982 and declared a Chapter 11 bankruptcy. Currently, the property is occupied by Virco Manufacturing, Electric Voice, the offices of Great Lakes Chemical Industries, and Eastern Plating Company. Eastern Plating Company occupies the main plant building and operates the electroplating line formerly used by Heywood-Wakefield Company.

The Heywood-Wakefield Company built a wastewater treatment plant (constructed by Utilite Co.) to allow the discharge of effluent to the Pigeon River. On June 13, 1974, the Heywood-Wakefield Company was issued a temporary NPDES permit to discharge effluent from a wastewater treatment system into Sinking Creek. A permanent NPDES permit was issued May 15, 1979, for discharge into the Pigeon River. This permit was recorded as inactive on October 16, 1983.

The main waste associated with the facility is wastewater treatment sludge from electroplating operations, containing the hazardous constituents cadmium, chromium, nickel, lead, copper, and zinc. In 1978, approximately 200 pounds of sludge waste produced at the facility was disposed of at the Cocke County Landfill. Prior to 1978, solid waste material collected by air pollution control equipment (containing 55 percent wood flour and 45 percent inert materials), approximately 200 pounds per day, was buried on the Heywood-Wakefield Company grounds. Following the implementation of RCRA the wastes were shipped to SCA Services' hazardous waste landfill at Pinewood, South Carolina.

On March 8, 1982, the state conducted an inspection of the facility and several violations of the Tennessee Hazardous Waste Management. Rules were noted. On April 16, 1982, the state conducted another inspection of the facility to determine whether the violations noted during the previous inspection had been corrected. It was noted that the violations found in the previous inspection had not been corrected, and that there had been an overflow from the wastewater treatment plant. In March 1984, representatives from the state of Tennessee Division of Solid Waste Management performed a RCRA closure inspection. During the inspection, Chemical Waste Management, Inc. removed approximately 77 drums of hazardous waste from the property. The Heywood-Wakefield site is located in the Valley and Ridge physiographic province of northeastern Tennessee. This

province is typified primarily by faulted and folded carbonate rocks which result in northeast to southwest trending ridges and valleys. Topography of area the consists of discontinuous northeast trending mountainous ridges and broad, flat stream valleys. Groundwater in the area of the facility occurs in the residual soil and primarily in fractures and solution features in the upper 200 feet of the underlying bedrock of the Sevier Shale and the Knox Group. Based on analysis of topographic contours in the area surrounding the facility, the estimated depth to the water table ranges between 10 and 15 feet below land surface (bls), and is very dependent upon topographic position and elevation as well as seasonal changes in the availability of water.

Newport Utilities supplies water to the city of Newport and Cocke County. Water is obtained from an intake on the French Broad River at river mile 82. This surface water intake is upgradient of the Heywood-Wakefield Company site. Those people within 4 miles of the Heywood-Wakefield Company site that do not use city water obtain potable water from private wells. The majority of private wells in the area are completed in the shales, sandstones, and limestone of the Sevier Shale (at depths of 20 to 450 feet) or in the dolomite of the Knox Group of rocks (at depths of 34 to 800 feet). There are 779 homes within a 4-mile radius that obtain water from private wells. The nearest well is located approximately 0.8 miles north of the site.

A total of 14 environmental samples were collected during the field investigation. Analysis of surface soil samples indicated the presence of lead, zinc, chromium, copper, and nickel at elevated levels. Sediment samples indicated the presence of lead, chromium, nickel, and zinc at elevated levels; calcium was also present. One surface soil sample contained an elevated level of bis(2-ethylhexyl)phthalate (a common plasticizer). No elevated levels of organic or inorganic constituents were detected in subsurface soil samples. Inorganic contaminants detected at Heywood-Wakefield Company can generally be attributed to the metal plating operations of the plant. The onsite exposure and air pathways are of greatest concern at the Heywood-Wakefield Company site. The site is not fenced and easily accessible, allowing direct contact with surface soils with elevated levels of heavy metal constituents. The surface water pathway is of concern because surface water from the north side of the site eventually drains into the Pigeon River. The groundwater pathway is of concern because there are 2,010 persons within 4 miles of the site who obtain water from private wells. The nearest private well is located approximately 0.8 miles north of the site. Based upon the results of the field investigation, FIT 4 recommends that the site be evaluated using the HRS (effective March 14, 1991).

1.0 INTRODUCTION

The HALLIBURTON NUS Environmental Corporation Region 4 Field Investigation Team (FIT) was tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division to conduct a Site Inspection (SI) at the Heywood-Wakefield Company site in Newport, Cocke County, Tennessee. The investigation was performed under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The task was performed to satisfy the requirements stated in Technical Directive Document (TDD) number F4-9008-32. The field investigation was conducted September 11-13, 1990.

1.1 OBJECTIVES

The objectives of this inspection were to determine the nature of contaminants present at the site and to determine if a release of these substances has occurred or may occur. Further, this inspection sought to determine the possible pathways by which contamination could migrate from the site and the populations and environments it would potentially affect. Through these objectives, a recommendation was made regarding future activities at the site.

1.2 SCOPE OF WORK

The objectives were achieved through the completion of a number of specific tasks. These activities were to:

- Obtain and review relevant background materials.
- Obtain information on local water systems.
- Determine location of and distance to nearest potable well.
- Evaluate target populations and environments associated with the groundwater, surface water, air, and soil exposure pathways.

- Develop a site sketch.

- Conduct a geophysical screening of site to determine whether buried drums may be present.

- Collect environmental samples.

2.0 SITE CHARACTERIZATION

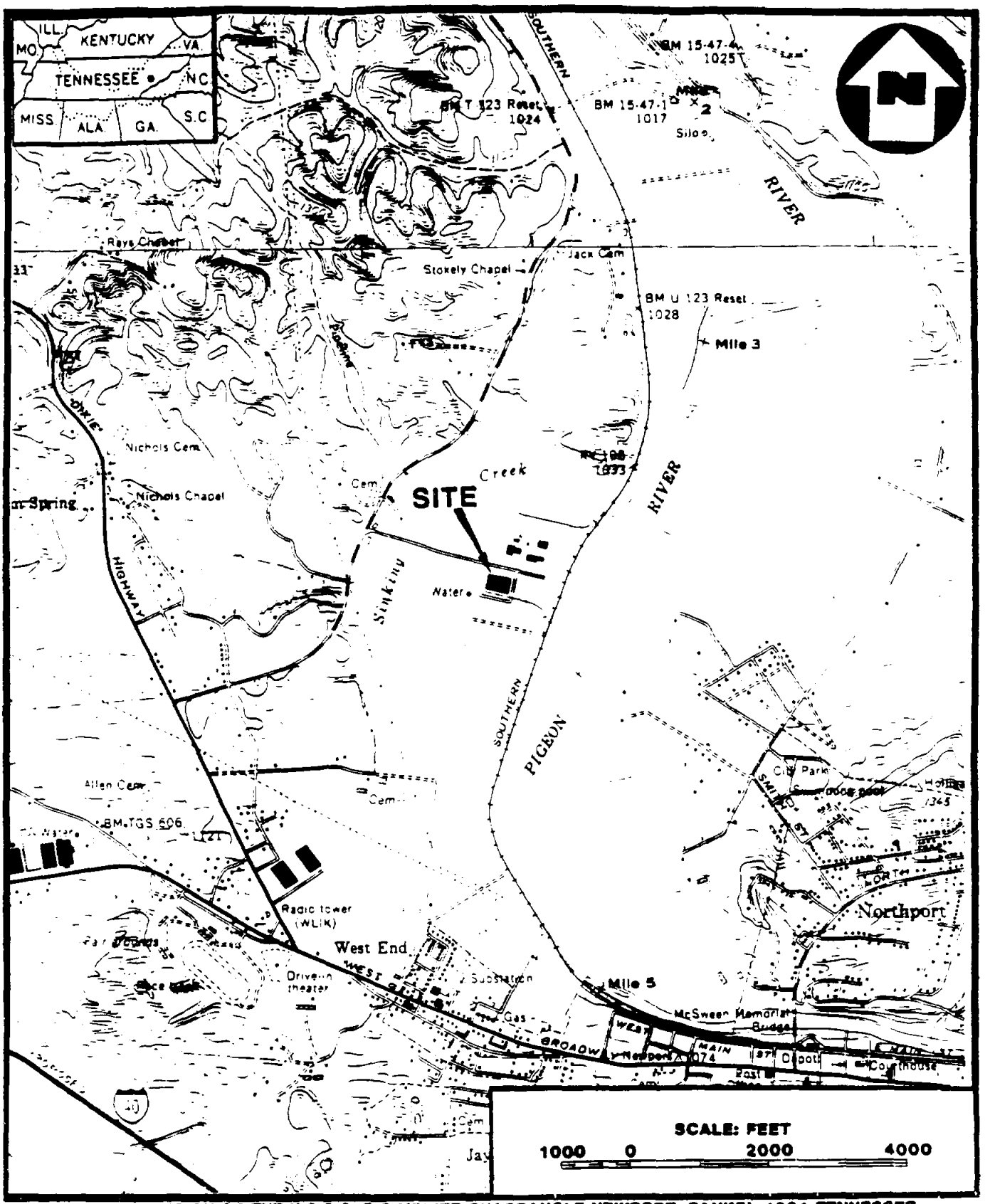
2.1 SITE HISTORY

The Heywood-Wakefield Company is located in an industrial park on Chemwood Drive, approximately 1 mile northwest of the city of Newport, Cocke County, Tennessee (Figure 1). Geographically, the facility is located at 35°59'10" N latitude and 83°12' 07" W longitude (Appendix A). The site location is shown in Figure 1, and the site layout is shown in Figure 2.

The Heywood-Wakefield Company began hand production and plating of school desks and various other types of metal seatings in 1957. In 1963, an automatic electroplating line was added to upgrade the manufacturing process (Ref. 1). Heywood-Wakefield Company ceased operations in 1982 and declared a Chapter 11 bankruptcy (Refs. 2, 3).

Currently, the facility property is occupied by Virco Manufacturing, Electric Voice, the offices of Great Lakes Chemical Industries, and Eastern Plating Company. Eastern Plating Company owns the main plant building and parking lot and operates the electroplating line formerly used by Heywood-Wakefield Company (Refs. 2, 4). Virco Manufacturing owns the building they occupy and also the large warehouse building. Eastern Plating Company leases space to Great Lakes Chemical Industries (Ref. 5).

The Heywood-Wakefield Company filed Part A of an EPA Hazardous Waste Permit Application on September 16, 1980 as a TSD facility. The application was resubmitted with corrections on March 18, 1981 (Ref. 6). The Heywood-Wakefield Company was classified as a large generator at the time of bankruptcy (August 1982) (Ref. 7). The Heywood-Wakefield Company built a wastewater treatment plant (constructed by Utilite Co.) to allow the discharge of effluent to the Pigeon River (Ref. 8). On June 13, 1974, the Heywood-Wakefield Company was issued a temporary NPDES permit to discharge effluent from a wastewater treatment system into Sinking Creek (Refs. 9, 10, 11). A permanent NPDES permit was issued May 15, 1979, for discharge into the Pigeon River (Ref. 9). This permit was recorded as inactive on October 16, 1983 (Ref. 12). An old wastewater treatment plant operated by Newport Utilities, located between the railroad tracks southeast of the site and the Pigeon River, was built in 1960. A new wastewater treatment plant operated by Newport Utilities, located behind the Heywood-Wakefield Company site, was put in operation in September 1979 (Ref. 13). A pretreatment plant was already in place when Eastern Plating Company began operations (Ref. 8). Pretreated effluent (electroplating process water) is pumped directly to the Newport Utilities

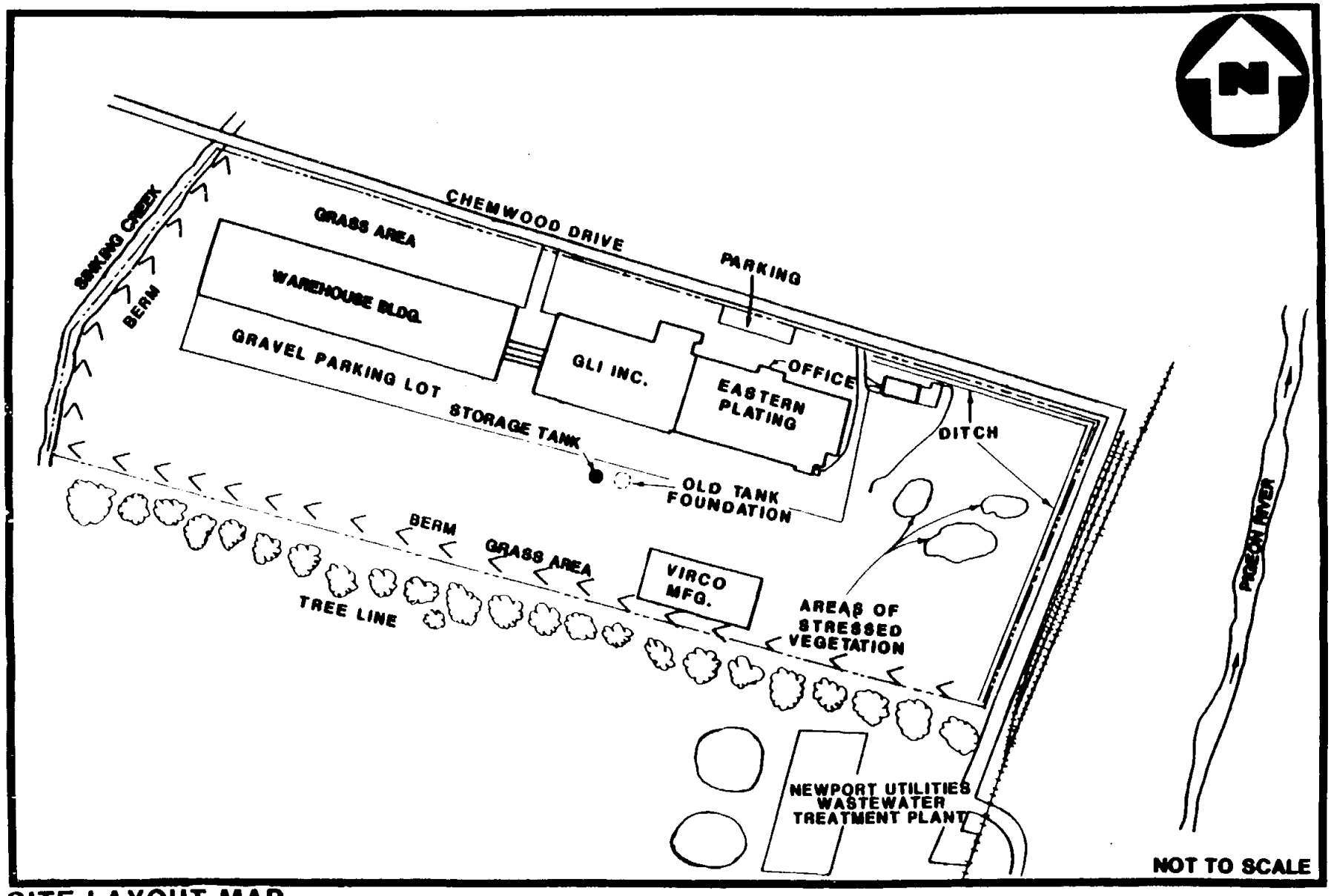


BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE NEWPORT, RANKIN, 1961 TENNESSEE.

SITE LOCATION MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 1

NUS CORPORATION



SITE LAYOUT MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 2

NUS

wastewater treatment plant (Refs. 5, 8). Eastern Plating Company holds an Industrial Wastewater Discharge Permit (No. NUB-001) for discharge of pretreated effluent to the Newport Utilities wastewater treatment plant (Ref. 8). Eastern Plating Company does not have an NPDES permit (Ref. 14). On March 8, 1982, the state conducted an inspection of the facility and several violations of the Tennessee Hazardous Waste Management Rules were noted (Ref. 11). On April 16, 1982, the state conducted another inspection of the facility to determine whether the violations noted during the previous inspection had been corrected. It was noted that the violations found in the previous inspection had not been corrected, and that there had been an overflow from the wastewater treatment plant (Ref. 11). In April 1982, the state inspected the site as a generator and as a treatment and storage facility (Ref. 10). The state said the company needed to notify as a treatment and storage facility as well as a generator and correct the violations in order to continue operations. The wastes were stored in drums prior to offsite disposal (Refs. 2, 11). In August 1982, the Heywood-Wakefield Company filed for bankruptcy (Ref. 3). The Heywood-Wakefield Company was classified as a large generator at this time (Ref. 7). A "Request for Order Civil Penalty and Damage Assessment" was entered on April 15, 1983 for RCRA storage of hazardous waste at the facility after the plant ceased operations. The state of Tennessee found that no inspections were being conducted, and there was no control of access to the drum storage area. The Heywood-Wakefield Company had a large number of state violations (Ref. 3). In March 1984, representatives from the state of Tennessee Division of Solid Waste Management performed a RCRA closure inspection. During the inspection, it was noted that Eastern Plating Company was leasing and operating the plating facility and had notified as a generator. Chemical Waste Management, Inc. removed 59 drums of sludge from a locked building, eight drums of sludge from the plant yard, and 10 drums that were used to contain free liquids from the sludge drums in order to handle the waste types separately (Ref. 2). All drums of wastes associated with Heywood-Wakefield's operations were removed by Chemical Waste Management, Inc. (Ref. 2). In January 1989, Eastern Plating Company was served with a notice of noncompliance for illegal discharges, which resulted in high concentrations of chromium, nickel, and lead in stormwater run-off and sediment (Ref. 15). Eastern Plating Company has current RCRA status of large generator (Ref. 16).

2.2 SITE DESCRIPTION

2.2.1 Site Features

The Heywood-Wakefield Company site occupies approximately 39 acres of land in Cocke County. The site is located on the south side of Chemwood Drive approximately 1 mile northwest of the city of Newport, Tennessee (Figure 1).

The site consists of two large buildings separated by a covered gravel driveway and a grass lawn to the front of the buildings. A gravel parking lot is located to the rear of the buildings. A large open grassy area is located between the rear parking lot and a tree line at the rear of the property. There is a water storage tank and an old tank foundation at the rear of the parking lot. Virco Manufacturing occupies a building behind the water storage tank (Figure 2). A wastewater treatment plant used by Heywood-Wakefield Company is located to the southeast of the site (Ref. 2; Figure 2). Railroad tracks are located to the east of the site across the road to the wastewater treatment plant. The middle of Sinking Creek is the west property boundary (Figure 2). The property is not fenced, and is easily accessible on foot or by vehicle (Ref. 4).

2.2.2 Waste Characteristics

The waste associated with the facility includes spent electroplating solvents and RCRA listed F006 waste - wastewater treatment sludges from electroplating operations. The wastewater treatment sludges contain the hazardous constituents chromium, lead, copper, zinc, and nickel (Refs. 2, 17, 18, 19).

Before 1980, sludge waste produced at the facility was disposed of at the Cocke County Landfill (Ref. 11). Prior to 1978, waste material (containing 55 percent wood flour and 45 percent inert materials) collected by air pollution control equipment, approximately 200 pounds per day, was buried on the Heywood-Wakefield Company grounds (Ref. 20). Following the implementation of RCRA, manifests kept at the facility indicate that the wastes were shipped to SCA Services hazardous waste landfill at Pinewood, South Carolina (Ref. 10).

3.0 REGIONAL POPULATIONS AND ENVIRONMENTS

3.1 POPULATION AND LAND USE

3.1.1 Demography

The Heywood-Wakefield Company site is located in an industrial area approximately 1 mile northwest of the city of Newport, Tennessee (Appendix A). A house count, using topographic maps, provided an estimate of population in the 0 - 0.25, 0.25 - 0.5, 0.5 - 1 and 3 - 4-mile radii. Figures for the 1- to 2- and 2- to 3-mile radii were obtained from the U.S.Census Bureau data base. The 4-mile radius surrounding the site includes all of the incorporated area of the city of Newport, and has a total population of 12,976. The population within 4 miles of the facility is 0 - 0.25 mile (0); 0.25 - 0.5 mile (8); 0.5 - 1 mile (284); 1 - 2 mile (3,316); 2 - 3 mile (7,760); and 3 - 4 mile (1,790) (Refs. 21, 22; Appendix A). One grammar school and one high school are located within 2 miles of the facility. The nearest residence is located approximately 0.4 mile northwest of the facility (Appendix A).

3.1.2 Land Use

Land in the immediate vicinity of Heywood-Wakefield Company is used for industrial purposes. The nearest regularly occupied buildings are G.L.I., Inc. and Great Lakes Chemical Company, located on the north side of Chemwood Drive across from the site. Although most of the housing in the area is single-family, there are trailer parks and multi-family residences within the 4-mile radius. The Newport city park is approximately 1 mile northeast of the site. Land in the Newport area is also used for farming. Major crops include tobacco, tomatoes, corn, and fruit. An orchard is located approximately 4 miles from the site. There are also livestock and dairy farms in the area (Refs. 23, 24, Appendix A).

The ranges of several endangered species include the area surrounding the Heywood-Wakefield Company site. The endangered species are the gray bat (Myotis grisescens), Indiana bat (Myotis sodalis), eastern cougar (Felis concolor cougar), bald eagle (Haliaeetus leucocephalus), American peregrine falcon (Falco peregrinus anatum), and the red-cockaded woodpecker (Picoides

(Dendrocopos) borealis). The critical habitat for the Indiana bat is not included within the 4-mile radius of the Heywood-Wakefield Company facility (Ref. 25, Appendix A).

3.2 SURFACE WATER

3.2.1 Climatology

Cocke County is located in eastern Tennessee. The climate in the area is classified as humid subtropical with no distinct dry season. The average summer temperature is 76° F, and the average winter temperature is 39° F. The average annual precipitation is 44.8 inches and is well distributed throughout the year (Ref. 26, pp. 7-9). The net annual rainfall for this area is 11 inches, and the 2-year, 24-hour rainfall is 3.2 inches (Refs. 27, pp. 43, 63; 28, p. 95).

3.2.2 Overland Drainage

After a thorough investigation of the site, there appears to be no well defined surface water pathway. Although the site seems to be level, surface water drainage will flow to the eastern portion of the site. The site is bordered on the west by a berm approximately 10 feet high. This berm separates the site from Sinking Creek. To the south, the berm is approximately 5 feet high. Thus, the site may be considered to be in an artificially enclosed basin (Refs. 4, 23). Chemwood Drive borders the site on the east and north sides and is slightly higher than the site elevation. There is a drainage ditch along Chemwood Drive on the north and east sides of the site. Surface water along the eastern side of the site will flow south to a low area, where a railroad spur track was formerly located (Figure 2). Surface water from the north side of the site would drain approximately 0.2 miles to the east along Chemwood Drive, travel under the roadway, and flow approximately 0.2 mile eastward into the Pigeon River. Drainage would continue 3.7 miles along the Pigeon River and flow into the French Broad River. Surface water would then flow another 10.9 miles along the French Broad River (the backwaters of Douglas Lake) to complete the 15-mile surface water pathway (Appendix A).

3.2.3 Potentially Affected Water Bodies

The Pigeon River, the French Broad River, and Douglas Lake are potentially affected by surface water run-off from the site. There are no documented surface water intakes along the surface water pathway (Appendix A). There is little recreational fishing in the Pigeon River. The French Broad River and Douglas Lake are used for swimming, boating, and recreational fishing (Ref. 29).

3.3 GROUNDWATER

3.3.1 Hydrogeology

The Heywood-Wakefield site is located in the Valley and Ridge physiographic province of northeastern Tennessee. This province is typified primarily by faulted and folded carbonate rocks which result in northeast to southwest trending ridges and valleys (Refs. 26, p. 4; 30, p. 132; 31, p.391). Topography of the area consists of discontinuous northeast trending mountainous ridges and broad, flat stream valleys. Elevations in the area of the site range between 1,009 and 2,420 feet above mean sea level (amsl). The elevation of the Heywood-Wakefield Company facility is approximately 1,030 feet amsl (Appendix A). Major soil types beneath the site include the Chewacla fine sandy loam, the Congaree fine sandy loam, the Congaree loam, and the State loam (Ref. 26, Legend sheet, Newport sheet). These residual soils have developed from old alluvial material, and range between 5 and 15 feet thick (Ref. 26, pp. 16-17, 31-33, 88). The Middle Ordovician Sevier Shale underlies the residual soils (Ref. 32). The Sevier Shale consists of blue calcareous shale interbedded with sandstone, grading to a basal unit of blue limestone. The Sevier Shale is approximately 2,500 to 4,000 feet thick in the area of the facility (Ref. 30, pp. 12-13, 132-133). The Lower Ordovician Knox Group underlies the Sevier Shale (Ref. 32). The Knox Group consists of interbedded siliceous dolomite and limestone. The Knox Group ranges between 2,450 and 3,100 feet thick in the area of the facility (Ref. 30, pp. 12-13, 132-133). Groundwater in the area of the facility occurs in the residual soil and primarily in fractures and solution features in the upper 200 feet of the underlying bedrock of the Sevier Shale and the Knox Group. The rocks have little or no primary porosity but contain fractures caused by folding and faulting (Ref. 31, p. 394). These secondary openings and fractures along bedding planes may be enlarged by dissolution of the carbonate rocks (Ref. 30, p. 270). The residual soil and fractured bedrock make up the unconfined residual soil/fractured rock aquifer system. Based on analysis of topographic contours in the area surrounding the facility, the estimated depth to the water table ranges between 10 and 15 feet below land surface (bls) and is very dependent upon topographic position and elevation as well as seasonal changes in the availability of water. The general direction of groundwater flow is to the east toward the Pigeon River (Appendix A). Hydraulic conductivity values of materials similar in composition as those present in the silty to sandy residual soils underlying the facility range between 1.0×10^{-3} cm/sec and 1.0×10^{-5} cm/sec (Ref. 26, pp. 16-17, 31-33, 88; 33, p. 29).

3.3.2 Aquifer Use

Newport Utilities supplies water to the city of Newport and Cocke County. Water is obtained from an intake on the French Broad River at river mile 82. This surface water intake is upgradient of the

Heywood-Wakefield Company site and greater than 4 miles from the site. The water treatment plant is located at Eastport to the east of Newport (Refs. 23, 34, Appendix A).

Those people within 4 miles of the Heywood-Wakefield Company site that do not use city water obtain potable water from private wells. The majority of private wells in the area are completed in the shales, sandstones, and limestone of the Sevier Shale or in the dolomite of the Knox Group of rocks. Depths of wells completed in the Sevier Shale in the site area range between 20 and 450 feet deep, averaging 89 feet deep. Well yields range between 5 and 300 gallons per minute (gpm) averaging 103 gpm. Depths of wells completed in the Knox Group of rocks in the site area range between 34 and 800 feet deep averaging 174 feet deep. Well yields range between 125 and 300 gallons per minute (gpm) averaging 200 gpm (Ref. 30, pp. 134-144).

A house count, using topographic maps of the area, indicates that there are 2,010 persons (779 homes x 2.58) within 4 miles of the site who obtain water from private wells. There are 72 homes within the 0- to 1-mile radius, 93 homes within the 1- to 2-mile radius, 211 homes within the 2- to 3-mile radius, and 403 homes within the 3- to 4-mile radius (Ref. 22, Appendix A). The nearest private well is located approximately 0.8 mile north of the site (Appendix A).

4.0 FIELD INVESTIGATION

4.1 GEOPHYSICAL FIELD SURVEYS

The purpose of this geophysical survey was to provide a screening technique by which sample localities for environmental sampling could be chosen by the HALLIBURTON NUS Environmental Corporation FIT 4 sampling team. In the accomplishment of this task, areas of suspected waste disposal on the property were surveyed using two geophysical techniques to produce a magnetic intensity survey and a ground conductivity survey, respectively. Details of geophysical methods used in the survey occur in Appendix C.

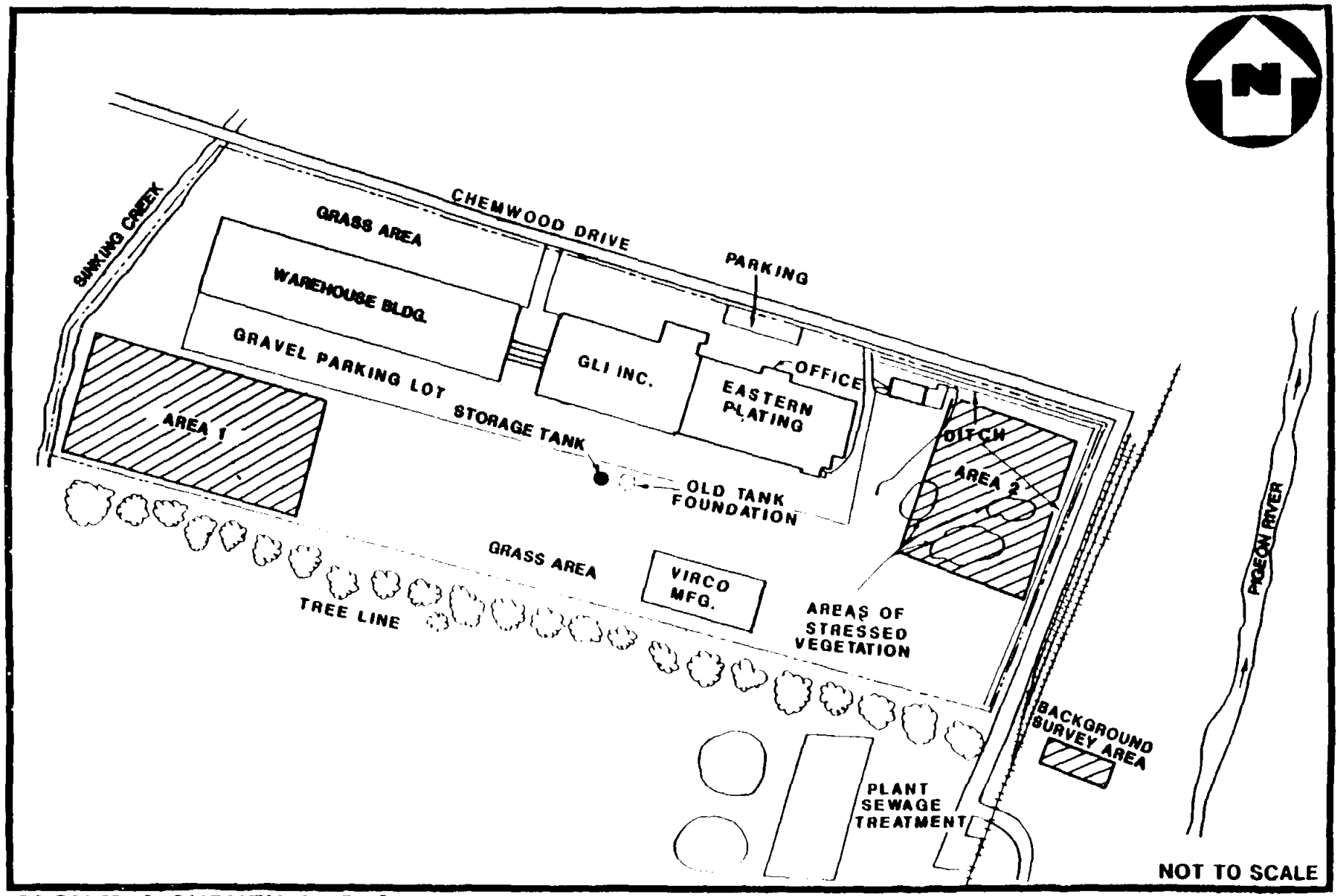
4.1.1 Methodology

Two geophysical instruments were utilized in this geophysical study: a proton precision magnetometer and a non-contacting ground conductivity meter. Both instruments were calibrated and put through a pre-operational check according to standard manufacturer's operational procedures. A base station was established in an area located southeast of the facility in which undisturbed local field conditions were believed to exist. Five measurements, 20 feet apart, were taken with both instruments at this location prior to the surveys. The magnetic field intensity ranged from 53,666 to 53,695 gammas and averaged 53,674 gammas. The background conductivity level ranged from 3.8 to 4.2 mmhos/m and averaged 4.0 mmhos/m. The values were used for comparison purposes, with measurements recorded on the facility property.

A cartesian coordinate grid was established before performing the surveys. Grid stations were established at 50-foot spacings in the x- and y-coordinate directions. Survey areas are shown in Figures A-1 and A-2. Data were recorded on geophysical field data sheets from measurements taken at each station. Field data sheets are listed in Appendix C.

4.1.2 Geophysical Survey Results

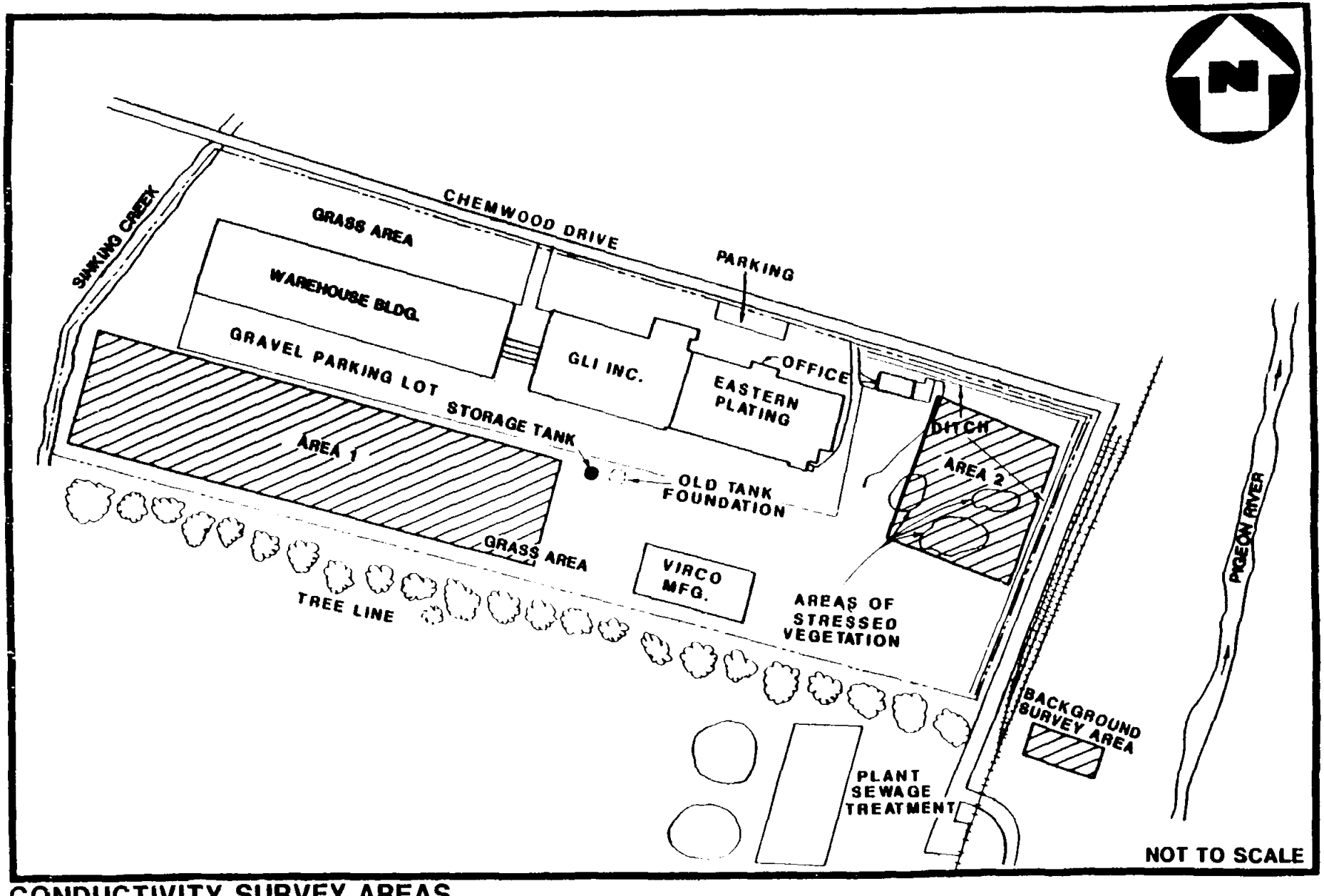
The results of the magnetic and conductivity survey performed at the respective survey areas are presented as computer generated contour maps in Figures A-3 through A-6. The survey results generally indicate uniform conditions in both survey areas.



MAGNETIC SURVEY AREAS
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-1

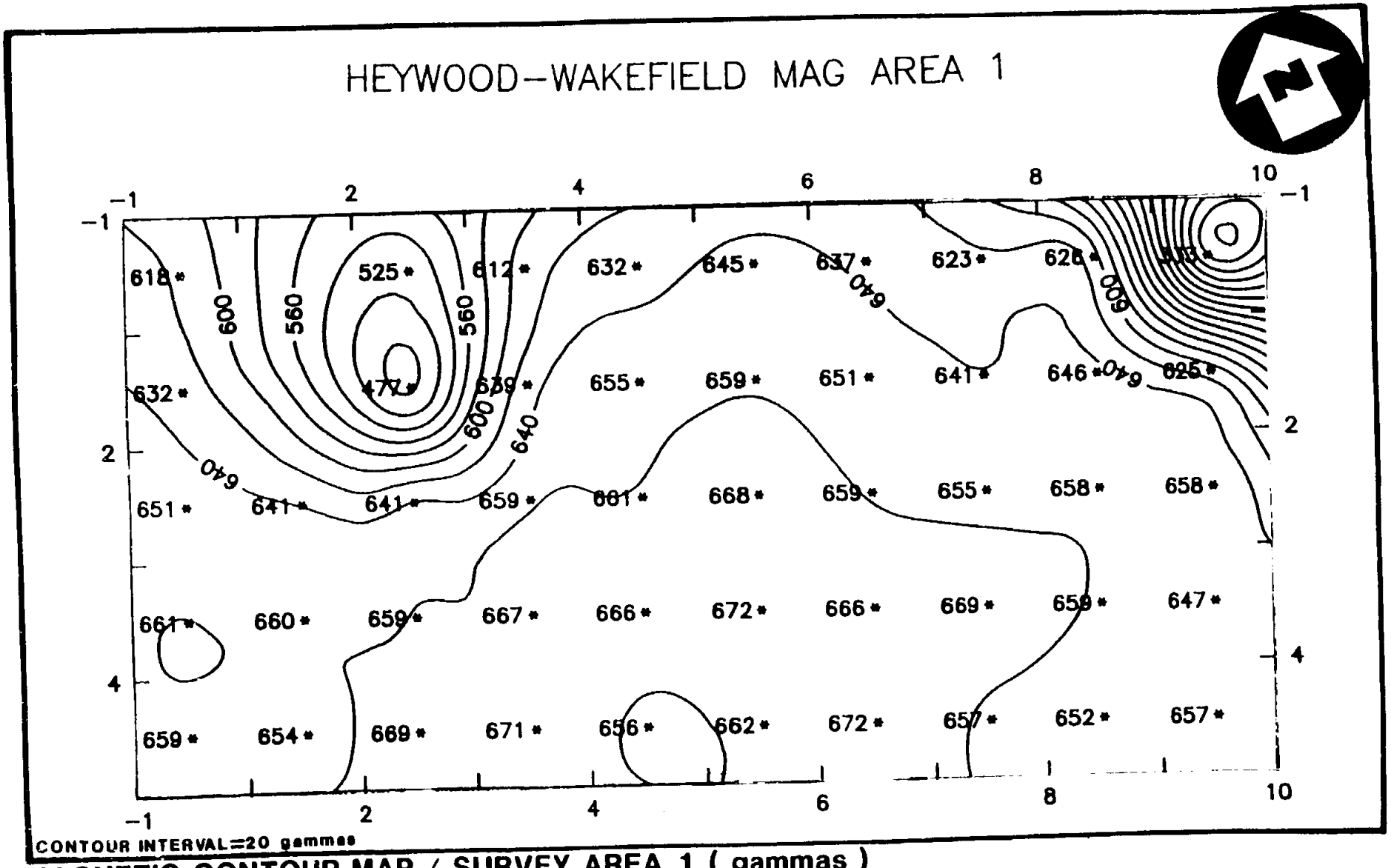
NUS CORPORATION



CONDUCTIVITY SURVEY AREAS
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-2

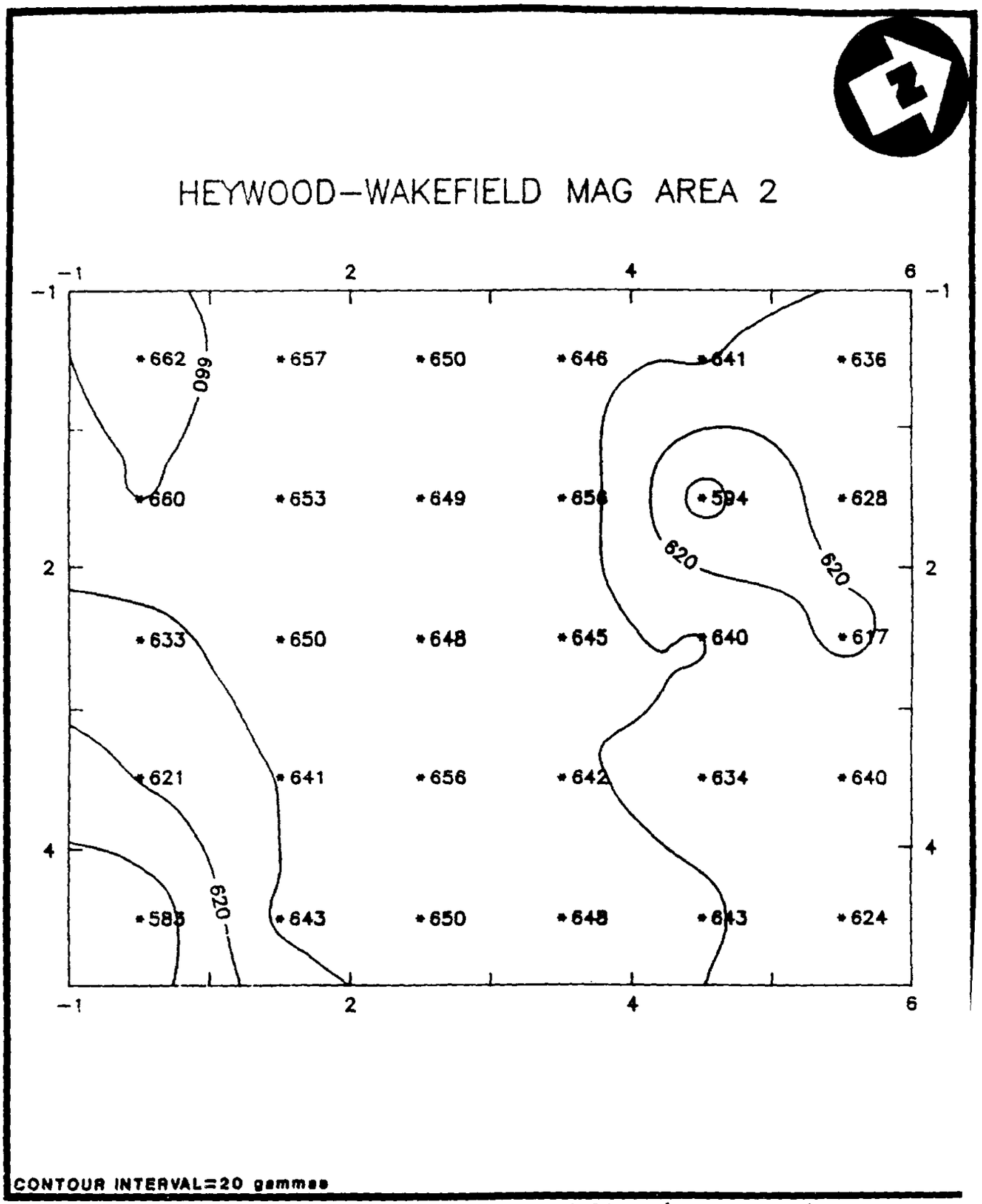
NUS CORPORATION



MAGNETIC CONTOUR MAP / SURVEY AREA 1 (gammas)
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-3

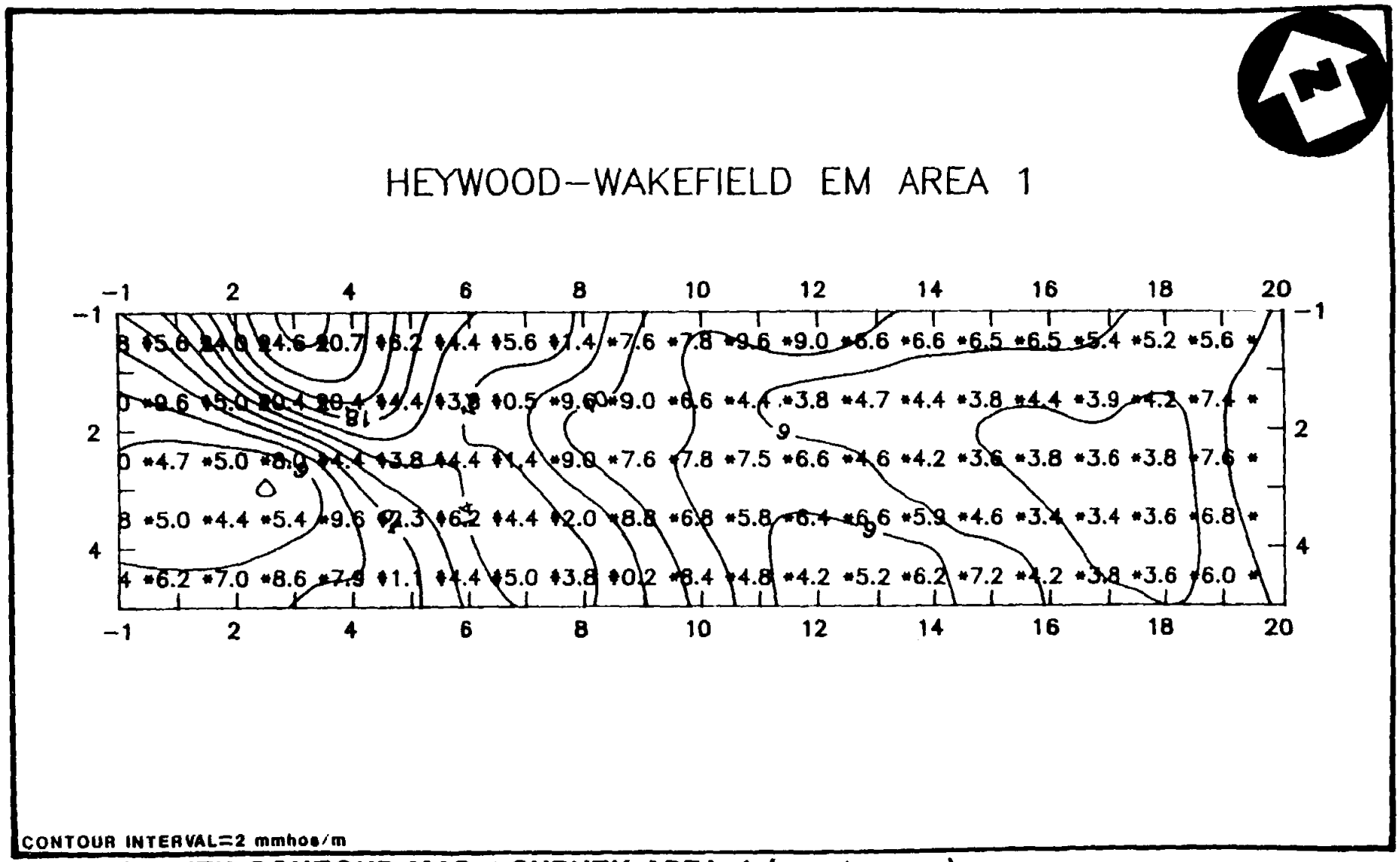
NUS CORPORATION



MAGNETIC CONTOUR MAP / SURVEY AREA 2 (gammas)
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-

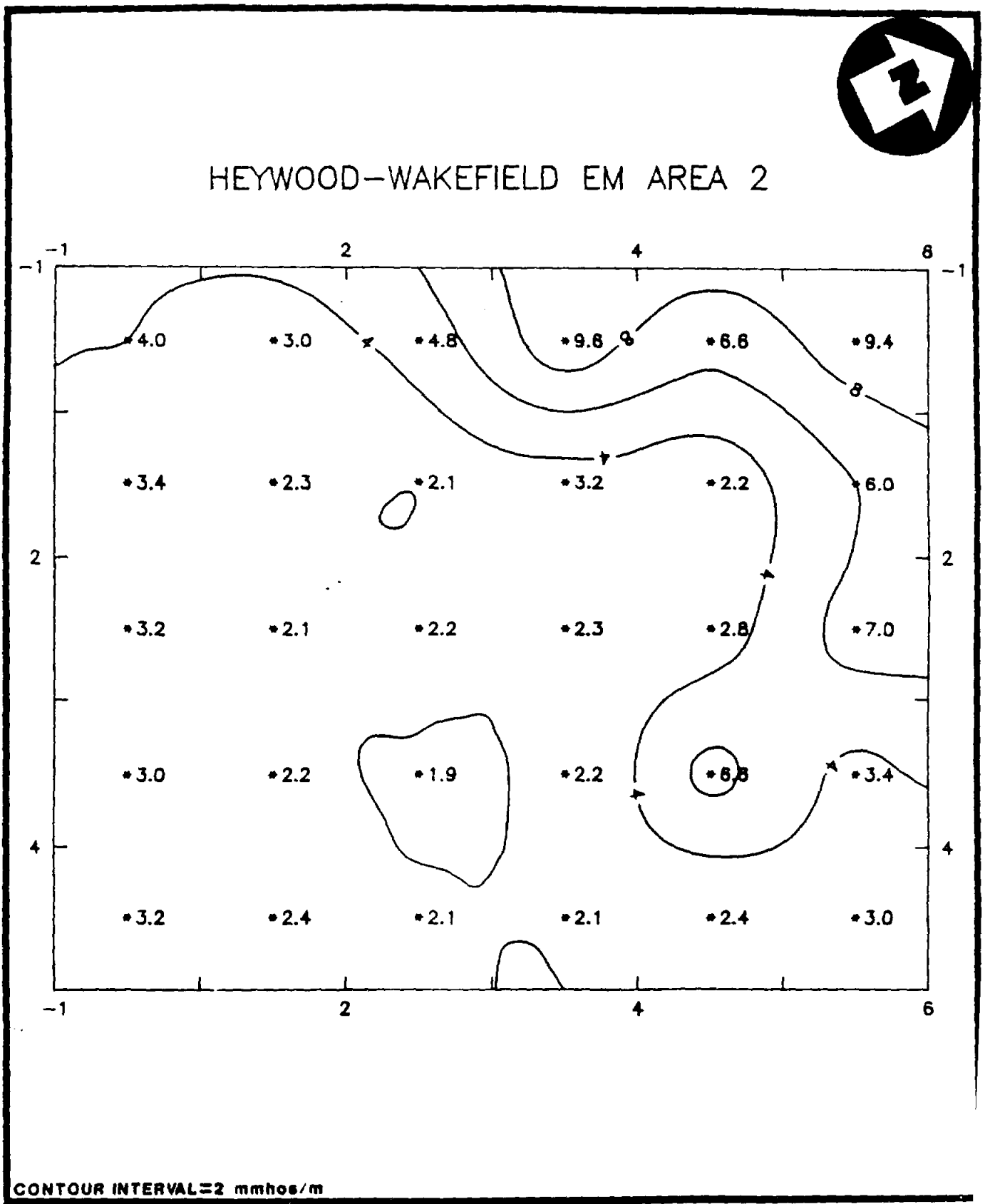
NUS CORPORATION



CONDUCTIVITY CONTOUR MAP / SURVEY AREA 1 (mmhos/m)
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-5

NUS CORPORATION



CONDUCTIVITY CONTOUR MAP / SURVEY AREA 2 (mmhos/m)
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE A-

NUS CORPORATION

Conductivity values in survey area 1 ranged from 3.4 to 24.6 mmhos/m. An anomalous feature of interest is located in the northwest corner centered on the 24.6 mmhos/m conductivity value. The magnetic survey performed in area 1 had values that ranged from 56,333 to 56,656 gammas. A magnetic low anomaly is located close to the conductivity anomaly.

Conductivity values in area 2 ranged from 1.9 to 9.4 mmhos/m, while magnetic values ranged from 56,583 to 56,662 gammas. No outstanding anomalous feature was noted in area 2.

4.2 SAMPLE COLLECTION

During the field investigation, conducted August 27, 1990, FIT 4 attempted to identify and characterize contaminants which may be present in the environment as a result of activities that were conducted at Heywood-Wakefield Company. To accomplish this, FIT 4 collected environmental surface soil, subsurface soil, and sediment samples from a number of strategic locations. These locations were selected based on historical information, hydrogeological data for the region and site area, and direct observation at the site. No groundwater samples were taken due to the fact that bedrock was encountered before the saturation zone was reached.

4.2.1 Sample Collection Methodology

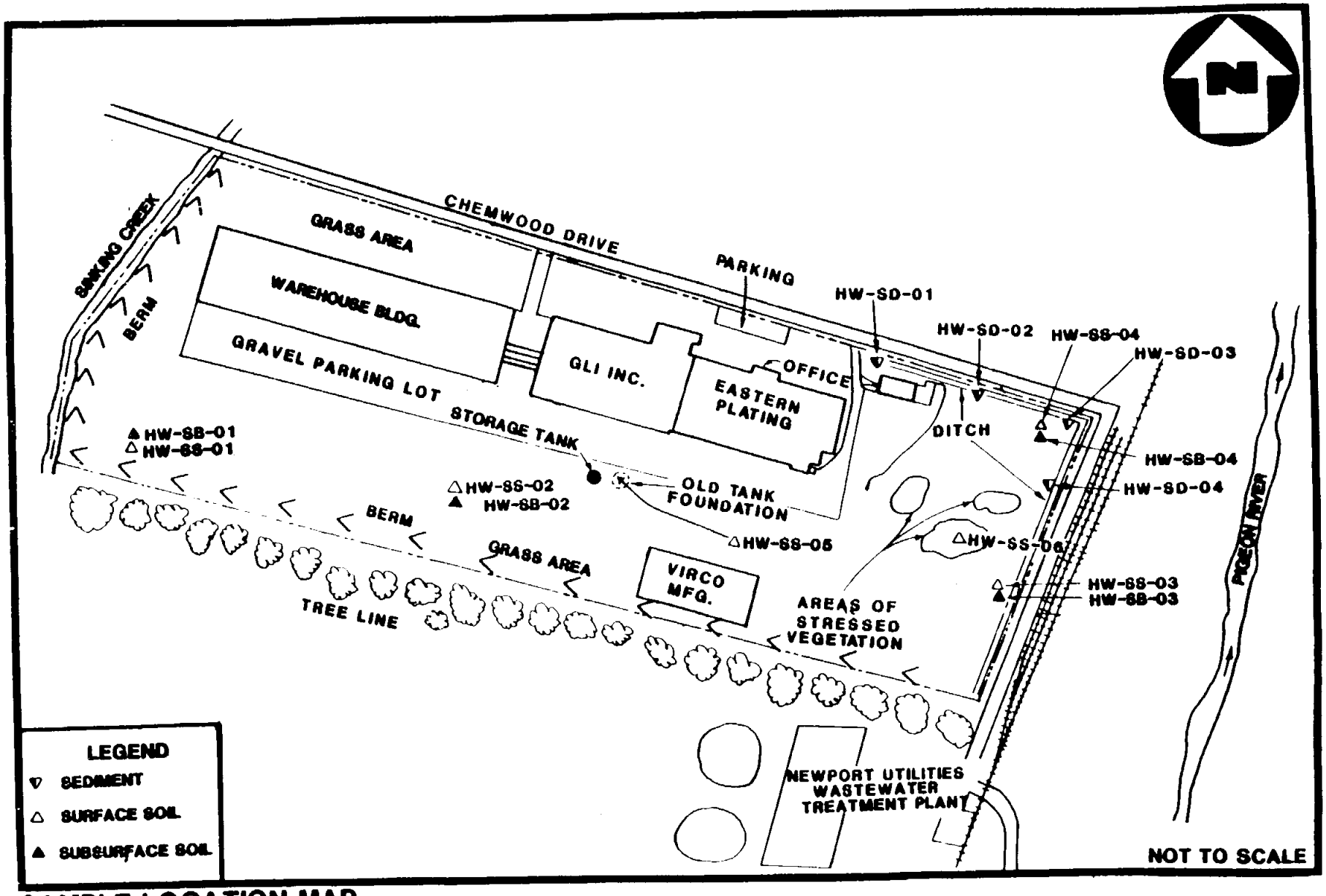
All sample collection, sample preservation, and chain-of-custody procedures used during this investigation were in accordance with the standard operating procedures as specified in Sections 3 and 4 of the Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual; U.S. Environmental Protection Agency, Region IV, Environmental Services Division, February 1, 1991.

4.2.2 Duplicate Samples

Duplicate samples were offered to and accepted by Tom McNealy, a designated representative of Eastern Plating, the current owner of the Heywood-Wakefield Company facility. Receipt for sample forms are on file at FIT 4.

4.2.3 Description of Samples and Sample Locations

During the sampling investigation, a total of 14 environmental samples were collected. Six surface soil, four subsurface soil, and four sediment samples were collected. All sample locations are shown in Figure 3. Sample codes, descriptions, locations, and rationale are contained in Table 1.



SAMPLE LOCATION MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 3

NUS CORPORATION

TABLE 1

SAMPLE LOCATIONS AND RATIONALE
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

Sample Code	Sample Type	Location	Rationale
HW-SS-01	Surface Soil	Southwest corner of site	Background sample
HW-SS-02	Surface Soil	On site, southwest of storage tank	Determine presence or absence of contamination
HW-SS-03	Surface Soil	On site, near east side of site	Determine presence or absence of contamination
HW-SS-04	Surface Soil	Northeast corner of site	Determine presence or absence of contamination
HW-SS-05	Surface Soil	On site, at old storage tank foundation	Determine presence or absence of contamination
HW-SS-06	Surface Soil	On site, in stressed vegetation due east of main building	Determine presence or absence of contamination
HW-SB-01	Subsurface Soil	Southwest corner of site, 4 feet below land surface (bls)	Background sample
HW-SB-02	Subsurface Soil	On site, southwest of storage tank, 7.5 feet bls	Determine the presence or absence of contamination
HW-SB-03	Subsurface Soil	On site, near east side of site, 4 feet bls	Determine the presence or absence of contamination
HW-SB-04	Subsurface Soil	Northeast corner of site, 4.5 feet bls	Determine the presence or absence of contamination
HW-SD-01	Sediment	West end of drainage ditch on north side of site	Background sample
HW-SD-02	Sediment	In drainage ditch on north side of site	Determine presence or absence of contamination
HW-SD-03	Sediment	East end of drainage ditch on north side of site	Determine the presence or absence of contamination
HW-SD-04	Sediment	From the drainage ditch toward the sewage plant, 50 feet south of the northeast corner of the site	Determine the presence or absence of contamination

HW - Heywood-Wakefield Company
SS - Surface Soil
SB - Subsurface Soil
SD - Sediment

Background surface soil (HW-SS-01) and subsurface soil samples (HW-SB-01) were collected upgradient near the southwest corner of the site. The background sediment sample (HW-SD-01) was collected in a drainage ditch to the east, adjacent to the facility.

Surface soil samples were collected near the storage tank, near the east side of the site, at the old storage tank foundation, and in an area of stressed vegetation due east of the main building. Subsurface soil samples were collected near the storage tank, near the east side of the site, and at the northeast side of the site. Subsurface soil samples were collected at depths ranging between 4 and 6 feet below land surface. Sediment samples were collected in a drainage ditch on the north side of the site, at the east end of the drainage ditch, and in the drainage ditch toward the sewage treatment plant approximately 50 feet south of the northeast corner of the site.

4.2.4 Field Measurements

No field measurements were performed on the surface soil, subsurface soil, or sediment samples during this investigation.

4.3 SAMPLE ANALYSIS

4.3.1 Analytical Support and Methodology

All samples collected were analyzed under the Contract Laboratory Program (CLP) and analyzed for all organic and inorganic parameters listed in the Target Compound List (TCL). Organic analysis of soil and water samples was performed by Gulf South Environmental Labs of New Orleans, Louisiana. Inorganic analysis of soil and water samples was performed by Chemtech Consulting Group, Ltd. of New York, New York.

All laboratory analyses and laboratory quality assurance procedures used during this investigation were in accordance with standard procedures and protocols as specified in the Laboratory Operations and Quality Control Manual, U.S. Environmental Protection Agency (EPA), Region IV, Environmental Services Division, issued October 24, 1990; or as specified by the existing EPA standard procedures and protocols for the CLP Statement of Work, as applicable.

4.3.2 Analytical Data Quality and Data Qualifiers

All analytical data were subjected to a quality assurance review as described in the EPA Environmental Services Division laboratory data evaluation guidelines. In the tables, some of the concentrations of the organic and inorganic parameters have been flagged with a "J". This indicates that the qualitative analysis was acceptable, but the quantitative value has been estimated. A few other compounds are flagged with an "N", indicating that they were detected based on the presumptive evidence of their presence. This means that the compound was tentatively identified, and its detection cannot be used as positive identification of its presence. Results for some background samples are reported with a "U" flag. This flag means that the material was analyzed for but not detected. The reported number is the laboratory-derived minimum quantitation limit (MQL) for the compound or element in that sample. At times, miscellaneous organic compounds that do not appear on the target compound list are reported with a data set. These compounds are labeled as "JN", indicating that they are tentatively identified at estimated quantities. Because these compounds are not routinely analyzed for or reported, background levels or MQL values are not generally available for comparison. The complete analytical data sheets are presented in Appendix B.

4.3.3 Presentation of Analytical Results

This section presents a discussion and interpretation of the analytical results from the environmental samples collected during the investigation at Heywood-Wakefield Company samples are presented in Tables 2, 3, 4, and 5. Background samples have been designated for all media. Values for background sample results are presented as either a measured value or as the MQL. Samples containing concentrations of contaminants greater than 3 times the background level or MQL of these contaminants are considered to be elevated. These samples are noted in the text.

4.3.3.1 Summary of Organic Analytical Results

Organic analytical results are presented in Tables 2 and 3. Only one organic compound was detected at an elevated level in surface soil samples, bis(2-ethylhexyl)phthalate in HW-SS-05 (at the old storage tank foundation). This compound, a common plasticizer, was found at a concentration of 87,000 ug/kg (110 x background). Also detected in this sample was presumptive evidence of six miscellaneous extractables in a estimated range of concentrations from 700 - 4,000J ug/kg. Presumptive evidence of a petroleum product was found in both HW-SS-05 and HW-SS-06 (in an area of stressed vegetation due east of the main building) (Table 2). No elevated levels of organics were detected in subsurface soil samples (Table 3).

TABLE 2

SUMMARY OF ORGANIC ANALYTICAL RESULTS
SURFACE SOIL SAMPLES
HEYWOOD WAKEFIELD CO.
NEWPORT, COCKE COUNTY, TENNESSEE

PARAMETERS (ug/kg)	Trip Blank	Background	On Site				
	HW-TB-01	HW-SS-01	HW-SS-02	HW-SS-03	HW-SS-04	HW-SS-05	HW-SS-06
PURGEABLE COMPOUNDS							
TOLUENE	-	47U	-	-	-	120J	-
TRICHLOROFLUOROMETHANE	-	47U	9.6J	-	-	-	-
EXTRACTABLE COMPOUNDS							
PENTACHLOROPHENOL	-	1600U	-	-	-	3900J	-
CHRYSENE	-	790U	-	-	-	280J	-
BIS(2-ETHYLHEXYL) PHTHALATE	-	790U	-	-	-	87000	-
BENZO(B AND/OR K)FLUORANTHENE	-	790U	-	-	-	360J	-
METHYLBENZENESULFONAMIDE(1)						1000JN	
HEXADECANOIC ACID(1)						3000JN	
OCTACENENOIC ACID(1)						4000JN	
HEXADECANAMIDE(1)						700JN	
METHYLFLUORANTHENE(1)						2000JN	
PHOSPHORIC ACID TRIPHENYLESTER(1)						3000JN	
PETROLEUM PRODUCT(1)						N	N

- Material analyzed for but not detected above minimum quantitation limit (MQL).
J Estimated value.
N Presumptive evidence of presence of material
U Material was analyzed for but not detected. The number given is the MQL.
(1) Tentatively identified compound. This compound is not on Target Compound List and is reported only as detected in individual samples; MQL not determined.

TABLE 3

SUMMARY OF ORGANIC ANALYTICAL RESULTS
SUBSURFACE SOIL AND SEDIMENT SAMPLES
HEYWOOD WAKEFIELD CO.
NEWPORT, COCKE COUNTY, TENNESSEE

PARAMETERS (ug/kg)	Background	On Site			Background	On Site		
	HW-SB-01	HW-SB-02	HW-SB-03	HW-SB-04	HW-SD-01	HW-SD-02	HW-SD-03	HW-SD-04
PURGEABLE COMPOUNDS								
TRICHLOROFLUOROMETHANE	52U	10J	-	-	28J	31J	20J	12J
EXTRACTABLE COMPOUNDS								
FLUORANTHENE	-	-	-	-	810U	-	110J	-
PYRENE	-	-	-	-	810U	-	92J	-
CHRYSENE	-	-	-	-	810U	-	100J	-
BENZO(B AND/OR K)FLUORANTHENE	-		-	-	810U	-	170J	-
HEXADECANOIC ACID(1)						6000JN		
HEXADECENOIC ACID(1)						8000JN		
OCTADECANOIC ACID(1)						1000JN		
PETROLEUM PRODUCT(1)						N	N	N
DICHLOROISOCYANATOBENZENE(1)						300JN		
TETRADECANOIC ACID(1)						600JN		
UNIDENTIFIED COMPOUND/NO.(1)						8000J/1		

- Material analyzed for but not detected above minimum quantitation limit (MQL).
J Estimated value.
N Presumptive evidence of presence of material.
U Material was analyzed for but not detected. The number given is the MQL.
(1) Tentatively identified compound. This compound is not on Target Compound List and is reported only as detected in individual samples; MQL not determined.

TABLE 4

SUMMARY OF INORGANIC ANALYTICAL RESULTS
SURFACE SOIL SAMPLES
HEYWOOD WAKEFIELD CO.
NEWPORT, COCKE COUNTY, TENNESSEE

	Background	On Site				
PARAMETERS (mg/kg)	HW-SS-01	HW-SS-02	HW-SS-03	HW-SS-04	HW-SS-05	HW-SS-06
ALUMINUM	34,000	15,000	19,000	17,000	3400	14,000
ARSENIC	4.2	2.5	2.8	-	-	-
BARIUM	230	170	240	180	100	180
CALCIUM	1600	1800	1600	2000	4600	1900
CHROMIUM	84J	18J	25J	24J	95J	280J
COBALT	22	9.8	12	11	-	11
COPPER	27	13	-	-	-	170
IRON	38,000	19,000	23,000	20,000	25,000	19,000
LEAD	21	13	24	15	230	26
MAGNESIUM	4800	3800	4600	4800	690	3600
MANGANESE	990	470	650	470	140	480
NICKEL	18	11	20	13	36	140
POTASSIUM	3400	2500	3400	3200	-	2900
VANADIUM	48	25	28	28	-	22
ZINC	100U	-	-	-	450	630

- Material analyzed for but not detected above minimum quantitation limit (MQL).
J Estimated value.
U Material was analyzed for but not detected. The number given is the MQL.

TABLE 5

SUMMARY OF INORGANIC ANALYTICAL RESULTS
SUBSURFACE SOIL AND SEDIMENT SAMPLES
HEYWOOD WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

PARAMETERS (mg/kg)	Background	On Site			Background	On Site		
	HW-SB-01	HW-SB-02	HW-SB-03	HW-SB-04	HW-SD-01	HW-SD-02	HW-SD-03	HW-SD-04
ALUMINUM	26,000	19,000	21,000	18,000	21,000	3000	14,000	14,000
ARSENIC	3	3 6	-	-	2U	5 1	2 5	-
BARIUM	160	270	280	190	210	52	160	200
BERYLLIUM	2 5	-	1 7	-	-	-	-	-
CALCIUM	990	2500	1500	2000	2900	41,000	38,000	23,000
CHROMIUM	69J	18J	29J	23J	51J	380J	53J	40J
COBALT	15	11	14	10	14	-	8 9	8 7
COPPER	30U	-	-	-	20U	-	24	-
IRON	33,000	28,000	27,000	21,000	26,000	4400	17,000	17,000
LEAD	13	16	20	15	27	140	47	38
MAGNESIUM	5100	3400	5400	4900	5100	5100	14,000	8100
MANGANESE	710	420	550	490	720	88	420	450
NICKEL	15	13	23	12	44	840	39	86
POTASSIUM	3700	1700	3600	3200	3200	490	2500	2900
VANADIUM	47	32	31	25	32	-	19	23
ZINC	82	-	130	82	100U	200	420	-

- Material analyzed for but not detected above minimum quantitation limit (MQL).
J Estimated value.
U Material was analyzed for but not detected. The number given is the MQL.

No elevated concentrations of organics on the Target Compound List were detected in sediment samples. Sediment sample HW-SD-02 (from the drainage ditch on the north side of the site) contained presumptive evidence of five miscellaneous extractables at a concentration of range of 3000 to 8,000J ug/kg. Presumptive evidence of a petroleum product was found in all sediment samples except the background sample (HW-SS-01) (Table 3).

4.3.3.2 Summary of Inorganic Analytical Results

Inorganic analytical results are shown in Tables 4 and 5. Lead (230 mg/kg, 11 times background) and zinc (450 mg/kg, 4.5 times background) were detected in HW-SS-05. The following inorganic constituents were detected in HW-SS-06: chromium (200J mg/kg, 3 times background), zinc (450 mg/kg, 6 times background), copper (170 mg/kg, 6 times background), and nickel (140 mg/kg, 8 times background) (Table 4). No elevated concentrations of inorganic constituents were found in subsurface soil samples (Table 5).

The following constituents were found in HW-SD-02: lead (140 mg/kg, 5 times background), chromium (380J mg/kg, 7 times background), and nickel (840 mg/kg, 19 times background). Zinc (420 mg/kg, 4 times background) was found in HW-SD-03. Calcium was also observed at elevated levels in sediment samples (Table 5).

Inorganic contaminants detected at Heywood-Wakefield Company can generally be attributed to the metal plating operations of the plant.

5.0 SUMMARY

The main waste associated with the Heywood-Wakefield Company facility is wastewater treatment sludge from electroplating operations, containing the hazardous constituents chromium, lead, copper, zinc, and nickel.

Analysis of surface soil samples indicated the presence of lead, zinc, chromium, copper, and nickel at elevated levels. Sediment sample analysis indicated the presence of lead, chromium, nickel, and zinc at elevated levels. Calcium was also observed at elevated levels in the sediment samples. One surface soil sample contained an elevated level of bis(2-ethylhexyl)phthalate (a common plasticizer). No elevated levels of organic or inorganic constituents were detected in subsurface soil samples.

Inorganic contaminants detected at Heywood-Wakefield Company can generally be attributed to the metal plating operations of the plant.

The onsite exposure and air pathways are of greatest concern at the Heywood-Wakefield Company site. The site is not fenced and easily accessible, allowing direct contact with surface soils with elevated levels of heavy metal constituents. The surface water pathway is of concern because surface water from the north side of the site eventually drains into the Pigeon River. The groundwater pathway is of concern because there are 2,010 persons within 4 miles of the site that obtain water from private wells. The nearest private well is located approximately 0.8 mile north of the site. Based upon the results of the field investigation, FIT 4 recommends that the Heywood-Wakefield Company site be evaluated using the HRS (effective March 14, 1991).

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3. Tennessee Department of Public Health, Request for Order Civil Penalty and Damage Assessment for Heywood-Wakefield Company, Case Number 82-344 before the Tennessee Solid Waste Disposal Control Board, April 15, 1983.

4. HALLIBURTON NUS Environmental Corporation Field Logbook No. F4-2521. Documentation of Field Sampling Activity, Heywood-Wakefield Company, TDD No. F4-9008-32, September 11-13, 1990.

5. Michael Mullaney, Eastern Plating Company, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, June 6, 1991. Subject: Property ownership.

6. EPA Hazardous Waste Permit Application (EPA Form 3510-1) for Heywood-Wakefield Company. Filed by E.G. Chartier, Vice President, September 16, 1980.

7. Jennifer Powers, Division of Solid Waste Management, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, July 10, 1991. Subject: RCRA status of Heywood-Wakefield Company at the time of bankruptcy.

8. Michael Mullaney and Tom McNealy, Eastern Plating Company, telephone conversation with Wendell C. McLendon, HALLIBURTON NUS Environmental Corporation, June 25, 1991. Subject: Wastewater treatment procedures for Heywood-Wakefield Company and Eastern Plating Company.

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10. Rick Brown, Environmental Engineer, Tennessee Division of Solid Waste Management, Hazardous Waste Inspection Report, dated March 8, 1982.

11. Rick Brown, Tennessee Department of Public Health, Division of Solid Waste Management, Notice of Violation letter to Forrest Ellison, Heywood-Wakefield Company, April 27, 1982. Subject: Hazardous waste inspection report.

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15. Earl C. Leming, Manager, TDH&E Division of Water Pollution Control, letter to Tom McNealy, Plant Manager, Eastern Plating, January 26, 1989. Subject: Notice of noncompliance, illegal discharges.

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18. E.W. Kuemmerle, Jr., Ph.D., Chief Chemist, Atek Labs, Inc., letter to Walter O'Neil, Heywood-Wakefield Company, July 6, 1978. Subject: Physical and chemical characteristics of wastewater treatment sludge.

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22. U.S. Department of Commerce, Proof Copy of table generated for CPH-1: Summary Population and Housing Characteristics, issued by Bureau of the Census (April 1991).

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30. G.O. De Buchananne and R.M. Richardson, Ground-Water Resources of East Tennessee, Bulletin No. 58, part 1 (Nashville, Tennessee: State of Tennessee, Department of Conservation, Division of Geology, 1956), pp. 12-13, 132-144, 270.

31. U.S. Geological Survey, National Water Summary 1984: Hydrologic Events, Selected Water Quality Trends, and Ground-Water Resources, Water Supply Paper 2275 (Washington, D.C.: GPO, 1984), pp. 391-396.

32. William D. Hardeman, Geologic Map of Tennessee (East Sheet), (State of Tennessee, Department of Conservation, Division of Geology, 1966), scale 1:250,000.

33. R.Allan Freeze, and John A. Cherry, Groundwater, Englewood Cliffs, N.J.: Prentice-Hall, Inc. 1979, p. 29.

34. Leonard Allen, Newport Water Department, telephone conversation with Wendell C. McLendon, NUS Corporation, April 3, 1991. Subject: Areas served by the Newport water department.

Page

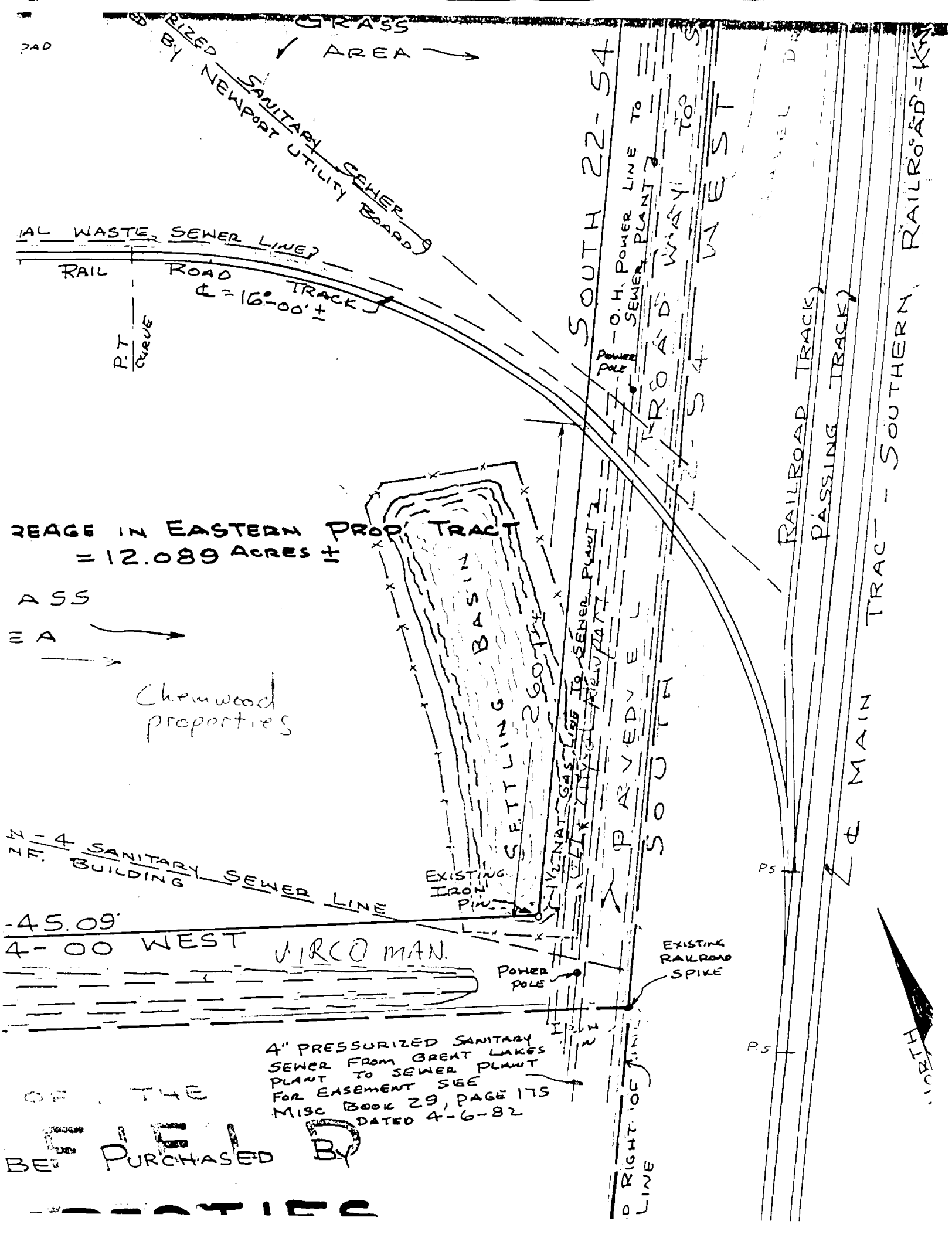
Reference No. 1

Heywood-Wakefield Company
Chemwood Drive
Rt. #7
Newport, Tennessee 3782
615-623-3042
manufactured movable class Room Furnitur
and Transportation seating
Other Plant Locations
Purchased By Arkansas
Gardner, Mass. — Menominee, Mich.
Pennyan, New York — Woodstock, New Brunswick, Can.
Orillia Ontario, Canada
General offices Gardner, Mass. 01440

Products were school furniture, auditorium, theatr
and church seating, Household furniture, Transportation
seating and outdoor furniture

Names of Interest
John Heywood, George Heywood, Jack Heywood, — John's Son
George Heywood Jr., Howard Hauger, Clarence Phillips,
Emanuel Biancullí, E. G. Chartier. John ~~Cabaliam~~ Cunningham Pres
— Shut in Fr
Tom Morally

Newport, Tennessee Plant start-up in 1957
Acquired 45 acres of land in 1961
A Hand Plating operation was started shortle
after 1957 and Existing untill approx. 1963 when a
New automatic Return type Plating unit was
Purchased and Installed
this facility was owned & operated by [illegible]


GRASS AREA
SANITARY SEWER
BY NEWPORT UTILITY BOARD
WASTE SEWER LINE
RAIL ROAD TRACK
℄ = 16°-00' ±
P.T. CURVE
SOUTH 22-54
O.H. POWER LINE TO SEWER PLANT
POWER POLE
ROAD WAY TO
WEST
RAILROAD TRACK
PASSING TRACK
SOUTHERN RAILROAD
℄ MAIN TRAC
REAGE IN EASTERN PROP. TRACT
= 12.089 ACRES ±
ASS
EA
Chemwood properties
SETTLING BASIN
260 FT
1½ NAT GAS LINE TO SEWER PLANT
PAVEDVEL
SOUTH
SANITARY SEWER LINE
BUILDING
EXISTING IRON PIN
-45.09'
4-00 WEST
VIRCO MAN.
POWER POLE
EXISTING RAILROAD SPIKE
4" PRESSURIZED SANITARY SEWER FROM GREAT LAKES PLANT TO SEWER PLANT FOR EASEMENT SEE MISC BOOK 29, PAGE 175 DATED 4-6-82
RIGHT OF LINE
PS
PS
OF THE
BE PURCHASED BY

REFERENCE # 2

HAZARDOUS WASTE INSPECTION REPORT

NAME OF FACILITY
Heywood-Wakefield Company

I.D. NUMBER
TND003382230

ADDRESS AND LOCATION
off Rankin Road
Newport, Tennessee

OWNER/OPERATOR/PRINCIPAL CONTACT
None (the company is bankrupt and out of business). Sam Spratlin of Barclay's Bank, a creditor of the company, is acting as the contact for the company in its dealings with the State.

MAILING ADDRESS
None (No employees or contacts of the company can now be reached at this location).

TELEPHONE
None

DATE/TIME OF INSPECTION
March 8, 1984, 2:00 P.M.

REPORT PREPARED BY:
Rick Brown
Division of Solid Waste Management
East Tennessee Regional Health Office
1522 Cherokee Trail
Knoxville, Tennessee 37920

NAME(S) OF PARTICIPANTS/TITLES/AFFILIATIONS
Rick Brown, Environmental Engineer, Division of Solid Waste Management
Larry Trapp, Chemical Waste Management, Inc.

PURPOSE OF INSPECTION
This was a closure inspection for an inactive storage facility. We were notified that the hazardous wastes were to be removed on this date, in accordance with an agreement between the Division and Barclay's Bank. The purpose of the inspection was to verify that all hazardous wastes and hazardous waste residues were removed.

FACILITY DESCRIPTION
The Heywood-Wakefield Company used to manufacture metal desks for schools. The desk frames were plated at the plant. The plating wastewater was treated in an on-site wastewater treatment plant, and a wastewater treatment sludge (F006) was generated. This waste was stored in drums, most of which were stored inside a locked building, although a few were placed outside in the plant yard.

There has been no production at the plant for almost two years, and all personnel except for a security guard have been gone for over a year. The portion of the plant where the plating was done has been leased to another company, Eastern Plating Company, which has reactivated the plating line and the wastewater treatment system. They have notified as a generator.

Up until the time of this inspection all of the drums containing waste generated by Heywood-Wakefield have remained where they were when Heywood-Wakefield abandoned the plant. At the time of this inspection the wastes were being loaded into a trailer and the site was being cleaned up by personnel from Chemical Waste Management, Inc. The wastes from Heywood-Wakefield's operations make up one trailer load; when this is gone, none of Heywood-Wakefield's wastes will remain at the site.

INSPECTION FINDINGS

The Heywood-Wakefield Company has been in enforcement for some time due to their improper storage of hazardous wastes, and has been ordered to remove the wastes. Barclay's Bank, a creditor of Heywood-Wakefield, agreed to remove the hazardous wastes, and contracted with Chemical Waste Management to have this done. This inspection verified that the wastes were removed and that the site was cleaned up.

RECOMMENDATIONS/REMARKS

Heywood Wakefield had told us that they had put all of their drums of hazardous waste inside a locked building for storage. However, Chemical Waste Management found some of the same plating sludge in eight supposedly "empty" drums on the plant yard and agreed to include them in the cleanup project. This brought the total of drums up to 67. Also, a number of the drums contained free liquids on top of the sludge. These liquids were pumped off into other drums so that they could be handled separately. Ten more drums were generated from removing the liquids. Two drums were in very bad condition; the bottom fell out of one drum when it was moved. These were placed inside recovery drums. Some waste material had to be cleaned up around these leaky drums. Fortunately, they were on a concrete base so no soil was contaminated. Also, some water was spilled on the floor when the liquid portion of the waste was transferred. All spilled waste was cleaned up using absorbents, brooms, and shovels, and was drummed for shipment.

I stayed until the last drums were being loaded and the spillage on the floor was being cleaned up. Mr. Larry Trapp of Chemical Waste Management told me that he had been empowered by Mr. Sam Sprattlin of Barclay's Bank to sign the generator's copy of the manifest. I requested that copies of the manifest be submitted to this office when the project is completed.

Rick Brown

Rick Brown

March 9, 1984
DATE

RSB:pjm M/5

ATTACHMENTS/EXHIBITS

AGREEMENT #84-009C

WASTE TRANSPORTATION AND DISPOSAL AGREEMENT

On this 9th day of January, 19 84, the parties, Barclays American Business Credit, a _____ corporation, with its principal offices at _____, (hereinafter called "Generator"), and Emelle, Alabama Division of Chemical Waste Management, Inc., a Delaware corporation, with its principal offices at P.O. Box 55, Emelle, Alabama 35459, (hereinafter referred to as "Disposer"), have agreed as follows:

1. WASTE MATERIALS. During the term of this Agreement, Generator will provide to Disposer Generator's entire output of certain waste materials generated at Heywood Wakefield Rankin Road, Newport, Tennessee (up to a maximum of 80 drums per one time), the chemical composition and physical characteristics of which materials are described in the "Generator's Waste Material Profile Sheet", Code designation MAR-D24992, attache hereto, and incorporated herein.

2. DISPOSER SERVICES. Disposer agrees to provide Generator the following services, as indicated by the initials of Disposer on one or more of the following sections:

a. mcw Loading of the described waste materials onto transportation vehicles, cars or vessels.

b. ____ Transportation of the described waste materials from _____ to the permitted storage facility at _____

c. mcw Transportation of the described waste materials from Heywood Wakefield Newport, Tennessee to the disposal facility next following.

d. mcw Disposal of the described waste materials, in a manner permitted by law, at the following facility: Chemical Waste Management, Inc., Highway 17 @ Mile Marker 163, Emelle, Alabama 35459

REFERENCE # 3

BEFORE THE TENNESSEE SOLID WASTE DISPOSAL CONTROL BOARD

15-26

IN THE MATTER OF:	)	
	)	
HEYWOOD-WAKEFIELD COMPANY	)	82-344
NEWPORT, TENNESSEE	)	
	)	
	)	

REQUEST FOR
ORDER
CIVIL PENALTY AND DAMAGE ASSESSMENT

Comes now the Tennessee Department of Public Health, and states that:

I.

It is responsible for the State Hazardous Waste Management Program under the provisions of T.C.A. 53-6301, et. seq. and the Tennessee Department of Public Health Regulations 1200-1-11-.01 et. seq. The Division of Solid Waste Management, hereinafter referred to as "The Division", is delegated administrative responsibility under the foregoing statute and regulations for carrying out the State Hazardous Waste Management Program.

II.

Heywood-Wakefield Company, hereinafter referred to as "The Respondent", is a manufacturing concern located in Newport, Tennessee, and was, at all times pertinent to this order, engaged in the business of the manufacture of moveable classroom school furniture. The Respondent has not registered with the Division, either as a storage, treatment or disposal facility or as a generator of hazardous waste, namely, wastewater treatment sludge generated from its electroplating operations. Originally, the waste was generated, accumulated and shipped off-site for disposal, within the 90 day time limit in accordance with Rule 1200-1-11-.03(4)(b)2. On August 17, 1982, the Division was informed that the Respondent has filed for Bankruptcy under Chapter 11 of the Federal Bankruptcy Act (Case # 82-B-10330(JJG)UNITED STATES BANKRUPTCY COURT FOR THE SOUTHERN DISTRICT OF NEW YORK). Since that time, the resultant inactivity on the Respondent's part has resulted in the storage of hazardous waste for longer than 90 days which made the Respondent subject to the permitting requirements of Rule 1200-1-11-.07. A representative of the Division inspected the facility first

on March 8, 1982 and found numerous violations of Division regulations. Subsequent inspections conducted on April 16, July 1, August 17, and October 5 continued to show violations though some progress seemed to be made. At the present time, the plant is no longer in operation and hazardous waste accumulated from the time when it was active continues to be stored on the site. This storage consists of two types: the first being plating liquid accumulated from the spent plating fluid used in the chrome and nickel plating of the frames of the furniture produced there. This liquid is stored in two tanks on the site. The second consists of drums containing the sludge generated from the treatment of the spent plating fluid, the water from which was later discharged under a waste water treatment system permitted for that limited purpose by the Tennessee Department of Public Health, Division of Water Quality Control through an NPDES Permit (NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM). The generation and maintenance of such hazardous wastes for longer than 90 days necessitates the classification of Respondent as a Non-Notifier of hazardous waste activities, subject to obtaining a permit under the provisions of T.C.A. 53-6301 et. seq. and Tennessee Department of Public Health regulations 1200-1-11-.01 et. seq. (to be cited in more detail below).

III.

On December 1, 1982, a representative of the Department inspected the facility for the sixth time in 1982 to monitor correction of the violations which were noted at the time of the initial inspection. During that inspection, the following deficiencies were noted:*

> N.B: These violations resulted from the Respondent's storing hazardous waste longer than 90 days, thereby requiring it to comply with all provisions of Division Regulations governing the storage and treatment of hazardous waste.

1. Hazardous waste at the site was not cataloged as to location within the facility and as to quantity in each location, including cross references to specific document numbers, if the waste was accompanied by a manifest.

2. Personnel remaining at the facility had not been given training to insure appropriate response to emergency situations involving the hazardous waste, either through classroom instruction or on the job training.

3. There was no documentation of efforts to familiarize local police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances into the facility and possible evacuation routes with specific designation of primary and secondary response authorities in these areas; there was no documentation of attempts to reach agreements with state emergency response teams, emergency response contractors and equipment suppliers; there was no documentation of any agreements made to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or diseases which could result from fires, explosions or releases at the facility; and there was no documentation of any refusals by local or state authorities to enter into such arrangements.

4. The contingency plan was deficient in that no directions were given which employees must take in response to fires, explosion or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents to air, soil or surface water at the facility, due to the fact that no specific steps were set out for each particular type of realistic emergency (e.g. the possibility of release of a highly corrosive waste from tanks at the site).

5. The contingency plan was further deficient in that no list of the emergency equipment at the facility was given to include its location, a physical description of each item on the list, and a brief outline of its capabilities.

6. The contingency plan was further deficient in that there was no record of any agreements between the respondent and local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services, nor had a copy of the contingency plan as existing been submitted to all of the above agencies.

7. The closure plan was deficient in that it failed to provide the description of how and when the facility would be partially closed if applicable, or ultimately closed, and failed to identify with specificity the maximum extent of the operation which would be unclosed during the life of the facility nor did it describe how all applicable closure requirements would be met nor did it include an estimate of the maximum inventory of waste in storage at any given time during the life of the facility.

IV.

The above conditions found at the inspection on December 1, 1982, constitute violations of the following specific regulations, respectively:*

*N.B: Division Regulations require compliance with these provisions whenever a generator exceeds the 90 day accumulation time allowance of Rule 1200-1-11-.03(4)(b) thereby making him subject to receiving the proper operating authority in accordance with Rule 1200-1-11-.07(1)(b)1(ii). As set forth in Rule 1200-1-11-.07(1)(b)1(ii), an existing facility must not treat, store, or dispose of hazardous wastes without a permit unless interim status is obtained. To operate during interim status the owner or operator must qualify for interim status and comply with the requirements of Rule 1200-1-11-.05 (see paragraph IV 1-7 of this order).

1. Tennessee Department of Public Health, Division of Solid Waste Management, Rule 1200-1-11-.05(5)(a).
2. Tennessee Department of Public Health, Division of Solid Waste Management, Rules 1200-1-11-.05(2)(g)(i), (2)(g)1(ii), (2)(g)1(iii) and (2)(g)4.
3. Tennessee Department of Public Health, Division of Solid Waste Management, Rules 1200-1-11-.05(3)(g)1(i), (3)(g)1(ii), (3)(g)1(iii), (3)(g)1(iv) and (3)(g)2.
4. Tennessee Department of Public Health, Division of Solid Waste Management, Rule 1200-1-11-.05(4)(c)(1).
5. Tennessee Department of Public Health, Division of Solid Waste Management, Rule 1200-1-11-.05(4)(e).
6. Tennessee Department of Public Health, Division of Solid Waste Management, Rules 1200-1-11-.05(4)(e)3, and (4)(e)2.
7. Tennessee Department of Public Health, Division of Solid Waste Management, Rules 1200-1-11-.05(7)(e)(i) and (7)(e)1(ii).

RELIEF

V.

NOW, THEREFORE, the Department hereby requests the Board to order the respondent to take the following steps:

(a) Within forty-five days from receipt of the Board's Order, a written proposal for removal of the waste from the Heywood Wakefield Company Plant in Newport must be submitted to the Division. The written proposal must include:

1. The dates for sampling the waste if applicable.
2. The name of the certified laboratory employed if needed.
3. The permitted contracted transporter to transport the waste.
4. The hazardous waste facility employed to manage the waste.

(b) Within seventy-five days from receipt of the Board's Order, the removal of hazardous waste must be initiated.

(c) Respondents must comply with all manifest requirements of the Rules Governing Hazardous Waste Management in Tennessee.

(d) Within 120 days of receipt of the Board's Order, all hazardous waste must have been removed to an authorized hazardous waste management facility.

DAMAGES

VI.

FURTHERMORE, the Department requests that Damages of $632.00 be assessed against the Respondent for expenses incurred by the Division for investigating the above violations and enforcing the restoration of the environment to its former condition more particularly as follows:

PERSONNEL 45 hours at $12.00 per hour	540.00
MILEAGE 460 mile at .20 per mile	92.00
TOTAL	632.00

CIVIL PENALTY

VII.

FINALLY, the Department requests that Respondent be assessed a civil penalty in the amount of:

$20,000.00 (TWENTY-THOUSAND DOLLARS).

In requesting this civil penalty, at least the following factors were considered:

1. In spite of the cooperation of local representatives of the Respondent, the lack of effort put forth by corporate officials and their creditors to comply with the law.
2. The economic benefit gained by the Respondent in failing to make the proper financial outlay for removal of the waste.

NOTICE OF RIGHT TO APPEAL

REQUEST FOR

ORDER, CIVIL PENALTY AND DAMAGE ASSESSMENT

The Respondents are hereby notified that in accordance with T.C.A. 53-6313 and statutes cited therein, they may appeal this Request for Order, Civil Penalty and Damage Assessment to the Solid Waste Disposal Control Board by filing with the Deputy Commissioner a written petition setting forth the grounds and reasons for and asking for a hearing in the matter before that Board. If no written petition for review is filed within thirty days after the date of service, the Respondents shall be deemed to have consented and this Request for Order, Civil Penalty and Damage Assessment shall become final as though granted by the Board. The petition must be filed in accordance with Division Rule 1200-1-10-.04. The hearing before the Board would be governed by Tennessee Code Annotated 53-6313, Division Rules 1200-1-10-.01 et. seq. and applicable provisions as set out in T.C.A. 4-5-101 et. seq. The Respondents may be represented by legal counsel.

"Rite in the Rain"®

ALL-WEATHER

LEVEL

Notebook No. 311

F4-2521

F4-9008-32
Heywood-Wakefield Co.
Newport/Cocke Co./Tennessee
Andrew Harvey

REFERENCE # 4

LOGBOOK REQUIREMENTS
REVISED - NOVEMBER 29, 1988

NOTE: ALL LANGUAGE SHOULD BE FACTUAL AND OBJECTIVE

1. Record on front cover of the Logbook: TDD No., Site Name, Site Location, Project Manager.
2. All entries are made using ink. Draw a single line through errors. Initial and date corrections.
3. Statement of Work Plan, Study Plan, and Safety Plan discussion and distribution to field team with team members' signatures.
4. Record weather conditions and general site information
5. Sign and date each page. Project Manager is to review and sign off on each logbook daily.
6. Document all calibration and pre-operational checks of equipment. Provide serial numbers of equipment used onsite.
7. Provide reference to Sampling Field Sheets for detailed sampling information.
8. Describe sampling locations in detail and document all changes from project planning documents.
9. Provide a site sketch with sample locations and photo locations.
10. Maintain photo log by completing the stamped information at the end of the logbook.
11. If no site representative is on hand to accept the receipt for samples, an entry to that effect must be placed in the logbook.
12. Record I.D. numbers of COC and receipt for sample forms used. Also record numbers of destroyed documents.
13. Complete SMO information in the space provided.

We, the undersigned, have read and understand the work, study, and safety plans:

- Andy Harvey (Proj. Mgr.) Andy Harvey 9/1/90
- Ron Wilde (Health & Safety Officer) Ron Wilde
- Wendell McLenton (Paperwork Officer) Wendell McLenton
- Patricia Harris (Sampler) Patricia Harris
- Mark Hitchcock (Sampler) Mark Hitchcock
- ~~Andy Spaugh~~ JAY CHASTAIN (Sampler)
- Greg Thomas (Sampler)
- Robert Hutcheson (Geophysics) Robert Hutcheson
- Brant McCanless (Geophysics) Brant McCanless 9/1/90

All entries shall be made by me, Andy Harvey unless indicated otherwise, my initials are AH. AH 9/1/90

Weather is hazy and hot

10:55 Arrived at site. Asked for Mike Mullaney of Eastern Plating.

11:05 Brant, Robert & I met with Tom McNealy & Mike Mullaney until 11:33. We ~~answe~~ answered questions about our operations and they decided they do want split samples.

11:40 We all walked around the site. Eastern Plating plates exercise equipment and other products.

11:55 There is a new building on the southeast portion of the site which has been built at least 10 years ago. A water storage tank is in the back, and a concrete foundation (circular) is next to it, where a tank of some type was torn down.

9/11/90 A.H.

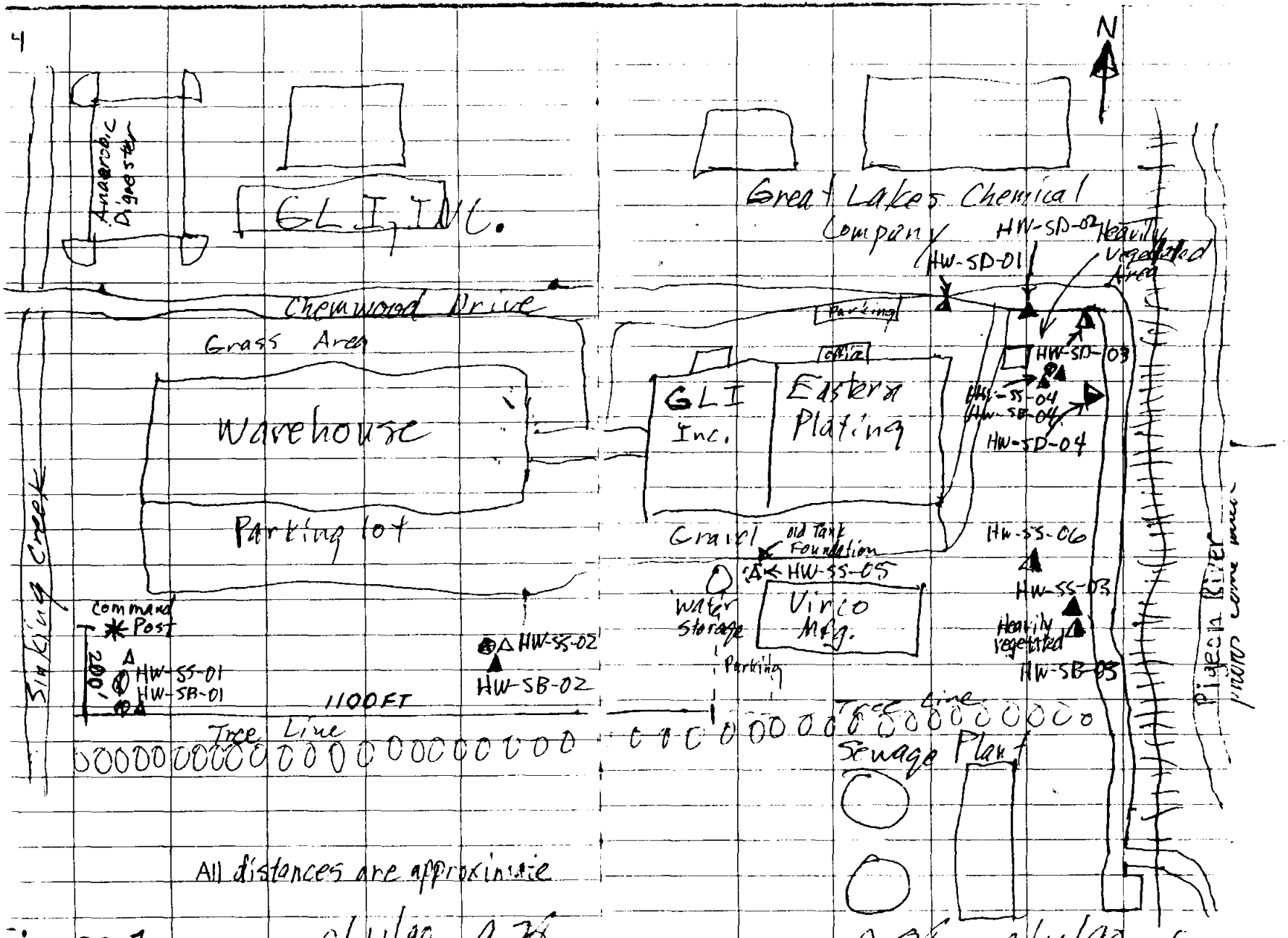
The new building mentioned above was not mentioned in the Phase I file material, or on the property map.

12:15 The site is extremely big, and the southeast corner is extremely overgrown with much vegetation.

ADDENDUM TO MEETING:
We explained to Mr. McNealy, Plant Manager, and Mr. Mullaney, Pres. of Eastern Plating, about how we take split samples, and the procedures involved. I then showed Mr. Mullaney our proposed sample locations on a plot map.

12:30 Inspected Geophysical locations and then went to lunch

9/11/90 A.H.



All distances are approximate

Figure 1 9/11/90 A.H.

A.H. 9/11/90

0115 Back at site. Conducted calibration and background reading in field across the street from the sewage plant. Instrument is the Geonics EM31, EPA serial # 307293. We are conducting a geophysical survey to find a suspected burial site somewhere on the property. The literature states that Heywood-Wakefield operated an incinerator to burn air pollution ~~equipment~~ control waste, and buried the remnants somewhere on site.

0130 We are setting up a grid next to Virco Mfg. Building (west of it).

1715 ~~0545~~ We have finished geophysical surveys with the conductivity meter in the back of the facility.

a.H. 9/11/90

1730 ~~0530~~ Inspected ~~area~~ N.E. corner of site.

1745 ~~0545~~ End of Day

1845 Reviewed day's activities

0745 9/12/90

Hazy, partly cloudy with a chance of rain

- Brant McCanless, Robert Hutcheson and I arrived early to complete ~~expe~~ geophysical survey.

0750 This morning we are going to run the Geonics EM31 in the NE corner of the site, to delineate the location of a suspected burial site.

0755 We have returned to the grass field across the street from the sewage plant to recalibrate the instrument and run a background check. The rest of the crew is scheduled

9/12/90 a.H.

8 9/12/90

[illegible] to be here at 8:30.

There are 2 large plants across the street from the Heywood-Wakefield facility (See Fig. 1). The GLI, Inc. plant is a recently built facility, and is going to manufacture a non-caloric sweetener for foods, according to Mike Mullaney, Pres., Eastern Plating. The other plant is a Great Lakes Chemical facility, and they manufacture phosgene gas, according to M. Mullaney.

0805 Today we will use the magnetometer to further delineate possible burial sites. We are calibrating and taking a background reading in the same area as the conductivity meter, across the street from the sewage plant.

9/12/90 [illegible]

0812 We will be using a Geometrics G-856 Magnetometer, Serial No. 690741

0820 Although the site appears to be quite level, it seems that drainage will flow to the eastern portion of the site. The site is surrounded by a berm which is approximately 10 ft. high in the west, and separates Sinking Creek from the site in the west. To the south the berm is approximately 4 to 5 feet high and to the east is Chemwood Dr., which is slightly higher than the eastern, heavily vegetated portion of the site. There is no evidence of stressed vegetation and insect life is highly abundant. See Figure 1

9/12/90 [illegible]

photos come back

0900 Crew arrived. Wendell & Mark are going to search for the private well nearest the site, to the west which is upgradient. They are also going back to the hotel to pick up blanks & spikes. We are setting up the command post in the S/W corner of the site, near our background location.

Additional Note

0955 We forgot to use the Hnu yesterday, because we only did geophysics in an open field in the back of the site. Greg Thomas has been tasked to check for organic vapors with it today, 9/12/90 before we start sampling. We calibrated it at 9.8 span with the 10.2 eV probe 57 ppm. The Hnu ova readings turned up no prohibitive vapors.

a.H. 9/12/90

1045 We inspected heavily vegetated area east of buildings, and south of Chemwood Dr. We found some stunted growth in pockets within the area.

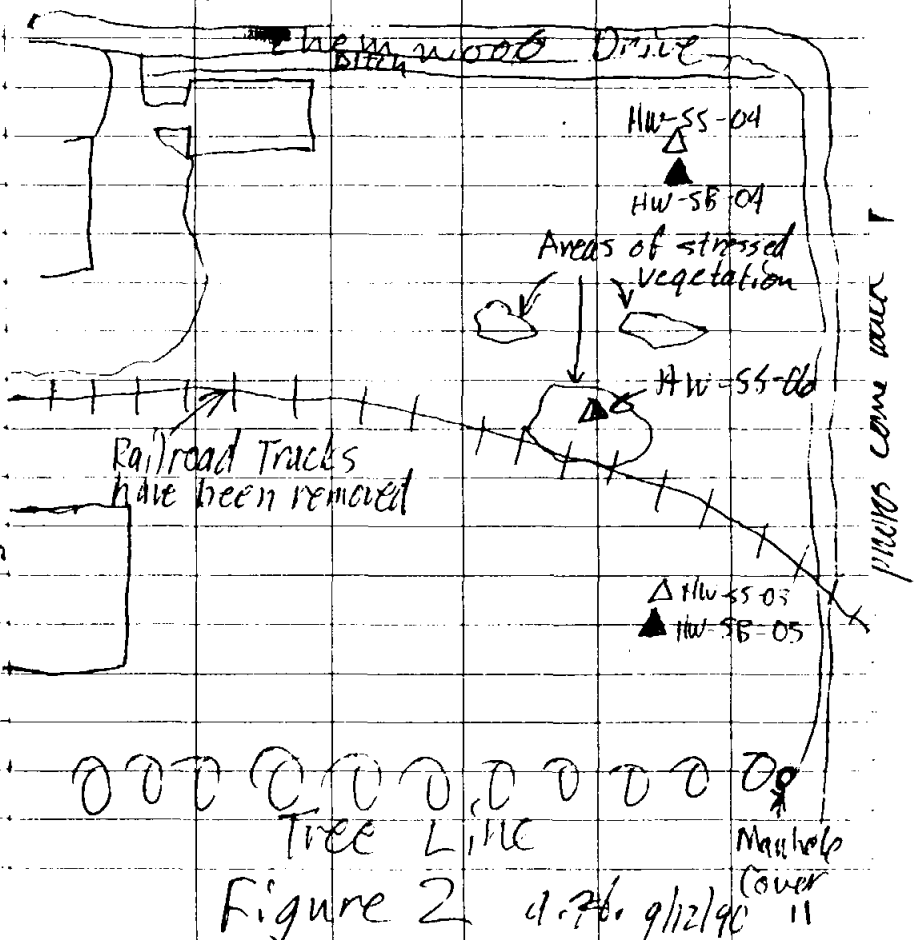


Figure 2 a.H. 9/12/90

2

110 After a thorough investigation of the site, it appears that there is no well defined surface water pathway. Discussed sample locations with crew.

130 Obtained sample bottles from Tom McNealy. Sample bottles are the wrong kind, they are plastic (liter bottles. We told them we would get split samples for them.

00 Set up area for background samples. A.H. 9/12/90 1st sample is located in SW portion of site. Sample is named HW-SS-01, ~~HW-SB-01~~ A.H. 9/12/90 and it was taken at a depth of 6 inches and it is a dark brown clay. We started drilling with the Little Beaver and hit rock at approximately 5 feet. Then we moved it 25 ft South.

A.H. 9/12/90

1230 Ron Wilde, Tom McNealy, and I have gone to look for sample locations.

1240 We have found a ditch running in front of the site, along Chemwood Dr. This appears to be the surface water drainage pathway

~~[illegible]~~ A.H. 1310 We are back at the command post 4 ft deep with Lil Beaver. Decided to take HW-SB-01 now before we hit rock again. HW-SB-01 taken at 5 ft. depth. It is dark brown sandy clay. Hit rock at 8 ft. deep. My belief is that the water table is within the rock, and deeper than 8 ft. Therefore we will attempt to obtain a groundwater sample at our next location.

A.H. 9/12/90

pieces come back

13

1345 To Lunch

1430 Picked sample locations in drainage ditch. Found a pipe which ends in ditch, 50' East of 2nd entrance in front of Eastern Plating building.

1445 HW-SD-01 → Hnu negative. Dark brown sandy clay with small amount of organic detritus. Location 50' west of 2nd entrance, in front ditch

1450 HW-SD-02 - Sediment sample out of ditch. Hnu negative. Grayish brown sandy clay with intermixed organic matter. Location 50' E of 2nd Entrance. Taken where pipe intersects ditch to drain into it. Pipe could possibly be an outlet for excess water pressure.

1500 HW-SD-03 - Sediment sample out of ditch, at corner of property approx. 300' from 2nd entrance. Hnu negative. Dark brown sandy clay with some organic matter.

A.H. 9/12/90

1520 HW-SD-04 - sediment sample taken from ditch on Chemwood Drive toward Sewage plant, approximately 50 ft. away from the corner of the lot.

1525 Hnu serial # is 41547

1530 Tommy Morrow, of H & R trucking came by and asked how to get the results because he wanted to buy some property at the east of the site. I told him to call Ramona Klein at the U.S.E.P.A.

NOTE: HW-SD-01 is background sample.

A.H. 9/12/90

Phillips came back

1530 HW-SS-05 - obtained from the middle of the incinerator foundation. Hnu negative. Soil was dark brown clay intermixed with organic detritus.

FOR SAMPLE LOCATIONS SEE Figure 1 on pages 4 & 5. See field sampling sheets for detailed info as they are an extension of this logbook.

1600 We have ~~flags~~ a.m. 9/12 measured 400' from the southwest corner, along the baseline of the geophysic grid system, and then 100' to the North of that point. Based upon a conductivity anomaly detected during our survey of yesterday. The anomaly was an area of higher conductivity in the shape of a teardrop.

a.m. 9/12/90

HW-SS-02 - Location moved from study plan to location stated in above paragraph. Hnu negative. Depth 6 inches. Soil is Dark brown sandy clay.

HW-SB-02 - Depth 6 ft. Hnu - negative. Location 400' from southwest corner of site, then 100' perpendicular to baseline. Grayish brown wet clay. Hit rock at 7 1/2 ft. I believe the water table is below this depth, although the soil directly above the rock is saturated. Pebbles recovered are rounded and could be part of a riverbed gravel deposit, which could possibly have created the conductivity anomaly.

a.m. 9/12/90

1540 we are packing up to go home. END OF DAY

1730 I have reviewed the day's activities Andy Stanley 9/12/90

A.S. 9/12/90

9/13/90

weather - overcast with intermittent rain & drizzle

08:30 Arrived at site. Set up command post in the eastern portion of site. Picked sample locations. Calibrated Hnu with the 10.2 Ev probe at 9.8 span - 57 ppm.

0900 Hnu not functional. OVA was taken back to Atlanta inadvertantly by the Geophysics crew. Based on our negative readings of yesterday I have decided to proceed sampling with caution. I have advised the crew to withdraw upon the 1st odor smelled which is out of the ordinary.

A.S. 9/13/90

Photos come back

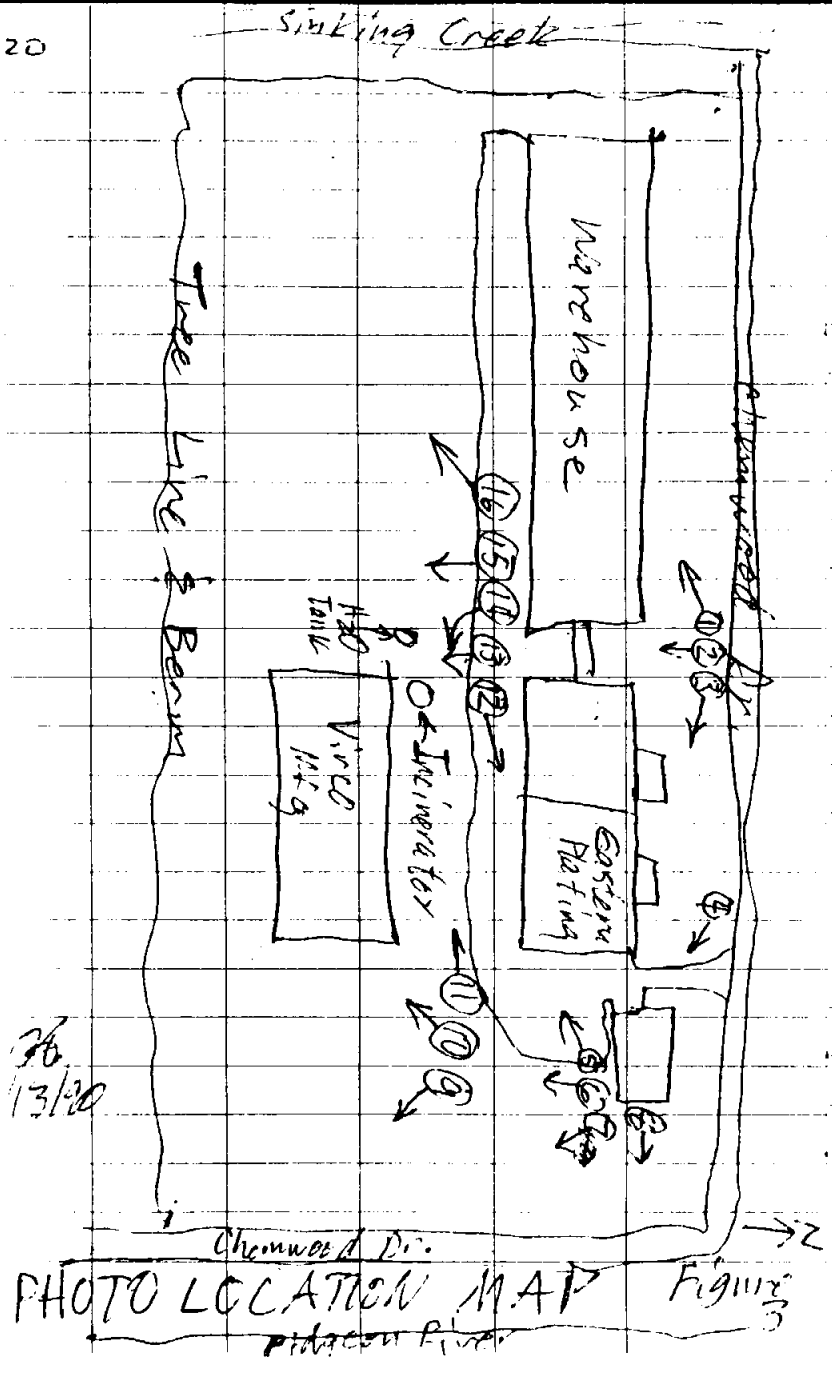


PHOTO LOCATION MAP Figure 3

0950 HW-SS-06-Location-middle of field east part of site. Soil is grayish granular flakes 1/4 inch in diameter with blue plastic bits intermixed. Sample obtained from an area of stressed vegetation. (see Figures 1 & 2).

1000 HW-SS-04-Location-NE corner of site Dark brown clay with much organic matter intermixed. Hit rock at 4 ft, but it was a river deposit of large rounded pebbles, and we were able to break thru. Decided to take HW-SB-04 at 5½ ft depth for fear of hitting bedrock

photos come back

G.A. 4/15/90

2

005 HW-SS-03 - Dark brown sandy clay with some organic matter intermixed. Location - South ~~western~~ eastern corner of site at the estimated location of old settling basin. Depth - 6 inches

015 HW-SB-04 - Dark brown clayey sand with large rounded pebbles. Depth - 4½ ft. Location - NE corner of site. Due to the rocky nature of the soil and the weather conditions, No temporary well will be dug, and we will not be able to obtain a ground water sample. Location - same as HW-SS-04

020 HW-SB-03 - Location - Southeast corner of site, in possible settling basin. Dark brown sandy clay, with some blue specks and rounded pebbles, depth 4 ft.

1030 Packed up to leave.

A.H. 9/13/90

1115 Met with PRP. Updated sample location map with study plan and gave them a copy of it. Tom McNeely signed a receipt for samples form & we transferred his samples to him.

1230 Photo 1, Front of warehouse
Photo 2, First entrance, front of facility
Photo 2, Front of 2nd building

1230 #4 2nd entrance to facility off Chemwood Drive.

1240 #5 East side of Eastern Plating
6 Looking south from garage
7 Looking SE toward field
8 Looking E toward field

1245 9 Parking lot, looking SE toward settling basin

photos come back

A.H. 9/13/90

2445 9 Parking lot – toward settling basin
10 Looking toward back of Virco Mfg. (East side)
11 Toward old water tank

1255 12 Rear of Eastern Plating

13 Old incinerator and storage tank

14 Front of Virco Mfg.

1300 15 Next to H2O tank, looking south

16 Overlooking field in rear of facility
see Figure 3 for a map of sample locations.

1330 Back at hotel. Helped Wendell w/paperwork. End of Day

A.A. 9/13/90

NOTE: Since A.A. 9/13/90 saturation zone could not be reached, all temporary wells and water samples as described in the study plan have been eliminated.

1530 I have reviewed the days activities as disclosed in this logbook
Andrew Harvey 9/13/90

photos come back

A.A. 9/13/90

NUS CORPORATION AND SUBSIDIARIES REFERENCE # 5 **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	06/06/91	11:00

DISTRIBUTION:
Heywood-Wakefield Company

BETWEEN: Michael Mullaney	OF: Eastern Plating Company Newport, Tennessee	PHONE: (615) 623-0062

AND:
Wendell C. McLendon Wendell C. McLendon 6/6/91

DISCUSSION:

Mr. Mullaney stated that the wastewater treatment plant was owned and operated by the city of Newport, TN. Heywood-Wakefield Co. sends effluent directly to the wastewater treatment plant.

Eastern Plating Company owns the building where they are located and the parking lot. They lease space to GLI, Inc. Virco Manufacturing Co. owns the building where they are located and also the large warehouse building. The small garage building and 7 acres by the city wastewater treatment plant are owned by Chemwood Properties.

MAR 20 1981

HEYWOOD-WAKEFIELD COMPANY OF NEWPORT

A DIVISION OF HEYWOOD-WAKEFIELD COMPANY
NEWPORT, TENNESSEE 37821

615 623 3042
Telex 55-7454

REFERENCE # 6

March 18, 1981

Environmental Protection Agency
Region IV
345 Courtland St.
Atlanta, Ga. 30365

Dear Sir:

The attached Hazardous Waste Permit Application is re-submitted per your request with corrections and additional information as needed to complete approval.

If further assistance is required concerning this application, please direct correspondence to the undersigned.

Sincerely,

Walter O'Neil
Walter O'Neil
Engineering

CC: State of Tennessee
Dept. of Public Health
Cordell Hull Bldg.
Nashville, Tn. 37219

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

F D

LABEL ITEMS

I. EPA I.D. NUMBER	
III. FACILITY NAME	TND003382330
V. FACILITY MAILING ADDRESS	HEYWOOD-WAKEFIELD CO RURAL PL NEWPORT, TN [illegible]
VI. FACILITY LOCATION	OFF FARMINGTON RD NEWPORT, TN [illegible]

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X			D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X			F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP

IV. FACILITY CONTACT

A. NAME & TITLE (last, first, & title): CHARTIER ~~[illegible]~~ VICE PRESIDENT

2 ~~KELLY, JOHN~~ ~~OPERATIONS MGR~~

B. PHONE (area code & no.): 615 623 3042

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3

B. CITY OR TOWN | C. STATE | D. ZIP CODE

4

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5

B. COUNTY NAME

COCKE

C. CITY OR TOWN | D. STATE | E. ZIP CODE | F. COUNTY CODE (if known)

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
2531 (specify) MFG SCHOOL FURNITURE	(specify)
C. THIRD	**D. FOURTH**
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME: HEYWOOD-WAKEFIELD COMPANY

B. Is the name listed in Item VIII-A also the owner? ☒ YES ☐ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)

P (specify)

D. PHONE (area code & no.): A 615 623 3042

E. STREET OR P.O. BOX: ROUTE 7

F. CITY OR TOWN: NEWPORT

G. STATE: TN

H. ZIP CODE: 37821

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): N TN0001392	D. PSD (Air Emissions from Proposed Sources): 9 P
B. UIC (Underground Injection of Fluids): U	E. OTHER (specify): 9 (specify)
C. RCRA (Hazardous Wastes): R	E. OTHER (specify): 9 (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

MANUFACTURE MOVABLE CLASS ROOM SCHOOL FURNITURE

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
~~JOHN J. KELLY~~ E. E. Chartier V. Pres. ~~OPERATIONS MANAGER~~	John J. Kelly	9/16/80

COMMENTS FOR OFFICIAL USE ONLY

C

Type or print in the unshaded areas only. Fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: C D U P 1

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, and if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

YR. MO. DAY

X 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

YR. 78 MO. 03 DAY 06

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

1. FACILITY HAS INTERIM STATUS

2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided. Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C D U P 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600	G		5				
X-2	T03	20	E		6				
1	D80	~~25~~ 120	L ~~A~~		7				
2					8				
3					9				
4					10				

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. **EPA HAZARDOUS WASTE NUMBER** — Enter the four—digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four—digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. **ESTIMATED ANNUAL QUANTITY** — For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column A estimate the total annual quantity of all the non—listed **waste***(s)* that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. **PROCESSES**

1. PROCESS CODES:
   For listed hazardous waste: For each **listed** hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non—listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: *If a code is not listed for a process that will be used, describe the process in the space provided on the form.*

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002				included with above

CONTINUE ON PAGE 3

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)	FOR OFFICIAL USE ONLY
W 1	W DUP 2 DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F006	4,200	P	D80	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

CONTINUE ON REVERSE

Continued from the front

IV. DESCRIPTION OF HAZARDOUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

S		T/A/C
F		6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
35 84 30N	83 12 00W

VIII. FACILITY OWNER

X A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
	G		

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
E.G. Chartier, V. Pres ~~JOHN J. KELLY~~	E.G. Chartier 3/17/81 ~~John J. Kelly~~	1/28/81

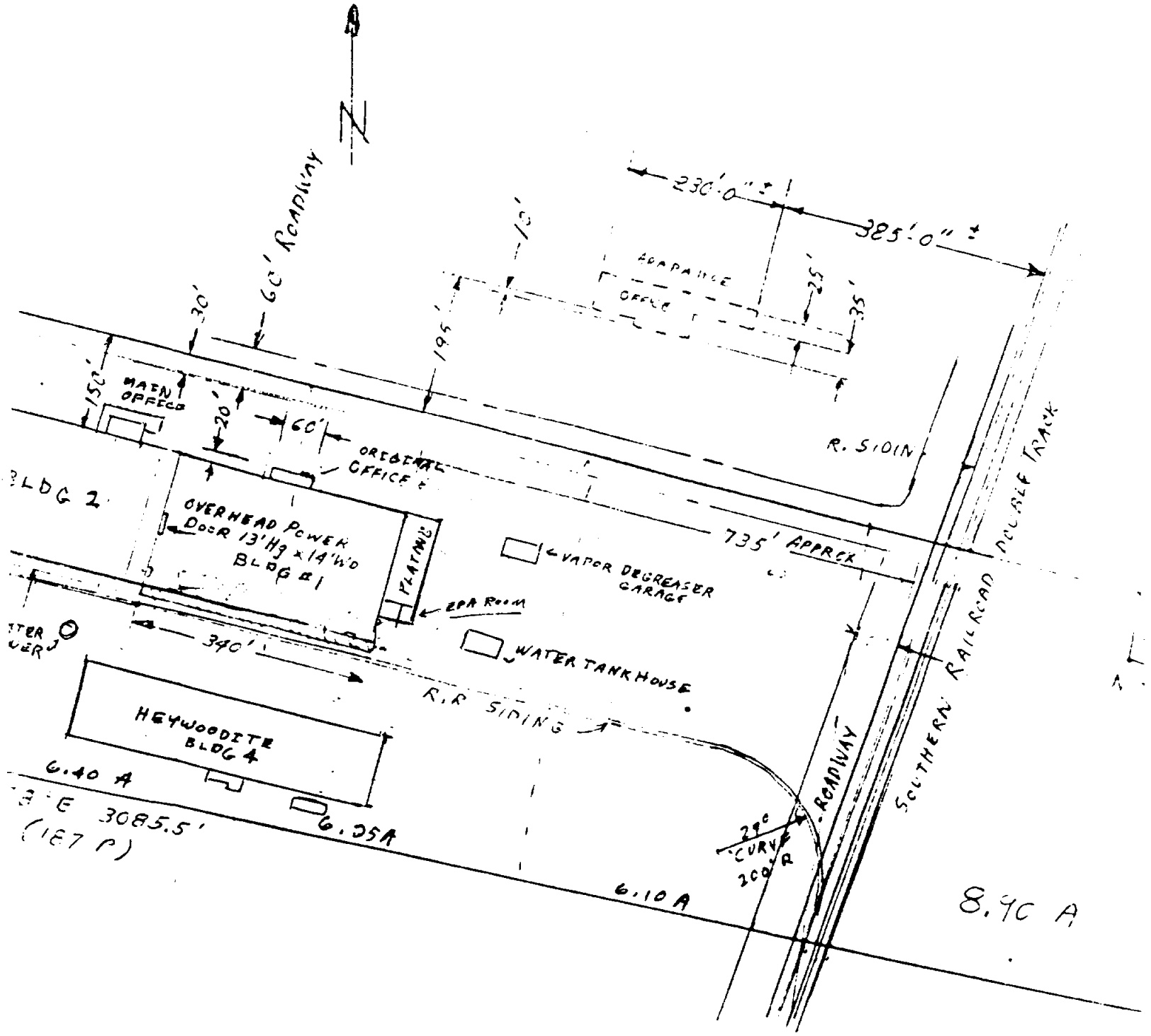
X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
E.G. Chartier, V. Pres ~~JOHN J. KELLY~~	E.G. Chartier 3/13/81 ~~John J. Kelly~~	9/16/80

CONTINUE ON PAGE 5

NEWPORT TENN



1/16" ≈ 12.50

REFERENCE # 7

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	07/10/91	14:10

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN: Jennifer Powers	OF: Division of Solid Waste Management	PHONE: (615)741-3424

AND:
Wendell C. McLendon Wendell C. McLendon 7/10/91

DISCUSSION:

Ms. Powers stated that Heywood-Wakefield Company was classified as a large generator at the time of bankrputcy (August, 1982).

REFERENCE # 8

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	06/25/91	14:30

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN:	OF:	PHONE:
Michael Mullaney Tom McNealy	Eastern Plating Co. Newport, Tennessee	(615)623-0062

AND:
Wendell C. McLendon Wendell C. McLendon 6/25/91

DISCUSSION:

I talked with Mr. Mullaney and Mr. McNealy concerning wastewater treatment at Eastern Plating Company. They stated that the Heywood-Wakefield Company built a waste treatment plant (constructed by Utilite Co.) to allow the discharge of effluent to the Pigeon River.

A pretreatment plant was already in place when Eastern Plating Co. began operations. Water used in the electroplating process is pretreated before pumping effluent directly to the Newport Utilities wastewater treatment plant.

Eastern Plating Company holds an Industrial Wastewater Discharge Permit (No. NUB-001).

REFERENCE # 9

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	07/09/91	14:25

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN: Abba Yavari	OF: Central Office - Water Pollution Control	PHONE: (625)741-7883

AND:
Wendell C. McLendon Wendell C McLendon 7/9/91

DISCUSSION:

Mr. Yavari stated that Heywood-Wakefield Company was issued a temporary NPDES permit on June 13, 1974 (expired June 1, 1977). The earliest date for a permanent NPDES permit (No. TN0001392) listed is May 15, 1979. The original outfall (listed on the temporary permit) was for 0.2 mile on Sinking Creek. The outfall for the permanent NPDES permit is River Mile No. 4 on the Pigeon River.

REFERENCE # 10

(3)

NAME OF FACILITY
Heywood-Wakefield Company

I.D. NUMBER
TND003382330

ADDRESS AND LOCATION
Off Rankin Road, Newport, Tennessee

OWNER/OPERATOR/PRINCIPAL CONTACT
Walter O'Neill

MAILING ADDRESS
Rural Route 7, Newport, Tennessee 37821

TELEPHONE
615-623-3042

DATE/TIME OF INSPECTION
March 8, 1982, 10:00 A.M.

REPORT PREPARED BY:
Rick Brown

NAME(S) OF PARTICIPANTS/TITLES/AFFILIATIONS
Rick Brown, Environmental Engineer, Tennessee Division of Solid Waste Management
Walter O'Neill, Heywood-Wakefield Company

PURPOSE OF INSPECTION
Initial inspection under the Tennessee Hazardous Waste Management Act. The purpose of this inspection was to examine records pertaining to and facilities involved in the generation, treatment, and storage of those hazardous wastes of which Heywood-Wakefield has notified the State of Tennessee, as required by law, in order to determine whether the facility is in compliance with the regulations established under the Act.

FACILITY DESCRIPTION
The Heywood-Wakefield plant at Newport, Tennessee, manufactures metal-frame desks for schools. One stage in the process is nickel and chrome plating of the frames. The plating process includes a unit which recovers and recycles much of the chromium. The spent plating solution is discharged into a treatment system, which by pH adjustment precipitates most of the remaining metals so that the effluent can be discharged under an NPDES permit. The sludge from the treatment system is pressure-filtered to reduce the moisture content and is then put into drums. The sludge from the treatment system is a hazardous waste. The drums containing this waste are stored in an area outside the plant until enough have accumulated to justify a shipment to an approved disposal facility. Presently, the waste is transported to SCA Services' approved hazardous waste landfill at Pinewood, South Carolina. Manifests are kept on these shipments. Prior to the RCRA requirements, the waste went to the Cocke County landfill.

Presently production has almost stopped at the plant and the plant is likely to close down.

INSPECTION FINDINGS
The following violations of the Tennessee Hazardous Waste Management Rules were noted during the inspection:

1. The facility was is violation of 1200-1-11-.05(5)(d)2. (i), .05/A(a)(1-3), and (5)(d)2.(ii) concerning records of wastes received. There were no records of quantities of wastes received into the treatment system or placed in the storage area, and there was no record of the location of the wastes within the facility.

HAZARDOUS WASTE INSPECTION REPORT

NAME OF FACILITY
Heywood-Wakefield

I. D. NUMBER
TND003382330

REFERENCE # 11

ADDRESS AND LOCATION
Off Rankin Road
Newport, TN

OWNER/OPERATOR/PRINCIPAL CONTACT
Forrest Ellison

MAILING ADDRESS
Rural Route 7
Newport, TN 37821

TELEPHONE
(615) 623-3042

DATE/TIME OF INSPECTION
April 16, 1982 10:00 A.M.

REPORT PREPARED BY:
Rick Brown

NAME(S) OF PARTICIPANTS/TITLES/AFFILIATIONS
Rick Brown
Environmental Engineer
Tennessee Division of Solid Waste Management

Forrest Ellison
Heywood-Wakefield Company

PURPOSE OF INSPECTION
Compliance inspection under the Tennessee Hazardous Waste Management Act. The facility was inspected as a generator and as a treatment and storage facility. The purpose of this inspection was to determine whether the violations noted during the previous inspection, (March 8, 1982), had been corrected.

FACILITY DESCRIPTION
The Heywood-Wakefield plant at Newport, Tennessee, manufactures metal-frame desks for schools. One stage in the process is nickle and chrome plating of the frames. The plating process includes a unit which recovers and recycles much of the chromium. The spent plating solution is discharged into a treatment system which by pH adjustment precipitates most of the remaining metals so that the resulting effluent can be discharged under an NPDES permit. The sludge from the treatment system is a hazardous waste. After being pressure-filtered to reduce the moisture content, it is put into drums. The drums filled with this waste are stored outside the plant until enough have accumulated to justify a shipment to an approved off-site disposal facility. Manifests kept at the facility show that the waste has been shipped to SCA Services' approved hazardous waste landfill at Pinewood, South Carolina. Prior to the hazardous waste laws, the waste went to the Cocke County landfill.

Production has completely stopped at the plant and only a few office personnel are employed. The hazardous waste treatment and storage facilities have not been closed or removed and they are not being inspected or maintained. The plant plans to reopen in about 30 days.

INSPECTION FINDINGS

The following violations of the Tennessee Hazardous Waste Management Rules were noted during the inspection:

1. Rule 1200-1-11-.05(5)(d)2(i) requires owners or operators to keep records of each hazardous waste received at the facility, as the information becomes available, which contains a description of each waste by its common name and the appropriate waste codes, the estimated or manifest-reported weight, or volume and density, where applicable, and the methods and dates of treatment, storage or disposal.

   There is no provision for keeping such records.

2. Rule 1200-1-11-.05(5)(d)2(ii) requires owners or operators of hazardous waste management facilities to record the location of each hazardous waste within the facility and the quantity in each location, this information must include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest.

   This has not been done.

3. Rule 1200-1-11-.05(4)(g)10 requires owners or operators of hazardous waste management facilities to note in the operating record, the time, date, and details of any incident that requires implementing the contingency plan.

   This rule could not have been complied with because no contingency plan existed.

4. Rule 1200-1-11-.05(2)(f)1 requires owners or operators of hazardous waste management facilities to inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing, or may lead to, release of hazardous waste constituents to the environment or a threat to public health.

   This is not being done.

5. Rule 1200-1-11-.05(2)(f)2 requires owners or operators of hazardous waste management facilities to develop and follow a written inspection schedule that will both identify the types of problems which are to be looked for when inspecting monitoring equipment, safety and emergency equipment, security devices, operating and structual equipment, and the other items required to be inspected, and the frequency for inspecting them.

   This has not been done.

6. Rule 1200-1-11-.05(2)(f)4 requires owners or operators of hazardous waste management facilities to record inspections in an inspection log or summary which includes the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions, and to retain these records for three years from the date of the inspection.

   This is not being done.

7. Rule 1200-1-11.05(9)(e) requires owners or operators who manage hazardous waste in containers to inspect the areas where containers are stored at least weekly, looking for leaks and for deterioration caused by corrosion or other factors.

   This has not been done.

8. Rule 1200-1-11-.05(17)(d)2 requires owners or operators who chemically, physically, and biologically treat hazardous waste to inspect data gathered from monitoring equipment, at least once each operating day, to ensure that the treatment process or equipment is being operated according to its design.

   This has not been done.

9. Rule 1200-1-11-.05(17)(d)3 requires owners or operators who chemically, physically, and biologically treat hazardous waste to inspect the construction materials of the treatment process or equipment, at least weekly, to detect corrosion or leaking of fixtures or seams.

   This has not been done.

10. Rule 1200-1-11-.05(17)(d)4 requires owners or operators who chemically, physically, and biologically treat hazardous waste to inspect the construction materials of, and the area immediately surrounding discharge confinement structures, at least weekly to detect erosion or obvious signs of leakage.

    This has not been done.

11. Rule 1200-1-11-.05(8)(b)1 requires owners or operators of hazardous waste management facilities to have a written estimate of the cost of closure, which is equal to the cost of closure at the point in the facilities' operating life when the extent and manner of its operation would make closure the most expensive.

    This has not been done.

12. Rule 1200-1-11-.05(2)(g)1(i) requires owner or operators of hazardous waste management facilities to ensure that facility personnel successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures that the facility will be properly managed.

    This has not been done.

13. Rule 1200-1-11-.05(2)(g)1(ii) requires owners or operators of hazardous waste management facilities to ensure that the training program be directed by a person trained in hazardous waste management procedures, and include instruction which teaches facility personnel hazardous waste management procedures relevant to the positions in which they are employed.

    This has not been done.

14. Rule 1200-1-11-.05(2)(g)2 requires owner or operators of hazardous waste management facilities to ensure that facility personnel successfully complete the training program by September 6, 1981 or six months after the date of their employment or assignment to a facility or to a new position at a facility, and not work in an unsupervised position until they have successfully completed the training program.

    This has not been done.

15. Rule 1200-1-11-.05(2)(g)4 requires owners or operators of hazardous waste management facilities to maintain the documents and records for the job titles for each position related to hazardous waste management, and the names of the employees filling each job, a written job description for each position, a written description of the type and amount of both introductory and continuing training that will be given to each person filling the position, and records that document that the training or job experience has been given to, and completed by, facility personnel.

This has not been done.

16. Rule 1200-1-11-.05(3)(g)1(i) requires owners or operators of hazardous waste management facilities to attempt to make arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes, as appropriate for the type of waste handled at the facility and potential need for the services of these organizations.

Rule 1200-1-11-.05(3)(g)1(ii) requires owners or operators of hazardous waste managment facilities to attempt to make arrangements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority, where more than one police and fire department might respond to an emergency, as appropriate for the type of hazardous waste handled at the facility and the potential need for the services of these organizations.

Rule 1200-1-11-.05(3)(g)1(iii) requires owners or operators of hazardous waste management facilities to make agreements with State emergency response teams, emergency response contractors, and equipment suppliers, as appropriate for the type of hazardous waste handled at the facility and the potential need for the services of these organizations.

Rule 1200-1-11-.05(3)(g)1(iv) requires owners or operators of hazardous waste management facilities to make agreements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility, as appropriate for the hazardous waste handled at the facility and the potential need for the services of these organizations.

Rule 1200-1-1-.05(3)(g)2 requires owners or operators of hazardous waste management facilities to document the refusal in the operating record, where State or local authorities decline to enter into emergency preparedness arrangements.

There has been no effort to comply with these rules.

17. Rule 1200-1-11-.05(4)(b)1 requires owners or operators of hazardous waste management facilities to have a contingency plan, designed to minimize hazards to public health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

This has not been done.

18. Rule 1200-1-11-.05(4)(c)1 requires owners or operators of hazardous waste management facilities to describe in the contingency plan, the actions facility personnel must take in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.

Rule 1200-1-11-.05(4)(d)2 requires owners or operators of hazardous waste management facilities to submit a copy of the contingency plan and all revisions to the plan to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

No provision has been made for complying with these rules.

19. Rule 1200-1-11-.05(7)(c)1 requires owners or operators of hazardous waste management facilities to have, at the facility, a written closure plan which identifies the steps necessary to completely close the facility at any point during its intended life and at the end of its intended life.

This has not been done.

20. Rule 1200-1-11-.05(7)(c)1(i) requires owners or operators of hazardous waste management facilities to include in the closure plan a description of how and when the facility will be partially closed, if applicable, and ultimately closed, and ensure that the description identifies the maximum extent of the operation which will be unclosed during the life of the facility, and how all applicable closure requirements will be met.

Rule 1200-1-11-.05(2)(c)1(iv) requires owners or operators of hazardous waste management facilities to include in the closure plan a schedule for final closure which must include, as a minimum, the anticipated date when wastes will no longer be received, the date when completion of final closure is anticipated, and intervening milestone dates which allow tracking of the progress of closure.

No provision has been made for complying with these rules.

21. Rule 1200-1-11-.05(2)(e)1 requires owners or operators of hazardous waste management facilities to prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of his facility, unless physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of the facility, and disturbance of the waste or equipment, by the unknowing or unauthorized entry of persons or livestock onto the active portion of a facility, will not cause a violation of the requirements for this facility.

Rule 1200-1-11-.05(2)(e)2 requires owners or operators of hazardous waste management facilities to have a 24-hour surveillance system which continuously monitors and controls entry onto the active portion of the facility, or an artificial or natural barrier, which completely surrounds the active portion of the facility, and a means to control entry, at all times, through the gates or other entrances to the active portion of the facility, if this kind of control is needed for this kind of facility.

Rule 1200-1-11-.05(3)(f) requires owners or operators of hazardous waste management facilities to maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless aisle space is not needed for any of these purposes.

The drum storage area is in violation of these rules.

22. Rule 1200-1-11-.05(3)(b) requires owners or operators of hazardous waste management facilities to maintain and operate their facilities in a manner which will minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten public health or the environment.

    The treatment system was in violation of this rule because some of the tanks had overflowed and several of them were in violation of freeboard requirements, resulting in spillage of the liquid waste.

23. Rule 1200-1-11.05(10)(b)3 requires owners or operators of hazardous waste management facilities that manage hazardous waste in uncovered tanks, to operate them to ensure at least 60 centimeters (2 feet) of freeboard, unless the tank is equipped with a containment structure, a drainage control system, or a diversion structure with a capacity that equals or exceeds the volume of the top 60 centimeters (2 feet) of the tank.

    Several tanks in the treatment system were in violation of this rule.

RECOMMENDATIONS/REMARKS

The violations noted in the previous inspection have not been corrected primarily because the report was addressed to the former environmental manager who is no longer with the company, and the general manager, Mr. Ellison, was not present during the previous inspection and was not aware of the report. The wastewater plant overflowed because no one who was familiar with the system was there to watch it.

Mr. Ellison assured me that he would call a wastewater operator back immediately to stop the overflow and clean up the spill. He was instructed to manage all of the spilled liquid as a hazardous waste after it is cleaned up.

The company has been advised that they must notify as a treatment and storage facility, as well as a generator and that they must correct all of the listed violations if they continue to maintain or operate treatment or storage facilities.

Rick Brown
SIGNATURE

4-27-82
DATE

RB:pg D/1

REFERENCE # 12

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	07/08/91	15:35

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN: Jesse Jones	OF: TN Dept. of Environment and Conservation	PHONE: (615)594-6035

AND:
Wendell C. McLendon Wendell C. McLendon 7/8/91

DISCUSSION:

Mr. Jones stated that Heywood-Wakefield Company was issued an NPDES permit on July 1, 1983 (original issue date - October 29, 1980). The permit was to expire July 30, 1988. The permit was recorded as inactive on October 16, 1983. NPDES permit No. TN0001392.

REFERENCE # 13

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	06/21/91	14:28

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Cocke County, Tennessee

BETWEEN: Carol Proffitt	OF: Newport Wastewater Treatment Plant	PHONE: (615)623-7001

AND:
Wendell C. McLendon

Wendell C. McLendon 6/21/91

DISCUSSION:

Mr. Proffitt stated that the wastewater treatment plant located behind the Heywood-Wakefield Company facility was put in operation in September, 1979. An old wastewater treatment plant, located between the railroad tracks and the Pigeon River, was built in 1960.

REFERENCE # 14

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	06/21/91	14:20

DISTRIBUTION:
Heywood-Wakefield Company
Newport, Cocke County, Tennessee

BETWEEN: Lisa Mullins	OF: Dept of Environment and Conservation	PHONE: (615)594-6444

AND:
Wendell C. McLendon

Wendell C. McLendon 6/21/91

DISCUSSION:

Ms. Mullins stated that Eastern Plating Company did not have an NPDES permit.

REFERENCE # 15

STATE OF TENNESSEE
DEPARTMENT OF HEALTH AND ENVIRONMENT
2700 Middlebrook Pike
Suite 220
Knoxville, Tennessee 37921

January 26, 1989

Certified Mail
P 825 958 712

Mr. Tom McNealy, Plant Manager
Eastern Plating
Route # 7, Box 26
Chemwood Drive
Newport, TN 37821

RE: Notice of Noncompliance
Illegal Discharges
Eastern Plating
Cocke County

Dear Mr. McNealy:

Samples collected at your facility by the Division of Water Pollution Control indicate illegal discharges of industrial wastes into waters, and a location from which they are likely to move into waters, have occurred. High concentrations of chromium, nickel, and lead in sediment and stormwater runoff from this facility are indicated by the samples. Reports of the analyses are enclosed (KI 582 B and KI 885).

The Tennessee Water Quality Control Act, TCA 69-3-101, et. seq., states, in part, that it shall be unlawful for any person to discharge industrial wastes into waters or a well, or a location from which it is likely that the discharged substance will move into waters or a well, except in accordance with the conditions of a valid permit.

The Division advises that Eastern Plating propose a plan to investigate the possible presence of pollutants in groundwater, soils, and stormwater runoff at this facility, to be submitted no later than April 24, 1989. A Compliance Review Meeting will be conducted on Thursday, February 23, 1989, at 10:00 a.m. at our offices on 2700 Middlebrook Pike, Knoxville. Your cooperation is expected. You should bring all information pertinent to your past and present waste management, including, but not limited to, waste characterizations, quantities and dates generated, and methods of treatment/disposal.

If there are questions regarding this correspondence, please contact Burl Maupin at 594-6444.

Sincerely,

Earl C. Leming, Manager
Knoxville Basin Office
Division of Water Pollution Control

ECL:BHM:bb

Enclosures: Laboratory Analyses KI 582 B and KI 885

cc: Jack Crabtree, DSWM
Ken Church, DSF
Enforcement Section - Nashville
Cocke County Health Department

Fran Disk

TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT
ENVIRONMENTAL LABORATORIES

KI 582 B

Sample Source: Eastern Plating
I.D.: ditch in front
Stream Mile: _____ Depth: 0-3 inches
County: Cocke Field No.: 1
Collected: Date 10-24-88 Time 11:30am By BHM
Potential Hazard: Ni, Cr, Pb, CN
Signature of Sampler: Burl H Maupin

Inorganic Analysis, Solids

Sample type: ☑ Sediment ☐ Tissue ☐ Air

Sample Priority: ☐ Emergency ☐ Legal ☑ Routine ☐ Ambient

Date priority requested: _____

Laboratory Number: KI 582B
Received: Date 881024 Time 1250 by UER
Sampling Agency: ☐ APC ☐ SWM ☑ WM ☐ Other _____
If SWM: ☐ SW ☐ SS ☐ SIU ☐ Other _____
If WM: ☐ GW ☑ WP ☐ WS ☐ Other _____
Send Report to: WPC - Knoxville

code	✓	Sediment	Unit	value
01108		aluminum, Al	mg/kg	
01003		arsenic, As	mg/kg	
01008		barium, Ba	mg/kg	
01023		boron, B	mg/kg	
01028		cadmium, Cd	mg/kg	
00917		calcium, Ca	mg/kg	
01029	✓	chromium, Cr	mg/kg	902.0
01038		cobalt, Co	mg/kg	
01043		copper, Cu	mg/kg	
01170		iron, Fe	mg/kg	
01052	✓	lead, Pb	mg/kg	178.2
00924		magnesium, Mg	mgk/g	
01053		manganese, Mn	mg/kg	
71921		mercury, Hg	mg/kg	
01068	✓	nickel, Ni	mg/kg	5440
00938		potassium, K	mg/kg	
01148		selenium, Se	mg/kg	
01078		silver, Ag	mg/kg	
00934		sodium, Na	mg/kg	
01093		zinc, Zn	mg/kg	
00721	✓	cyanide, CN	mg/kg	0.02
		nitrogen, ammonia	mg/kg	
00633		nitrogen, NO2 & NO3	mg/kg	
		nitrogen, total kjeldahl	mg/kg	
		oil and grease	mg/g	
		hydrocarbons, total	mg/g	
		percent solids	%	
32731		phenols	mg/kg	
00668		phosphate, total	mg/kg	

code	✓	Tissue	Unit	value
81666		aluminum, Al	mg/kg	
01004		arsenic, As	mg/kg	
81658		barium, Ba	mg/kg	
81657		boron, B	mg/kg	
71940		cadmium, Cd	mg/kg	
71939		chromium, Cr	mg/kg	
81659		cobalt, Co	mg/Kg	
71937		copper, Cu	mg/kg	
81660		iron, Fe	mg/kg	
71936		lead, Pb	mg/kg	
81741		manganese, Mn	mg/kg	
71930		mercury, Hg	mg/kg	
01069		nickel, Ni	mg/kg	
01149		selenium, Se	mg/kg	
81742		silver, Ag	mg/kg	
71938		zinc, Zn	mg/kg	
34326		cyanide, CN	mg/kg	
34468		phenols	mg/kg	
		Coal		
		ash	%	
		heat content	BTU	
		Moisture	%	
		sulfur	%	

code	✓	EP Toxicity	Unit	value
01000		arsenic, As	µg/L	
01005		barium, Ba	µg/L	
01025		cadmium, Cd	µg/L	
01030		chromium, total Cr	µg/L	
01049		lead, Pb	µg/L	
71890		mercury, Hg	µg/L	
01065		nickel, Ni	µg/L	
01145		selenium, Se	µg/L	
01075		silver, Ag	µg/L	
00723		cyanide, CN	µg/L	
		Other		

Signature of Unit Supervisor: Edward McCrary Date NOV 16 1988

Signature of supervisor indicates that the work was performed in accordance with federally approved procedures where available and in compliance with current quality assurance criteria except as qualified below.

Comments: _____

NOV 17 1988

* please designate desired analyses by placing a check mark before the appropriate parameter.

TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT
ENVIRONMENTAL LABORATORIES

Inorganic Analysis, Liquids

Laboratory Number K1885 KI 885
Received: Date 881221 Time 1600 by WJK
Sampling Agency: ☐ APC ☐ SWM ☐ WM ☒ Other
If SWM: ☐ SW ☐ SS ☐ SIU ☐ Other
If WM: ☐ GW ☒ WP ☐ WS ☐ Other
Send Report to WPC-Knoxville

Sample Source Eastern Plating stormwater
D. runoff from ditch at driveway
Stream Mile Depth
County Cocke Field No. 1
Collected: Date 12-21-88 Time 1:00pm by BHM
Potential Hazard metals
Signature of Sampler Burl H. Maupin

Sample Priority
☐ Emergency ☒ Legal ☐ Routine ☐ Ambient

Date priority needed

Code	✓*	Field Determinations	Units	Value
00095		conductivity	µmho	
00300		dissolved oxygen	mg/L	
00061		flow	CFS	
00400		pH	Units	
00545		residue, settleable	mg/L	
00077		Secchi disc	M	
00010		temperature	°C	
		Microbiology		
31616		coliform, fecal	# /100 mL	
31501		coliform, total	# /100 mL	
31679		streptococci, fecal	# /100 mL	
		Physical Characteristics		
00081		color, apparent	PtCoU	
00080		color, true	PtCoU	
		flash point	°C	
00403		pH, lab	Units	
00515		residue, dissolved	mg/L	
00545		residue, settleable	ml/L	
00530		residue, suspended	mg/L	
00500		residue, total	mg/L	
00095		specific cond. 25°C	µmho	
00070		turbidity	NTU	
		Organics		
00310		BOD, 5-day, 20°C	mg/L	
00335		COD (low)	mg/L	
00340		COD (high)	mg/L	
		Hydrocarbons	mg/L	

Code	✓	Organics	Units	Value
		formaldehyde, air impinger	µg	
38260		MBAS	mg/L	
00550		oil and grease	mg/L	
32730		phenols	µg/L	
00690		TOC	mg/L	
		Non-metallic Inorganics		
00437		acidity	mg/L	
00410		alkalinity, total	mg/L	
00415		alkalinity, phenolphthalein	mg/L	
01022		boron	ug/L	
00940		chloride	mg/L	
50060		chlorine, residual total	mg/L	
00720		cyanide	mg/L	
00290		dissolved oxygen	mg/L	
00950		fluoride	mg/L	
00900		hardness, total	mg/L	
82395		hardness, calcium	mg/L	
00635		nitrogen, total kjeldahl	mg/L	
00610		nitrogen, ammonia	mg/L	
00605		nitrogen, total organic	mg/L	
00630		nitrogen, NO3 & NO2	mg/L	
00615		nitrogen, nitrite (NO2)	mg/L	
00620		nitrogen, nitrate (NO3)	mg/L	
70507		orthophosphate, total	mg/L	
00666		phosphate, dissolved	mg/L	
00665		phosphate, total	mg/L	
00955		silica	mg/L	
00945		sulfate	mg/L	
00745		sulfide, total	mg/L	
00746		sulfide, dissolved	mg/L	

Code	✓	Metals	Units	Value
01105	✓	aluminum, Al	µg/L	2770
01097		antimony, Sb	µg/L	
01002		arsenic, As	µg/L	
01007		barium, Ba	µg/L	
01012		beryllium, Be	µg/L	
01027		cadmium, Cd	µg/L	
00910		calcium, Ca	mg/L	
01034	✓	chromium, Cr, total	µg/L	15,540
01032		chromium, Cr, hex.	µg/L	
01037		cobalt, Co	µg/L	
01042		copper, Cu	µg/L	
01045		iron, Fe	µg/L	
01051		lead, Pb	µg/L	
00927		magnesium, Mg	mg/L	
01055		manganese, Mn	µg/L	
71900		mercury, Hg	µg/L	
01067	✓	nickel, Ni	µg/L	1081
00937		potassium, K	mg/L	
01147		selenium, Se	µg/L	
01077		silver, Ag	µg/L	
00929		sodium, Na	mg/L	
01059		thallium, Tl	µg/L	
01102		tin, Sn	µg/L	
01152		titanium, Ti	µg/L	
01092	✓	zinc, Zn	µg/L	101
		Other		

*please designate desired analyses by placing a check mark before the appropriate parameter.

Signature of Unit Supervisor: Edward McGrary Date JAN 11 1989
Signature of supervisor indicates that the work was performed in accordance with federally approved procedures where available and in compliance with current quality assurance criteria except as qualified below
Comments:

PH-3012 LAB (rev 7/88)

REFERENCE # 16

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	07/31/91	11:30

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN: Jennifer Powers	OF: Division of Solid Waste Management	PHONE: (615)741-3424

AND:
Wendell C. McLendon Wendell C. McLendon 7/31/91

DISCUSSION:

Ms. Powers stated that Eastern Plating Company was classified as a large generator.

REFERENCE # 17

Potential Hazardous Waste Site

PRELIMINARY ASSESSMENT

HEYWOOD-WAKEFIELD COMPANY

COCKE COUNTY, NEWPORT, TENNESSEE

TND 003382330

PRELIMINARY ASSESSMENT
HEYWOOD-WAKEFIELD COMPANY
TND 003382330

The Hewyood-Wakefield Company was located off of Rankin Road, north of Newport, Cocke County, Tennessee, and was a manufacturer of metal desks for schools. The frames of the desks were metal plated at the Plant. The company went bankrupt and ceased production in about 1982.

There were approximately 60 drums of waste left on site after the plant closure. Most of the drums were contained in an old plant building that was kept locked, but during clean-up procedures approximately eight drums with waste in them were discovered in the back lot behind the old process building. It is unknown what drum storage or waste disposal policies were used during the plants productive years.

The site lies in a valley between and within one mile of Sinking Creek and the Pigeon River. It is located one mile north, northwest of Newport, Tennessee and is located in a highly faulted area of the Appalacian Mountains. Migration of any contamination could result in the contamination of both ground and surface water.

The plants by-product sludge contained both chromium and nickel and spent solvents. The site was cleaned up in 1984 by Chemical Waste Management Inc. and hazardous waste was transported and properly disposed of by Chemical Waste Management at the Emelle, Alabama facility. For these reasons a low priority was assigned and should be inspected on a time available basis.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D 003382330

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Heywood-Wakefield Company	Route 7

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Newport	TN	37821	Cocke	29	1

09 COORDINATES LATITUDE	LONGITUDE
35° 84' 30"	83° 12' 00"

10 DIRECTIONS TO SITE (Starting from nearest public road)

US. 70 West from Newport, TN. North on Dixie Highway to Rankin Road. East on Rankin Road. The road to the site is the second right off of Rankin Road.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business mailing address)
Heywood-Wakefield Company	Rural Rt. #7

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Newport	TN	37821	(615) 623-3042

07 OPERATOR (If known and different from owner)	08 STREET (Business mailing address)
Forrest Ellison	Off Rankin Road

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
Newport	TN	37821	(615) 623-3042

13 TYPE OF OWNERSHIP (Check one)

☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL

☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☒ YES DATE 3/8/84 (MONTH DAY YEAR)
☐ NO

BY (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)

CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)

☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION

1961 (BEGINNING YEAR) | 1982 (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Site was an old electroplating plant with drums of electroplating sludge and solvents on site.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

If waste was allowed to be spilled on ground, then soil, groundwater, and surface water contamination is possible.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Based on the available data) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
		( )

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Charles R. Rush	TDH&E	Superfund	(615) 741-6287	9 / 9 / 86 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
TN	D 003382330

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [ ] A SOLID
- [ ] B POWDER, FINES
- [X] C SLUDGE
- [ ] D OTHER _____ (Specify)
- [ ] E SLURRY
- [X] F LIQUID
- [ ] G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

NO. OF DRUMS 41 +

03 WASTE CHARACTERISTICS (Check all that apply)

- [X] A TOXIC
- [ ] B CORROSIVE
- [ ] C RADIOACTIVE
- [X] D PERSISTENT
- [ ] E SOLUBLE
- [ ] F INFECTIOUS
- [ ] G FLAMMABLE
- [ ] H IGNITABLE
- [ ] I HIGHLY VOLATILE
- [ ] J EXPLOSIVE
- [ ] K REACTIVE
- [ ] L INCOMPATIBLE
- [ ] M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	7255 +	gallons	
OLW	OILY WASTE			
SOL	SOLVENTS	unknown		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	unknown		

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU	electroplating sludge	999	Drums		
SOL	Spent electroplating solvents	999	Tanks		
MES	Chromium	7440473	Drums		
MES	Nickle	7440020	Drums		

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sampling analysis, reports)

See references.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D 003382330

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: <100 — 04 NARRATIVE DESCRIPTION

Due to the highly fractured nature of the mountainous area, there exists the potential for groundwater contamination.

01 [X] B. SURFACE WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 — 04 NARRATIVE DESCRIPTION

If migration of contaminants occures the possibility exists that it could go to the Pigeon River and Sinking Creek since both are within one mile of the site.

01 [ ] C. CONTAMINATION OF AIR — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [X] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: < 100 — 04 NARRATIVE DESCRIPTION

Some of the drums were stored in a back lot and the condition is unknown. If leakage occured there is a possibility of contact contamination.

01 [X] F. CONTAMINATION OF SOIL — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED: 1.0 (ACRES) — 04 NARRATIVE DESCRIPTION

Some of drums were stored in a back lot and if leakage occured, there will be soil contamination.

01 [ ] G. DRINKING WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] H. WORKER EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D 003382330

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: < 100 — 04 NARRATIVE DESCRIPTION
Drums were stored outside in a back lot of the plant with no barriers and it is possible leakage could occur.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: < 100

IV. COMMENTS

The drums were all removed from this site in 1984.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

See references.

EPA FORM 2070-12 (7-81)

15-502 (4)

REFERENCE # 18

July 6, 1978

Heywood-Wakefield Company
Rankin Road
Newport, TN 37821
Attn: Mr. Walter O'Neil

Dear Mr. O'Neil:

The results of the solid waste (sludge) sample from filter press [illegible] wastewater treatment plant, taken 6-19-78 at 0800 hrs., are as follows:

Physical characteristics

a. State: semisolid sludge @ 25°C.
b. Color: light brown
c. Moisture content: 74.8% (w/w)
d. Density: 74.2 lb/ft.^{3}

Chemical Characteristics

(1) Percentage of specific compounds present on a dry weight basis:

Iron (Fe), total	8.91%
Nickel (Ni)	9.44
Chromium (Cr), total	2.27
Zinc (Zn)	0.31
Copper (Cu)	0.073
Cadmium (Cd)	< 0.001
Lead (Pb)	0.022
Manganese (Mn)	0.12

(2) pH: 8.7

(3) Solubility

a. At point source pH: 0.048 g/100 ml @ 25°C.
b. At pH 4: 0.446 g/100 ml @ 25°C.
c. At pH 10: 0.061 g/100 ml @ 25°C.

July 6, 1978

Heywood-Wakefield Company

The solubilities of the sludge at the various pH values were determined as follows: 100ml of deionized water was stirred at 25°C. with an excess (> saturated) of sludge for a period of 24 hrs. For the pH 4 and pH 10 samples, the pH of the stirred mixture was adjusted with acid or base to the required value, and was monitored until no further change in pH occurred. Stirring was continued for 24 hrs. Each mixture was then filtered through W/O paper, and 100 ml of filtrate was placed in a tared 250 ml beaker. The [illegible] was evaporated and the residue was dried and weighed.

Sincerely yours,
ATEK LABS, INC.

E. W. Kuemmerle, Jr., Ph.D.
Chief Chemist

REFERENCE # 19

MINERAL EXPLORATION • MINING CONSULTANTS
LABORATORY SERVICES (COAL/WATER/GEOLOGIC)
505 EAST BROADWAY • MARYVILLE, TENNESSEE 37801
615/984-6100

CERTIFICATE OF ANALYSIS

August 7, 1981

Heywood-Wakefield Company
Rankin Road
Newport, TN 37821

Attention: Mr. Walter O'Neil

Dear Mr. O'Neil:

The results of the Electroplating Sludge from filter press taken 6/15/81 at 1430 hrs. are as follows:

	ppm, Dry Weight Basis	ppm, As Received
As	22.5	5.35
Pb	700	166
Cu	1,400	333
Ti	<63	<15
Ba	<100	<24
Se	1.00	0.24
Zn	41,000	9,745
Cd	<6.2	<1.5
Ag	<12.5	<3.0
Ni	125,000	29,700
Fe	36,000	8,550
Sb	500	120
Mn	1,300	310
Co	80.0	19.0
Cr^{+3}	25,000	5,940
Cr^{+6}	3.75	0.89

Sincerely yours,

KENWILL, INC.

Wm. J. Carter, Jr.
for Edgar W. Kuemmerle, Jr., Ph.D.
Vice President, Laboratory Division

EWK/sl

REFERENCE # 20

HEYWOOD-WAKEFIELD COMPANY OF NEWPORT

NEWPORT, TENNESSEE 37821

615 623-3042

July 13, 1978

State of Tennessee
Department of Public Health
Division of Solid Waste Management
621 Cordell Hull Building
Nashville, Tennessee 37219

Attention: Mr. Larry K. Ledford

Dear Sir:

As requested in your letter dated June 22, 1978 concerning waste material collected by air pollution control equipment, the following information is submitted:

1. No percentage of waste material is reused in process.

2. Quantity of waste material collected is approximately 200 pounds per day.

3. Location of disposal site...ground burial on Heywood-Wakefield Company property.

4. Major constituents of waste material:
   55% wood flour (finely ground wood chips) and
   45% inert ingredients.

Sincerely yours,

Walter O'Neil

Walter O'Neil
Heywood-Wakefield Company

j
cc: Hubert W. Gunter

REFERENCE # 21

COVERAGE

STATE	COUNTY	STATE NAME	NTY NAME
47	29	Tennessee	:ke Co
47	59	Tennessee	:ene Co
47	89	Tennessee	:fferson Co
47	155	Tennessee	vier Co

Ref. 21

CENTER POINT AT STATE :
COUNTY : 29 [illegible]

Press RETURN key to continue...

REGION OF THE COUNTRY

Zipcode found: 37821 at a distance of 2.9 Km

STATE	CITY NAME	COMMUNITY	FIPSCODE	LATITUDE	LONGITUDE
NC	NEWPORT	WATERVILLE, N C	37087	35.9650	83.1850

Press RETURN key to continue ...

CENSUS DATA

HEYWOOD-WAKEFIELD COMPANY
LATITUDE 35:59:13 LONGITUDE 83:12: 7 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	0	0	0	0	0
S 2	44	0	0	0	0	0	44
S 3	0	0	0	0	0	513	513
S 4	0	0	0	2349	3110	0	5459
S 5	0	0	0	967	2133	0	3100
S 6	0	0	0	0	0	0	0
S 7	0	0	0	0	1575	0	1575
S 8	0	0	0	0	942	0	942
RING TOTALS	44	0	0	3316	7760	513	11633

Press RETURN key to continue ...

STAR STATION

==========

INDEX NUMBER	STATION NAME	LATITUDE DEGREE	LONGITUDE DEGREE	PERIOD OF RECORD	STABILITY CLASSES	DISTANCE (km)
13891	KNOXVILLE TN	35.8167	83.9833			6 72.81
03812	ASHEVILLE NC	35.4333	82.5333			6 86.15
13877	BRISTOL/TRI CITY TN	36.4833	82.4000			6 90.58
03814	CORBIN KY	36.9667	84.1333			6137.00
03870	GREENVILLE-SPARTANBU	34.9000	82.2167			6150.11
93804	SPARTANBURG MEM SC	34.9167	81.9500			6164.24
93846	ANDERSON/COUNTY SC	34.5000	82.7167			6170.96

Press RETURN key to continue ...

U.S. SOIL DATA

STATE : TENNESSE

LATITUDE : 35:59:13 LONGITUDE : 83:12: 7
THE STATION IS INSIDE H.U. 6010107

GROUND WATER ZONE	:	8			
RUNOFF SOIL TYPE	:	3			
EROSION	:	1.5560E-03			CM/MONTH
DEPTH TO GROUND WATER BETWEEN	:	1.0000E+02	AND	3.0000E+02	
FIELD CAPACITY FOR TOP SOIL	:	8.0000E-02			
EFFECTIVE POROSITY BETWEEN	:	1.0000E-02	AND	1.0000E-01	
SEEPAGE TO GROUNDWATER BETWEEN	:	4.6330E+02	AND	9.2660E+02	CM/MONTH
DISTANCE TO DRINKING WELL	:	2.6000E+04			CM

Press RETURN key to continue ...

U.S. CITY

STATE	PLACE NAME	FIPSCODE	LATITUDE	LONGITUDE
TN	NEWPORT	47029	35.9650	83.1850

Press RETURN key to continue ...

MENU: Geodata Handling Data List procedures

1. Site level retrieval of data (SITERET)
2. Access Census Data (CENSUS)
3. Determine County Coverage (COVERAGE)
4. Geographic Data Management (GEODM)
5. HUCODE/SOIL locator (HUCODE)
6. Convert to Lat/Long (LATLON)
7. Lookup/Examine Star Station Data (STAR)
8. Find US cities (USCITY)
9. Find Soil Survey Status of Counties (SSURVEY)

```
Enter an option number or a procedure name (in parentheses)
or a command: HELP, HELP option, BACK, CLEAR, EXIT, TUTOR
GEMS>

Enter an option number or a procedure name (in parentheses)
or a command: HELP, HELP option, BACK, CLEAR, EXIT, TUTOR
GEMS>

Enter an option number or a procedure name (in parentheses)
or a command: HELP, HELP option, BACK, CLEAR, EXIT, TUTOR
GEMS> EXIT

Type YES to confirm the EXIT command; type NO to restart GEMS
GEMS> YES
$
$ LOGOUT
 WRT          logged out at 29-MAR-1991 13:16:43.55
 Itemized resource charges, for this session, follow:

NODE: VAXTM1
ACCT: NTIS                              START TIME:     29-MAR-1991 13:12:27.26
PROJ: NTISNUCN                          FINISH TIME:    29-MAR-1991 13:16:43.55
USER: WRT                               BILLING PERIOD:910301
UIC:  [000750,000112]                   WEEKDAY:        FRIDAY
BAUD:                                   TERMINAL PORT:  VTA1420

DESCRIPTION OF CHARGE                    QUANTITY                EXPENDITURE
-----------------------------------------------------------------------------

  ALL CHARGE LEVELS
    300  baud            (Seconds)          256                      0.0000
    CPU TIME             (Seconds)            6                      0.3333
                                                                   -----------
    TOTAL FOR THIS SESSION                                       $   0.3333

** Note:  This total reflects the charges for this process only,
          subprocesses created during this session are accounted for
          separately
NODE 3157  HOST 1038: DROPPED BY HOST
please log in: X

error, type user name:
```

REFERENCE # 22

U.S. Department of Commerce, Proof Copy of table generated for CPH-1: Summary Population and Housing Characteristics, issued by Bureau of the Census (April 1991).

Table 6. Household, Family, and Group Quarters Characteristics: 1990

[For definitions of terms and meanings of symbols, see text]

State County Place and [In Selected States] County Subdivision	Persons in households	All households	Family households: Total	Family households: Married-couple family	Family households: Female householder, no husband present	Nonfamily households: Total	Nonfamily households: Householder living alone: Total	Householder living alone: 65 years and over: Total	Householder living alone: 65 years and over: Female	Persons per—: Household	Persons per—: Family	Persons in group quarters: Total	Persons in group quarters: Institutionalized persons	Persons in group quarters: Other persons in group quarters
The State	4 748 066	1 853 725	1 348 019	1 060 569	232 669	505 706	442 139	178 877	143 186	2.56	3.04	129 139	65 389	63 740
COUNTY														
Anderson County	67 506	27 384	19 848	16 181	2 968	7 536	6 911	3 117	2 547	2.47	2.96	455	378	77
Bedford County	30 001	11 808	8 788	7 387	1 288	2 840	2 536	1 280	1 017	2.59	3.01	380	343	37
Benton County	14 256	5 784	4 333	3 732	466	1 451	1 348	751	603	2.46	2.90	269	228	41
Bledsoe County	8 808	3 261	2 522	2 104	300	739	670	320	240	2.64	3.06	1 361	1 351	10
Blount County	84 463	33 034	25 344	21 284	3 237	8 280	7 400	3 387	2 881	2.51	2.94	1 506	1 344	162
Bradley County	72 043	27 604	21 157	17 519	2 841	6 447	5 714	2 277	1 826	2.61	3.02	1 669	539	1 130
Campbell County	34 763	13 190	10 158	8 038	1 702	2 982	2 780	1 466	1 192	2.65	3.07	296	285	11
Cannon County	10 358	3 989	3 036	2 574	351	945	872	470	375	2.60	3.03	111	111	-
Carroll County	28 860	10 727	8 013	6 612	1 082	2 714	2 531	1 436	1 140	2.50	2.96	654	388	266
Carter County	50 225	20 189	14 879	12 283	2 114	5 310	4 779	2 314	1 838	2.48	2.94	1 280	749	531
Cheatham County	28 640	8 515	7 740	6 670	776	1 767	1 524	587	436	2.82	3.15	300	180	120
Chester County	11 791	4 560	3 506	2 933	444	1 053	963	514	422	2.59	3.01	1 028	187	841
Claiborne County	25 533	9 628	7 578	6 286	1 007	2 050	1 810	835	772	2.65	3.06	604	210	394
Clay County	7 158	2 856	2 144	1 748	301	711	646	318	214	2.51	2.93	80	71	9
Cocke County	28 640	11 191	8 483	6 561	1 500	2 708	2 470	1 138	882	2.56	3.00	301	270	31
Coffee County	38 868	15 500	11 727	9 680	1 588	3 773	3 431	1 586	1 284	2.57	3.01	484	452	32
Crockett County	13 103	5 183	3 860	3 141	567	1 327	1 257	764	623	2.53	3.00	275	275	-
Cumberland County	34 207	13 408	10 461	8 648	1 286	2 975	2 680	1 280	1 028	2.55	2.92	529	529	-
Davidson County	480 489	207 530	131 386	96 982	28 586	76 136	62 630	18 280	14 980	2.36	2.97	21 096	10 317	10 779
Decatur County	10 330	4 216	3 109	2 600	381	1 107	1 032	607	461	2.45	2.91	142	142	-
DeKalb County	14 237	5 680	4 316	3 574	584	1 360	1 250	682	563	2.50	2.93	123	106	17
Dickson County	34 532	13 019	10 096	8 148	1 510	2 920	2 640	1 286	1 007	2.65	3.06	529	389	140
Dyer County	34 343	13 617	9 923	7 880	1 643	3 694	3 380	1 773	1 438	2.52	3.01	511	474	37
Fayette County	25 110	8 453	6 717	5 038	1 334	1 736	1 570	765	556	2.97	3.40	448	435	13
Fentress County	14 550	5 511	4 258	3 415	685	1 253	1 186	585	439	2.64	3.07	110	110	-
Franklin County	33 429	12 680	9 903	8 412	1 135	2 777	2 530	1 312	1 081	2.64	3.04	1 296	314	982
Gibson County	45 568	18 361	13 472	10 708	2 240	4 889	4 573	2 580	2 114	2.48	2.96	747	644	103
Giles County	25 336	9 632	7 454	6 038	1 116	2 378	2 218	1 166	981	2.58	3.02	405	205	200
Grainger County	16 912	6 394	5 078	4 281	591	1 316	1 217	590	456	2.64	3.02	183	146	37
Greene County	54 175	21 482	16 280	13 280	2 290	5 202	4 747	2 120	1 687	2.52	2.94	1 678	727	951
Grundy County	13 157	4 784	3 743	3 040	534	1 041	976	522	412	2.75	3.18	205	193	12
Hamblen County	49 750	19 429	14 795	11 886	2 314	4 634	4 138	1 828	1 313	2.56	2.97	730	525	205
Hamilton County	279 044	111 799	78 864	60 790	15 042	32 935	29 085	11 581	9 480	2.50	3.02	6 492	3 622	2 870
Hancock County	6 571	2 484	1 904	1 506	321	580	532	280	212	2.65	3.07	168	168	-
Hardeman County	22 589	8 276	6 190	4 534	1 356	2 086	1 887	986	751	2.73	3.22	788	770	18
Hardin County	22 358	8 728	6 633	5 480	882	2 093	1 948	978	764	2.56	3.00	283	253	30
Hawkins County	44 232	17 187	13 223	11 100	1 624	3 964	3 638	1 671	1 334	2.58	2.99	333	299	34
Haywood County	19 240	7 014	5 150	3 580	1 320	1 864	1 708	905	703	2.74	3.29	187	58	129
Henderson County	21 630	8 527	6 466	5 380	820	2 061	1 929	975	786	2.54	2.97	214	212	2
Henry County	27 458	11 362	8 216	6 743	1 128	3 146	2 908	1 619	1 282	2.42	2.89	432	388	44
Hickman County	15 715	5 978	4 608	3 883	528	1 360	1 228	618	505	2.63	3.04	1 038	1 038	-
Houston County	6 848	2 683	2 039	1 706	281	644	604	338	240	2.55	2.98	176	163	13
Humphreys County	15 561	6 083	4 583	3 844	581	1 470	1 373	665	514	2.56	3.01	244	110	134
Jackson County	8 776	3 642	2 782	2 300	334	860	808	475	358	2.52	2.94	121	119	2
Jefferson County	31 415	12 329	9 510	8 018	1 144	2 819	2 530	1 192	940	2.55	2.94	1 601	445	1 156
Johnson County	13 600	5 408	4 081	3 289	590	1 325	1 230	618	484	2.52	2.96	157	145	12
Knox County	323 400	133 639	90 561	71 679	15 478	43 078	36 861	12 982	10 642	2.42	2.97	12 340	3 289	9 081
Lake County	6 067	2 418	1 735	1 338	323	683	625	343	282	2.50	3.00	1 372	1 351	21
Lauderdale County	22 580	8 420	6 361	4 848	1 290	2 272	1 890	1 090	842	2.68	3.15	693	684	9
Lawrence County	34 968	13 338	10 265	8 688	1 291	3 073	2 864	1 500	1 317	2.62	3.08	311	302	9
Lewis County	9 089	3 533	2 606	2 179	328	927	859	451	363	2.58	3.08	148	135	13
Lincoln County	27 610	10 881	8 220	6 612	1 087	2 661	2 466	1 378	1 090	2.57	3.01	247	239	8
Loudon County	30 928	12 156	9 280	7 687	1 301	2 886	2 638	1 237	1 006	2.54	2.96	329	329	-
McMinn County	41 710	16 361	12 458	10 275	1 751	3 903	3 600	1 755	1 425	2.56	2.98	673	446	227
McNairy County	22 180	8 634	6 479	5 392	824	2 150	2 014	1 073	863	2.51	2.95	242	242	-
Macon County	15 817	6 159	4 711	4 027	522	1 448	1 356	707	577	2.57	3.00	89	56	33
Madison County	73 515	28 608	21 301	15 969	4 506	8 308	7 387	3 208	2 594	2.56	3.08	2 467	841	1 626
Marion County	24 645	9 215	7 171	5 836	1 002	2 044	1 873	983	781	2.67	3.08	215	205	10
Marshall County	21 248	8 288	6 120	4 980	881	2 148	1 954	980	779	2.57	3.04	291	229	62
Maury County	54 073	20 608	15 552	12 280	2 622	5 056	4 554	2 082	1 580	2.62	3.07	739	688	51
Meigs County	7 921	2 998	2 333	1 968	281	663	592	255	194	2.64	3.03	112	112	-
Monroe County	29 940	11 383	8 781	7 231	1 163	2 582	2 385	1 167	917	2.63	3.06	601	317	284
Montgomery County	93 516	34 345	26 914	22 284	3 712	7 431	6 209	2 071	1 620	2.72	3.09	6 982	472	6 510
Moore County	4 714	1 734	1 391	1 222	112	343	327	148	136	2.72	3.11	7	7	-
Morgan County	16 011	5 841	4 621	3 746	680	1 220	1 119	558	432	2.74	3.13	1 299	1 299	-
Obion County	31 388	12 412	9 219	7 624	1 278	3 193	2 960	1 588	1 290	2.53	3.00	318	298	20
Overton County	17 435	6 734	5 286	4 404	645	1 448	1 388	745	581	2.58	2.98	201	192	9
Perry County	6 480	2 512	1 906	1 690	186	607	560	300	232	2.57	3.02	152	152	-
Pickett County	4 494	1 798	1 330	1 108	166	456	430	238	184	2.52	2.98	54	49	5
Polk County	13 538	5 092	4 010	3 373	455	1 082	990	519	418	2.66	3.06	105	105	-
Putnam County	48 419	18 753	13 984	11 578	1 913	5 730	4 757	1 945	1 583	2.45	2.93	2 954	534	2 420
Rhea County	23 638	9 186	6 986	5 609	1 080	2 200	2 022	984	779	2.57	3.00	706	410	296
Roane County	46 747	18 453	13 967	11 612	1 631	4 486	4 128	1 970	1 598	2.53	2.96	480	434	46
Robertson County	41 045	14 801	11 886	9 920	1 537	2 915	2 623	1 283	990	2.77	3.14	449	449	-
Rutherford County	113 372	42 118	31 225	25 678	4 272	10 893	8 546	2 671	2 138	2.69	3.14	5 199	1 456	3 743
Scott County	18 180	6 534	5 120	4 156	768	1 408	1 311	684	553	2.78	3.21	180	180	-
Sequatchie County	8 778	3 287	2 555	2 087	353	732	656	322	252	2.67	3.08	85	85	-
Sevier County	50 384	19 529	15 081	12 708	1 663	4 448	3 868	1 561	1 238	2.58	2.98	649	582	67
Shelby County	803 085	303 571	212 076	144 773	56 404	91 495	77 885	25 398	20 348	2.65	3.22	23 248	12 180	11 068
Smith County	13 988	5 360	4 151	3 576	447	1 207	1 127	643	512	2.61	3.00	145	134	11
Stewart County	9 288	3 670	2 812	2 480	251	858	793	444	344	2.53	2.93	184	96	88
Sullivan County	141 440	56 729	42 516	36 372	5 638	14 213	13 040	5 674	4 688	2.49	2.93	2 147	1 361	786
Sumner County	102 085	36 880	29 511	24 907	3 546	7 338	6 394	2 579	2 083	2.77	3.13	1 216	637	579
Tipton County	37 301	13 033	10 345	8 116	1 780	2 688	2 410	1 198	924	2.86	3.27	287	287	-
Trousdale County	5 798	2 261	1 719	1 408	241	546	512	258	207	2.56	3.01	125	100	25
Unicoi County	16 310	6 621	4 938	4 074	653	1 683	1 580	880	703	2.46	2.81	231	220	11
Union County	13 573	4 938	3 892	3 388	500	940	841	386	309	2.75	3.10	121	90	31
Van Buren County	4 841	1 799	1 461	1 189	190	348	322	140	109	2.69	3.05	5	5	-
Warren County	32 587	12 681	9 601	7 881	1 385	3 080	2 834	1 404	1 192	2.57	3.01	395	381	14
Washington County	87 891	35 883	26 375	20 537	3 786	10 449	9 004	3 632	2 948	2.46	2.95	4 404	2 017	2 407
Wayne County	13 709	5 174	4 079	3 440	480	1 095	1 011	581	448	2.65	3.03	226	204	22
Weakley County	30 989	11 902	8 500	7 194	1 078	3 402	3 089	1 673	1 289	2.47	2.95	2 403	479	1 924
White County	19 480	7 722	5 986	4 889	786	1 736	1 622	915	725	2.57	2.98	210	192	18
Williamson County	80 308	27 989	23 356	20 285	2 228	4 632	4 145	1 395	1 117	2.86	3.20	713	699	14
Wilson County	67 110	24 070	19 610	16 719	2 240	4 460	3 910	1 868	1 338	2.79	3.13	565	271	294

NOTE: The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

Table 6

II

U.S. Department of Commerce, Proof Copy of table generated for 1990 CPH-1: Summary Population and Housing Characteristics, issued by Bureau of the Census (April 1991).

Table 6. Household, Family, and Group Quarters Characteristics: 1990 —Con.

[For definitions of terms and meanings of symbols, see text]

State / County / Place and [In Selected States] County Subdivision	Persons in households	All households	Family households: Total	Family households: Married-couple family	Family households: Female householder, no husband present	Nonfamily households: Total	Householder living alone: Total	65 years and over: Total	65 years and over: Female	Persons per — Household	Persons per — Family	Persons in group quarters: Total	Institutionalized persons	Other persons in group quarters
PLACE AND COUNTY SUBDIVISION														
Adams city, Robertson County	552	213	158	135	17	55	52	38	32	2.59	3.11	35	35	-
Adamsville town, McNairy County	1 604	708	488	391	76	218	210	127	115	2.27	2.78	141	141	-
Alamo town, Crockett County	2 283	994	650	502	125	344	330	208	180	2.30	2.82	143	143	-
Alcoa city, Blount County	6 400	2 692	1 909	1 424	404	783	718	385	301	2.38	2.88	-	-	-
Alexandria town, DeKalb County	730	321	212	167	35	109	105	70	61	2.27	2.80	-	-	-
Algood town, Putnam County	2 234	939	656	502	135	283	266	149	123	2.38	2.83	165	165	-
Allardt city, Fentress County	609	244	196	163	24	48	48	23	20	2.50	2.86	-	-	-
Altamont town, Grundy County	668	232	196	158	27	36	34	18	12	2.88	3.18	11	11	-
Ardmore city	786	335	251	204	38	84	80	44	32	2.38	2.79	70	70	-
Giles County	758	319	238	194	35	81	77	42	30	2.37	2.79	70	70	-
Lincoln County	40	16	13	10	3	3	3	2	2	2.50	2.77	-	-	-
Arlington town, Shelby County	1 062	356	283	234	42	73	66	31	22	2.98	3.37	489	489	-
Ashland City town, Cheatham County	2 467	1 009	717	516	166	292	283	137	119	2.44	2.98	65	65	-
Athens city, McMinn County	11 545	4 844	3 381	2 518	752	1 463	1 358	627	523	2.38	2.92	509	282	227
Atoka town, Tipton County	659	233	192	161	23	41	38	23	18	2.83	3.19	-	-	-
Atwood town, Carroll County	1 068	422	323	266	47	99	96	66	54	2.53	2.96	-	-	-
Auburntown town, Cannon County	240	101	74	66	7	27	27	18	15	2.38	2.86	-	-	-
Baileyton town, Greene County	308	128	94	68	18	34	30	20	18	2.41	2.84	-	-	-
Baneberry city, Jefferson County	218	90	68	67	1	22	20	4	3	2.42	2.85	-	-	-
Banner Hill CDP, Unicoi County	1 717	690	521	418	76	169	162	104	79	2.49	2.94	-	-	-
Bartlett town, Shelby County	26 637	8 458	7 638	6 787	666	817	713	223	190	3.15	3.34	352	352	-
Baxter town, Putnam County	1 274	527	372	300	63	155	143	90	78	2.42	2.98	15	15	-
Beersheba Springs town, Grundy County	598	231	177	141	25	54	48	32	28	2.58	2.97	-	-	-
Belinda City CDP, Wilson County	2 098	673	579	484	75	94	74	5	4	3.12	3.37	-	-	-
Bell Buckle town, Bedford County	328	132	100	80	16	32	28	17	14	2.47	2.83	-	-	-
Belle Meade city, Davidson County	2 639	1 098	878	825	42	221	198	105	83	2.58	2.82	-	-	-
Bells town, Crockett County	1 518	622	430	318	100	192	183	104	83	2.44	3.04	124	124	-
Benton town, Polk County	988	360	271	211	48	89	80	44	42	2.68	3.14	27	27	-
Berry Hill city, Davidson County	758	402	171	119	38	231	190	42	27	1.88	2.78	43	28	15
Bethel Springs town, McNairy County	755	312	228	184	35	84	80	38	35	2.42	2.80	-	-	-
Big Sandy town, Benton County	505	246	149	114	32	97	94	50	46	2.05	2.70	-	-	-
Blaine city, Grainger County	1 328	470	390	315	52	80	76	28	22	2.82	3.12	-	-	-
Bloomingdale CDP, Sullivan County	10 863	4 232	3 346	2 815	423	887	788	282	239	2.58	2.98	-	-	-
Blountville CDP, Sullivan County	2 298	879	712	610	73	167	154	88	72	2.61	2.96	309	309	-
Bluff City city, Sullivan County	1 380	544	414	330	57	130	121	57	51	2.56	2.97	-	-	-
Bolivar city, Hardeman County	5 331	2 000	1 419	905	461	581	513	281	209	2.67	3.24	638	638	-
Braden town, Fayette County	354	137	109	90	17	28	28	17	10	2.58	2.98	-	-	-
Bradford town, Gibson County	1 154	472	344	286	52	128	122	88	78	2.44	2.94	-	-	-
Brentwood city, Williamson County	16 306	5 276	4 748	4 400	283	528	464	120	104	3.09	3.29	86	86	-
Brighton town, Tipton County	717	275	208	163	40	67	63	41	35	2.61	3.08	-	-	-
Bristol city, Sullivan County	22 862	9 746	6 608	5 248	1 100	3 138	2 886	1 280	1 031	2.35	2.91	559	119	440
Brownsville city, Haywood County	9 881	3 698	2 628	1 641	870	1 070	978	523	431	2.67	3.20	138	-	138
Bruceton town, Carroll County	1 488	640	440	360	68	200	187	124	102	2.34	2.87	98	98	-
Bulls Gap town, Hawkins County	659	271	193	161	23	78	75	43	34	2.43	2.98	-	-	-
Burlison town, Tipton County	394	161	118	98	12	43	37	22	19	2.45	2.88	-	-	-
Burns town, Dickson County	1 127	408	326	261	51	82	75	50	42	2.76	3.14	-	-	-
Byrdstown town, Pickett County	848	390	272	183	74	118	116	68	57	2.43	2.98	49	49	-
Calhoun town, McMinn County	552	204	163	140	18	41	38	21	15	2.71	3.08	-	-	-
Camden town, Benton County	3 428	1 532	1 015	827	164	517	489	274	230	2.24	2.80	215	215	-
Carthage town, Smith County	2 241	983	626	477	131	357	350	203	180	2.28	2.94	145	134	11
Caryville town, Campbell County	1 740	677	532	424	80	145	136	66	55	2.57	2.98	11	-	11
Cedar Hill town, Robertson County	347	126	91	66	17	35	31	14	9	2.75	3.31	-	-	-
Celina town, Clay County	1 422	641	410	287	108	231	214	112	83	2.22	2.82	71	71	-
Centertown town, Warren County	332	109	92	81	8	17	17	12	8	3.05	3.42	-	-	-
Centerville town, Hickman County	3 415	1 481	1 006	813	155	475	448	285	234	2.31	2.96	201	201	-
Central CDP, Carter County	2 635	1 056	785	645	101	271	236	102	79	2.50	2.93	-	-	-
Chapel Hill town, Marshall County	833	325	238	200	31	87	83	56	48	2.56	3.11	-	-	-
Charleston city, Bradley County	653	252	188	150	31	64	61	34	25	2.59	3.12	-	-	-
Charlotte town, Dickson County	854	355	255	188	47	100	96	52	43	2.41	2.91	-	-	-
Chattanooga city, Hamilton County	147 497	62 177	40 300	27 774	10 628	21 877	19 330	7 606	6 251	2.37	2.98	4 398	3 017	1 352
Church Hill town, Hawkins County	4 712	1 899	1 437	1 197	204	462	410	187	151	2.49	2.92	122	122	-
Clarksburg town, Carroll County	309	128	97	64	10	31	30	17	13	2.34	2.78	21	-	21
Clarksville city, Montgomery County	68 596	25 442	19 471	15 885	2 906	5 971	4 944	1 475	1 180	2.70	3.10	6 898	420	6 478
Cleveland city, Bradley County	28 364	11 986	8 286	6 471	1 452	3 711	3 282	1 404	1 151	2.41	2.94	1 386	519	867
Clifton city, Wayne County	600	240	171	132	31	69	63	38	34	2.50	3.01	20	20	-
Clinton town, Anderson County	8 884	3 798	2 638	2 028	515	1 159	1 080	508	418	2.34	2.88	78	78	-
Coalmont city, Grundy County	813	283	228	188	32	54	51	29	23	2.87	3.27	-	-	-
Collegedale city, Hamilton County	4 113	1 516	1 172	984	162	344	287	88	78	2.71	3.11	935	24	911
Collierville town, Shelby County	14 313	4 429	3 879	3 389	408	550	489	192	155	3.23	3.50	114	114	-
Collinwood city, Wayne County	1 014	405	302	233	51	103	98	62	53	2.50	2.98	-	-	-
Colonial Heights CDP, Sullivan County	6 711	2 538	2 080	1 868	164	458	418	143	120	2.64	2.96	5	-	5
Columbia city, Maury County	27 864	11 287	7 981	5 981	1 712	3 306	2 980	1 283	1 075	2.46	2.99	629	589	40
Cookeville city, Putnam County	19 117	8 563	5 173	4 088	868	3 390	2 613	987	803	2.21	2.82	2 627	227	2 400
Copperhill city, Polk County	362	174	114	88	21	60	54	31	27	2.08	2.58	-	-	-
Cornersville town, Marshall County	664	285	208	181	18	77	71	46	41	2.33	2.77	19	19	-
Cottage Grove town, Henry County	86	36	22	18	3	14	14	11	10	2.38	3.23	-	-	-
Covington city, Tipton County	7 245	2 729	1 928	1 221	623	801	735	402	326	2.66	3.25	242	242	-
Cowan city, Franklin County	1 738	676	507	380	98	169	159	93	79	2.57	3.05	-	-	-
Crab Orchard city, Cumberland County	876	328	245	188	43	83	73	31	25	2.67	3.11	-	-	-
Cross Plains city, Robertson County	1 025	356	298	256	36	57	50	21	14	2.88	3.16	-	-	-
Crossville city, Cumberland County	6 682	2 837	1 901	1 400	421	936	863	383	325	2.36	2.92	268	268	-
Crump city, Hardin County	2 038	790	628	537	59	162	151	66	51	2.58	2.96	-	-	-
Cumberland City town, Stewart County	318	131	97	72	17	34	30	12	7	2.44	2.84	-	-	-
Cumberland Gap town, Claiborne County	210	91	58	45	8	33	30	13	11	2.31	3.06	-	-	-
Dandridge town, Jefferson County	1 294	558	396	318	64	162	149	79	62	2.32	2.78	246	246	-
Dayton city, Rhea County	5 238	2 129	1 513	1 088	356	616	574	282	240	2.46	2.97	436	147	289
Decatur town, Meigs County	1 250	505	352	283	67	153	140	67	53	2.48	3.02	105	105	-
Decaturville town, Decatur County	867	339	257	201	51	82	78	52	42	2.53	2.87	22	22	-
Decherd town, Franklin County	2 183	847	616	478	121	231	208	120	104	2.58	3.08	3	3	-
Dickson city, Dickson County	8 478	3 523	2 453	1 727	627	1 070	989	541	435	2.41	2.96	312	302	10
Dover city, Stewart County	1 248	564	386	308	46	178	169	123	105	2.21	2.79	96	96	-
Dowelltown town, DeKalb County	308	141	88	66	16	53	51	37	30	2.18	2.88	-	-	-

TPS8 POSTSCRIPT CPH147 CENSUS88 ... 09/20/91 10:28 AM MACHINE: C DATA:CENSUS88 ... OUTPUT:CHARTS ... PAGE: 64
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NOTE: The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

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TDD F4-8907-27
BOB DONAGHUE

REFERENCE # 23

8/15 Went to State office to review file material for site. Also obtained some information on water systems in Cocke County

Newport Utilities serves all Cocke County except for small area served by L.W. Hooper. Areas not served use private wells.

8/16 Drove to Newport Utilities Office and met with Leonard Allen's assistant - Mr Tucker

I showed him a topo with water lines I had copied from a service area map contained

8/16 BD

in the state file. He verified that water lines existed in these locations.

He indicated that areas without service use private wells.

Water is obtained from intake on French Broad River at River Mile 82.

Directions to site
27 - 70 E to 25 E go left and drive to Rankin Road make right. Large complex on right across from Great Lakes Chemical is the old Heywood Wakefield location. In Rankin Road Industrial Park

8/16 BD

It is currently occupied by Eastern Plating, GLI, Virco Manufacturing and EV (Electric Voice).

South of site is Newport Wastewater treatment plant expansion, while Great Lakes Chemical north of site

No residences in immediate vicinity of site, since it is an industrial area.

Slope is level.

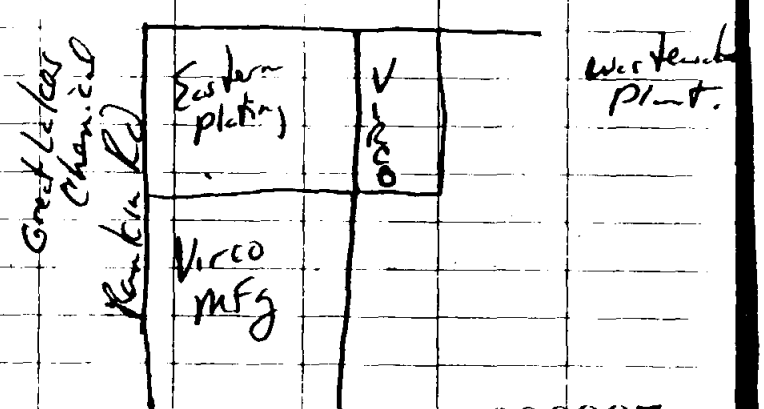
Few mobile homes near intersection of Rankin Road on Rt 25-E. No well pumps or well house visible. Water line atlas shows area served by public water.

8/14 BD

Drove to tax assessors office
Property currently owned by

1. Chemwood Properties (18.98 acres)
   1600 Camden Street
   Chattanooga TN 37406
   (Eastern Plating is large stockholder)

2. Virco Manufacturing Corp
   15134 S. Vermont Ave
   Box 44846
   Los Angeles CA 90044
   (18 Acre)



Went to Agricultural Extension and got copy of aerial

Aerial shows a stormwater pond at southeast corner of property. Not visible from road due to dense vegetation.

8/10
BD.

REFERENCE # 24

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	04/02/91	11:20

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN:	OF:	PHONE:
Loretta Wild	Newport/Cocke County Chamber of Commerce	(615)623-7201

AND:
Wendell C. McLendon Wendell C McLendon 4/2/91

DISCUSSION:

There are trailer parks and apartment buildings located in the city of Newport. There are 2 schools: Newport Grammar School, and Cocke County High School.

There is farming in the area. Major crops are tobacco, tomatoes, corn, and fruit. There are also livestock and dairy farms in the area.

ENDANGERED AND THREATENED SPECIES

REFERENCE # 25

U.S. FISH AND WILDLIFE SERVICE

REGION 4 - ATLANTA

PREFACE

The materials in this notebook are provided as an aid to anyone having a continuing need for current information on Federally listed endangered and threatened species found within Region 4 of the U.S. Fish and Wildlife Service. This area includes the Carolinas, Georgia, Florida, Alabama, Tennessee, Kentucky, Mississippi, Arkansas, Louisiana, Puerto Rico, and the Virgin Islands.

Recipients of the notebook are placed on a permanent mailing list and will automatically receive updated information whenever listing or other changes occur. Questions or comments pertaining to the notebook should be directed to the Endangered Species Office, U.S. Fish and Wildlife Service, Richard B. Russell Federal Building, 75 Spring St., S.W., Atlanta, Georgia 30303; telephone 404/221-3583 or FTS 242-3583. Other questions pertaining to endangered species matters should be addressed to one of the Service field stations listed at the end of this Preface.

The notebook is divided into two primary sections. Materials in the first section provide quick reference as to what species are listed, proposed, or under review, the states where they occur, the location of critical habitat areas, and other related information. The second part of the notebook contains species accounts which briefly discuss such things as the status, range, life history, and management needs of listed species. Please note that the range maps for these species generally reflect current distribution, but in many cases they reflect distribution rather broadly and should only be interpreted in relation to other information included in the species account.

The Endangered Species Act - General

Passage of the Endangered Species Act of 1973 gave the United States one of the most far-reaching laws ever enacted by any country to prevent the extinction of imperiled animals and plants. Under the law, the Secretary of the Interior (acting through the U.S. Fish and Wildlife Service) has broad powers to protect and conserve all forms of wildlife and plants he finds in serious jeopardy. The Secretary of Commerce, acting through the National Marine Fisheries Service, has similar authority for protecting and conserving most marine life.

Congress addressed the question of why we should save endangered species in the preamble to the Endangered Species Act, holding that endangered and threatened species of fish, wildlife and plants "are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people." In making this statement, Congress was summarizing a number of convincing arguments advanced by thoughtful scientists, conservationists, and others who are greatly concerned by the disappearance of wildlife.

Protecting endangered species and restoring them to the point where their existence is no longer jeopardized is the primary objective of the U.S. Fish and Wildlife Service's Endangered Species Program.

It should be emphasized, however, that not all Federal actions will necessarily be detrimental to critical habitat. There may be many kinds of actions which can be carried out within a critical habitat area without reducing the species' numbers or distribution, or otherwise posing jeopardy to it.

In summary, the designation of critical habitat does not create a nature preserve or refuge. It does not affect private, local, or state projects unless Federal funds or permits are involved. It does provide a means by which listed species can be protected from adverse impacts resulting from Federal action.

Consultation

Section 7 of the Act requires all Federal agencies to review their actions, and if they determine that their actions may affect a listed species or its habitat, they must enter into consultation with the Fish and Wildlife Service. During the course of such consultation the involved agency and the Fish and Wildlife Service will try to determine a course of action which will allow for completion of the agency's project and at the same time not jeopardize the species. Most consultations accomplish this goal.

In the case of a conflict, the Act provides a means whereby under certain conditions the affected Federal agency may be exempted from the requirements of Section 7. Exemption applications must be submitted to the Secretary of the Interior for consideration. If the Secretary decides the application meets exemption criteria, it is then passed on to a seven-member cabinet-level Endangered Species Committee for a final decision.

Conservation and Recovery

A main aim of the Service's Endangered Species Program is to restore populations of listed species to a point where they are no longer in danger of extinction and are again self-sustaining members of their ecosystem. Recovery plans for a number of these species are already being carried out. The plans may recommend the acquisition of land, new research, captive breeding, or may call for special wildlife and habitat management techniques.

In addition to overseeing the development and implementation of recovery plans, the Fish and Wildlife Service utilizes the authorities and funding provided under the Act to provide for technical assistance, management, law enforcement, land acquisition, research, status surveys, and financial assistance to state agencies which have entered into a cooperative agreement with the Service.

Permits

The Service's Wildlife Permit Office can issue permits for certain activities involving endangered or threatened species. Permits for

Federally Listed Species by State

TENNESSEE

(E=Endangered; T=Threatened; CH=Critical Habitat determined)

Mammals	General Distribution
Bat, gray (*Myotis grisescens*) - E	Entire state
Bat, Indiana (*Myotis sodalis*) - E, CH	Central, East
Cougar, eastern (*Felis concolor cougar*) - E	North, East
Panther, Florida (*Felis concolor coryi*) - E	Southwest
Squirrel, Carolina northern flying (*Glaucomys sabrinus coloratus*) - E	Eastern mountains (Carter and Sevier Counties)
Birds	
Eagle, bald (*Haliaeetus leucocephalus*) - E	Entire state
Falcon, American peregrine (*Falco peregrinus anatum*) - E	East, Central, Extreme Northwest
Falcon, Arctic peregrine (*Falco peregrinus tundrius*) - T	Entire state (mostly West)
Tern, least (*Sterna antillarum*), interior population - E	Mississippi River
Warbler, Bachman's (*Vermivora bachmanii*) - E	West
Warbler, Kirtland's (*Dendroica kirtlandii*) - E	Extreme Northeast
Woodpecker, ivory-billed (*Campephilus principalis*) - E	Extreme West
Woodpecker, red-cockaded (*Picoides* (=*Dendrocopos*) *borealis*) - E	East
Fishes	
Chub, slender (*Hybopsis cahni*) - T,CH	Hancock, Claiborne, Grainger Counties
Chub, spotfin (*Hybopsis monacha*) - T,CH	Hawkins, Sullivan, Morgan, Fentress, and Cumberland Counties
Dace, blackside (*Phoxinus cumberlandensis*) - T	Upper Cumberland River System (Scott, Campbell, and Claiborne Counties)
Darter, amber (*Percina antesella*) - E,CH	Conasauga R., Polk County
Darter, slackwater (*Etheostoma boschungi*) - T,CH	Wayne and Lawrence Counties
Darter, snail (*Percina tanasi*) - T	Knox, Loudon, Meigs, Polk, Bradley/McMinn, Hamilton, Marion, and Giles Counties

TENNESSEE (cont'd)

	General Distribution
Mussel, tuberculed-blossom pearly (*Epioblasma* (=*Dysnomia*) *torulosa torulosa*) - E	Possibly extinct
Mussel, turgid-blossom pearly (*Epioblasma* (=*Dysnomia*) *turgidula*) - E	Possibly extinct
Mussel, white warty-back pearly (*Plethobasus cicatricocus*) - E	Tennessee River
Mussel, yellow-blossom pearly (*Epioblasma* (=*Dysnomia*) *florentina florentina*) - E	Possibly extinct
Snail, Chittenango ovate amber (*Succinea chittenangoensis*) - T	Monroe County
Snail, painted snake coiled forest (*Anguispira picta*) - T	Franklin County
Arthropods:	
Crayfish, Nashville (*Orconectes shoupi*) - E	Mill Creek, Davidson and Williamson Counties
Plants	
Echinacea tennesseensis (Tennessee coneflower) - E	Davidson, Rutherford, Wilson Counties
Isotria medeoloides (small whorled pogonia) - E	Hamilton County
Pityopsis ruthii (Ruth's golden aster) - E	Polk County
Scutellaria montana (large-flowered skullcap) - E	Hamilton and Marion Counties
Solidago spithamaea (Blue Ridge goldenrod) - T	Carter County

TENNESSEE - Critical Habitat

Myotis sodalis, "Indiana bat"

The following areas (exclusive of those existing man-made structures or settlements which are not necessary to the normal needs or survival of the species) are Critical Habitat for the Indiana bat:

White Oak Blowhole Cave, Blount County.

REFERENCE # 26

SOIL SURVEY

Cocke County Tennessee

Series 1944, No. 4

Issued March 1958

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with the
TENNESSEE AGRICULTURAL EXPERIMENT STATION
and the
TENNESSEE VALLEY AUTHORITY

GENERAL NATURE OF THE AREA

LOCATION AND EXTENT

Cocke County is in the eastern part of Tennessee adjacent to and partly within the Great Smoky Mountains National Park (fig. 1).

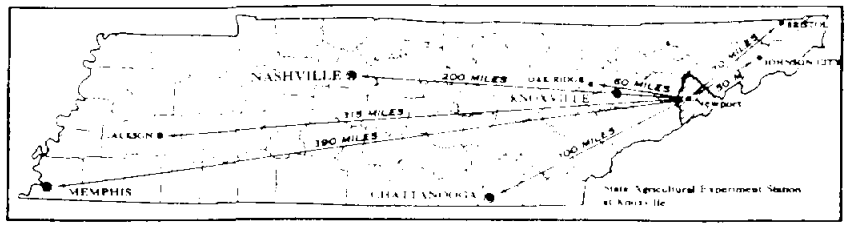


FIGURE 1.—Location of Cocke County in Tennessee.

The southern and southeastern boundaries coincide with the Tennessee-North Carolina State line. Newport, east of Knoxville, is the county seat and largest town. The total area of the county is 434 square miles, or 277,760 acres. Of this, a total of about 3,871 acres is occupied by the Douglas Reservoir.

PHYSIOGRAPHY, RELIEF, AND DRAINAGE

PHYSIOGRAPHY

Approximately the southeastern one-third of the county is in the Blue Ridge physiographic province, and the rest is in the Ridge and Valley province commonly known as the Great Valley of East Tennessee (*4*).[2] The Blue Ridge province includes a heterogenous arrangement of high rugged peaks and ridges of the Appalachian Mountain region that extends southwestward across the extreme eastern and southeastern parts of Tennessee. Part of the province in Cocke County is in the Great Smoky Mountains, which are in the Appalachian chain, and the rest includes mountainous outliers and foothills adjacent to the Smokies.

The Ridge and Valley province represents a belt of uneven lowland 30 to 50 miles wide that extends in a northeast-southwest direction across east Tennessee adjacent to and parallel to the Blue Ridge province. It slopes gradually southwestward. It is characterized by a series of alternating parallel ridges and valleys that extend in a northeast-southwest direction, or lengthwise of the province and parallel with the strike of the underlying folded and faulted bedrock strata. Approximately the northwest two-thirds of Cocke County is within this province. Both relief and drainage are more variable than in the Blue Ridge province, but the ridges are lower and more uniform in elevation and less rugged than those of the mountains.

The principal rocks underlying the Ridge and Valley part of the county are shale and limestone. Slate, quartzite, and conglomerate dominate the Blue Ridge section or mountainous part, and granite, gneiss, and schist occur over a comparatively small part of the area along the Tennessee-North Carolina State line.

[2] Italic numbers in parentheses refer to Literature Cited, p. 171.

All of the rocks have been subjected to severe folding and faulting, and this with the subsequent differential geologic erosion of the rocks has produced the present relief. The Ridge and Valley part is dominantly rolling to hilly, whereas the Blue Ridge section is mostly steep and mountainous. Parts of the valley area are steep, however, but these steep slopes are relatively short. Smooth areas, nearly level and undulating, are confined to the bottom lands, stream terraces, small tracts on the broader ridge tops of the uplands, and parts of the colluvial slopes.

LOCAL PHYSIOGRAPHIC DIVISIONS

From a more local physiographic aspect, the county can be divided into four fairly distinct physiographic subdivisions: (1) The knobs, (2) the valley land, (3) the foothills, and (4) the mountains. Each of these subdivisions is characterized by a distinct type of relief that has been determined largely by the character of the dominant underlying rock and the resistance of that rock to weathering over a long geologic period. The first two subdivisions are within the Ridge and Valley part of the county, and the latter two are in the Blue Ridge section.

The knobs.—This subdivision is underlain almost wholly by shale, much of which is calcareous. The surface is hilly to steeply sloping. This area is chiefly in the extreme northern part of the county and occupies about half of the Ridge and Valley part. The landscape is mainly a series of moderately narrow sharp-topped and knobby ridges separated by comparatively deep narrow valleys with rather steeply sloping sides and narrow nearly level bottoms. The more conspicuous ridges parallel the strike of the underlying bedrock strata. In places the ridges have been reduced considerably and more nearly resemble hills with moderately sloping sides and well-rounded tops. Some of the highest and most steeply sloping ridges have small or thin interbeds of sandstone exposed at or near their crests. Other similar but much less extensive areas of the knobs occur along the southeastern edge of the Ridge and Valley part of the county adjacent to the mountains and foothills. These smaller areas are occupied chiefly by Litz and Teas soils, whereas the more extensive area in the northern part of the county is occupied by associations that include the Danridge soils. (See fig. 2.) All of the soils of the upland part are shallow over bedrock and are excessively drained.

The valley land.—This land represents an area of low-lying ridges and valleys underlain chiefly by dolomitic limestone. The area averages about 5 miles in width and extends from the northeastern county boundary in a southwestern direction nearly across the central part of the county. It comprises approximately the southeastern half of the Ridge and Valley section. The relief is dominantly rolling to hilly. The major part is underlain almost wholly by comparatively chert-free and moderately cherty limestone, and it is less rugged than the other three subdivisions.

Sinkholes characterize much of the valley land underlain by limestone. They vary considerably in size and depth, but most of them range from a few square rods to a few acres in area and from about 10 to 40 feet in depth. Some are walled by rather steep slopes, but most of them have gently or moderately sloping sides. Some are deeper and steeper on one side than on the other, but most of them are roughly cone-shaped. The deepest ones usually have the smallest

les. Some are not crossable
ıre farmed intensively, espe-
· of the unusually high pro-
vater much of the time and
r livestock. Most, however,
ıg or after unusually heavy
sufficiently open to remove

of steep, comparatively high
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· Ridge and Valley section
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Blue Ridge province is in
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y the Pigeon and French
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he principal divide con-
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Some areas are rough,
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ock and are excessively

RELIEF

Elevations range from a low of about 1,000 feet at the surface c Douglas Reservoir to a high of 6,636 feet on Mount Guyot. Mos ridge tops in the Ridge and Valley province of the county range fror 1,250 to 1,400 feet above sea level and from about 200 to 280 feet abov the adjacent flood plains, whereas those in the Blue Ridge (or moun tainous) section are much more variable in height. The highest peak are on the mountain divide along the Tennessee-North Carolina Stat line. Most of this divide ranges from 3,000 to 6,000 feet above se: level. Secondary peaks and ridges within the Blue Ridge part of th county form foothills adjacent to the mountains proper, are con siderably lower and somewhat more uniform in height than the highe: ones, and range from about 2,000 to 3,000 feet above sea level and fron about 600 to 1,600 feet above the adjacent bottom lands. Althougl lower and more uniform in height than the mountain peaks, they are higher and less uniform than the ridges in the valley land. Flood plains and low terraces along the larger streams vary in elevation from about 960 to 1,200 feet. Most high stream terraces are 80 to 200 feet above the adjacent flood plains. The approximate elevation above sea level of the highest of these is 1,200 feet. Newport on the Pigeor River and near the center of the county is 1,096 feet above sea level at the United States Weather Bureau station.

DRAINAGE

All soils of the county are at least moderately well drained except foı areas in limestone sinks or the low, nearly flat parts of some of th stream terraces and first bottom lands. Here, drainage is slow or poor A few small imperfectly drained areas are at or near the base of som slopes where seepage occurs.

All runoff water flows to the French Broad River and thence to the Tennessee River. The Pigeon and Nolichucky Rivers are the largest tributaries of the French Broad. All of the streams have relatively rapid flow, and except along the lower part of the French Broad their alluvial plains are narrow. Springs are common throughout much of the county.

The uplands dominate in both physiographic provinces. The colluvial slopes and first bottoms are about equally divided between the two provinces, whereas the terraces are largely within the Ridge and Valley area. The colluvial slopes consist of materials washed or rolled from the adjacent uplands and terraces, whereas the stream terraces and much of the bottom lands consist of alluvium. Many high terraces may or may not be related to the present drainage system, but all the low terraces apparently were formed by the present streams. Most bottoms, including those along the rivers, are comparatively narrow and irregular, ranging from only a few yards to less than one-half mile in width.

CLIMATE

According to Koppen's classification (*9*) most of Cocke County is in the Humid Mesothermal climatic zone and has no distinct dry season but has hot summers. The highest parts in the more mountainous sections are in the zone designated as having cool summers. Table 1 gives the normal monthly, seasonal, and annual temperature and precipitation at Newport.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Newport, Cocke County, Tenn.*

[Elevation 1,096 feet]

Month	Average [1] temperature	Precipitation [2]		
		Average	Total amount for the driest year	Total amount for the wettest year
	°F.	Inches	Inches	Inches
December	39.1	4.03	1.21	4.83
January	38.2	3.68	2.08	3.44
February	40.0	3.91	1.01	5.93
Winter	39.1	11.62	4.30	14.20
March	48.4	4.84	3.73	4.12
April	56.9	3.66	2.95	2.96
May	65.8	4.25	1.93	5.02
Spring	57.0	12.75	8.61	12.10
June	74.1	4.30	2.51	4.27
July	76.7	4.48	7.55	9.05
August	75.6	3.94	2.55	7.30
Summer	75.5	12.72	12.61	20.62
September	70.6	2.78	.89	4.28
October	58.1	2.47	1.64	2.63
November	46.5	2.47	2.05	3.55
Fall	58.4	7.72	4.58	10.46
Year	57.5	44.81	[3] 30.10	[4] 57.38

[1] Average temperature based on 61-year record, 1890 to 1950.
[2] Average precipitation based on 61-year record, 1890 to 1950.
[3] In 1941.
[4] In 1945.

The highest temperature reported at Newport since 1930 is 106° F., and the lowest, −3°. The average frost-free period is about 198 days, the last killing frost averaging April 9, and the first killing frost October 25. The frost-free period is shorter in the mountains. According to the Weather Bureau data from the Newport station, killing frosts have occurred as late as May 2 and as early as September 26. These data are representative of the Ridge and Valley part of the county. In the areas of high elevation, the temperature is cooler and the precipitation is greater. At an elevation of 2,186 feet at Elkmont in Sevier County, the average annual temperature is 55.7°; at an elevation of 6,684 feet on Mount Mitchell about 40 miles east of Cocke County the average annual temperature is 42.9°. The average annual precipitation at Elkmont is 63.45 inches, and at Mount Mitchell 69.05 inches.

nnual temperature and
ounty, Tenn.

	Precipitation [2]	
	Total amount for the driest year	Total amount for the wettest year
	Inches	*Inches*
03	1. 21	4. 83
68	2. 08	3. 44
91	1. 01	5. 93
62	4. 30	14. 20
84	3. 73	4. 12
66	2. 95	2. 96
25	1. 93	5. 02
75	8. 61	12. 10
30	2. 51	4. 27
48	7. 55	9. 05
44	2. 55	7. 30
72	12. 61	20. 62
78	. 89	4. 28
7	1. 64	2. 63
7	2. 05	3. 55
2	4. 58	10. 46
4	[1] 30. 10	[4] 57. 38

o 1950.
o 1950.

t since 1930 is 106°
period is about 198
the first killing frost
the mountains. Ac-
Newport station, kill-
arly as September 26.
d Valley part of the
perature is cooler and
2,186 feet at Elkmont
ture is 55.7°; at an
nt 40 miles east of
42.9°. The average
, and at Mount Mit-

Less obvious but nevertheless significant differences, especially in temperature, are noted between various parts of each physiographic province. Frost occurs more frequently in sinkholes and on lower slopes than on the adjacent higher slopes and ridge tops. Slopes facing north can be expected to have a lower average temperature and warm more slowly in spring than those facing south. For this reason they may be preferable for fruits that are subject to killing by late spring frosts. Favorable moisture conditions extend farther into the driest part of the growing season on the stronger north-facing slopes than on comparable south-facing exposures. The deep drains and coves in the mountains are recognized as favorable sites for hemlock, yellow-poplar, and other native plants that flourish under cool, humid conditions.

Winter temperatures in the Ridge and Valley part are characterized by rapid changes and short cold spells during which light freezes occur for two or three nights and are then followed by rising temperatures. Certain kinds of outdoor farm work can be done throughout the winter when moisture conditions permit. Such fall-planted grains as wheat, oats, and barley, as well as red clover, alfalfa, crimson clover, and vetch, are not commonly damaged by winterkilling. When damage occurs, it is because the crop failed to attain sufficient growth in the fall as a result of late seeding, lack of moisture, inadequate fertility, or some combination of these conditions. Hardy greens survive through the winter, and under a high level of management grazing vegetation can be maintained throughout a great part of the year. Usually, however, there is little vegetative growth from November 1 to March 1. For short periods during the winter season, wet soil or snow may make grazing impractical or impossible.

The annual precipitation is fairly well distributed throughout the year. The lightest precipitation occurs in fall and coincides well with the harvesting of corn, tobacco, and other important crops. The dry fall season, however, is disadvantageous to fall-planted crops and late-season grazing.

Snow occurs only occasionally and lightly in the lowland or valley land but is common in the higher parts of the mountains. It frequently falls in the mountains concurrently with rains at the lower elevations. Snow on the valley land usually melts within a few hours or days except in shaded areas or at or near the top of some of the highest ridges. In the mountains it may remain for several days or even weeks during the coldest winter periods.

Most rain in winter falls slowly and usually over a period of several hours; most of that in summer comes rapidly in thunderstorms, occasionally accompanied by hail. The ground seldom freezes to a depth of more than 2 inches, and soil moisture is generally abundant at the start of the growing season. Runoff during the late winter and early spring causes erosion on sloping areas not protected by vegetation.

Temperature, moisture, and sunshine provide notably favorable growing conditions during the spring and early summer, but moisture supplies are commonly below the optimum for plant growth during the late summer and fall. As a result, growth is restricted. Crop failures from lack of moisture, however, are extremely rare. Investigations and experience have shown that in many years during this

TABLE 4.—*Soil series of Cocke County, Tenn., grouped according to topographic position, parent material, and drainage*

Parent material	Excessively drained [1] (rolling to very steep)	Well drained [2] (undulating to steep)	Imperfectly drained [3] (nearly level to rolling)	Poorly drained [4] (nearly level)
SOILS OF UPLANDS				
Sedimentary rocks:				
High grade limestone		Dewey		
Slightly clayey limestone		Dunmore		
Shaly limestone or limestone with shale interbeds.		Groseclose [5]		
Calcareous shale	Dandridge [6]			
Leached calcareous and acid shale with a few limestone lenses.	Litz [6]			
Purplish shale, parts calcareous	Teas [6]			
Igneous and metamorphic rocks:				
Quartzite, conglomerate, and slate	Ramsey			
Light-colored gneiss and granite	Ashe			
SOILS OF TERRACE LANDS				
Old alluvium:				
Chiefly gneiss and granite		Altavista [5]	Augusta [7]	
Limestone, some sandstone, quartzite, and shale.		Cumberland		
Sandstone, quartzite, limestone, and shale		Waynesboro		
Do		Nolichucky		
Do		Holston [5]	Monongahela	Tyler.
Sandstone, quartzite, limestone, and shale (low terrace).		Sequatchie [6]		
Gneiss and granite (low terrace)		State		
SOILS OF COLLUVIAL LANDS				
		Emory [8]		
		Greendale [5 8]	Ooltewah [8]	

Gneiss and granite				
Limestone, some sandstone, quartzite, and shale.		Altavista [5]		
Sandstone, quartzite, limestone, and shale.		Cumberland	Augusta [7]	
Do		Waynesboro		
Do		Nolichucky		
Sandstone, quartzite, limestone, and shale (low terrace).		Holston [5]		
Gneiss and granite (low terrace)		Sequatchie [6]	Monongahela	Tyler.
		State		

Soils of Colluvial Lands

High grade limestone		Emory [8]		
Cherty limestone		Greendale [5 8]		
Limestone			Ooltewah [8]	
Purplish shale, parts calcareous		Camp [5]		
Calcareous shale		Whitesburg [5 8]		
Shale		Leadvale [5]		
Sandstone and quartzite with some limestone or calcareous shale.		Hayter		
Sandstone, quartzite, shale, and some limestone		Allen		
Sandstone, quartzite, and shale		Jefferson [6]		
Do		Barbourville [5 8]	Cotaco [7 8]	
Gneiss and granite		Tusquitee [5]		

Soils of Bottom Lands

Cherty limestone			Lindside [7 8]	
Chiefly calcareous shale and slate, some sandstone and quartzite.		Staser [5 8]	Hamblen [7 8]	Prader.[8]
Gneiss and granite		Congaree [5 8]	Chewacla [7 8]	Wehadkee.[8]
Gneiss and granite (sandy component)	Buncombe [6 8]			

[1] Indistinct profile due to rapid geologic erosion; surface runoff rapid to very rapid; internal drainage low to very low; color varies with parent material.

[2] Brown or reddish-brown to yellowish-brown soils, free of mottlings to a depth of about 30 inches.

[3] Pale-yellow soils—grayish-brown or yellowish-gray mottled below about 12 inches.

[4] Light brownish-gray to light-gray soils, mottled below 6 to 8 inches.

[5] Ranges from well drained to imperfectly drained.

[6] Ranges from excessively drained to well drained.

[7] Ranges from imperfectly drained to poorly drained.

[8] These soils do not have distinct textural horizons, chiefly because of the short time their parent materials have been in place.

252953—55——2

sandy loam containing an abun-

½ to 3 feet of the surface, and
feet in most places. The soil
most areas are favorable. Or-
supply are not high, and the

ch of this soil is cleared, and
n crops. The greater part is
pplied, and some fertilization
ntent makes it impractical to
many areas can be worked
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tting, such as small grains
on is done by hand. Corn,
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re if adequately fertilized.
gement of Soils describes

pes) (Bp).—Much of the
st bottoms or flood plains
h Broad, Nolichucky, and
rocks. The areas occur
nels. The soil is slightly
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rown loose loamy fine sand.
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Mica occurs through-

er and is medium acid.
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t of Buncombe loamy
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Heavy fertilization
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Weeds are notably
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, see group 2 in the

ight-red or purplish
The parent rock is
calcareous. Areas

are on gently sloping alluvial fans and along drainways adjacent to areas of Teas soils. This well-drained soil is in the Teas-Stony land soil association.

Profile description:

0 to 6 inches, reddish-brown (moist) or light-red (dry) silt loam.
6 to 18 inches, reddish-brown (moist) or light-red (dry) silty clay loam.
18 inches +, weak reddish-brown moderately firm silty clay loam containing some shale fragments; bedrock shale at depths of 3 to 7 feet.

Shale fragments, though not abundant, are common throughout much of this moderately fertile soil. Tilth is good, although clay content causes the soil to clod or bake more easily than soils such as the Ramsey, Dandridge, and Barbourville. This soil is moderately permeable, retains moisture for plants moderately well, and has a medium acid reaction. Erosion is a hazard only on the higher lying more sloping areas.

Use suitability and management.—Most of Camp silt loam is cleared and in corn and hay, but a small acreage in narrow draws, within areas of steep Teas soils, is still in native forest. This soil is well suited to most of the general farm crops, including alfalfa and tobacco. Root crops, such as potatoes, can be grown, but the fairly heavy nature of much of the material makes them less well suited. Because of its smooth surface and response to good management, the soil can be intensively cultivated. For a discussion of use and management, see group 3 in the section on Use and Management of Soils.

Chewacla fine sandy loam (0–2% slopes) (Cb).—This imperfectly drained soil occurs on the bottom lands along streams and consists of alluvium that originated largely from micaceous rocks. Most areas are along the Nolichucky and French Broad Rivers in the Congaree-State soil association. They lie in gentle depressions on nearly level positions associated with Congaree and Buncombe soils and are among the first soils to be flooded by high water. The Douglas Reservoir has inundated 489 acres.

Profile description:

0 to 18 inches, pale-brown to very dark-brown fine sandy loam; plow soil is usually darker than the rest of the layer.
18 to 36 inches +, mottled brown, yellow, and gray loam or fine sandy loam; firmer than surface layer and more predominantly gray with depth; bedrock at depths of 5 to 15 feet.

This moderately fertile soil has a fair content of organic matter. It is medium to strongly acid. Tilth is good, but slow internal drainage delays tillage operations following wet periods in spring. The susceptibility to flooding is a hazard to crops. The soil is permeable to roots and maintains adequate moisture for plants through a great part of the growing season.

Use suitability and management.—Practically all of this soil is used for crops (chiefly corn and hay) and pasture. Some fertilization is practiced, and good yields are obtained. The moderate fertility and abundant moisture supply make pasture, hay, and such moisture-tolerant crops as corn and soybeans well suited. The soil requires lime for the legumes and grasses if high yields are to be obtained. Under proper management productivity for the adapted crops is easily maintained. Group 1 in the section on Use and Management of Soils describes management for this fine sandy loam.

Congaree fine sandy loam (0–2% slopes) (Cc).—This is a well-drained to somewhat excessively drained brown sandy soil on the first bottoms. It consists of alluvium that came mainly from micaceous rocks. It is associated with Chewacla, Wehadkee, Buncombe, and other Congaree soils in areas of the Congaree-State and Staser-Sequatchie soil association. It is on bottom lands along the French Broad, Nolichucky, and Pigeon Rivers. It differs from the Buncombe soil in having sufficient clay to be a fine sandy loam rather than a loamy fine sand. The surface is nearly level, and the soil is subject to overflow. Approximately 576 acres have been inundated by the Douglas Reservoir.

Profile description:

0 to 20 inches, brown friable fine sandy loam, darker in the upper 5 or 6 inches.
20 to 30 inches, yellowish-brown very friable fine sandy loam.
30 inches +, yellow friable fine sandy loam mottled with gray and brown; bedrock ranges from 5 to 15 feet below the surface.

In places the soil is free of mottlings to 40 inches. In some areas the texture below 28 inches is sandy clay loam or clay loam.

Occasional flooding helps to maintain the fertility of this soil. It is medium acid and fair in content of organic matter. Tilth is good, and the soil is permeable. Although its capacity for holding moisture is lower than for some soils, its permeable nature favors deep root development and moisture relations suitable for all except the shallow-rooted grasses.

Use suitability and management.—Friability, permeability, smooth surface, and response to fertilization make Conagree fine sandy loam very desirable for many truck crops and tobacco. It is used chiefly for these crops and for corn, and yields are high. Practically all crops commonly grown are suited, although there are several soils that probably are more desirable for sod crops. Small quantities of fertilizer are used for corn, but fairly large applications are given tobacco and truck crops. Under proper management, high productivity is easily maintained, even under intensive use. For a discussion of use and management, see group 1 in the section on Use and Management of Soils.

Congaree loam (0–2% slopes) (Cd).—Texture is the chief difference between this soil and Congaree fine sandy loam. The color is a little darker, and the depth to mottling is a little less. The surface is nearly level, and all areas are subject to overflow. The areas, ranging from 10 to 50 acres in size, are widely distributed on bottom lands along the French Broad, Nolichucky, and Pigeon Rivers in the Congaree-State and Staser-Sequatchie soil association. About 307 acres were inundated by the Douglas Reservoir.

This is one of the most fertile soils in the county; material deposited during overflows helps to maintain its productivity. The soil is permeable and has good internal drainage. Good tilth and a smooth surface make it easy to work. The reaction is medium acid. The soil has good water-holding capacity, and moisture relations are normally very favorable for the crops commonly grown.

Use suitability and management.—Since it is productive and easily worked and conserved, this soil is well suited to intensive use. It is suited to practically all the crops commonly grown, including the more exacting legumes if they are moderately limed. Corn, tobacco, and

-lopes) (Cc).—This is a well-
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ined. Corn, tobacco, and

truck crops are the chief crops, and a small acreage is in hay and pasture. Little fertilizer is used for corn and hay crops, but the cash crops (tobacco and truck) receive heavy applications. Yields are high. Floods are a hazard, especially to high-value crops such as tobacco, cabbage, and beans. Use and management are described under group 1 in the section on Use and Management of Soils.

Cotaco fine sandy loam (0–3% slopes) (Ce).—Poorer internal drainage chiefly differentiates this soil from Barbourville fine sandy loam. It is an imperfectly drained sandy soil consisting of alluvium derived from sandy Ramsey soils. It occurs as narrow strips along drainways; much of it is closely associated with extensive areas of the steep Ramsey soils. The surface is nearly level to gently sloping, and small parts are subject to overflow.

Profile description:

0 to 18 inches, light brownish-gray loam or fine sandy loam.
18 inches+, mottled light-gray, pale-yellow, and brown fine sandy loam or fine sandy clay loam.

Bedrock slate or quartzite is at depths of 2 to 6 feet, and a few cobblestones and pieces of gravel occur in places. In some areas the mottling is at a shallower depth. A few higher lying patches of Barbourville soils, too small to map separately, are included with this soil. These areas are free of mottling to depths of 2 to 3 feet.

Cotaco fine sandy loam is moderately fertile but low in organic-matter content. It is medium to strongly acid, permeable, and good in tilth relations. Its relatively high water table—within 2 feet of the surface much of the time—interferes with root development.

Use suitability and management.—Slow internal drainage restricts the range of crops to which this soil is suited. Its smooth surface and good tilth make it well suited to intensive use; and inasmuch as most of it is on farms that have a limited acreage of cropland, it is especially valuable for row crops. It is used to advantage for corn, lespedeza, orchard grass, sorghums, and permanent pasture of legumes and grasses. Alfalfa, potatoes, and other root crops are not so productive unless the soil is artificially drained. Some areas along the narrower drainways in the more remote sections are still forested. See group 3 in the section on Use and Management of Soils for further information on management of Cotaco fine sandy loam.

Cumberland silty clay loam, eroded undulating phase (2–12% slopes) (Cf).—Areas on the high stream terraces with the darkest brown color are represented by this soil. It consists of old mixed alluvium, apparently strongly influenced by limestone. It differs from the Waynesboro soils chiefly in having a darker brown surface soil and a redder, finer textured subsoil. All areas are in the Waynesboro-Nolichucky-Dunmore soil association. Most of the soil is eroded to the extent that the plow layer now consists of a mixture of original surface soil with subsoil material.

Profile description:

0 to 5 inches, dark-brown to very dark-brown friable silty clay loam.
5 to 16 inches, yellowish-red friable silty clay loam.
16 to 36 inches, red or dark brownish-red firm but friable silty clay loam grading to silty clay; material is variable below this layer; it may consist of an irregular gravelly bed, or it may be firm silty clay or silty clay loam variegated or reticulated with red and yellow; bedrock, in most places limestone, is at depths of 4 to 18 feet.

252953—55——3

State loam (0–2% slopes) (SF).—This brown well-drained soil on low stream terraces consists of alluvium originating from micaceous rocks—granite and gneiss. It is distinguished from Sequatchie soils by the mica content. It occupies low benches along the French Broad, Nolichucky, and Pigeon Rivers in the Congaree-State soil association. It occupies large areas on smooth valley floors, and much of it is well suited to crops. About 589 acres have been inundated by the Douglas Reservoir.

Profile description:

0 to 14 inches, dark grayish-brown loam.
14 to 40 inches, brown friable but somewhat firm loam that grades to yellowish-brown; texture becomes coarser with depth.
40 to 72 inches +, yellowish-brown, grading to brownish-yellow, loamy fine sand; bedrock is usually at depths of 5 to 10 feet.

Mica occurs throughout the soil, and some areas have cobblestones. This fertile soil contains a moderate quantity of organic matter in the surface layer. Its reaction is medium to strongly acid. Tilth is favorable, and the soil material is permeable and well drained. Except in most sandy areas, favorable moisture relations are maintained throughout much of the growing season. In general, State loam can be worked under a wide range of moisture conditions.

Use suitability and management.—Most of State loam is planted to corn, tobacco, and some truck crops. Small grains and hay are common (pl. 1, *C*) but less so than the row crops. Some areas are used intensively for row crops several years in succession.

As it is productive, easily worked and conserved, responsive to good management, and suitable for a wide variety of crops, this is one of the most desirable soils of the county for crops and pasture. Fertilization is commonly practiced, and much of the acreage has been limed. The more loamy areas are especially desirable for grazing in midsummer, as their moisture relations are then more favorable than for many of the soils of the uplands. See group 4 in the section on Use and Management of Soils for management of this loam.

Stony colluvium (Jefferson soil material) (5–30% slopes) (SG).—This land type consists chiefly of colluvial material composed of quartzite and sandstone rock fragments with some intermixed soil material. The areas occur on sloping to strongly sloping foot slopes below mountainous areas of Ramsey soils. Stone fragments ranging up to 3 or 4 feet in diameter are numerous enough to make tillage impossible and the pasture value low. The small quantity of intermixed soil material is yellow or brownish-yellow sandy loam. Bedrock is at depths of 2 to 10 feet. The largest areas are at the base of the west slope of Neddy Mountain in the Jefferson-Allen-Barbourville soil association.

Use suitability and management.—Much of this land type is in native deciduous forest, its best use. This land type is included in group 16 in the section on Use and Managment of Soils.

Stony hilly land (Dunmore soil material) (12–25% slopes) (SH).—Limestone outcrops and loose fragments are so abundant in areas of this land type that tillage is impractical (pl. 4, *A*). Rock probably occupies 10 to 50 percent of the surface. The soil material between the rocks is similar to that of the Dunmore or Dewey soils.

OVERSIZED

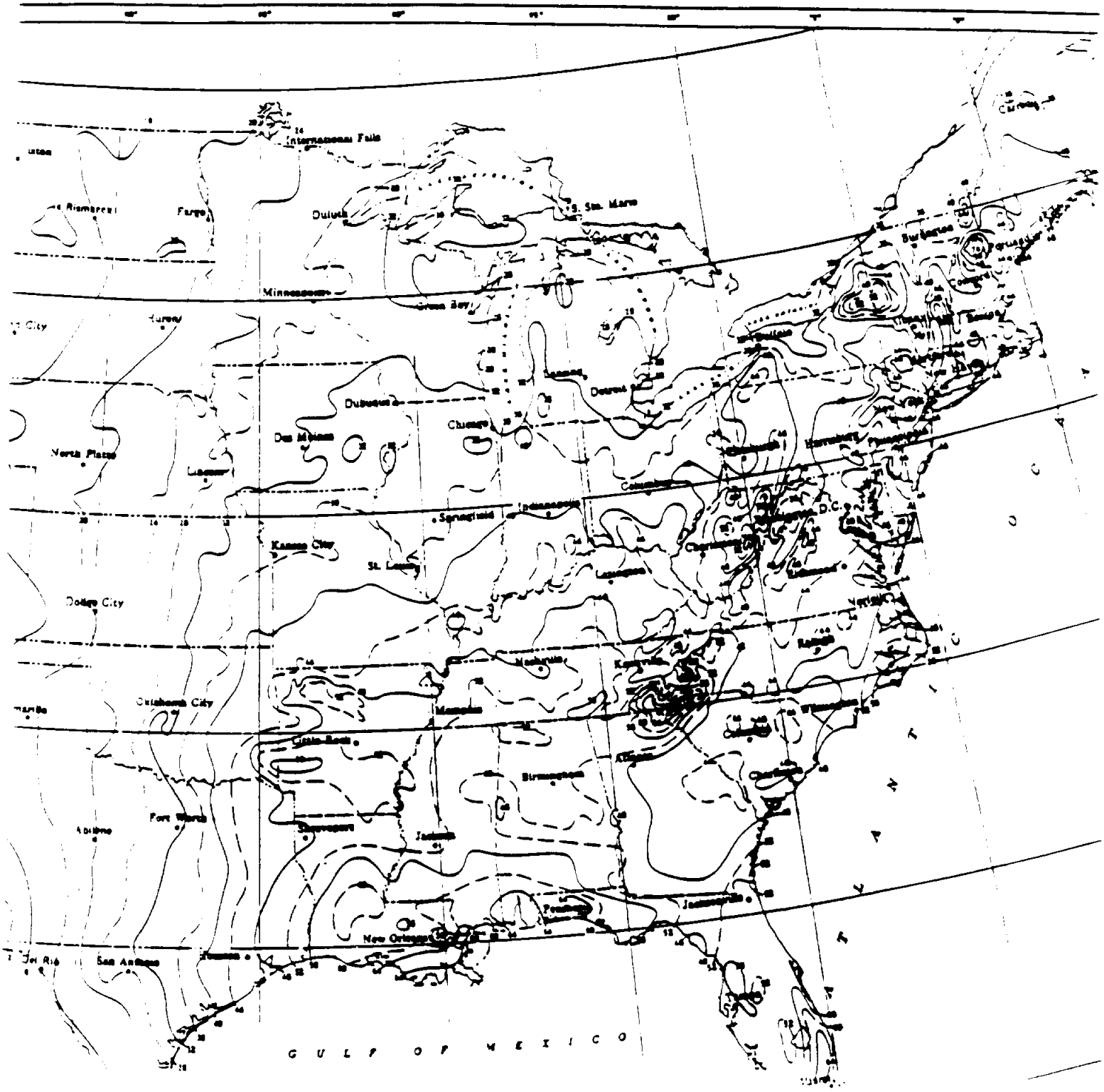
DOCUMENT

REFERENCE # 27

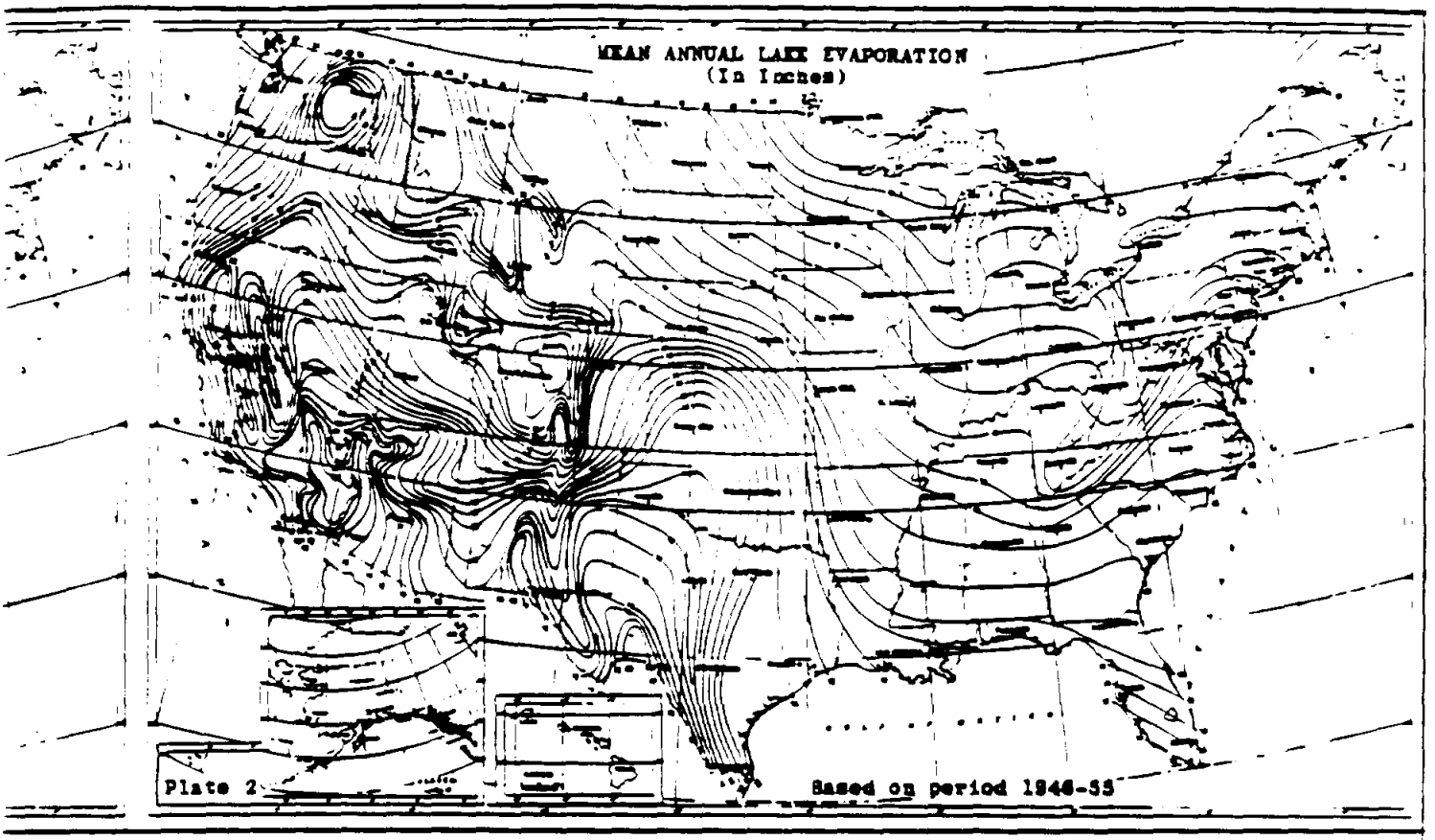
CLIMATIC ATLAS OF THE UNITED STATES

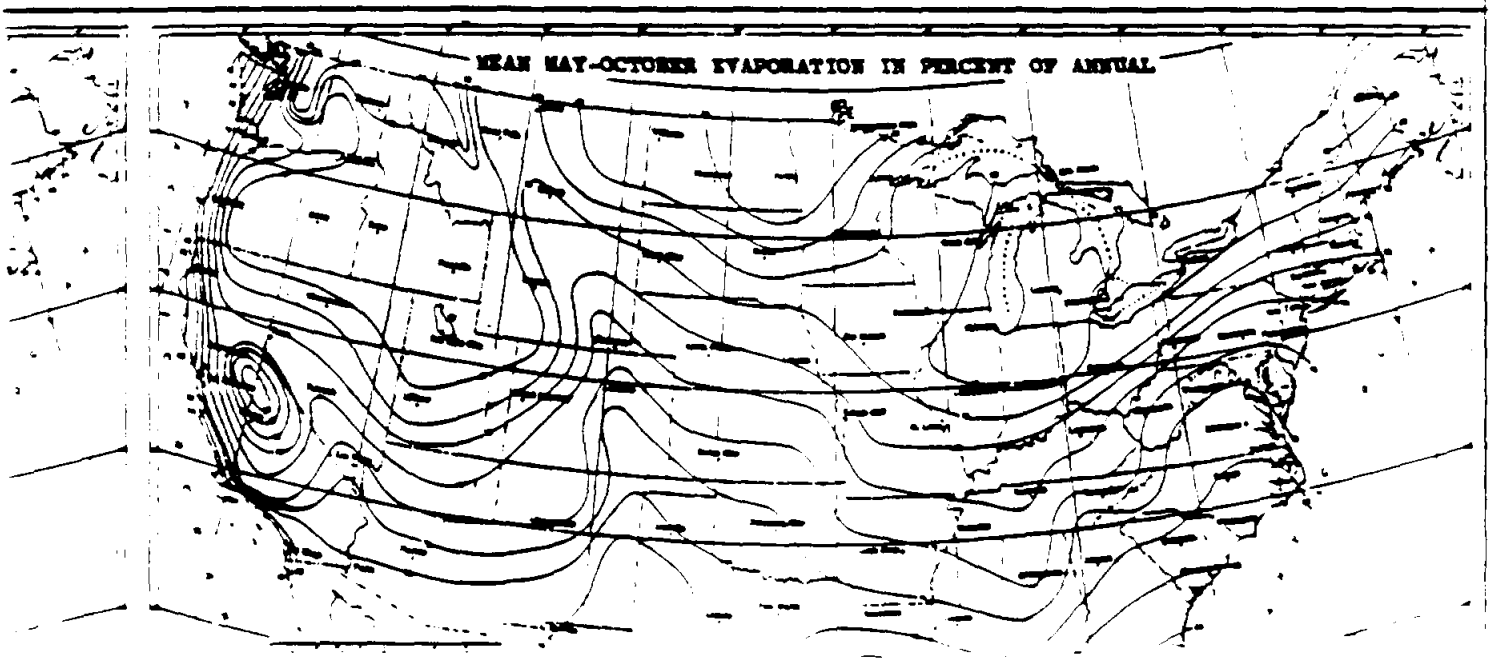
ronmental Science Services Administration . Environmenta

L ANNUAL TOTAL PRECIPITATION (Inches)



N AND LAKE EVAPORATION





DEPARTMENT OF COMMERCE
Luther H. Hodges, Secretary

WEATHER BUREAU
F. W. Reichelderfer, Chief

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

REFERENCE # 28

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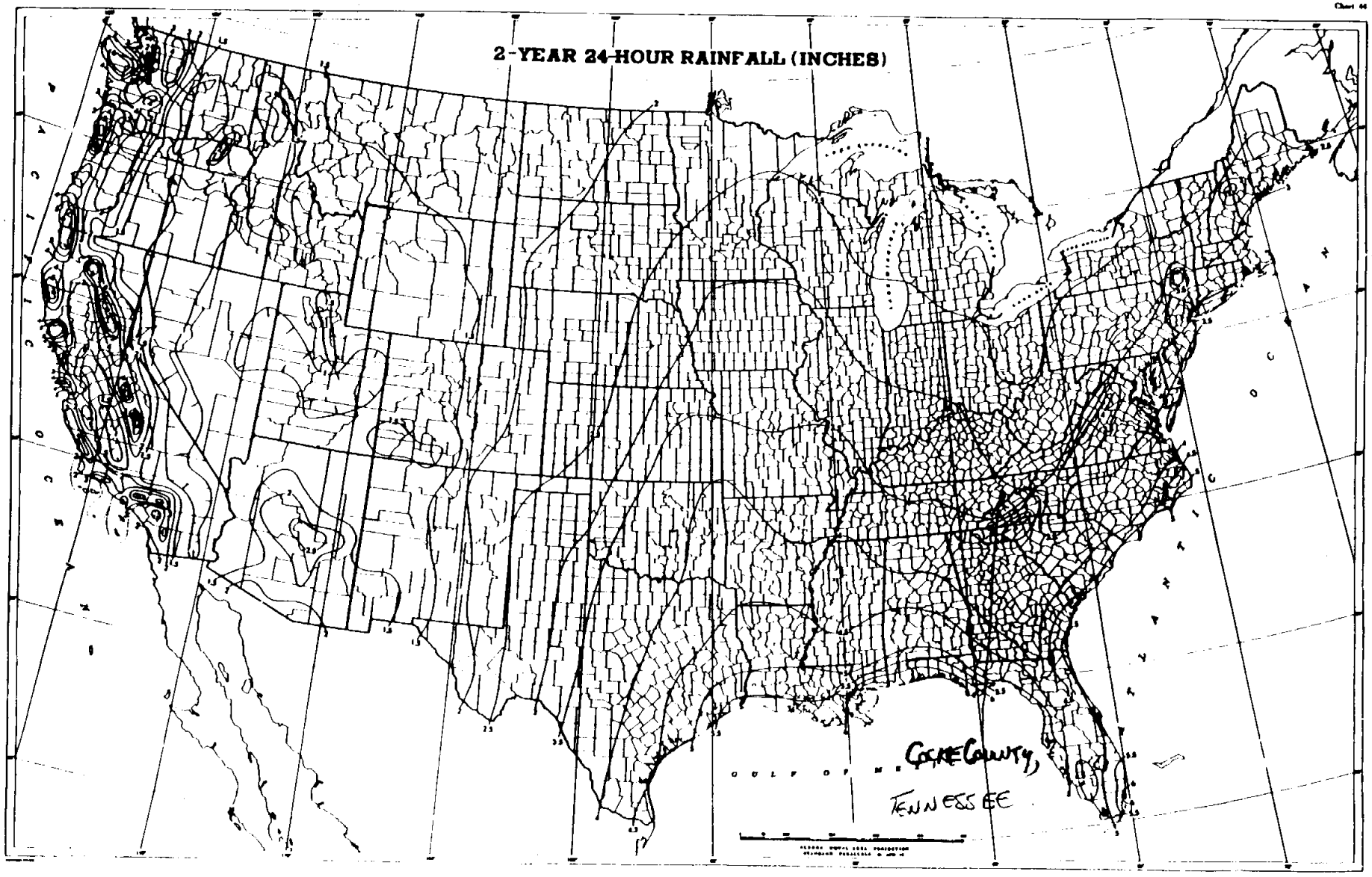
2-YEAR 24-HOUR RAINFALL (INCHES)
COCKE COUNTY,
TENNESSEE

REFERENCE # 29

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	04/03/91	09:45

DISTRIBUTION:
Heywood-Wakefield Company
Newport, Tennessee

BETWEEN:	OF:	PHONE:
Shane Bunch	Dept. of Fish and Game Cocke County, Tennessee	(615)623-0045

AND:
Wendell C. McLendon Wendell C McLendon 4/3/91

DISCUSSION:

There is recreational fishing, boating, and swimming in Douglas Lake and the French Broad River. Species fished for include crappie, striped bass, and walleye. The Tennessee Wildlife Resources Agency stocks trout (10 inch size) in small streams in the area; there are natural trout streams in the area.

There is little recreational fishing on the Pigeon River.

REFERENCE # 30

State of Tennessee

DEPARTMENT OF CONSERVATION

DIVISION OF GEOLOGY

BULLETIN 58

PART I

GROUND-WATER RESOURCES OF EAST TENNESSEE

By

G. D. DeBUCHANANNE

and

R. M. RICHARDSON

Prepared in cooperation with the U. S. Geological Survey

NASHVILLE, TENNESSEE

1956

TABLE 4.—GEOLOGIC FORMATIONS IN EAST TENNESSEE—Continued

Era or system	Series	Group	Subdivisions				Thickness (feet)	Physical character		Water-bearing properties
Ordovician	Upper Ordovician		Sequatchie formation / Juniata formation				200–400	Sequatchie: Maroon and blue shaly limestone and shale. Juniata: Maroon siltstone and shale.		Yield small supplies to wells and springs.
	Middle Ordovician		Upper part of Chickamauga limestone	Reedsville shale / Chickamauga limestone Unit 4	Martinsburg shale		700–1,000	Upper part of Chickamauga: Blue, crystalline well-bedded limestone; upper part shaly limestone. Reedsville shale: Bluish calcareous shale. Martinsburg shale: Bluish calcareous shale.		Limestones yield small to moderate quantities of water to wells and springs. Where limestones are interbedded in shale, the limestone commonly contains well-developed solution cavities. Quality of water varies. Shale generally yields larger quantities of water to drilled wells than limestone. Quality of water varies.
			Lower and middle parts of Chickamauga limestone	Unit 3	Moccasin formation / Bays formation		700–1,000	Moccasin: Maroon limy shale and shaly limestone and blue flaggy limestone. Bays: Maroon siltstone and shale.		
				Unit 2	Ottosee shale	Sevier shale	2,500–4,000	Units of Chickamauga limestone: Blue generally well-bedded limestone, in part silty and shaly. Ottosee: Bluish calcareous shale containing crystalline limestone lenses. Holston: Red crystalline limestone (marble), quartzose crystalline limestone and limy sandstone. Lenoir: Blue nodular and massive limestone. Sevier: Blue calcareous shale with sandstone beds, blue limestone at base. Athens: Bluish calcareous shale and shaly limestone, blue limestone at base, some sandstone.		
				Unit 1	Holston formation					
					Lenoir limestone / Athens shale					
	Lower Ordovician	Knox	Newala, Longview and Chepultepec formations undivided	Newala formation	Mascot dolomite	Jonesboro limestone	400–800	Siliceous dolomite	Jonesboro limestone: Dark, blue weathering limestone	Water occurs in joints and solution channels. Yield small to large supplies to wells. Water generally of good quality. Sandstone beds in Chepultepec dolomite serve as aquifers for small supplies. Numerous large springs are found in these rocks.
					Kingsport formation		200	Siliceous dolomite, thick limestone near base.		
				Longview dolomite			250	Very siliceous dolomite, limestone beds near top.		
				Chepultepec dolomite			700–750	Siliceous dolomite, sandstone beds near base.		
	Upper Cambrian		Copper Ridge dolomite / Conococheague limestone				900–1,100	Copper Ridge: Dark crystalline siliceous dolomite. Conococheague: Limestone.		
			Upper Cambrian part of Conasauga shale or Conasauga	Maynardville limestone member of Nolichucky shale			150–350	Limestone below, dolomite above.		Limestone and dolomite yield small to large quantities of water to springs and wells. Shale-limestone contacts produce springs at surface. In subsurface these con-
				[illegible] shale			400–750	Greenish shale.		

	Lower Ordovician	Knox	Newala, Longview and Chepultepec formations undivided	Newala formation	Mascot dolomite	Jonesboro limestone	400-600	Siliceous dolomite	Jonesboro limestone: Dark, blue weathering limestone.	Water occurs in joints and solution channels. Yield small to large supplies to wells. Water generally of good quality. Sandstone beds in Chepultepec dolomite serve as aquifers for small supplies. Numerous large springs are found in these rocks.
					Kingsport formation		200	Siliceous dolomite, thick limestone near base.		
				Longview dolomite			250	Very siliceous dolomite, limestone beds near top.		
				Chepultepec dolomite			700-750	Siliceous dolomite, sandstone beds near base.		
Cambrian	Upper Cambrian	Conasauga	Copper Ridge dolomite		Conococheague limestone		900-1,100	Copper Ridge: Dark crystalline siliceous dolomite. Conococheague: Limestone.		Limestone and dolomite yield small to large quantities of water to springs and wells. Shale-limestone contacts produce springs at surface. In subsurface these contacts are frequently water bearing.
			Upper Cambrian part of Conasauga shale or Conasauga group	Maynardville limestone member of Nolichucky shale			150-350	Limestone below, dolomite above.		
				Nolichucky shale			400-750	Greenish shale.		
	Middle Cambrian		Middle Cambrian part of Conasauga shale or Conasauga group	Honaker dolomite	Maryville limestone		260-650	Blue limestone, mostly ribboned with dolomite.		Shale yields small supplies to dug and drilled wells. Wells in shale near streams occasionally yield moderate to large quantities of water. Pumpkin Valley shale is very poor aquifer.
					Rogersville shale		0-250	Light-green shale.		
					Rutledge limestone		100-500	Blue limestone, mostly ribboned with dolomite.		
				Pumpkin Valley shale			200-400	Greenish silty shale.		
	Lower Cambrian		Rome formation	Sandstone-bearing member			700	Varicolored shale, siltstone, and sandstone.		Yield small quantities of water to dug and drilled wells. Water occurs in closely spaced joints. Upper member of the Rome formation is a better aquifer than the lower member.
				Apison shale member				Bright-red and green shale.		
			Shady dolomite				1,000	Blue-gray and white dolomite.		Water occurs in joints and bedding planes.
		Chilhowee	Erwin formation	Helenmode member			1,000-1,500			Yield small to moderately large supplies to drilled wells and springs.
				Hesse sandstone				White sandstone.		
				Murray shale				Greenish silty shale.		
				Nebo sandstone				White sandstone.		
			Hampton formation	Nichols shale			500-2,500	Hampton: Greenish silty shale and siltstone with feldspathic sandstone layers. Nichols: Greenish silty shale.		
			Unicoi formation	Cochran conglomerate			1,000-5,000	Feldspathic sandstone and conglomerate.		

Cocke County

(Area 434 square miles, population 22,991)

General Features

Cocke County lies in the eastern part of the region covered by this report. The county is somewhat triangular in outline and is bounded on the northwest, north, and part of the northeast side by the Nolichucky River and Douglas Reservoir. The southeast boundary is the Tennessee-North Carolina State line. It is adjacent to Sevier, Jefferson, Hamblen, and Greene Counties.

Newport, the county seat, is about 40 miles east of Knoxville. It has a population of 3,892 and is the largest town in the county. Parrottsville, the second largest town, has a population of 115. Other communities are Bridgeport, Bybee, Cosby, Del Rio, French Broad, Hartford, and Wolf Creek.

The area is served by a branch line of the Southern Railway System, which in general follows the valley of the French Broad River. U. S. Highways 70 and 25E cross the county from the east. State Highways 35 and 32 cross the county from the north.

The county is principally agricultural. Industries which are mainly concentrated in the vicinity of Newport, include canneries, hosiery mills, a leather tannery, numerous small establishments dealing in wood products, and some barite mines.

Geology

About half of Cocke County lies in the Blue Ridge province and half in the Valley and Ridge province. The boundary separating these two provinces is usually considered as the line of numerous faults connecting the Great Smoky fault with the Holston Mountain fault.

The youngest rocks exposed in the Blue Ridge province are those represented by the Rome formation of Early Cambrian age. The oldest formation is the Great Smoky conglomerate of pre-Cambrian (?) age. These rocks include clayey and silty sandstone, conglomerate, shale, and graywackes that are much more resistant to erosion than the younger rocks found in the Valley and Ridge province. They have been so metamorphosed and faulted that in many cases little evidence is left of their original form and sequence.

That part of Cocke County which is in the Valley and Ridge province is underlain by limestone, dolomite, and calcareous shale with a few thin sandstone members. The rocks range in age from the Rome formation of Early Cambrian age to the Sevier shale of Ordovician age. Although somewhat subdued, the typical Valley and Ridge topography is still apparent.

Ground Water

Ground water in Cocke County occurs chiefly in fractures in the underlying rocks. In the calcareous rocks, the fractures are usually somewhat enlarged by solution in the upper two hundred to three hundred feet, but, in the less soluble rocks, few fractures are enlarged. Some ground water occurs in the residuum overlying the carbonate rocks, but yields of wells in the clayey soil are usually less than 5 gpm. Drilled wells and springs supply most of the rural population. The city of Newport, which has the only municipal public water supply in the county, uses three wells each of which has a reported yield of 250 gpm. Several industrial wells with yields up to 300 gpm have been reported. Most of the larger yield wells obtain their water from the Sevier shale.

Unlike most counties in East Tennessee, Cocke County does not have many large springs. Of the springs scheduled in the course of investigations for this report, no spring with a reported discharge of more than 250 gpm was scheduled. It is probable that such springs do occur in Cocke County, but they are not as numerous as in some of the other counties. Springs with high discharges, if present, would be in areas underlain by limestones or dolomites. No large springs should be expected in areas underlain by calcareous shales or in the valleys of the Blue Ridge province section of the county, where ground water occurs in the alluvium overlying bedrock.

Analyses of representative ground waters from Cocke County are given in table 25.

TABLE 24.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY

Shown on Plates 3, 4, 10, and 11

Method of lift: A, air lift; B, bucket; C, centrifugal; J, jet pump; L, lift pump; P, pitcher pump; T, turbine pump.
Use of water: Ab, abandoned; D, domestic; In, industrial; Ir, irrigation; P, public supply; S, stock

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds		Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
									Character of material	Geologic horizon							
	NEWPORT																
1-1	In town	City of Newport	John Arnet	Valley	1,080	325	110	6	Dolomite	O Ꞓk	20	.....	T	250	...	P	
1-2	do.	do.	.....	do.	1,080	360	110	6	do.	O Ꞓk	.....	....	T	250	...	P	
1-3	½ mi. N.	do.	.....	do.	1,100	450	.....	....	Shale	Osv	50	.....	T	125	...	....	Water used to fill swimming pool.
1-4	1 mi. SE.	do.	A. B. DeArmand	do.	1,070	250	55	6	Dolomite	O Ꞓk	23	.....	T	250	60	P	
1-5	½ mi. SW.	do.	.....	Slope	1,240	575	.....	....	do.	O Ꞓk	.....	.....	T	125	...	Ab	Well abandoned due to cost of pumping against excessive head.
1-6	1 mi. W.	do.	A. E. Calley	Valley	1,165	800	.....	....	do.	O Ꞓk	.....	.....	...	.....	...	Ab	Dry hole.
1-7	do.	do.	Henry Thornton	Sinkhole	1,135	400	.....	....	do.	O Ꞓk	.....	.....	...	.....	...	Ab	Do.
2-1	½ mi. E.	Stokely Bros.	S. W. Cole	Valley	1,090	300	55	6	do.	O Ꞓk	60	.....	T	125	....	In	Reported drawdown of 12 feet after pumping 10 hours at 125 gpm.
2-2	do.	do.	John Arnet	do.	1,090	310	45	6	do.	O Ꞓk	55	.....	T	180	....	In	Reported drawdown of 15 feet after pumping 10 hours at 180 gpm.
2-3	do.	do.	do.	do.	1,090	280	40	8	do.	O Ꞓk	60	.....	T	300	....	In	Reported drawdown of 20 feet after pumping 10 hours at 300 gpm.
2-4	do.	do.	do.	do.	1,080	205	60	8	do.	O Ꞓk	60	.....	T	200	....	In	Reported drawdown of 20 feet after pumping 10 10 hours at 200 gpm.
2-5	do.	do.	.....	do.	1,070	....	....	4	do.	O Ꞓk	.....	..	A	200	..	In	
3	1½ mi. NE.	R. D. Kilpatrick	Mack Lingo	do.	1,270	135	30	6	Shale	Osv	15	....	J	60	..	In	Water sample analyzed.
4-1	1 mi. SE.	H. C. Lawrence Leather Co.	.....	do.	1,070	94	..	5	Dolomite	O Ꞓk	16	..	T	250	..	In	

2-3	do.	do.															
2-4	do.	do.	do.	do.	1,080	205	60	8	do.	O-Ck	60	.....	T	200	..	In	hours at 300 gpm. Reported drawdown of 20 feet after pumping 10 10 hours at 200 gpm.
2-5	do.	do.	.....	do.	1,070	.....	.....	4	do.	O-Ck	.....	.....	A	200	..	In	
3	1½ mi. NE.	R. D. Kilpatrick	Mack Lingo	do.	1,270	135	30	6	Shale	Osv	15	.....	J	60	..	In	Water sample analyzed.
4-1	1 mi. SE.	H. C. Lawrence Leather Co.	.....	do.	1,070	94	.....	5	Dolomite	O-Ck	16	.....	T	250	..	In	
4-2	do.	do.	.....	Ridge	1,140	352	.....	5	do.	O-Ck	120	.....	T	150	..	P,In	
4-3	do.	do.	.....	Valley	1,070	34	34	48	do.	O-Ck	15	7/48	L	....	..	In	
5	2½ mi. SE.	T. C. Hale	.....	Slope	1,120	100	30	8	do.	O-Ck	.....	.....	J	.....	..	D,S	
6	3½ mi. S.	J. B. Allen	.....	Valley	1,100	67	30	6	do.	O-Ck	20	.....	P	.....	..	D,S	
	BRIDGEPORT																
7	4½ mi. SW.	Carl Wood	A. V. Smith	do.	1,155	11	11	6	do.	O-Ck	6	.....	P	.....	..	D	
	HARTFORD																
8	5½ mi. NW.	Ed Simmons	Sample	Slope	1,210	55	36	7	do.	O-Ck	38	.....	L	....	..	D	
9	5 mi. NW.	James Wood	.....	Valley	1,180	53	36	36	Shale	Osv	.....	.....	L	.....	..	D	
	COSBY																
10-S	4½ mi. N.	C. S. Fancher	.....	do.	1,210	.....	.....	...	Dolomite	O-Ck	.....	.....	...	3	59	D	
	NEWPORT																
11-S	5 mi. SW.	Mr. Nusbreeden	.....	Slope	1,220	.....	.....	...	do.	O-Ck	.....	.....	...	2	67	D	
12	do.	R. V. Denton	.....	Valley	1,180	100	.....	6	do.	O-Ck	80	.....	J	5	..	D	
13	4 mi. SW.	Landon Bryant	Reed	do.	1,130	25	15	6	do.	O-Ck	18	.....	J	.....	..	D	
14	1½ mi. SW.	Ed L. Wilson	Dawson & Fowler	Slope	1,240	146	27	6	do.	O-Ck	30	.....	L	.....	..	D,S	
15	1½ mi. S.	R. E. Wilson	do.	do.	1,200	67	10	6	do.	O-Ck	27	.....	J	.....	..	D	
16	1½ mi. SW.	Raymond Taylor	.....	Valley	1,180	25	.....	36	do.	O-Ck	24	6/48	B	.....	58	D	
17-1	2½ mi. SW.	W. M. Prowe	Dawson & Fowler	Slope	1,275	78	46	6	do.	O-Ck	53	.....	J	5	..	D	
17-2	do.	do.	do.	do.	1,275	70	35	6	do.	O-Ck	50	6/48	....	.....	..	Ab	Water too turbid to use.
18	3 mi. SW.	C. A. Baxter	.....	Valley	1,235	32	.....	30	do.	O-Ck	28	6/48	L	.....	..	D	
19-S	5½ mi. SW.	T. V. Lillard	.....	do.	1,180	.....	.....	....	do.	O-Ck	.....	.....	...	10	58	D	
	COSBY																
20	5½ mi. N.	James Breeden	.....	Ridge	1,270	56	.....	...	do.	O-Ck	51	6/48	L	.....	..	D	
21	4½ mi. N.	A. L. Benjamin	.....	Slope	1,305	197	30	....	do.	O-Ck	.....	.....	L	.....	..	D	
22	5 mi. N.	Reuben Williamson	.....	Valley	1,290	43	.....	36	do.	O-Ck	36	6/48	B	.....	59	D	

TABLE 24.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY—Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds: Character of material	Probable water-bearing beds: Geologic horizon	Depth of water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
	NEWPORT																
23–1	4½ mi. S.	A. M. Wilson	.....	Slope	1,320	304	20	6	Dolomite	O€k	160	.....	J	.....	....	D,S	Water occasionally turbid. Water sample analyzed.
23–2	do.	do.	.....	Valley	1,240	27	.....	27	do.	O€k	22	6/48	L	.....	....	Ab	
24	3½ mi. S.	Bruce Gray	Ransler Barnes	do.	1,110	23	23	24	do.	O€k	16	6/48	L	.....	....	D	Well goes dry occasionally.
25	½ mi. S.	Pet Milk Co.	.....	do.	1,180	327	60	6	do.	O€k	20	.....	T	.....	....	In	
26–1	2 mi. S.	H. N. Justus	.....	do.	1,070	20	20	48	do.	O€k	18	.....	P	.....	....	D	
26–2	do.	do.	.....	do.	1,070	20	20	48	do.	O€k	18	.....	P	.....	....	D	
	BRIDGE-PORT																
27	2 mi. SW.	James A. T. Woods	.....	do.	1,200	149	80	6	do.	O€k	80	.....	J	.....	....	D,S	Water occasionally turbid
28	1½ mi. SW.	E. E. Wilds	Dawson & Fowler	do.	1,170	104	19	6	do.	O€k	44	.....	L	.....	....	D	Do.
29	½ mi. SW.	H. D. C. Brooks	do.	Valley	1,200	150	106	6	do.	O€k	103	.....	L	3	....	D,S	
30	In town	Lane	do.	do.	1,080	54	.....	6	do.	O€k	32	.....	.....	.....	....	....	
31	½ mi. W.	Ben McNabb	do.	Slope	1,130	109	100	6	do.	O€k	79	.....	J	.....	....	D,S	
32	2 mi. W.	George Sweeten	.....	Valley	1,240	352	50	8	do.	O€k	99	.....	L	.....	....	P	Well supplies 25 tourist cabins and 3 dwellings.
	NEWPORT																
33	1½ mi. SE.	G. H. Murray	Porter Sartin	do.	1,220	49	14	6	do.	O€k	22	6/48	....	300	....	Ab	Well tested with air lift and weir. Water too muddy for use.
34	1 mi. NE.	Cecil Lindsay	Dawson & Fowler	Slope	1,190	115	60	6	do.	O€k	75	6/48	....	.....	....	D	
35	1½ mi. NE.	Clayton Cooper	do.	Valley	1,120	53	20	6	Shale	Osv	23	.....	J	.....	....	D,S	
36	2 mi. E.	Charlie Moore	.....	do.	1,120	26	26	48	Dolomite	O€k	23	6/48	L	.....	....	D	
	BRIDGE-PORT		.....	Ridge	1,220	215	.....	6	do.	O€k	155	.....	T	.....	....	S	
																D,S	

33	NEWPORT 1½ mi. SE.	G. H. Murray	Porter Sartin	do.	1,220	49	14	6	do.	O-Ck	22	6/48	...	300	...	Ab	Well tested with air lift and weir. Water too muddy for use.
34	1 mi. NE.	Cecil Lindsay	Dawson & Fowler	Slope	1,190	115	60	6	do.	O-Ck	75	6/48	...	...	...	D	

35	1½ mi. NE.	Clayton Cooper	do.	Valley	1,120	53	20	6	Shale	Osv	23	...	J	...	...	D,S	
36	2 mi. E.	Charlie Moore	...	do.	1,120	26	26	48	Dolomite	O-Ck	23	6/48	L	...	...	D	
	BRIDGE-PORT																
37	2½ mi. N.	Joe Carpenter	Kyker	Ridge	1,220	215	...	6	do.	O-Ck	155	...	T	...	...	S	
38	2½ mi. NW.	I. L. Bryant	Smith & Lingo	Valley	1,160	88	8	6	do.	O-Ck	53	...	L	...	...	D,S	
	NEWPORT																
39	2½ mi. NE.	Goldie Woods	Lewis Buckner	do.	1,040	30	10	6	do.	O-Ck	15	...	L	...	...	D,S	
	BRIDGE-PORT																
40	3½ mi. N.	Mrs. J. D. Hurley	...	do.	1,080	33	33	30	do.	O-Ck	26	6/48	B	...	...	D	
	NEWPORT																
41	2½ mi. NE.	Edward Hughes	Ed Holdway	do.	1,140	31	8	6	Shale	Osv	7	...	L	...	...	D	
42-1	2 mi. NE.	Hugh R. Holder	Hayes	do.	1,135	35	19	6	do.	Osv	7	6/48	L	5	...	D,S	
42-2	do.	do.	...	do.	1,133	23	19	6	do.	Osv	8	6/48	...	...	...	Ab	
43	2 mi. N.	V. S. Andys	...	do.	1,110	80	...	6	do.	Osv	71	6/48	B	...	...	D	
44	1½ mi. N.	Chas. Sechorn	...	do.	1,060	20	...	48	do.	Osv	...	...	P	...	...	D	
45	2 mi. NW.	Sindy Shelton	...	Ridge	1,120	54	...	6	do.	Osv	22	...	L	...	...	D,S	
46-1	do.	County Poor Farm	...	Valley	1,040	152	...	6	do.	Osv	20	6/48	...	...	...	D	
46-2	do.	do.	...	do.	1,040	32	...	36	do.	Osv	...	...	L	...	...	D	Well goes dry occasionally.
46-3	do.	do.	...	Slope	1,155	35	...	6	do.	Osv	...	...	L	...	...	D	
46-4	do.	do.	...	Valley	1,035	54	...	6	do.	Osv	44	...	L	...	...	D,S	
47	2 mi. NW.	C. C. Hance	Porter Sartin	Slope	1,120	142	10	6	do.	Osv	18	...	J	8	...	D	
48	1½ mi. W.	Shell Oil Co.	do.	Valley	1,160	152	30	6	do.	Osv	12	...	T	300	...	In	
49-1	3 mi. W.	C. S. Runnion	Dawson & Fowler	do.	1,160	35	17	6	do.	Osv	20	...	B	...	...	D	
49-2	do.	do.	do.	do.	1,130	40	9	6	do.	Osv	8	7/48	T	120	...	Ir	Reported drawdown of 4.3 feet after 1 hour pumping at 120 gpm.
	BRIDGE-PORT																
50	1 mi. E.	Glen Blanchard	...	do.	1,100	23	23	48	Dolomite	O-Ck	21	6/48	B	...	58	D,S	
51-8	3 mi. E.	...	...	do.	1,110	...	...	...	Sandstone	-Ce	...	...	...	3	...	D	

TABLE 24.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY—Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds		Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
									Character of material	Geologic horizon							
	DEL RIO																
52	1½ mi. NE.	Frank Huff	.....	Valley	1,260	38	.....	6	Sandstone	Ꞓu	11	.....	P	.....	.....	D,S	
53	½ mi. N.	John A. Jones	.....	do.	1,165	43	.....	6	do.	Ꞓu	21	6/48	.....	.....	59	D	
	WOLF CREEK																
54	2 mi. E.	Maynard	.....	do.	1,540	101	.....	6	do.	Ꞓu	13	6/48	.....	5	.....	D	
55	In town	Wm. M. Walker	.....	do.	1,200	15	.....	36	do.	Ꞓu	9	6/48	J	.....	57	D	
	FRENCH BROAD																
56	1½ mi. NE.	Charlie Cashieu	.....	do.	1,170	22	22	36	do.	Ꞓu	17	6/48	.....	.....	.....	Ab	
57	2 mi. S.	C. V. Finchum	.....	do.	1,435	13	.....	36	Shale	ocss	.....	.....	L	.....	.....	D	
58	1½ mi. S.	Harmony Grove School	.....	do.	1,330	63	.....	6	do.	ocss	.....	.....	.....	.....	.....	D	
59	1 mi. S.	Walter Stokely	.....	do.	1,320	42	.....	6	do.	ocss	.....	.....	L	.....	.....	D	
60	do.	E. E. Ponder	.....	do.	1,355	51	18	6	do.	ocss	9	.....	L	.....	.....	D	Water sample analyzed.
	DEL RIO																
61	½ mi. S.	Ed. Burnett	.....	do.	1,200	30	.....	.....	do.	ocss	22	6/48	P	.....	.....	D	
62	2½ mi. SE.	Robert Seay	.....	do.	1,260	14	.....	.....	do.	ocss	6	.....	L	.....	.....	D	
63	3 mi. S.	W. C. Turner	.....	Slope	1,400	71	8	6	Siltstone	ocsb	10	.....	J	.....	.....	D	
64	1 mi. S.	Mrs. Nathan Pack	.....	Ridge	1,290	84	.....	6	Shale	ocss	.....	.....	L	.....	.....	D	
65	1½ mi. SW.	David Carver	.....	Slope	1,280	93	.....	6	do.	ocss	11	6/48	L	.....	.....	D	
	WOLF CREEK																
66	3 mi. N.	Wyman Tweed	.....	Valley	1,720	24	.....	24	do.	Ꞓr	18	.....	L	.....	.....	D	

BRIDGE-

64	1 mi. S.	Mrs. Nathan Pack	.....	Ridge	1,290	84	.....	6	Shale	Ocsb			L	.....	.....	D	
65	1½ mi. SW.	David Carver	.....	Slope	1,280	93	.....	6	do.	Ocsb	11	6/48	L	.....	.....	D	
	WOLF CREEK																
66	3 mi. N.	Wyman Tweed	.....	Valley	1,720	24	.....	24	do.	€r	18	.....	L	.....	.....	D	
	BRIDGE-PORT																
67	3 mi. W.	Craw Barger	.....	Sinkhole	1,280	78	.....	6	Dolomite	O€k	68	6/48	B	.....	.....	D	Supply inadequate. Water muddy after rain.
	PARROTTS-VILLE																
68	½ mi. SW.	Joe Bacon	.....	Slope	1,250	230	40	6	do.	O€k	90	.....	J	.....	.....	D,S	
69	1 mi. E.	Greer Ottinger	Dawson & Fowler	Valley	1,210	25	12	6	Shale	Osv	6	.....	P	.....	.....	S	
70	In town	Doyle Ottinger	do.	Slope	1,200	61	.....	6	do.	Osv	.....	.....	J	.....	.....	D	
71	3 mi. E.	W. L. Ottinger	Samples & Chaney	Valley	1,250	87	6	6	Dolomite	O€k	4	.....	L	.....	.....	D	
72	do.	do.	.....	do.	1,250	20	6	6	Shale	Osv	4	.....	P	.....	.....	D	
73	4 mi. NE.	Jeff LaFollette	.....	Slope	1,340	57	.....	6	Dolomite	O€k	35	6/48	.....	.....	.....	Ab	Water has strong sulfur taste.
74	5 mi. E.	L. Burnett	.....	Ridge	1,400	135	.....	6	do.	O€k	.....	.....	L	.....	.....	D	
	BRIDGE-PORT																
75	1 mi. NE.	C. L. Baley	Dawson & Fowler	Valley	1,140	79	12	6	do.	O€k	12	.....	J	.....	.....	D	
76	2 mi. NE.	Doc Gregg	.....	Ridge	1,320	74	.....	48	do.	O€k	70	6/48	L	.....	.....	S	
77	3 mi. NE.	R. J. Parks	Dawson & Fowler	Valley	1,480	174	30	6	do.	O€k	92	.....	L	.....	.....	D,S	
	DEL RIO																
78	3½ mi. NW.	Jess Huff	.....	Slope	1,240	58	2	6	do.	€s	33	6/48	B	.....	58	D	
	PARROTTS-VILLE																
79	4½ mi. SE.	Sherman Brown	Dawson & Fowler	Valley	1,300	105	28	6	do.	€hk	30	.....	J	.....	.....	D	Water sample analyzed.
80	4 mi. E.	Mrs. Laura Criteelous	do.	Slope	1,320	94	12	6	do.	€hk	20	.....	J	.....	.....	D	
	CEDAR CREEK																
81	4½ mi. N.	Rabbit Hill School	do.	do.	1,450	204	.....	6	do.	€hk	.....	.....	L	.....	.....	P	Well can be pumped dry.

TABLE 24.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY—Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds		Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
									Character of material	Geologic horizon							
82	5 mi. W.	Ted Winters	Carpenter Well Co.	Slope	1,400	420	60	7	Limestone	Ꞓcu	40	.....	J	.....	.....	D,S	Water sample analyzed.
83	do.	Mrs. Ollie Ottinger	.....	Ridge	1,510	140	.....	6	Dolomite	Ꞓhk	.....	.....	J	.....	.....	D,S	
84	5½ mi. W.	M. F. Ottinger	Alvin Kyker	Slope	1,420	112	30	6	do.	O Ꞓk	.....	.....	L	.....	.....	D	
	BRIDGEPORT																
85	2 mi. E.	M. E. Edwards	Samples & Chaney	do.	1,170	105	.....	6	do.	O Ꞓk	20	.....	J	.....	.....	D	
	PARROTTSVILLE																
86	2 mi. S.	Jakie Williams	.....	Sinkhole	1,210	85	.....	48	do.	O Ꞓk	30	.....	J	.....	.....	D,S	
87	1½ mi. S.	Allen Chapel	.....	Slope	1,340	195	.....	6	do.	O Ꞓk	.....	.....	.....	.....	.....	Ab	Dry hole.
88	1 mi. SE.	Frank Hommel	.....	do.	1,270	65	.....	6	do.	O Ꞓk	45	7/48	B	.....	.....	D,S	
89	2½ mi. E.	Aubrey Rader	.....	Valley	1,330	38	38	30	do.	O Ꞓk	21	.....	J	.....	58	D,S	
90	2 mi. E.	Clarence Scott	.....	Slope	1,335	50	.....	48	do.	O Ꞓk	38	.....	L	.....	.....	D,S	
91	2½ mi. SE.	M. L. Freshour	Dawson & Fowler	Valley	1,300	45	10	6	do.	O Ꞓk	16	7/48	B	.....	58	D	
92	3 mi. SE.	Waddell	Dawson & Fowler	Ridge	1,385	76	.....	6	do.	O Ꞓk	38	.....	L	.....	.....	D,S	
93	3 mi. E.	Bob Parks	do.	Slope	1,080	33	.....	5	do.	O Ꞓk	29	7/48	L	.....	.....	D,S	
94	4 mi. E.	A. J. Hawke	.....	do.	1,335	37	.....	6	do.	O Ꞓk	22	7/48	L	.....	.....	D	
95	1½ mi. N.	Crawford & Borger	Dawson & Fowler	Valley	1,215	31	10	6	Shale	Osv	7	7/48	J	.....	.....	D	Water sample analyzed.
96	2 mi. NW.	Walter Turner	.....	do.	1,105	41	.....	6	do.	Osv	13	7/48	B	.....	59	D	Do.

93	3 mi. E.	Bob Parks	do.	Slope	1,080	33	.....	5	do.	O-Ck	29	7/48	L	.....	.....	D,S	
94	4 mi. E.	A. J. Hawke	.....	do.	1,335	37	.....	6	do.	O-Ck	22	7/48	L	.....	.....	D	
95	1½ mi. N.	Crawford & Borger	Dawson & Fowler	Valley	1,215	31	10	6	Shale	Osv	7	7/48	J	.....	.....	D	Water sample analysed.
96	2 mi. NW.	Walter Turner	.....	do.	1,105	41	.....	6	do.	Osv	13	7/48	B	.....	59	D	Do.
97	2 mi. N.	McAfee Park	.....	Slope	1,180	41	.....	6	do.	Osv	15	7/48	P	.....	63	D,S	
98	3 mi. N.	Hal Bitner	Mac Lingo	Valley	1,165	55	.....	6	Dolomite	O-Ck	45	.....	J	.....	.....	D	
99	do.	John Smith	.....	Ridge	1,200	48	.....	6	Shale	Osv	25	7/48	B	.....	58	D	
	BYBEE																
100	3 mi. E.	Homer Palmer	.....	Valley	1,120	34	.....	6	do.	Osv	10	7/48	B	.....	60	D	
	PARROTTS-VILLE																
101	3 mi. N.	Emitt Dyke	.....	do.	1,170	26	.....	6	do.	Osv	17	7/48	B	.....	59	D	
102	2½ mi. N.	J. A. Henry	Hayes & Dawson	do.	1,210	24	.....	6	do.	Osv	6	7/48	B	.....	.....	D	
103	3 mi. N.	Mattie Golden	.....	do.	1,200	13	.....	36	do.	Osv	7	7/48	P	.....	.....	D	
104	4 mi. N.	Mrs Henry Dawson	.....	Slope	1,215	34	.....	6	do.	Osv	14	7/48	P	.....	58	D	
105	4½ mi. N.	Roy Owensby	.....	Valley	1,140	28	.....	6	do.	Osv	16	7/48	P	.....	.....	D	Water occasionally muddy.
106	5½ mi. N.	T. E. Smith	Joe Reams	do.	1,095	27	.....	6	do.	Osv	23	7/48	B	.....	.....	D	
107	4 mi. NE.	H. E. Blazer	Alvin Kyker	Slope	1,240	68	25	6	Dolomite	O-Ck	33	.....	J	.....	.....	D	
108	2 mi. NE.	Estel Blazer	.....	Valley	1,235	31	.....	6	Shale	Osv	9	7/48	B	.....	62	D	
109	2 mi. E.	Lester F. Wilds	.....	do	1,215	45	.....	6	do.	Osv	16	.....	J	.....	.....	D,S	
110	3½ mi. NE.	Athan Smith	Joe Reams	do.	1,280	39	.....	6	do.	Osv	17	7/48	B	.....	58	D	
111	4½ mi. NE.	Johnie Ottinger	.....	Slope	1,315	61	.....	6	Dolomite	O-Ck	39	7/48	L	.....	.....	D,S	
	BYBEE																
112	3½ mi. NE.	Bob Quentin	.....	do.	1,115	23	.....	5	Shale	Osv	4	7/48	L	.....	.....	D	
113	5 mi. NE.	G. T. Carmichael	.....	Valley	1,170	25	.....	6	do.	Osv	5	7/48	B	.....	64	D,S	
	PARROTTS VILLE																
114-1	6½ mi. N.	C. E. Busler	.....	Slope	1,145	65	.....	6	do.	Osv	47	7/48	L	.....	.....	D	
114-2	do.	do.	Busler & Regan	Ridge	1,140	68	.....	6	do.	Osv	54	.....	L	.....	.....	S	
	BYBEE																
115	5½ mi. NE.	Walter Shaver	Willard Hayes	Valley	1,140	23	.....	6	do.	Osv	10	7/48	B	.....	.....	D	
116	do.	Howard Step	.....	Slope	1,070	27	.....	6	do.	Osv	20	7/48	B	.....	56	D	
117	4½ mi. NE.	Milton Hope	.....	do.	1,120	20	.....	36	do.	Osv	15	7/48	L	.....	.....	D,S	

TABLE 24.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY—Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds		Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
									Character of material	Geologic horizon							
118	4 mi. N.	J. A. Allison	.....	Slope	1,090	42	.....	6	Shale	Ouv	22	.....	L	.....	.....	D,S	
119	5 mi. NE.	D. S. Miller	.....	Valley	1,080	13	.....	18	do.	Ouv	3	7/48	J	.....	.....	D,S	
	LOWLAND																
120–1	4½ mi. SE.	Mrs. Eunice Sawyer	.....	Ridge	1,215	80	.....	6	do.	Ouv	48	7 48	J	.....	.....	D,S	
120–2	do.	do.	.....	do.	1,220	91	.....	5	do.	Ouv	65	7/48	.....	.....	.....	Ab	
121	3½ mi. SE.	Mrs Duncan	.....	Slope	1,020	34	.....	6	do.	Ouv	23	7/48	B	.....	.....	D	
	BYBEE																
122	3 mi. NE.	Clinton Reed	.....	Valley	1,180	41	.....	5	do.	Ouv	27	7/48	B	.....	59	D	
123	2½ mi. N.	Hobert Reed	.....	Ridge	1,190	74	3	6	do.	Ouv	50	7/48	B	.....	.....	D,S	Water often muddy.
124	1½ mi. N.	Mrs. Bill Kellar	.....	do.	1,200	47	.....	5	do.	Ouv	26	7/48	B	.....	59	D	
125	In town	E. T. Fowler	.....	Valley	1,125	47	.....	6	do.	Ouv	19	7/48	J	.....	61	D	Water sample analyzed
126	do.	Mrs. J. C. Arms	.....	Slope	1,125	33	.....	30	do.	Ouv	16	7/48	J	.....	60	D,S	
127	do.	Haywood Butler	.....	do.	1,120	20	.....	30	do.	Ouv	14	7/48	B	.....	59	D,S	
128	1½ mi. S.	J. M. Heritage	.....	Ridge	1,070	54	.....	6	do.	Ouv	16	7/48	B	.....	59	D	
	NEWPORT																
129	2 mi. NE.	Clemon Horton	.....	Valley	1,040	152	63	8	Dolomite	O-Ck	75	.....	.....	.....	.....	D	
	BYBEE																
130–1	2½ mi. S.	Lou Worth	.....	Slope	1,170	48	.....	6	Shale	Ouv	.....	.....	L	.....	.....	D,S	
130–2	3 mi. S.	do.	.....	do.	1,165	18	.....	6	do.	Ouv	8	.....	L	.....	.....	D	
131	2 mi. SE.	J. F. Walker	.....	do.	1,190	55	.....	6	do.	Ouv	33	7/48	L	.....	.....	D,S	
132	do.	H. A. Bible	.....	Valley	1,070	48	.....	6	do.	Ouv	19	7/48	B	.....	60	D,S	
133	2½ mi. E.	Fowler Grove School	.....	Slope	1,120	38	.....	6	do.	Ouv	21	7/48	L	.....	.....	P	
134	1½ mi. E.	Holcomb Ramsey	.....	do.	1,125	44	.....	6	do.	Ouv	31	7/48	B	.....	60	D,S	

	BYBEE																
130-1	2½ mi. S.	Lou Worth	.....	Slope	1,170	48	.....	6	Shale	Osv	.....	.....	L	.....	.....	D,S	
130-2	3 mi. S.	do.	.....	do.	1,165	18	.....	6	do.	Osv	8	.....	L	.....	.....	D	
131	2 mi. SE.	J. F. Walker	.....	do.	1,190	55	.....	6	do.	Osv	33	7/48	L	.....	.....	D,S	
132	do.	H. A. Bible	.....	Valley	1,070	48	.....	6	do.	Osv	19	7/48	B	.....	60	D,S	
133	2½ mi. E.	Fowler Grove School	.....	Slope	1,120	38	.....	6	do.	Osv	21	7/48	L	.....	.....	P	
134	1½ mi. E.	Holcomb Ramsey	.....	do.	1,125	44	.....	6	do.	Osv	31	7/48	B	.....	60	D,S	
135	2 mi. NE.	J. H. Holt	Buck Hayes	Ridge	1,190	96	.....	6	do.	Osv	49	7/48	L	.....	.....	D	
136	do.	Haskel Dyke	.....	Slope	1,210	24	.....	6	do.	Osv	6	7/48	B	.....	61	D	
	WHITE PINE																
137	3 mi. E.	J. D. Holt	.....	Valley	1,035	36	.....	6	do.	Osv	12	7/48	B	.....	59	D	
	LOWLAND																
138	3 mi. S.	Rube Bradey	.....	Ridge	1,065	68	.....	5	do.	Osv	37	7/48	B	.....	59	D	
139	3½ mi. S.	Point Pleasant Baptist Church	.....	Slope	1,030	28	.....	5	do.	Osv	27	7/48	.....	.....	.....	Ab	
	WHITE PINE																
140	4 mi. E.	Ruel Caffey	.....	do.	1,045	71	.....	5	do.	Osv	32	7/48	B	.....	59	D	
	BYBEE																
141	3½ mi. N.	Laura Turner	.....	do.	1,120	45	.....	5	do.	Osv	17	7/48	B	.....	58	D,S	
142	4 mi. N.	Leonard Reed	.....	do.	1,155	75	.....	6	do.	Osv	51	7/48	B	.....	.....	D	
143-1	2 mi. NW.	Christian Smith	.....	Ridge	1,105	47	.....	6	do.	Osv	41	7/48	B	.....	.....	D	
143-2	do.	do.	.....	Slope	1,080	50	.....	6	do.	Osv	13	.....	P	.....	.....	S	
143-3	do.	do.	.....	Ridge	1,100	43	.....	5	do.	Osv	35	7/48	.....	.....	.....	D	
144-1	3 mi. NW.	Frank Spurgeon	.....	Slope	1,010	59	.....	5	do.	Osv	38	7/48	L	.....	.....	D,S	Water sample analyzed.
144-2	do.	do.	.....	Valley	990	28	.....	24	do.	Osv	18	7/48	.....	.....	.....	Ab	
145	1½ mi. S.	Chandler Jones	.....	Ridge	1,130	35	.....	6	do.	Osv	10	8/48	L	.....	.....	D	
146	1½ mi. W.	Jim Clark	.....	Slope	1,130	40	.....	6	do.	Osv	25	8/48	.....	.....	.....	Ab	
147	2½ mi. W.	Rankin School	.....	Valley	1,010	62	.....	6	do.	Osv	20	8/48	L	.....	.....	P	
	WHITE PINE																
148	3 mi. SE.	.....	.....	Slope	1,030	34	.....	6	do.	Osv	22	8/48	.....	.....	.....	Ab	
	BYBEE																
149	3 mi. SW.	Clifford Hale	.....	Valley	1,025	25	.....	30	do.	Osv	.....	.....	P	.....	.....	D	
150	2½ mi. SW.	Mrs. Charles Nelson	.....	Slope	1,170	44	.....	24	do.	Osv	30	8/48	J	.....	.....	D	
151	1 mi. SW.	H. B. Walker	.....	do.	1,045	21	.....	24	do.	Osv	17	8/48	L	.....	.....	D	
152-1	2½ mi. W.	Burl Moss	.....	Ridge	1,190	43	.....	24	do.	Osv	36	8/48	B	.....	58	D	
152-2	do.	do.	.....	do.	1,190	55	.....	6	do.	Osv	46	8/48	B	.....	60	D,S	
153-1	3½ mi. W.	Glen Chambers	.....	do.	1,229	100	.....	6	do.	Osv	.....	.....	L	.....	59	D,S	

TABLE 24.—TYPICAL WELLS AND SPRINGS IN COCKE COUNTY—Continued

Well or spring No.	Location with reference to nearest post office	Owner or name	Driller	Topographic situation	Altitude (feet)	Depth of well (feet)	Length of casing (feet)	Diameter (inches)	Probable water-bearing beds		Depth to water level (feet)	Date of measurement	Method of lift	Yield (gallons per minute)	Temperature (°F.)	Use of water	Remarks
									Character of material	Geologic horizon							
153-2	3½ mi. W.	Glen Chambers	.....	Ridge	1,220	63	.....	6	Shale	Osv	46	8/48	B	.....	59	D,S	
154	4 mi. SW.	Stokely Bros. Farm	.....	Valley	1,010	96	.....	6	do.	Osv	9	8/48	L	.....	60	D	
155	3½ mi. SW.	J. B. O'Dell	.....	do.	1,100	20	.....	24	do.	Osv	10	.....	P	.....	.....	D,S	
156	NEWPORT 4 mi. NW.	Lon Moore	.....	Slope	1,030	111	.....	6	do.	Osv	81	8/48	J	.....	.....	D	
157	WHITE PINE 5½ mi. NW.	Arthur McCrary	.....	Valley	1,100	108	.....	6	do.	Osv	78	.....	L	.....	.....	D,S	
158	PARROTTSVILLE In town	Burnett Thomas	.....	do.	1,180	39	.....	6	do.	Osv	6	8/48	L	.....	.....	Ab	
159-S	½ mi. SE.	T. S. Ellison	.....	do.	1,180	.....	.....	.....	do.	Osv	.....	.....	.....	50	59	P	Supplies five dwellings and two school buildings.
160	In town	J. W. Etherton	.....	do.	1,170	37	.....	6	do.	Osv	4	8/48	J	.....	.....	D	
161-S	do.	Samuel Easterly	.....	do.	1,170	.....	.....	.....	do.	Osv	.....	.....	.....	20	58	D	
162	NEWPORT 4 mi. W.	Henry Clevenger	.....	Slope	1,485	28	.....	36	do.	Osv	31	.....	L	.....	.....	D	
163-S	5 mi. SW.	Ben W. Hooper, Jr.	.....	Valley	1,860	.....	.....	.....	do.	Ꞓui	.....	.....	.....	3	58	D	
164-S	4 mi. W.	Ben W. Hooper	.....	do.	.....	.....	.....	.....	do.	Ꞓr	.....	.....	.....	5	.....	P	Supplies, from 15,000-gallon reservoir, 12 families.
165	4 mi. W.	Roy Barnes	.....	do.	1,305	26	.....	24	do.	Osv	11	8/48	B	.....	68	D	
166	do.	Aurry McGaha	.....	Slope	1,220	31	.....	36	do.	Osv	14	8/48	J	.....	.....	D	
167-1	5 mi. W.	Flint Ray	Dawson & Fowler	Valley	1,220	80	34	6	do.	Osv	34	.....	L	.....	.....	D,S	

164-S	4 mi. W.	Ben W. Hooper															
165	4 mi. W.	Roy Barnes	.....	do.	1,305	26	.....	24	do.	Osv	11	8/48	B	.....	68	D	
166	do.	Aurry McGaha	.....	Slope	1,220	31	.....	36	do.	Osv	14	8/48	J	.....	.....	D	
167-1	5 mi. W.	Flint Ray	Dawson & Fowler	Valley	1,220	80	34	6	do.	Osv	34	.....	L	.....	.....	D,S	
167-2	do.	do.	.....	do.	1,220	26	.....	5	do.	Osv	18	8/48	P	.....	62	S	
168	4½ mi. NW.	Jim Clark and Misses Huff	.....	Slope	1,020	47	.....	5	do.	Osv	37	8/48	B	.....	60	D	Water turbid.
169	4½ mi. W.	Ray Hall	Evans	Valley	1,040	45	10	6	do.	Osv	10	8/48	P	.....	57	D	Water has strong taste and odor of sulfur. Water sample analyzed.
170-1	4½ mi. SW.	Tomplin Garland	Samples	Ridge	1,280	75	66	6	Dolomite	O-Ck	40	.....	L	.....	.....	Ab	Water too turbid to use.
170-2	do.	do.	.....	Valley	1,260	17	.....	36	do.	O-Ck	1	8/48	P	.....	58	D,S	
171	5½ mi. SW.	L. O. Carrell	.....	Slope	1,540	43	43	24	do.	O-Ck	40	8/48	B	.....	58	D	
	COSBY																
172	5 mi. N.	Luella Ambrose	.....	Valley	1,305	60	.....	5	do.	O-Ck	28	8/48	.....	.....	.....	Ab	
173	do.	Rebecca Huff	.....	do.	1,335	39	24	.....	do.	O-Ck	32	8/48	B	.....	57	D	
174	4½ mi. N.	Ross Bryant	.....	do.	1,390	79	.....	6	Shale	ocss	21	8/48	.....	.....	.....	Ab	
	NEWPORT																
175	5 mi. E.	C. D. Fine	.....	Slope	1,420	70	.....	24	Dolomite	O-Ck	57	8/48	B	.....	57	D	
	FRENCH BROAD																
176-S	3½ mi. S.	G. U. Stokely	.....	do.	1,620	.....	.....	.....	Siltstone	ocsb	.....	.....	.....	2	52	D	
177-S	4½ mi. S.	W. G. Greene	.....	Valley	1,960	.....	.....	.....	do.	ocsb	.....	.....	.....	15	56	D	
178-S	4½ mi. S.	J. C. Stokely	.....	Slope	2,060	.....	.....	.....	do.	ocsb	.....	.....	.....	15	54	D	
179	3½ mi. S.	Junior Stokely	.....	Valley	1,550	30	.....	24	do.	ocsb	.....	.....	L	.....	.....	D	Well goes dry in summer.
180-S	2½ mi. S.	Kenneth Runion	.....	Slope	1,575	.....	.....	.....	do.	ocsb	.....	.....	.....	30	57	D	
	DEL RIO																
181-S	3½ mi. S.	C. G. Green	.....	do.	1,500	.....	.....	.....	do.	ocsb	.....	.....	.....	20	54	D	
182-S	4½ mi. S.	Bern Woody	.....	do.	1,790	.....	.....	.....	do.	ocsb	.....	.....	.....	1	55	D	
183-S	5 mi. S.	John Coaldwell	.....	Valley	1,910	.....	.....	.....	do.	ocsb	.....	.....	.....	10	55	D	
	HARTFORD																
184-S	5 mi. E.	U. Smith	.....	do.	2,120	.....	.....	.....	do.	ocsb	.....	.....	.....	1	55	D	
185-S	3 mi. E.	Kin Holt	.....	Slope	2,000	.....	.....	.....	do.	ocsb	.....	.....	.....	100	57	D	
186	3 mi. NE.	J. S. McCaha	Freddie Laws	do.	1,900	36	20	4	do.	ocsb	0	12/48	L	20	.....	D	
187	do.	John O. Laws	do.	do.	1,810	47	20	4	do.	ocf	12	.....	B	.....	.....	D	

REFERENCE # 31

National Water Summary 1984

Hydrologic Events, Selected Water-Quality Trends, and Ground-Water Resources

By United States Geological Survey

United States Geological Survey
Water-Supply Paper 2275

DEPARTMENT OF THE INTERIOR
DONALD PAUL HODEL, Secretary

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TENNESSEE
Ground-Water Resources

More than one-half of the population of Tennessee relies on ground water for drinking-water supplies. Twenty-one percent of the water withdrawal in the State (exclusive of thermoelectric use) is ground water. Ground water provides more than 250 million gallons per day (Mgal/d) for public and rural-domestic supplies, 190 Mgal/d to self-supplied industries, and more than 13 Mgal/d for irrigation and livestock uses. In West Tennessee, nearly all public supplies, industries, and rural residents use ground water; Memphis, the largest city in Tennessee, is completely supplied by ground water. Ground-water withdrawals for various uses in 1980 and related statistics are listed in table 1.

GENERAL SETTING

Differing geologic features and land forms in Tennessee (fig. 1) cause significant differences in ground-water conditions. The Coastal Plain province of West Tennessee is underlain by unconsolidated sand, gravel, and clay that dip to the west and contain water in intergranular openings. The Highland Rim and Central Basin in Middle Tennessee and the Western Valley are underlain by nearly horizontal lying carbonate rocks that contain water in solution-enlarged openings. The Cumberland Plateau is underlain by sandstone, conglomerate, and shale. The Sequatchie Valley and the Valley and Ridge province of East Tennessee are underlain by intensely faulted and folded limestone, dolomite, sandstone, and shale. Water exists in fractures, faults, and bedding-plane openings. The mountains of the Blue Ridge province are underlain by massive crystalline and metasedimentary rocks which contain water in fractures.

Ground water in Tennessee is recharged by precipitation. Average annual precipitation is about 50 inches (in.) across the State; more than 60 in. falls on the mountains at the eastern edge of the State, and less than 40 in. falls on the leeward side of these mountains (U.S. Geological Survey, 1970). Only about one-fifth of the precipitation actually enters the ground-water system; the remainder runs off to streams or reenters the atmosphere by evapotranspiration (Zurawski, 1978).

PRINCIPAL AQUIFERS

Tennessee has nine principal aquifers—the alluvial, the Tertiary sand, the Cretaceous sand, the Pennsylvanian sandstone, the Mississippian carbonate, the Ordovician carbonate, the Knox, the Cambrian-Ordovician carbonate, and the crystalline rock. These aquifers are described below and in table 2; their areal distribution is shown in figure 1.

ALLUVIAL AQUIFER

The alluvial aquifer underlies the flood plain of the Mississippi River and its tributaries and the southern end of the Western Valley of the Tennessee River. The aquifer, which consists of sand and gravel with interbeds of clay, is used primarily for rural-domestic supplies and for some irrigation. This aquifer is capable of yielding more than 1,500 gallons per minute (gal/min) to wells in the Mississippi River area. At the southern end of the Western Valley, this aquifer supplies 1.4 Mgal/d for public supply in Hardin County. In some areas, iron concentrations exceed 1.0 milligrams per liter (mg/L).

Table 1. Ground-water facts for Tennessee

[Withdrawal data rounded to two significant figures and may not add to totals because of independent rounding. Mgal/d = million gallons per day; gal/d = gallons per day. Source: Graham, 1982; Solley, Chase, and Mann, 1983]

Population served by ground water, 1980	
Number (thousands)	2,320
Percentage of total population	51
From public water-supply systems:	
Number (thousands)	1,450
Percentage of total population	32
From rural self-supplied systems:	
Number (thousands)	870
Percentage of total population	19
Freshwater withdrawals, 1980	
Surface water and ground water, total (Mgal/d)	10,000
Ground water only (Mgal/d)	460
Percentage of total	5
Percentage of total excluding withdrawals for thermoelectric power	21
Category of use	
Public-supply withdrawals:	
Ground water (Mgal/d)	210
Percentage of total ground water	46
Percentage of total public supply	40
Per capita (gal/d)	150
Rural-supply withdrawals:	
Domestic:	
Ground water (Mgal/d)	43
Percentage of total ground water	9
Percentage of total rural domestic	100
Per capita (gal/d)	49
Livestock:	
Ground water (Mgal/d)	7.0
Percentage of total ground water	2
Percentage of total livestock	17
Industrial self-supplied withdrawals:	
Ground water (Mgal/d)	190
Percentage of total ground water	42
Percentage of total industrial self-supplied:	
Including withdrawals for thermoelectric power	2
Excluding withdrawals for thermoelectric power	11
Irrigation withdrawals:	
Ground water (Mgal/d)	6.4
Percentage of total ground water	1
Percentage of total irrigation	51

TERTIARY SAND AQUIFER

The Tertiary sand aquifer is the most productive aquifer in Tennessee. It underlies the western part of the Coastal Plain and includes the Memphis Sand of the Claiborne Group and the Fort Pillow Sand of the Wilcox Group. The Tertiary sand aquifer consists of a sequence of interbedded sand and clay that ranges in thickness from 100 feet (ft) in the outcrop area where ground water is unconfined to about 2,000 ft near the Mississippi River where the ground water is confined. This aquifer supplies water to most industries and municipalities in West Tennessee. Major withdrawal centers include Memphis, Millington, Germantown, Jackson, Union City, Crockett County, and Dyersburg (fig. 2). Well yields from the Tertiary sand aquifer commonly range from 200 to 1,000 gal/min and can exceed 2,000 gal/min. Iron concentrations in some areas exceed 1.0 mg/L.

Table 2. *Aquifer and well characteristics in Tennessee*

[Ft = feet; gal/min = gallons per minute; Sources: Reports of the U.S. Geological Survey and Tennessee State agencies]

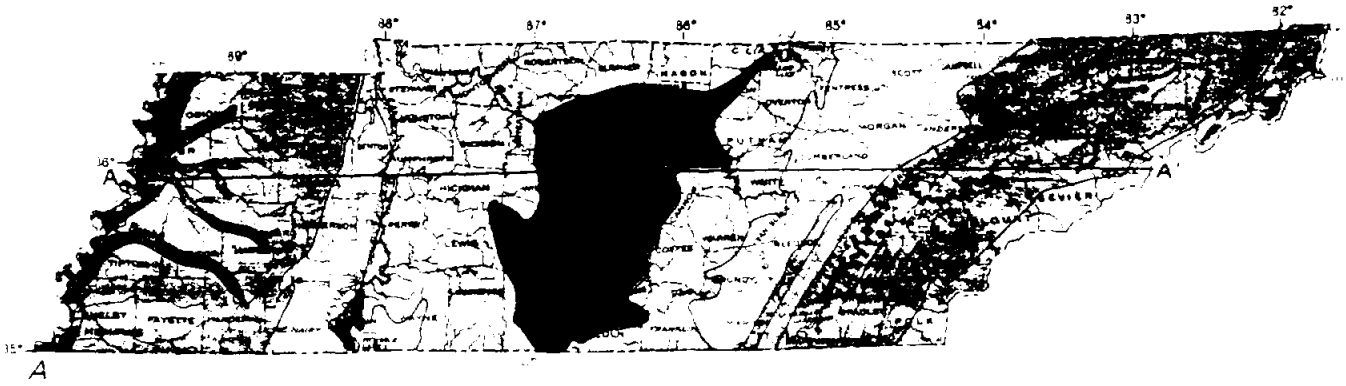
Aquifer name and description	Well characteristics				Remarks
	Depth (ft)		Yield (gal/min)		
	Common range	May exceed	Common range	May exceed	
Alluvial aquifer: Sand, gravel, and clay. Unconfined.	10 - 75	100	20 - 50	1,500	Large iron concentrations in some areas. Local contamination at some landfills.
Tertiary sand aquifer: A multiaquifer unit of interbedded sand, clay, silt, and some gravel and lignite. Confined, unconfined in the outcrop area.	100 - 1,300	1,500	200 - 1,000	2,000	Includes Memphis Sand of Claiborne Group and Fort Pillow Sand of Wilcox Group. Problems with large iron concentration in some places.
Cretaceous sand aquifer: A multiaquifer unit of interbedded sand, clay, marl, and gravel. Confined, unconfined in the outcrop area.	100 - 1,500	2,500	50 - 500	1,000	Includes McNairy and Coffee Sands, and Tuscaloosa Formation. Water used primarily in the outcrop area.
Pennsylvanian sandstone aquifer: A multiaquifer unit, primarily sandstone and conglomerate, interbedded with shale and some coal. Unconfined near land surface, confined at depth.	100 - 200	250	5 - 50	200	Permeability is from fractures, faults and bedding-plane openings. Principal water-bearing units are Rockcastle Sandstone and Sewanee Conglomerate. Large iron concentrations are a problem.
Mississippian carbonate aquifer: A multiaquifer unit of limestone, dolomite, and some shale. Unconfined or partly confined near land surface; may be confined at depth.	50 - 200	250	5 - 50	400	Water occurs in solution openings and bedding-plane openings. Principal water-bearing units are Ste. Genevieve (Monteagle), St. Louis and Warsaw Limestones and Fort Payne Formation. Susceptible to pollution. Water generally hard; large iron, sulfide, or sulfate concentrations problems in some areas.
Ordovician carbonate aquifer: A multiaquifer unit of limestone, dolomite, and shale. Partly confined to unconfined near land surface; confined at depth.	50 - 150	200	5 - 20	300	Principal water-bearing units are Bigby, Carters, Ridley, and Murfreesboro Limestones. Water generally hard; some large sulfide or sulfate concentrations in places. Units susceptible to contamination.
Knox aquifer: Primarily dolomite With some limestone. Confined.	700 - 1,200	1,400	1 - 10	20	A deep aquifer; occurs under most of Middle and west Tennessee. Away from Central Basin, water generally has large concentrations of dissolved solids.
Cambrian-Ordovician carbonate aquifer: Extremely faulted multiaquifer unit of limestone, dolomite, sandstone, and shale; structurally complex. Unconfined; confined at depth.	100 - 300	400	5 - 200	2,000	Principal water-bearing units are carbonate rocks in Chickamauga Limestone, Knox Group, and Honaker Dolomite. Water is generally hard. Brine below 3,000 ft.
Crystalline rock aquifer: A multi-aquifer unit of dolomite, granite gneiss, phyllite, and metasedimentary rocks overlain by thick regolith; alluvium and colluvium in some valleys. Generally unconfined.	50 - 150	200	5 - 50	1,000	Large yields occur primarily in valleys with dolomite or deep colluvium and alluvium. Shady Dolomite is a principal aquifer. Low pH and large iron concentrations may be problems in some areas.

Cretaceous Sand Aquifer

The formations of the Cretaceous sand aquifer are the McNairy and the Coffee Sands, and the Tuscaloosa Formation. The formations crop out in the eastern part of the Coastal Plain and underlie the Tertiary sand aquifer to the west. The Cretaceous sand aquifer is used primarily in and near the outcrop area where it supplies water for municipal, industrial, and rural use. Water in the aquifer is unconfined in the outcrop area and confined in the subsurface farther west. The Cretaceous sand aquifer is underlain by the Ordovician carbonate aquifer and Knox aquifer.

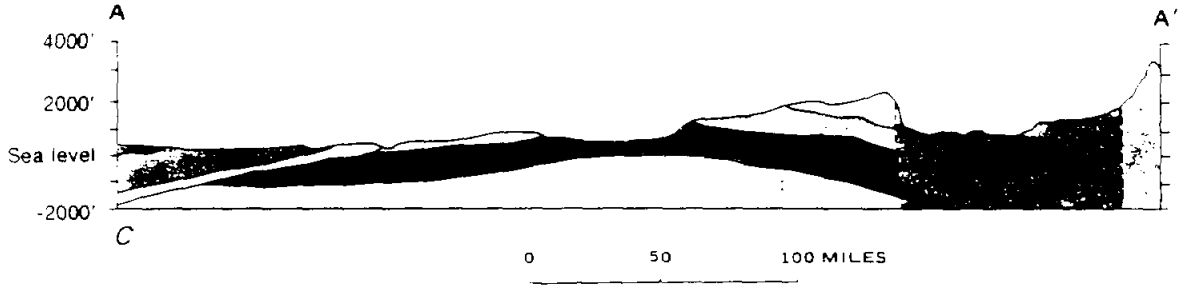
Pennsylvanian Sandstone Aquifer

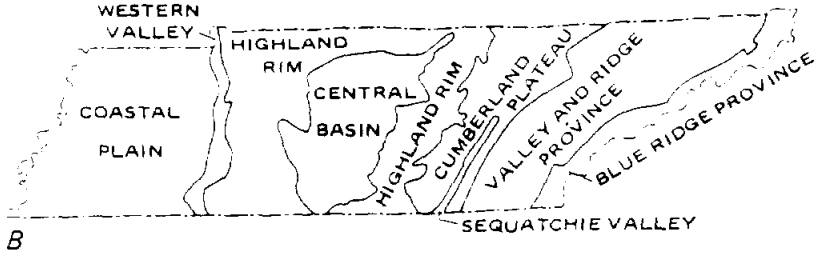
The Pennsylvanian sandstone aquifer in the eastern part of Tennessee includes sandstone and conglomerate. The water-bearing openings in these rocks consist of fractures, faults, and bedding-plane openings. Well yields generally are 5 to 50 gal/min, although some wells produce more than 200



EXPLANATION

- Alluvial aquifer
- Tertiary sand aquifer
- Cretaceous sand aquifer
- Pennsylvanian sandstone aquifer
- Mississippian carbonate aquifer
- Ordovician carbonate aquifer
- Knox aquifer
- Cambrian—Ordovician carbonate aquifer
- Crystalline rock aquifer
- A—A' Trace of cross section





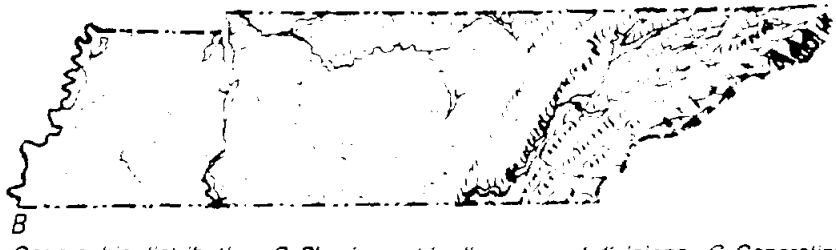


Figure 1. Principal aquifers in Tennessee. *A*, Geographic distribution. *B*, Physiographic diagram and divisions. *C*, Generalized cross section (A-A'). (See table 2 for a more detailed description of the aquifers. Sources: *A*, Miller, 1974; *B*, Fenneman, 1946; Raisz, 1954; Miller, 1974; *C*, Compiled by M. W. Bradley from U.S. Geological Survey files.)

gal/min. Sandstone and conglomerate, particularly the Rockcastle Sandstone and Sewanee Conglomerate, supply most of the water used for rural-domestic supplies. Iron concentrations of greater than 1.0 mg/L and pH of less than 6.0 are problems in some areas.

Mississippian and Ordovician Carbonate Aquifers

The formations that comprise the Mississippian carbonate aquifer in the Highland Rim and the Ordovician carbonate aquifer in the Central Basin are primarily limestone and dolomite, with small amounts of shale. Water in these carbonate aquifers occurs in solution-enlarged openings and is confined to partly confined near land surface; water may be confined at depth. These aquifers are important sources of drinking water for rural users and some public supplies.

The Mississippian carbonate and Ordovician carbonate aquifers are connected to land surface by caves and sinkholes in many areas and are susceptible to contamination. In general, the water hardness exceeds 200 mg/L as calcium carbonate. In the Highland Rim, iron and sulfate concentrations in water from the Mississippian carbonate aquifer may exceed 0.30 and 500 mg/L, respectively. The odor of sulfide is detectable in water from some wells.

The principal water-bearing formations of the Mississippian carbonate aquifer are the Ste. Genevieve (Monteagle), the St. Louis, and the Warsaw Limestones and the Fort Payne Formation. The regolith that overlies the Mississippian carbonate aquifer commonly is 30 to 100 ft thick, stores ground water, and releases it to openings in the underlying bedrock. In some areas of the southeastern Highland Rim, the Mississippian carbonate aquifer contains gravel zones in the regolith that yield as much as 400 gal/min to wells.

The principal water-bearing formations of the Ordovician carbonate aquifer are the Bigby, the Carters, the Ridley, and the Murfreesboro Limestones. The regolith that overlies this aquifer commonly is less than 10 ft thick. Some well yields exceed 300 gal/min.

Knox Aquifer

The Knox aquifer underlies Middle Tennessee and parts of West Tennessee. Water in the aquifer flows through interconnected solution openings and along bedding planes in the upper two formations of the Knox Group at depths of 800 to 1,500 ft. Although the aquifer is not a principal aquifer in terms of significant numbers of users or in providing large amounts to single users, it does provide water for rural-domestic use where ground water cannot be obtained at shallower depths. Sulfate concentrations that exceed 500 mg/L and sulfide gas are problems in some areas. Dissolved-solids concentrations in water from the Knox aquifer may exceed 10,000 mg/L in areas outside the Central Basin.

Cambrian-Ordovician Carbonate Aquifer

The Cambrian-Ordovician carbonate aquifer provides water for some cities and industries and practically all rural-domestic use in the Valley and Ridge province of East Tennessee. The aquifer consists of extensively faulted limestone, dolomite, sandstone, and shale. The principal water-bearing units are carbonate rocks of the Chickamauga Limestone, the Knox Group, and the Honaker Dolomite of the Conasauga Group. Major pumping centers in this aquifer are Chattanooga, Elizabethton, and Jefferson City (fig. 2). Some wells that penetrate large, extensive, and interconnected solution openings yield as much as 2,000 gal/min. The hardness of the water in the Cambrian-Ordovician carbonate aquifer generally exceeds 200 mg/L as calcium carbonate. Brines may be present below a depth of 3,000 feet.

Crystalline Rock Aquifer

The crystalline rock aquifer of the Blue Ridge province supplies water for industrial, some municipal, and most rural purposes. The water-bearing units consist of dolomite such as the Shady Dolomite; fractured igneous, metamorphic, and metasedimentary rocks; and, in some areas, regolith. Wells and springs in dolomite yield more than 1,000 gal/min (Maclay, 1962). Wells in the igneous and metamorphic rocks yield 5 to 50 gal/min from fractures. Some wells in regolith, which is present in some valleys, yield more than 100 gal/min. Iron concentrations that exceed 1.0 mg/L and pH of less than 6.0 are problems in several areas in the Blue Ridge province.

GROUND-WATER WITHDRAWALS AND WATER-LEVEL TRENDS

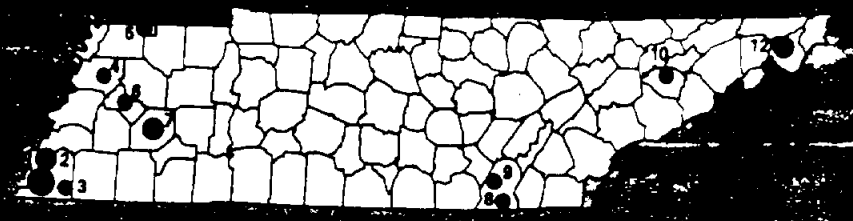
Of the 34 pumping centers in Tennessee that produce more than 1 Mgal/d, 20 of these are in West Tennessee. Statewide, there are 12 pumping centers that withdraw more than 3 Mgal/d each (fig. 2). The largest ground-water withdrawals are in Memphis and surrounding Shelby County (locations 1-3, fig. 2) where more than 190 Mgal/d is withdrawn for public and industrial use. In East Tennessee, areas of large ground-water withdrawals are Elizabethton (location 12, fig. 2), Jefferson City (location 10, fig. 2), and the Chattanooga area (locations 8, 9, fig. 2).

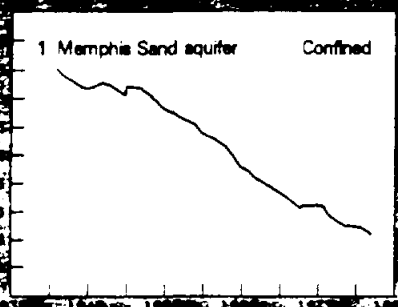
Hydrographs from wells near Memphis (locations 1, 2, fig. 2) show fluctuations in water levels that result from changes in pumpage. Water levels in the Memphis Sand (Claiborne Group) of the Tertiary sand aquifer have declined in response to yearly increases in pumpage since about 1950 (location 1, fig. 2); however, water levels remain above the top of the aquifer and represent a decline in artesian head rather than a dewatering of the aquifer. The Fort Pillow Sand (Wilcox Group) of the Tertiary sand aquifer, underlying the Memphis Sand, was pumped intensively between 1945 and about 1962. During this period, the water level in this part of the Tertiary sand aquifer declined about 45 ft (location 2, fig. 2). Since 1962, pumpage has decreased, and water levels have recovered about 20 ft. Pumpage at Jackson, primarily from the Wilcox Group, has increased steadily to more than 13 Mgal/d, and water levels have declined since the 1950's (location 7, fig. 2). In the rest of West Tennessee, long-term water levels show only seasonal fluctuations, as typified by the hydrograph for a well in Dyersburg (location 4, fig. 2).

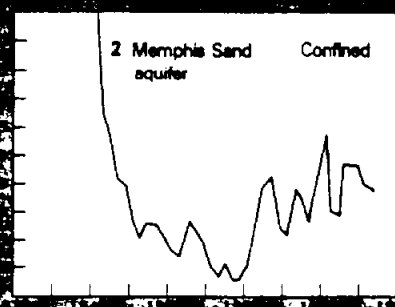
Ground-water levels in Middle and East Tennessee have not been affected significantly by pumping. The well in the Chattanooga area (location 9, fig. 2) is near a well field that is withdrawing about 0.5 Mgal/d. Water levels fluctuate almost daily in response to changes in pumping but do not show long-term declines. Water levels were lowest during the dry years from 1979 through 1981 but have recovered during subsequent years of normal rainfall. The hydrograph for the well near Elizabethton (location 12, fig. 2) also shows the effect of the drought, but no long-term declines.

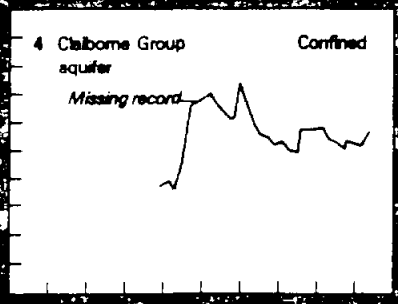
GROUND-WATER MANAGEMENT

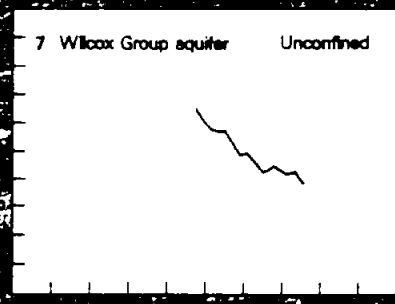
The Tennessee Department of Health and Environment, Office of Water Management, is responsible for ground-water management. The Groundwater Protection Division issues licenses to qualified well-drilling contractors, requires conformance with well-construction regulations, and receives reports of well completions as mandated by the Water Well Drillers

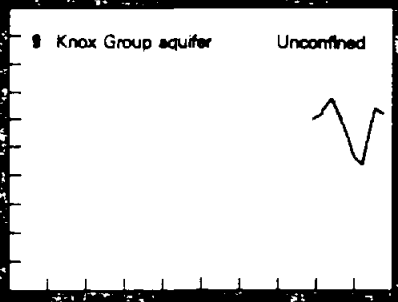


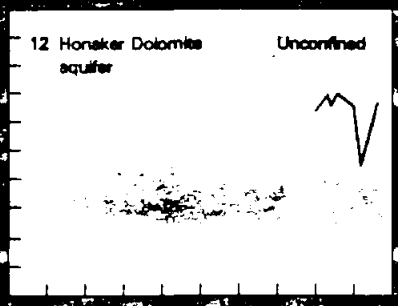












WITHDRAWAL SITES

No. on map	Geographic area	Aquifer	Principal uses
1	Memphis	Memphis Sand	Public supply, industrial.
2	Millington	do	Do.
3	Germantown	do	Do.
4	Dyersburg	Claiborne Group	Do.
5	Union City	do	Do.
6	Crockett County	do	Do.
7	Jackson	Wilcox Group	Do.
8	East Chattanooga	Knox, Chickamauga Limestone.	Public supply.
9	Hixon	Knox Group	Do.
10	Jefferson City	do	Public supply, mining.
11	Johnson City	Shady Dolomite	Public supply.
12	Elizabethton	Honaker Dolomite	Public supply, industrial.

Act (Tennessee Code Annotated 69-11-101, et seq.). The Water Supply Division requires community suppliers to submit designs for new facilities for State review and approval, requires compliance with design and construction guidelines, requires water treatment, and requires the treatment-plant operator to be trained and licensed (Tennessee Code Annotated 68-13-701, et seq.). The Office of Water Management requires that the State be notified when a user withdraws more than 50,000 gal/d (Tennessee Code Annotated 69-8-105, et seq.). In addition, the Office of Water Management supports investigations related to human health and ground-water protection.

The Tennessee Division of Geology is responsible for enforcement of the regulations of the Tennessee Oil and Gas Board. These regulations are intended to protect the quality of fresh ground water in areas of oil and gas development.

Tennessee intends to seek primacy in the implementation of the Underground Injection Control Program within the State (Tennessee Water Quality Control Board, 1983). If this program does become the responsibility of the State, the Groundwater Protection Division will be responsible for enforcement.

The U.S. Geological Survey collects hydrologic data and performs research in ground-water occurrence, movement, and water quality in cooperation with local and State agencies and in support of other Federal agencies (Department of Energy, Corps of Engineers, and Tennessee Valley Authority).

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Prepared by Michael W. Bradley and Este F. Hollyday

For further information contact District Chief, U.S. Geological Survey, A-413 Federal Building, Nashville, TN 37203

REFERENCE # 32

ROE

EAST SHEET

GEOLOGIC MAP OF TENNESSEE

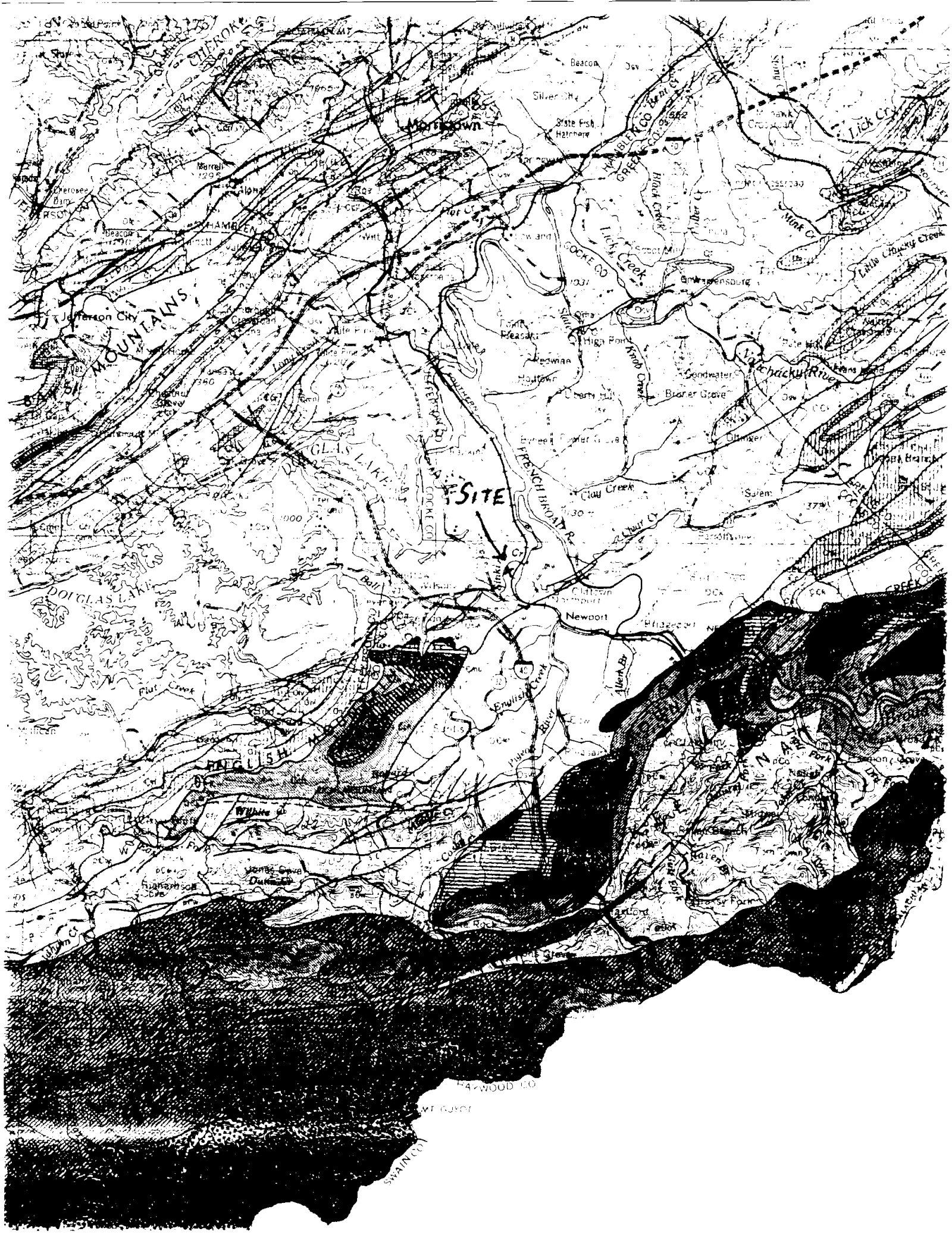
1966

WILLIAM D. HARDEMAN
STATE GEOLOGIST

Scale 1:250,000

CONTOUR INTERVAL 100 FEET

EXPLANATION



SITE
Morristown
Jefferson City
Newport
Clay Creek
Lick Creek
Black Creek
Knob Creek
Clear Cr
English Creek
Pigeon River
Flat Creek
Little Chucky Creek
Mink Cr
Lick Cr
Nolichucky River
Goodwater
Broiler Grove
Salem
Oltinger
Beacon
Silver City
State Fish Hatchery
Point Pleasant
High Point
Redwine
Hodtown
Liberty Hill
Byrnes
Fowler Grove
Wilsons
Clatown
Bridgeport
Allen Br
Raven Br
Hartford
Jones Cove
Richardson Cove
Wilhite
Ball
Long Creek
Cherokee Dam
Merrell
Alpha
Witt
Beacon
Cherokee
Cherokee Mt
Bear Cr
Sinks Cr
Flat Cr
Cocke Co
Hamblen Co
Greene Co
Jefferson Co
Southern
Frenchbroad R
Douglas Lake
Glas Lake
Mountains
Haywood Co
Swain Co

Sequatchie Formation
Maroon and gray shaly limestone, mottled greenish; with interbeds of olive to maroon calcareous shale and siltstone. Thickness about 300 feet.

Juniata Formation
Maroon claystone, siltstone, and shale, uniformly bedded; some faint greenish mottling; less calcareous than Sequatchie Formation. Thickness about 300 feet.

Upper Part of Chickamauga Group

Reedsville Shale
Greenish gray calcareous shale. Thickness 200 to 400 feet.

Unnamed Limestone Unit
Medium-grained, fossiliferous, gray limestone, shaly in part. Thickness as much as 600 feet.

Omb

Martinsburg Shale
Bluish-gray, calcareous clay shale, weathers yellowish brown, with thin beds of nodular gray, fossiliferous limestone, thin layers of metabentonite near base. Thickness about 1,000 feet.

Omc

Middle and Lower Parts of Chickamauga Group
A sequence of about 1,400 feet of limestone in the northwest, which thickens and becomes more clastic to the southeast and is divided into the formations shown at right. Maximum thickness about 8,000 feet.

Moccasin Formation
Maroon calcareous shale, siltstone, and limestone, thin metabentonite layers in upper part; mud cracks, ripple marks common. Thickness 800 to 1,000 feet.

Ob

Bays Formation
Maroon claystone and siltstone, commonly mottled greenish, evenly bedded; to northeast, light gray to white, thick-bedded sandstone, metabentonite in upper part. Maximum thickness 1,000 feet.

Oo

Ottosee Shale
Bluish gray calcareous shale, weathers yellow; with reef lenses of coarsely crystalline reddish fossiliferous limestone ("marble"). Thickness about 1,000 feet.

Oh

Holston Formation
Pink, gray, and red coarsely crystalline limestone (Holston Marble); in many areas upper part is sandy, crossbedded ferruginous limestone and brown to greenish calcareous shale. Thickness 200 to 600 feet.

Osv

Sevier Shale
Calcareous, bluish gray shale, weathers yellowish-brown, with thin gray limestone layers; sandstone, siltstone, and locally conglomerate to the east. Thickness 2,000 to 7,000 feet.

Ol

Lenoir Limestone
Nodular, argillaceous, gray limestone, in places basal sedimentary breccia, conglomerate, quartz sand, Mosheim Limestone Member (dense, light to medium-gray limestone) near base. Thickness 25 to 500 feet.

Oa

Athens Shale
Medium- to dark gray, calcareous, graptolitic shale, calcareous gray sandstone, siltstone, and locally fine pebble quartz conglomerate, nodules of shaly limestone near base. Maximum thickness 1,500 feet.

Onc

Oma

Mascot Dolomite
Light gray, fine-grained, well-bedded cherty dolomite, mottled (red and green) dolomite characteristic, interbeds of bluish gray limestone in upper part, chert-matrix quartz sandstone at base. Erosional unconformity at top. Thickness 3[illegible] to 800 feet.

On

Newala Formation

Ok

Kingsport Formation
Gray, fine-grained, sparingly cherty dolomite with basal dense, gray limestone sequence. Thickness about 250 feet.

Olv

Longview Dolomite
Siliceous, gray, fine grained, medium bedded dolomite, interbeds of gray limestone in upper part. Thickness about 300 feet.

Olc

Oc

Chepultepec Dolomite
Light gray, fine-grained, well-bedded dolomite, moderately cherty, fine grained limestone locally in upper part, quartz sandstone beds at base. Thickness about 800 feet.

Ojb

Jonesboro Limestone
Dark bluish gray, ribboned (silt and dolomite) limestone, numerous interbeds of dark-gray dolomite, quartz sandstone at base. Erosional unconformity at top. Thickness about 2,000 feet.

Ꞓcr

Copper Ridge Dolomite
Coarse, dark gray, knotty dolomite, asphaltic in places, with much gray, medium grained, well bedded dolomite, abundant chert, cryptozoons typical. Thickness about 1,000 feet.

Ꞓcc

Conococheague Limestone
Well bedded, ribboned (silt and dolomite), dark gray limestone, interbeds of fine grained, light- to dark gray dolomite, sparingly cherty, cryptozoons typical. Thickness about [illegible] feet.

Ꞓcu

Ꞓmn

Maynardville Limestone
Thick bedded, bluish gray, ribboned (silt and dolomite), nodular limestone, light gray, fine grained, laminated to thinly bedded, noncherty dolomite in upper part. Thickness 150 to [illegible] feet.

Ꞓn

Nolichucky Shale
Pastel colored (pink, greenish, olive), flaky clay shale, gray, commonly oolitic, shaly limestone lenses, locally stromatolitic limestone layers, thin, blocky siltstone near middle. Thickness [illegible] feet in the east to [illegible] feet in the west.

Ꞓmr

Maryville Limestone
Gray, ribboned (silt and dolomite), fine grained, evenly bedded limestone, intraformational conglomerate, and oolitic layers common, clay shale and light gray dolomite locally. Thickness [illegible] feet.

Ꞓrg

Rogersville Shale
Light green, fissile clay shale, in places limestone (Gray Member) in upper part. Commonly [illegible]

Honaker Dolomite

REFERENCE # 33

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University of British Columbia
Vancouver, British Columbia

John A. Cherry

Department of Earth Sciences
University of Waterloo
Waterloo, Ontario

GROUNDWATER

Prentice-Hall, Inc.
Englewood Cliffs, New Jersey 07632

Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

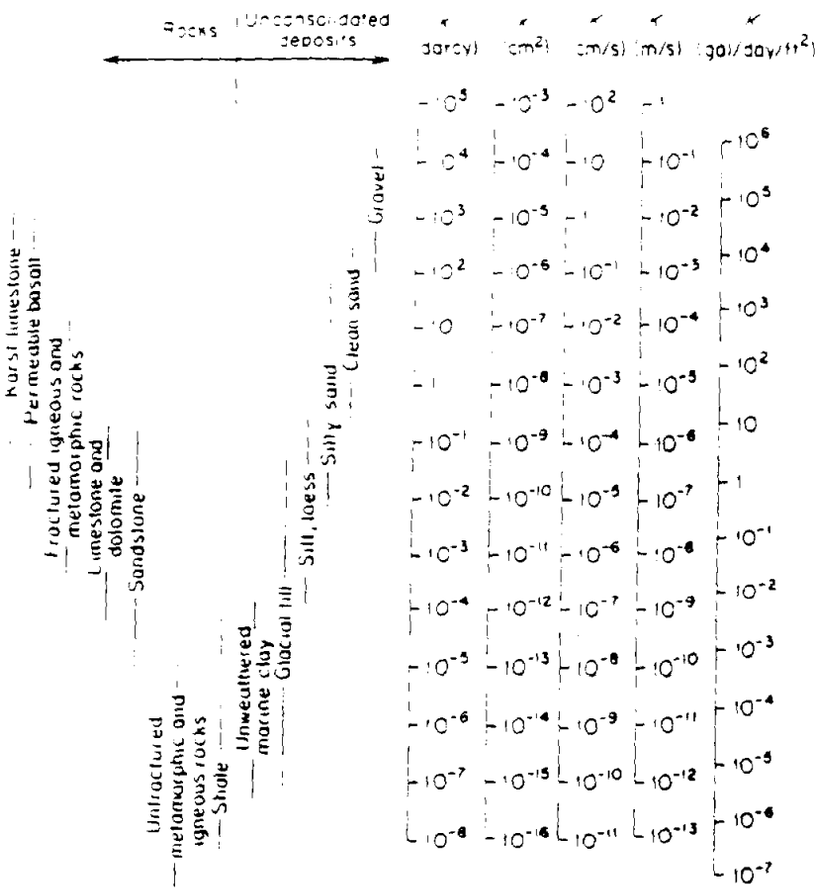

Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

	Permeability, k*			Hydraulic conductivity, K		
	cm^2	ft^2	darcy	m/s	ft/s	U.S. gal/day/ft^2
cm^2	1	1.08×10^{-3}	1.01×10^{8}	9.80×10^{2}	3.22×10^{3}	1.85×10^{9}
ft^2	9.29×10^{2}	1	9.42×10^{10}	9.11×10^{5}	2.99×10^{6}	1.71×10^{12}
darcy	9.87×10^{-9}	1.06×10^{-11}	1	9.66×10^{-6}	3.17×10^{-5}	1.82×10^{1}
m/s	1.02×10^{-3}	1.10×10^{-6}	1.04×10^{5}	1	3.28	2.12×10^{6}
ft/s	3.11×10^{-4}	3.35×10^{-7}	3.15×10^{4}	3.05×10^{-1}	1	6.46×10^{5}
U.S. gal/day/ft²	5.42×10^{-10}	5.83×10^{-13}	5.49×10^{-2}	4.72×10^{-7}	1.55×10^{-6}	1

*To obtain k in ft^2, multiply k in cm^2 by 1.08×10^{-3}

REFERENCE # 34

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
F4-9008-32	04/03/91	11:00

DISTRIBUTION:

Heywood-Wakefield Company
Newport, Tennessee

BETWEEN:	OF:	PHONE:
Leonard Allen	Newport Water Department Newport, Tennessee	(615)623-3074

AND:
Wendell C. McLendon — Wendell C. McLendon 4/3/91

DISCUSSION:

I spoke with Mr. Allen about water lines in Newport. He gave me information on areas served by the city water department. The areas covered were marked on the 4-mile radius map. The Water Treatment Plant is located on top of a circular hill at Eastport, on the east side of Newport. The surface water intake is located out the Ashville Highway on the French Broad River. The city has only one surface water intake.

OVERSIZED

DOCUMENT

APPENDIX B

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.   10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798   SAMPLE NO. 50142   SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-01
CASE NUMBER: 14852   SAS NUMBER:

PROG ELEM: NSF   COLLECTED BY: A HARVEY
CITY: NEWPORT   ST: TN
COLLECTION START: 09/12/90 1205   STOP: 00/00/00
D. NUMBER: X705

UG/KG	ANALYTICAL RESULTS
9.6U	ALPHA-BHC
9.6U	BETA-BHC
9.6U	DELTA-BHC
9.6U	GAMMA-BHC (LINDANE)
9.6U	HEPTACHLOR
9.6U	ALDRIN
9.6U	HEPTACHLOR EPOXIDE
9.6U	ENDOSULFAN I (ALPHA)
19U	DIELDRIN
19U	4,4'-DDE (P,P'-DDE)
19U	ENDRIN
19U	ENDOSULFAN II (BETA)
19U	4,4'-DDD (P,P'-DDD)
19U	ENDOSULFAN SULFATE
19U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
96U	METHOXYCHLOR
19U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
96U	GAMMA-CHLORDANE /2
96U	ALPHA-CHLORDANE /2
190U	TOXAPHENE
96U	PCB-1016 (AROCLOR 1016)
96U	PCB-1221 (AROCLOR 1221)
96U	PCB-1232 (AROCLOR 1232)
96U	PCB-1242 (AROCLOR 1242)
96U	PCB-1248 (AROCLOR 1248)
190U	PCB-1254 (AROCLOR 1254)
190U	PCB-1260 (AROCLOR 1260)
17	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS   1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49864 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/12/90 1205 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
47U	CHLOROMETHANE
47U	VINYL CHLORIDE
47U	BROMOMETHANE
47U	CHLOROETHANE
47U	TRICHLOROFLUOROMETHANE
47U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
470U	ACETONE
470U	CARBON DISULFIDE
47U	METHYLENE CHLORIDE
47U	TRANS-1,2-DICHLOROETHENE
47U	1,1-DICHLOROETHANE
470U	VINYL ACETATE
47U	CIS-1,2-DICHLOROETHENE
47U	2,2-DICHLOROPROPANE
470U	METHYL ETHYL KETONE
47U	BROMOCHLOROMETHANE
47U	CHLOROFORM
47U	1,1,1-TRICHLOROETHANE
47U	1,1-DICHLOROPROPENE
47U	CARBON TETRACHLORIDE
47U	1,2-DICHLOROETHANE
47U	BENZENE
47U	TRICHLOROETHENE(TRICHLOROETHYLENE)
47U	1,2-DICHLOROPROPANE
47U	DIBROMOMETHANE
47U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
47U	CIS-1,3-DICHLOROPROPENE
470U	METHYL ISOBUTYL KETONE
47U	TOLUENE
47U	TRANS-1,3-DICHLOROPROPENE
47U	1,1,2-TRICHLOROETHANE
47U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
47U	1,3-DICHLOROPROPANE
470U	METHYL BUTYL KETONE
47U	DIBROMOCHLOROMETHANE
47U	CHLOROBENZENE
47U	1,1,1,2-TETRACHLOROETHANE
47U	ETHYL BENZENE
47U	(M- AND/OR P-)XYLENE
47U	O-XYLENE
47U	STYRENE
47U	BROMOFORM
47U	BROMOBENZENE
47U	1,1,2,2-TETRACHLOROETHANE
47U	1,2,3-TRICHLOROPROPANE
47U	O-CHLOROTOLUENE
47U	P-CHLOROTOLUENE
47U	1,3-DICHLOROBENZENE
47U	1,4-DICHLOROBENZENE
47U	1,2-DICHLOROBENZENE
17.9	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49864 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SS-01

PROG ELEM: NSF COLLECTED BY. A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/12/90 1205 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
790U	BIS(2 CHLOROETHYL) ETHER
790U	BIS(2-CHLOROISOPROPYL) ETHER
790U	N-NITROSODI-N-PROPYLAMINE
790U	HEXACHLOROETHANE
790U	NITROBENZENE
790U	ISOPHORONE
790U	BIS(2-CHLOROETHOXY) METHANE
790U	1,2,4-TRICHLOROBENZENE
790U	NAPHTHALENE
790U	4-CHLOROANILINE
790U	HEXACHLOROBUTADIENE
790U	2-METHYLNAPHTHALENE
790U	HEXACHLOROCYCLOPENTADIENE (HCCP)
790U	2 CHLORONAPHTHALENE
790U	2-NITROANILINE
790U	DIMETHYL PHTHALATE
790U	ACENAPHTHYLENE
790U	2 6-DINITROTOLUENE
790U	3-NITROANILINE
790U	ACENAPHTHENE
790U	DIBENZOFURAN
790U	2,4-DINITROTOLUENE
790U	DIETHYL PHTHALATE
790U	FLUORENE
790U	4-CHLOROPHENYL PHENYL ETHER
790U	4-NITROANILINE
790U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
790U	4-BROMOPHENYL PHENYL ETHER
790U	HEXACHLOROBENZENE (HCB)
790U	PHENANTHRENE
790U	ANTHRACENE
790U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
790U	FLUORANTHENE
790U	PYRENE
790U	BENZYL BUTYL PHTHALATE
790U	3,3'-DICHLOROBENZIDINE
790U	BENZO(A)ANTHRACENE
790U	CHRYSENE
790U	BIS(2-ETHYLHEXYL) PHTHALATE
790U	DI-N-OCTYLPHTHALATE
790U	BENZO(B AND/OR K)FLUORANTHENE
790U	BENZO-A-PYRENE
790U	INDENO (1,2,3 CD) PYRENE
790U	DIBENZO(A,H)ANTHRACENE
790U	BENZO(GHI)PERYLENE
790U	PHENOL
790U	2-CHLOROPHENOL
1600U	BENZYL ALCOHOL
790U	2-METHYLPHENOL
790U	(3-AND/OR 4-)METHYLPHENOL
790U	2-NITROPHENOL
790U	2,4-DIMETHYLPHENOL
1600U	BENZOIC ACID
790U	2,4-DICHLOROPHENOL
790U	4-CHLORO-3-METHYLPHENOL
790U	2,4,6-TRICHLOROPHENOL
790U	2 4 5-TRICHLOROPHENOL
1600U	2,4-DINITROPHENOL
1600U	4-NITROPHENOL
790U	2,3,4 6-TETRACHLOROPHENOL
1600U	2-METHYL-4,6-DINITROPHENOL
1600U	PENTACHLOROPHENOL
17.9	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/02/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-883 SAMPLE NO. 49870 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1600 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
47U	CHLOROMETHANE
47U	VINYL CHLORIDE
47U	BROMOMETHANE
47U	CHLOROETHANE
[redacted]	
47U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
470U	ACETONE
470U	CARBON DISULFIDE
47U	METHYLENE CHLORIDE
47U	TRANS-1,2-DICHLOROETHENE
47U	1,1-DICHLOROETHANE
470U	VINYL ACETATE
47U	CIS-1,2-DICHLOROETHENE
47U	2,2-DICHLOROPROPANE
470U	METHYL ETHYL KETONE
47U	BROMOCHLOROMETHANE
47U	CHLOROFORM
47U	1,1,1-TRICHLOROETHANE
47U	1,1-DICHLOROPROPENE
47U	CARBON TETRACHLORIDE
47U	1,2-DICHLOROETHANE
47U	BENZENE
47U	TRICHLOROETHENE(TRICHLOROETHYLENE)
47U	1,2-DICHLOROPROPANE
47U	DIBROMOMETHANE
47U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
47U	CIS 1,3-DICHLOROPROPENE
470U	METHYL ISOBUTYL KETONE
47U	TOLUENE
47U	TRANS-1,3-DICHLOROPROPENE
47U	1,1,2-TRICHLOROETHANE
47U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
47U	1,3-DICHLOROPROPANE
470U	METHYL BUTYL KETONE
47U	DIBROMOCHLOROMETHANE
47U	CHLOROBENZENE
47U	1,1,1,2 TETRACHLOROETHANE
47U	ETHYL BENZENE
47U	(M- AND/OR P-)XYLENE
47U	O-XYLENE
47U	STYRENE
47U	BROMOFORM
47U	BROMOBENZENE
47U	1,1,2,2-TETRACHLOROETHANE
47U	1,2,3-TRICHLOROPROPANE
47U	O-CHLOROTOLUENE
47U	P-CHLOROTOLUENE
47U	1,3-DICHLOROBENZENE
47U	1,4-DICHLOROBENZENE
47U	1,2-DICHLOROBENZENE
11.4	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO 49872 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-05

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1530 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
380U	CHLOROMETHANE
380U	VINYL CHLORIDE
380U	BROMOMETHANE
380U	CHLOROETHANE
380U	TRICHLOROFLUOROMETHANE
380U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
3800U	ACETONE
3800U	CARBON DISULFIDE
380U	METHYLENE CHLORIDE
380U	TRANS-1,2-DICHLOROETHENE
380U	1,1-DICHLOROETHANE
3800U	VINYL ACETATE
380U	CIS-1,2-DICHLOROETHENE
380U	2,2-DICHLOROPROPANE
3800U	METHYL ETHYL KETONE
380U	BROMOCHLOROMETHANE
380U	CHLOROFORM
380U	1,1,1-TRICHLOROETHANE
380U	1,1-DICHLOROPROPENE
380U	CARBON TETRACHLORIDE
380U	1,2-DICHLOROETHANE
380U	BENZENE
380U	TRICHLOROETHENE(TRICHLOROETHYLENE)
380U	1,2-DICHLOROPROPANE
380U	DIBROMOMETHANE
380U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
380U	CIS-1,3-DICHLOROPROPENE
3800U	METHYL ISOBUTYL KETONE
[redacted]	
380U	TRANS-1,3-DICHLOROPROPENE
380U	1,1,2-TRICHLOROETHANE
380U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
380U	1,3-DICHLOROPROPANE
3800U	METHYL BUTYL KETONE
380U	DIBROMOCHLOROMETHANE
380U	CHLOROBENZENE
380U	1,1,1,2-TETRACHLOROETHANE
380U	ETHYL BENZENE
380U	(M- AND/OR P-)XYLENE
380U	O-XYLENE
380U	STYRENE
380U	BROMOFORM
380U	BROMOBENZENE
380U	1,1,2,2-TETRACHLOROETHANE
380U	1,2,3-TRICHLOROPROPANE
380U	O-CHLOROTOLUENE
380U	P-CHLOROTOLUENE
380U	1,3-DICHLOROBENZENE
380U	1,4-DICHLOROBENZENE
380U	1,2-DICHLOROBENZENE
73.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49872 SAMPLE TYPE: SOIL
SOURCE HEYWOOD-WAKEFIELD
STATION ID: SS-05

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1530 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
2500U	BIS(2 CHLOROETHYL) ETHER
2500U	BIS(2-CHLOROISOPROPYL) ETHER
2500U	N-NITROSODI-N-PROPYLAMINE
2500U	HEXACHLOROETHANE
2500U	NITROBENZENE
2500U	ISOPHORONE
2500U	BIS(2-CHLOROETHOXY) METHANE
2500U	1,2,4-TRICHLOROBENZENE
2500U	NAPHTHALENE
2500U	4-CHLOROANILINE
2500U	HEXACHLOROBUTADIENE
2500U	2-METHYLNAPHTHALENE
2500U	HEXACHLOROCYCLOPENTADIENE (HCCP)
2500U	2-CHLORONAPHTHALENE
2500U	2-NITROANILINE
2500U	DIMETHYL PHTHALATE
2500U	ACENAPHTHYLENE
2500U	2,6-DINITROTOLUENE
2500U	3-NITROANILINE
2500U	ACENAPHTHENE
2500U	DIBENZOFURAN
2500U	2,4-DINITROTOLUENE
2500U	DIETHYL PHTHALATE
2500U	FLUORENE
2500U	4-CHLOROPHENYL PHENYL ETHER
2500U	4-NITROANILINE
2500U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
2500U	4-BROMOPHENYL PHENYL ETHER
2500U	HEXACHLOROBENZENE (HCB)
2500U	PHENANTHRENE
2500U	ANTHRACENE
2500U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
2500U	FLUORANTHENE
2500U	PYRENE
2500U	BENZYL BUTYL PHTHALATE
2500U	3,3'-DICHLOROBENZIDINE
2500U	BENZO(A)ANTHRACENE
[redacted]	CHRYSENE
[redacted]	[redacted]
2500U	DI-N-OCTYLPHTHALATE
[redacted]	[redacted]
2500U	BENZO-A-PYRENE
2500U	INDENO (1,2,3 CD) PYRENE
2500U	DIBENZO(A,H)ANTHRACENE
2500U	BENZO(GHI)PERYLENE
2500U	PHENOL
2500U	2-CHLOROPHENOL
5000U	BENZYL ALCOHOL
2500U	2-METHYLPHENOL
2500U	(3-AND/OR 4-)METHYLPHENOL
2500U	2-NITROPHENOL
2500U	2,4-DIMETHYLPHENOL
5000U	BENZOIC ACID
2500U	2,4-DICHLOROPHENOL
2500U	4-CHLORO-3-METHYLPHENOL
2500U	2,4,6-TRICHLOROPHENOL
2500U	2,4,5-TRICHLOROPHENOL
5000U	2,4-DINITROPHENOL
5000U	4-NITROPHENOL
2500U	2,3,4,6-TETRACHLOROPHENOL
5000U	2-METHYL-4,6-DINITROPHENOL
[redacted]	[redacted]
73.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/04/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

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***********************************************************************************************************
**  PROJECT NO. 90-883    SAMPLE NO. 49872  SAMPLE TYPE: SOIL        PROG ELEM: NSF   COLLECTED BY: A HARVEY   **
**  SOURCE. HEYWOOD-WAKEFIELD                                        CITY. NEWPORT              ST. TN         **
**  STATION ID: SS-05                                                COLLECTION START: 09/12/90  1530   STOP. 00/00/00  **
**                                                                                                             **
***********************************************************************************************************
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ANALYTICAL RESULTS UG/KG

[redacted]IDE
[redacted]D
[redacted]ACID
[redacted]DE
[redacted]NE
[redacted] ESTER
N PETROLEUM PRODUCT

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50142 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-01
CASE NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1205 STOP: 00/00/00
D. NO.: X705 MD NO: X705

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

** PROJECT NO. 90-883 SAMPLE NO 49870 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY. A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD CITY: NEWPORT ST: TN **
** STATION ID: SS-02 COLLECTION START: 09/12/90 1600 STOP 00/00/00 **

UG/KG	ANALYTICAL RESULTS
750U	BIS(2 CHLOROETHYL) ETHER
750U	BIS(2-CHLOROISOPROPYL) ETHER
750U	N-NITROSODI-N-PROPYLAMINE
750U	HEXACHLOROETHANE
750U	NITROBENZENE
750U	ISOPHORONE
750U	BIS(2-CHLOROETHOXY) METHANE
750U	1,2,4-TRICHLOROBENZENE
750U	NAPHTHALENE
750U	4-CHLOROANILINE
750U	HEXACHLOROBUTADIENE
750U	2-METHYLNAPHTHALENE
750U	HEXACHLOROCYCLOPENTADIENE (HCCP)
750U	2-CHLORONAPHTHALENE
750U	2-NITROANILINE
750U	DIMETHYL PHTHALATE
750U	ACENAPHTHYLENE
750U	2,6-DINITROTOLUENE
750U	3-NITROANILINE
750U	ACENAPHTHENE
750U	DIBENZOFURAN
750U	2,4-DINITROTOLUENE
750U	DIETHYL PHTHALATE
750U	FLUORENE
750U	4-CHLOROPHENYL PHENYL ETHER
750U	4-NITROANILINE
750U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
750U	4-BROMOPHENYL PHENYL ETHER
750U	HEXACHLOROBENZENE (HCB)
750U	PHENANTHRENE
750U	ANTHRACENE
750U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
750U	FLUORANTHENE
750U	PYRENE
750U	BENZYL BUTYL PHTHALATE
750U	3,3'-DICHLOROBENZIDINE
750U	BENZO(A)ANTHRACENE
750U	CHRYSENE
750U	BIS(2-ETHYLHEXYL) PHTHALATE
750U	DI-N-OCTYLPHTHALATE
750U	BENZO(B AND/OR K)FLUORANTHENE
750U	BENZO-A-PYRENE
750U	INDENO (1,2,3 CD) PYRENE
750U	DIBENZO(A,H)ANTHRACENE
750U	BENZO(GHI)PERYLENE
750U	PHENOL
750U	2-CHLOROPHENOL
1500U	BENZYL ALCOHOL
750U	2-METHYLPHENOL
750U	(3-AND/OR 4-)METHYLPHENOL
750U	2-NITROPHENOL
750U	2,4-DIMETHYLPHENOL
1500U	BENZOIC ACID
750U	2,4-DICHLOROPHENOL
750U	4-CHLORO-3-METHYLPHENOL
750U	2,4,6-TRICHLOROPHENOL
750U	2,4,5-TRICHLOROPHENOL
1500U	2,4-DINITROPHENOL
1500U	4-NITROPHENOL
750U	2,3,4,6-TETRACHLOROPHENOL
1500U	2-METHYL-4,6-DINITROPHENOL
1500U	PENTACHLOROPHENOL
11.4	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50148 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: IN
COLLECTION START: 09/12/90 1600 STOP. 00/00/00
D. NUMBER: X711

UG/KG	ANALYTICAL RESULTS
8.9U	ALPHA-BHC
8.9U	BETA-BHC
8.9U	DELTA-BHC
8.9U	GAMMA-BHC (LINDANE)
8.9U	HEPTACHLOR
8.9U	ALDRIN
8.9U	HEPTACHLOR EPOXIDE
8.9U	ENDOSULFAN I (ALPHA)
18U	DIELDRIN
18U	4,4'-DDE (P,P'-DDE)
18U	ENDRIN
18U	ENDOSULFAN II (BETA)
18U	4,4'-DDD (P,P'-DDD)
18U	ENDOSULFAN SULFATE
18U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
89U	METHOXYCHLOR
32N	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
89U	GAMMA-CHLORDANE /2
89U	ALPHA-CHLORDANE /2
180U	TOXAPHENE
89U	PCB-1016 (AROCLOR 1016)
89U	PCB-1221 (AROCLOR 1221)
89U	PCB-1232 (AROCLOR 1232)
89U	PCB-1242 (AROCLOR 1242)
89U	PCB-1248 (AROCLOR 1248)
180U	PCB-1254 (AROCLOR 1254)
180U	PCB-1260 (AROCLOR 1260)
10	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-798 SAMPLE NO. 50148 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SS-02 COLLECTION START: 09/12/90 1600 STOP: 00/00/00 **
** CASE NO.: 14852 SAS NO.: D. NO.: X711 MD NO: X711 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49875 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1005 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
51UJ	CHLOROMETHANE
51UJ	VINYL CHLORIDE
51UJ	BROMOMETHANE
51UJ	CHLOROETHANE
51UJ	TRICHLOROFLUOROMETHANE
51UJ	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
510UJ	ACETONE
510UJ	CARBON DISULFIDE
100UJ	METHYLENE CHLORIDE
51UJ	TRANS-1,2-DICHLOROETHENE
51UJ	1,1-DICHLOROETHANE
510UJ	VINYL ACETATE
51UJ	CIS-1,2-DICHLOROETHENE
51UJ	2,2 DICHLOROPROPANE
510UJ	METHYL ETHYL KETONE
51UJ	BROMOCHLOROMETHANE
51UJ	CHLOROFORM
51UJ	1,1,1-TRICHLOROETHANE
51UJ	1,1-DICHLOROPROPENE
51UJ	CARBON TETRACHLORIDE
51UJ	1,2-DICHLOROETHANE
51UJ	BENZENE
51UJ	TRICHLOROETHENE(TRICHLOROETHYLENE)
51UJ	1,2-DICHLOROPROPANE
51UJ	DIBROMOMETHANE
51UJ	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
51UJ	CIS-1,3-DICHLOROPROPENE
510UJ	METHYL ISOBUTYL KETONE
51UJ	TOLUENE
51UJ	TRANS-1,3-DICHLOROPROPENE
51UJ	1,1,2-TRICHLOROETHANE
51UJ	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
51UJ	1,3-DICHLOROPROPANE
510UJ	METHYL BUTYL KETONE
51UJ	DIBROMOCHLOROMETHANE
51UJ	CHLOROBENZENE
51UJ	1,1,1,2-TETRACHLOROETHANE
51UJ	ETHYL BENZENE
51UJ	(M- AND/OR P-)XYLENE
51UJ	O-XYLENE
51UJ	STYRENE
51UJ	BROMOFORM
51UJ	BROMOBENZENE
51UJ	1,1,2,2-TETRACHLOROETHANE
51UJ	1,2,3-TRICHLOROPROPANE
51UJ	O-CHLOROTOLUENE
51UJ	P-CHLOROTOLUENE
51UJ	1,3-DICHLOROBENZENE
51UJ	1,4-DICHLOROBENZENE
51UJ	1,2-DICHLOROBENZENE
18.5	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49875 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SS-03

PROG ELEM: NSF COLLECTED BY. A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/13/90 1005 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
790U	BIS(2 CHLOROETHYL) ETHER
790U	BIS(2-CHLOROISOPROPYL) ETHER
790U	N-NITROSODI-N-PROPYLAMINE
790U	HEXACHLOROETHANE
790U	NITROBENZENE
790U	ISOPHORONE
790U	BIS(2-CHLOROETHOXY) METHANE
790U	1,2,4-TRICHLOROBENZENE
790U	NAPHTHALENE
790U	4-CHLOROANILINE
790U	HEXACHLOROBUTADIENE
790U	2-METHYLNAPHTHALENE
790U	HEXACHLOROCYCLOPENTADIENE (HCCP)
790U	2 CHLORONAPHTHALENE
790U	2-NITROANILINE
790U	DIMETHYL PHTHALATE
790U	ACENAPHTHYLENE
790U	2 6-DINITROTOLUENE
790U	3-NITROANILINE
790U	ACENAPHTHENE
790U	DIBENZOFURAN
790U	2,4-DINITROTOLUENE
790U	DIETHYL PHTHALATE
790U	FLUORENE
790U	4-CHLOROPHENYL PHENYL ETHER
790U	4-NITROANILINE
790U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
790U	4-BROMOPHENYL PHENYL ETHER
790U	HEXACHLOROBENZENE (HCB)
790U	PHENANTHRENE
790U	ANTHRACENE
790U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
790U	FLUORANTHENE
790U	PYRENE
790U	BENZYL BUTYL PHTHALATE
790U	3,3'-DICHLOROBENZIDINE
790U	BENZO(A)ANTHRACENE
790U	CHRYSENE
790U	BIS(2-ETHYLHEXYL) PHTHALATE
790U	DI-N-OCTYLPHTHALATE
790U	BENZO(B AND/OR K)FLUORANTHENE
790U	BENZO-A-PYRENE
790U	INDENO (1,2,3 CD) PYRENE
790U	DIBENZO(A,H)ANTHRACENE
790U	BENZO(GHI)PERYLENE
790U	PHENOL
790U	2-CHLOROPHENOL
1600U	BENZYL ALCOHOL
790U	2-METHYLPHENOL
790U	(3-AND/OR 4-)METHYLPHENOL
790U	2-NITROPHENOL
790U	2,4-DIMETHYLPHENOL
1600U	BENZOIC ACID
790U	2,4-DICHLOROPHENOL
790U	4-CHLORO-3-METHYLPHENOL
790U	2,4,6-TRICHLOROPHENOL
790U	2 4 5-TRICHLOROPHENOL
1600U	2,4-DINITROPHENOL
1600U	4-NITROPHENOL
790U	2,3,4,6-TETRACHLOROPHENOL
1600U	2-METHYL-4,6-DINITROPHENOL
1600U	PENTACHLOROPHENOL
18.5	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50153 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1005 STOP: 00/00/00
D. NUMBER: X716

UG/KG	ANALYTICAL RESULTS
9.9U	ALPHA-BHC
9.9U	BETA-BHC
9.9U	DELTA-BHC
9.9U	GAMMA-BHC (LINDANE)
9.9U	HEPTACHLOR
9.9U	ALDRIN
9.9U	HEPTACHLOR EPOXIDE
9.9U	ENDOSULFAN I (ALPHA)
20U	DIELDRIN
20U	4,4'-DDE (P,P'-DDE)
20U	ENDRIN
20U	ENDOSULFAN II (BETA)
20U	4,4'-DDD (P,P'-DDD)
20U	ENDOSULFAN SULFATE
20U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
99U	METHOXYCHLOR
20U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
99U	GAMMA-CHLORDANE /2
99U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
99U	PCB-1016 (AROCLOR 1016)
99U	PCB-1221 (AROCLOR 1221)
99U	PCB-1232 (AROCLOR 1232)
99U	PCB-1242 (AROCLOR 1242)
99U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
19	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-798 SAMPLE NO. 50153 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SS-03 COLLECTION START: 09/13/90 1005 STOP: 00/00/00 **
** CASE NO.: 14852 SAS NO.: D. NO.: X716 MD NO: X716 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/02/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-883 SAMPLE NO. 49874 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1000 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
53U	CHLOROMETHANE
53U	VINYL CHLORIDE
53U	BROMOMETHANE
53U	CHLOROETHANE
53U	TRICHLOROFLUOROMETHANE
53U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
530U	ACETONE
530U	CARBON DISULFIDE
53U	METHYLENE CHLORIDE
53U	TRANS-1,2-DICHLOROETHENE
53U	1,1-DICHLOROETHANE
530U	VINYL ACETATE
53U	CIS-1,2-DICHLOROETHENE
53U	2,2-DICHLOROPROPANE
530U	METHYL ETHYL KETONE
53U	BROMOCHLOROMETHANE
53U	CHLOROFORM
53U	1,1,1-TRICHLOROETHANE
53U	1,1-DICHLOROPROPENE
53U	CARBON TETRACHLORIDE
53U	1,2-DICHLOROETHANE
53U	BENZENE
53U	TRICHLOROETHENE(TRICHLOROETHYLENE)
53U	1,2-DICHLOROPROPANE
53U	DIBROMOMETHANE
53U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
53U	CIS-1,3-DICHLOROPROPENE
530U	METHYL ISOBUTYL KETONE
53U	TOLUENE
53U	TRANS-1,3-DICHLOROPROPENE
53U	1,1,2-TRICHLOROETHANE
53U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
53U	1,3-DICHLOROPROPANE
530U	METHYL BUTYL KETONE
53U	DIBROMOCHLOROMETHANE
53U	CHLOROBENZENE
53U	1,1,1,2-TETRACHLOROETHANE
53U	ETHYL BENZENE
53U	(M- AND/OR P-)XYLENE
53U	O-XYLENE
53U	STYRENE
53U	BROMOFORM
53U	BROMOBENZENE
53U	1,1,2,2-TETRACHLOROETHANE
53U	1,2,3-TRICHLOROPROPANE
53U	O-CHLOROTOLUENE
53U	P-CHLOROTOLUENE
53U	1,3-DICHLOROBENZENE
53U	1,4-DICHLOROBENZENE
53U	1,2-DICHLOROBENZENE
5.4	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49874 SAMPLE TYPE: SOIL
SOURCE HEYWOOD-WAKEFIELD
STATION ID. SS-04

PROG ELEM: NSF COLLECTED BY. A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/13/90 1000 STOP 00/00/00

UG/KG	ANALYTICAL RESULTS
690U	BIS(2 CHLOROETHYL) ETHER
690U	BIS(2-CHLOROISOPROPYL) ETHER
690U	N-NITROSODI N-PROPYLAMINE
690U	HEXACHLOROETHANE
690U	NITROBENZENE
690U	ISOPHORONE
690U	BIS(2-CHLOROETHOXY) METHANE
690U	1,2,4-TRICHLOROBENZENE
690U	NAPHTHALENE
690U	4-CHLOROANILINE
690U	HEXACHLOROBUTADIENE
690U	2-METHYLNAPHTHALENE
690U	HEXACHLOROCYCLOPENTADIENE (HCCP)
690U	2-CHLORONAPHTHALENE
690U	2-NITROANILINE
690U	DIMETHYL PHTHALATE
690U	ACENAPHTHYLENE
690U	2,6-DINITROTOLUENE
690U	3-NITROANILINE
690U	ACENAPHTHENE
690U	DIBENZOFURAN
690U	2,4-DINITROTOLUENE
690U	DIETHYL PHTHALATE
690U	FLUORENE
690U	4-CHLOROPHENYL PHENYL ETHER
690U	4-NITROANILINE
690U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
690U	4-BROMOPHENYL PHENYL ETHER
690U	HEXACHLOROBENZENE (HCB)
690U	PHENANTHRENE
690U	ANTHRACENE
690U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
690U	FLUORANTHENE
690U	PYRENE
690U	BENZYL BUTYL PHTHALATE
690U	3,3'-DICHLOROBENZIDINE
690U	BENZO(A)ANTHRACENE
690U	CHRYSENE
690U	BIS(2-ETHYLHEXYL) PHTHALATE
690U	DI-N-OCTYLPHTHALATE
690U	BENZO(B AND/OR K)FLUORANTHENE
690U	BENZO-A-PYRENE
690U	INDENO (1,2,3 CD) PYRENE
690U	DIBENZO(A,H)ANTHRACENE
690U	BENZO(GHI)PERYLENE
690U	PHENOL
690U	2-CHLOROPHENOL
1400U	BENZYL ALCOHOL
690U	2-METHYLPHENOL
690U	(3-AND/OR 4-)METHYLPHENOL
690U	2-NITROPHENOL
690U	2,4-DIMETHYLPHENOL
1400U	BENZOIC ACID
690U	2,4-DICHLOROPHENOL
690U	4-CHLORO-3-METHYLPHENOL
690U	2,4,6-TRICHLOROPHENOL
690U	2,4,5-TRICHLOROPHENOL
1400U	2,4-DINITROPHENOL
1400U	4-NITROPHENOL
690U	2,3,4,6-TETRACHLOROPHENOL
1400U	2-METHYL-4,6-DINITROPHENOL
1400U	PENTACHLOROPHENOL
5.4	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50152 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1000 STOP: 00/00/00
D. NUMBER: X715

UG/KG	ANALYTICAL RESULTS
9.8U	ALPHA-BHC
9.8U	BETA-BHC
9.8U	DELTA-BHC
9.8U	GAMMA-BHC (LINDANE)
9.8U	HEPTACHLOR
9.8U	ALDRIN
9.8U	HEPTACHLOR EPOXIDE
9.8U	ENDOSULFAN I (ALPHA)
20U	DIELDRIN
20U	4,4'-DDE (P,P'-DDE)
20U	ENDRIN
20U	ENDOSULFAN II (BETA)
20U	4,4'-DDD (P,P'-DDD)
20U	ENDOSULFAN SULFATE
20U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
98U	METHOXYCHLOR
20U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
98U	GAMMA-CHLORDANE /2
98U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
98U	PCB-1016 (AROCLOR 1016)
98U	PCB-1221 (AROCLOR 1221)
98U	PCB-1232 (AROCLOR 1232)
98U	PCB-1242 (AROCLOR 1242)
98U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
18	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

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**   PROJECT NO. 90-798    SAMPLE NO. 50152  SAMPLE TYPE: SOIL         PROG ELEM: NSF   COLLECTED BY: A HARVEY            **
**   SOURCE: HEYWOOD-WAKEFIELD DU                                       CITY: NEWPORT                ST: TN                  **
**   STATION ID: SS-04                                                  COLLECTION START: 09/13/90  1000   STOP: 00/00/00    **
**   CASE NO.: 14852          SAS NO.:                                  D. NO.: X715                 MD NO: X715             **
**                                                                                                                           **
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RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA. 10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50150 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-05
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1530 STOP: 00/00/00
D. NUMBER: X713

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
480U	ALPHA-BHC	4800U	METHOXYCHLOR
480U	BETA-BHC	960U	ENDRIN KETONE
480U	DELTA-BHC		CHLORDANE (TECH. MIXTURE) /1
480U	GAMMA-BHC (LINDANE)	4800U	GAMMA-CHLORDANE /2
480U	HEPTACHLOR	4800U	ALPHA-CHLORDANE /2
480U	ALDRIN	9600U	TOXAPHENE
480U	HEPTACHLOR EPOXIDE	4800U	PCB-1016 (AROCLOR 1016)
480U	ENDOSULFAN I (ALPHA)	4800U	PCB-1221 (AROCLOR 1221)
960U	DIELDRIN	4800U	PCB-1232 (AROCLOR 1232)
960U	4,4'-DDE (P,P'-DDE)	4800U	PCB-1242 (AROCLOR 1242)
960U	ENDRIN	4800U	PCB-1248 (AROCLOR 1248)
960U	ENDOSULFAN II (BETA)	9600U	PCB-1254 (AROCLOR 1254)
960U	4,4'-DDD (P,P'-DDD)	9600U	PCB-1260 (AROCLOR 1260)
960U	ENDOSULFAN SULFATE	75	PERCENT MOISTURE
960U	4,4'-DDT (P,P'-DDT)		

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50150 SAMPLE TYPE: SOIL	PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU	CITY: NEWPORT ST: TN
STATION ID: SS-05	COLLECTION START: 09/12/90 1530 STOP: 00/00/00
CASE NO.: 14852 SAS NO.:	D. NO.: X713 MD NO: X713

RESULTS	UNITS	PARAMETER
3.8U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49873 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-06

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
80U	CHLOROMETHANE
80U	VINYL CHLORIDE
80U	BROMOMETHANE
80U	CHLOROETHANE
80U	TRICHLOROFLUOROMETHANE
80U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
800U	ACETONE
800U	CARBON DISULFIDE
80U	METHYLENE CHLORIDE
80U	TRANS-1,2-DICHLOROETHENE
80U	1,1-DICHLOROETHANE
800U	VINYL ACETATE
80U	CIS-1,2-DICHLOROETHENE
80U	2,2 DICHLOROPROPANE
800U	METHYL ETHYL KETONE
80U	BROMOCHLOROMETHANE
80U	CHLOROFORM
80U	1,1,1-TRICHLOROETHANE
80U	1,1-DICHLOROPROPENE
80U	CARBON TETRACHLORIDE
80U	1,2-DICHLOROETHANE
80U	BENZENE
80U	TRICHLOROETHENE(TRICHLOROETHYLENE)
80U	1,2-DICHLOROPROPANE
80U	DIBROMOMETHANE
80U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
80U	CIS-1,3-DICHLOROPROPENE
800U	METHYL ISOBUTYL KETONE
80U	TOLUENE
80U	TRANS-1,3-DICHLOROPROPENE
80U	1,1,2-TRICHLOROETHANE
80U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
80U	1,3-DICHLOROPROPANE
800U	METHYL BUTYL KETONE
80U	DIBROMOCHLOROMETHANE
80U	CHLOROBENZENE
80U	1,1,1,2-TETRACHLOROETHANE
80U	ETHYL BENZENE
80U	(M- AND/OR P-)XYLENE
80U	O-XYLENE
80U	STYRENE
80U	BROMOFORM
80U	BROMOBENZENE
80U	1,1,2,2-TETRACHLOROETHANE
80U	1,2,3-TRICHLOROPROPANE
80U	O-CHLOROTOLUENE
80U	P-CHLOROTOLUENE
80U	1,3-DICHLOROBENZENE
80U	1,4-DICHLOROBENZENE
80U	1,2-DICHLOROBENZENE
37.7	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49873 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY. A HARVEY
SOURCE: HEYWOOD-WAKEFIELD CITY: NEWPORT ST. TN
STATION ID. SS-06 COLLECTION START. 09/13/90 0950 STOP 00/00/00

UG/KG	ANALYTICAL RESULTS
1100U	BIS(2 CHLOROETHYL) ETHER
1100U	BIS(2-CHLOROISOPROPYL) ETHER
1100U	N-NITROSODI-N-PROPYLAMINE
1100U	HEXACHLOROETHANE
1100U	NITROBENZENE
1100U	ISOPHORONE
1100U	BIS(2-CHLOROETHOXY) METHANE
1100U	1,2,4-TRICHLOROBENZENE
1100U	NAPHTHALENE
1100U	4-CHLOROANILINE
1100U	HEXACHLOROBUTADIENE
1100U	2-METHYLNAPHTHALENE
1100U	HEXACHLOROCYCLOPENTADIENE (HCCP)
1100U	2-CHLORONAPHTHALENE
1100U	2-NITROANILINE
1100U	DIMETHYL PHTHALATE
1100U	ACENAPHTHYLENE
1100U	2,6-DINITROTOLUENE
1100U	3-NITROANILINE
1100U	ACENAPHTHENE
1100U	DIBENZOFURAN
1100U	2,4-DINITROTOLUENE
1100U	DIETHYL PHTHALATE
1100U	FLUORENE
1100U	4-CHLOROPHENYL PHENYL ETHER
1100U	4-NITROANILINE
1100U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
1100U	4-BROMOPHENYL PHENYL ETHER
1100U	HEXACHLOROBENZENE (HCB)
1100U	PHENANTHRENE
1100U	ANTHRACENE
1100U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
1100U	FLUORANTHENE
1100U	PYRENE
1100U	BENZYL BUTYL PHTHALATE
1100U	3,3'-DICHLOROBENZIDINE
1100U	BENZO(A)ANTHRACENE
1100U	CHRYSENE
1100U	BIS(2-ETHYLHEXYL) PHTHALATE
1100U	DI-N-OCTYLPHTHALATE
1100U	BENZO(B AND/OR K)FLUORANTHENE
1100U	BENZO-A-PYRENE
1100U	INDENO (1,2,3-CD) PYRENE
1100U	DIBENZO(A,H)ANTHRACENE
1100U	BENZO(GHI)PERYLENE
1100U	PHENOL
1100U	2-CHLOROPHENOL
2100U	BENZYL ALCOHOL
1100U	2-METHYLPHENOL
1100U	(3-AND/OR 4-)METHYLPHENOL
1100U	2-NITROPHENOL
1100U	2,4-DIMETHYLPHENOL
2100U	BENZOIC ACID
1100U	2,4-DICHLOROPHENOL
1100U	4-CHLORO-3-METHYLPHENOL
1100U	2,4,6-TRICHLOROPHENOL
1100U	2,4,5-TRICHLOROPHENOL
2100U	2,4-DINITROPHENOL
2100U	4-NITROPHENOL
1100U	2,3,4,6-TETRACHLOROPHENOL
2100U	2-METHYL-4,6-DINITROPHENOL
2100U	PENTACHLOROPHENOL
37.7	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/04/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

** PROJECT NO. 90-883 SAMPLE NO. 49873 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTEDY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD CITY: NEWPORT ST: TN **
** STATION ID: SS-06 COLLECTION START: 09/13/90 0950 STOP: 00/00/00 **

ANALYTICAL RESULTS UG/KG

[redacted]

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50151 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-06
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00
D. NUMBER: X714

UG/KG	ANALYTICAL RESULTS
14U	ALPHA-BHC
14U	BETA-BHC
14U	DELTA-BHC
14U	GAMMA-BHC (LINDANE)
14U	HEPTACHLOR
14U	ALDRIN
14U	HEPTACHLOR EPOXIDE
14U	ENDOSULFAN I (ALPHA)
27U	DIELDRIN
27U	4,4'-DDE (P,P'-DDE)
27U	ENDRIN
27U	ENDOSULFAN II (BETA)
27U	4,4'-DDD (P,P'-DDD)
27U	ENDOSULFAN SULFATE
27U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
140U	METHOXYCHLOR
27U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
140U	GAMMA-CHLORDANE /2
140U	ALPHA-CHLORDANE /2
270U	TOXAPHENE
140U	PCB-1016 (AROCLOR 1016)
140U	PCB-1221 (AROCLOR 1221)
140U	PCB-1232 (AROCLOR 1232)
140U	PCB-1242 (AROCLOR 1242)
140U	PCB-1248 (AROCLOR 1248)
270U	PCB-1254 (AROCLOR 1254)
270U	PCB-1260 (AROCLOR 1260)
41	PERCENT MOISTURE

FOOTNOTES
*A AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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*R QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED. SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50151 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-06
CASE NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00
D. NO.: X714 MD NO: X714

RESULTS	UNITS	PARAMETER
1.7U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90 883 SAMPLE NO. 49863 SAMPLE TYPE: SEDIMBLK PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD CITY: NEWPORT ST: TN
STATION ID: TB-01S COLLECTION START: 09/10/90 0815 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
40U	CHLOROMETHANE	40U	CIS-1,3-DICHLOROPROPENE
40U	VINYL CHLORIDE	4000U	METHYL ISOBUTYL KETONE
40U	BROMOMETHANE	40U	TOLUENE
40U	CHLOROETHANE	40U	TRANS-1,3-DICHLOROPROPENE
40U	TRICHLOROFLUOROMETHANE	40U	1,1,2-TRICHLOROETHANE
40U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)	40U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
4000U	ACETONE	40U	1,3-DICHLOROPROPANE
4000U	CARBON DISULFIDE	4000U	METHYL BUTYL KETONE
40U	METHYLENE CHLORIDE	40U	DIBROMOCHLOROMETHANE
40U	TRANS-1,2-DICHLOROETHENE	40U	CHLOROBENZENE
40U	1,1-DICHLOROETHANE	40U	1,1,1,2-TETRACHLOROETHANE
4000U	VINYL ACETATE	40U	ETHYL BENZENE
40U	CIS-1,2-DICHLOROETHENE	40U	(M- AND/OR P-)XYLENE
40U	2,2-DICHLOROPROPANE	40U	O-XYLENE
4000U	METHYL ETHYL KETONE	40U	STYRENE
40U	BROMOCHLOROMETHANE	40U	BROMOFORM
40U	CHLOROFORM	40U	BROMOBENZENE
40U	1,1,1-TRICHLOROETHANE	40U	1,1,2,2-TETRACHLOROETHANE
40U	1,1-DICHLOROPROPENE	40U	1,2,3-TRICHLOROPROPANE
40U	CARBON TETRACHLORIDE	40U	O-CHLOROTOLUENE
40U	1,2-DICHLOROETHANE	40U	P-CHLOROTOLUENE
40U	BENZENE	40U	1,3-DICHLOROBENZENE
40U	TRICHLOROETHENE(TRICHLOROETHYLENE)	40U	1,4-DICHLOROBENZENE
40U	1,2-DICHLOROPROPANE	40U	1,2-DICHLOROBENZENE
40U	DIBROMOMETHANE	10.0	PERCENT MOISTURE
40U	BROMODICHLOROMETHANE		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49865 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1315 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
810U	BIS(2 CHLOROETHYL) ETHER
810U	BIS(2-CHLOROISOPROPYL) ETHER
810U	N-NITROSODI-N-PROPYLAMINE
810U	HEXACHLOROETHANE
810U	NITROBENZENE
810U	ISOPHORONE
810U	BIS(2-CHLOROETHOXY) METHANE
810U	1,2,4-TRICHLOROBENZENE
810U	NAPHTHALENE
810U	4-CHLOROANILINE
810U	HEXACHLOROBUTADIENE
810U	2-METHYLNAPHTHALENE
810U	HEXACHLOROCYCLOPENTADIENE (HCCP)
810U	2-CHLORONAPHTHALENE
810U	2-NITROANILINE
810U	DIMETHYL PHTHALATE
810U	ACENAPHTHYLENE
810U	2,6-DINITROTOLUENE
810U	3-NITROANILINE
810U	ACENAPHTHENE
810U	DIBENZOFURAN
810U	2,4-DINITROTOLUENE
810U	DIETHYL PHTHALATE
810U	FLUORENE
810U	4-CHLOROPHENYL PHENYL ETHER
810U	4-NITROANILINE
810U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
810U	4-BROMOPHENYL PHENYL ETHER
810U	HEXACHLOROBENZENE (HCB)
810U	PHENANTHRENE
810U	ANTHRACENE
810U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
810U	FLUORANTHENE
810U	PYRENE
810U	BENZYL BUTYL PHTHALATE
810U	3,3'-DICHLOROBENZIDINE
810U	BENZO(A)ANTHRACENE
810U	CHRYSENE
810U	BIS(2-ETHYLHEXYL) PHTHALATE
810U	DI-N-OCTYLPHTHALATE
810U	BENZO(B AND/OR K)FLUORANTHENE
810U	BENZO-A-PYRENE
810U	INDENO (1,2,3 CD) PYRENE
810U	DIBENZO(A,H)ANTHRACENE
810U	BENZO(GHI)PERYLENE
810U	PHENOL
810U	2-CHLOROPHENOL
1600U	BENZYL ALCOHOL
810U	2-METHYLPHENOL
810U	(3-AND/OR 4-)METHYLPHENOL
810U	2-NITROPHENOL
810U	2,4-DIMETHYLPHENOL
1600U	BENZOIC ACID
810U	2,4-DICHLOROPHENOL
810U	4-CHLORO-3-METHYLPHENOL
810U	2,4,6-TRICHLOROPHENOL
810U	2,4,5-TRICHLOROPHENOL
1600U	2,4-DINITROPHENOL
1600U	4-NITROPHENOL
810U	2,3,4,6-TETRACHLOROPHENOL
1600U	2-METHYL-4,6-DINITROPHENOL
1600U	PENTACHLOROPHENOL
19.1	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50143 SAMPLE TYPE:
SOURCE:
STATION ID: SB-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1315 STOP: 00/00/00
D. NUMBER: X706

UG/KG	ANALYTICAL RESULTS
9.9U	ALPHA-BHC
9.9U	BETA-BHC
9.9U	DELTA-BHC
9.9U	GAMMA-BHC (LINDANE)
9.9U	HEPTACHLOR
9.9U	ALDRIN
9.9U	HEPTACHLOR EPOXIDE
9.9U	ENDOSULFAN I (ALPHA)
20U	DIELDRIN
20U	4,4'-DDE (P,P'-DDE)
20U	ENDRIN
20U	ENDOSULFAN II (BETA)
20U	4,4'-DDD (P,P'-DDD)
20U	ENDOSULFAN SULFATE
20U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
99U	METHOXYCHLOR
20U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
99U	GAMMA-CHLORDANE /2
99U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
99U	PCB-1016 (AROCLOR 1016)
99U	PCB-1221 (AROCLOR 1221)
99U	PCB-1232 (AROCLOR 1232)
99U	PCB-1242 (AROCLOR 1242)
99U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
19	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50143 SAMPLE TYPE:
SOURCE:
STATION ID: SB-01
CASE NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1315 STOP: 00/00/00
D. NO.: X706 MD NO: X706

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49871 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SB-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1625 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
770U	BIS(2 CHLOROETHYL) ETHER
770U	BIS(2-CHLOROISOPROPYL) ETHER
770U	N-NITROSODI N-PROPYLAMINE
770U	HEXACHLOROETHANE
770U	NITROBENZENE
770U	ISOPHORONE
770U	BIS(2-CHLOROETHOXY) METHANE
770U	1,2,4-TRICHLOROBENZENE
770U	NAPHTHALENE
770U	4-CHLOROANILINE
770U	HEXACHLOROBUTADIENE
770U	2-METHYLNAPHTHALENE
770U	HEXACHLOROCYCLOPENTADIENE (HCCP)
770U	2-CHLORONAPHTHALENE
770U	2-NITROANILINE
770U	DIMETHYL PHTHALATE
770U	ACENAPHTHYLENE
770U	2,6-DINITROTOLUENE
770U	3-NITROANILINE
770U	ACENAPHTHENE
770U	DIBENZOFURAN
770U	2,4-DINITROTOLUENE
770U	DIETHYL PHTHALATE
770U	FLUORENE
770U	4-CHLOROPHENYL PHENYL ETHER
770U	4-NITROANILINE
770U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
770U	4-BROMOPHENYL PHENYL ETHER
770U	HEXACHLOROBENZENE (HCB)
770U	PHENANTHRENE
770U	ANTHRACENE
770U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
770U	FLUORANTHENE
770U	PYRENE
770U	BENZYL BUTYL PHTHALATE
770U	3,3'-DICHLOROBENZIDINE
770U	BENZO(A)ANTHRACENE
770U	CHRYSENE
770U	BIS(2-ETHYLHEXYL) PHTHALATE
770U	DI-N-OCTYLPHTHALATE
770U	BENZO(B AND/OR K)FLUORANTHENE
770U	BENZO-A-PYRENE
770U	INDENO (1,2,3 CD) PYRENE
770U	DIBENZO(A,H)ANTHRACENE
770U	BENZO(GHI)PERYLENE
770U	PHENOL
770U	2-CHLOROPHENOL
1500U	BENZYL ALCOHOL
770U	2-METHYLPHENOL
770U	(3-AND/OR 4-)METHYLPHENOL
770U	2-NITROPHENOL
770U	2,4-DIMETHYLPHENOL
1500U	BENZOIC ACID
770U	2,4-DICHLOROPHENOL
770U	4-CHLORO-3-METHYLPHENOL
770U	2,4,6-TRICHLOROPHENOL
770U	2,4,5-TRICHLOROPHENOL
1500U	2,4-DINITROPHENOL
1500U	4-NITROPHENOL
770U	2,3,4,6-TETRACHLOROPHENOL
1500U	2-METHYL-4,6-DINITROPHENOL
1500U	PENTACHLOROPHENOL
23.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50149 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1625 STOP: 00/00/00
D. NUMBER. X712

UG/KG	ANALYTICAL RESULTS
11U	ALPHA-BHC
11U	BETA-BHC
11U	DELTA-BHC
11U	GAMMA-BHC (LINDANE)
11U	HEPTACHLOR
11U	ALDRIN
11U	HEPTACHLOR EPOXIDE
11U	ENDOSULFAN I (ALPHA)
21U	DIELDRIN
21U	4,4'-DDE (P,P'-DDE)
21U	ENDRIN
21U	ENDOSULFAN II (BETA)
21U	4,4'-DDD (P,P'-DDD)
21U	ENDOSULFAN SULFATE
21U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
110U	METHOXYCHLOR
21U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
110U	GAMMA-CHLORDANE /2
110U	ALPHA-CHLORDANE /2
210U	TOXAPHENE
110U	PCB-1016 (AROCLOR 1016)
110U	PCB-1221 (AROCLOR 1221)
110U	PCB-1232 (AROCLOR 1232)
110U	PCB-1242 (AROCLOR 1242)
110U	PCB-1248 (AROCLOR 1248)
210U	PCB-1254 (AROCLOR 1254)
210U	PCB-1260 (AROCLOR 1260)
24	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-798 SAMPLE NO. 50149 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID. SB-02 COLLECTION START: 09/12/90 1625 STOP: 00/00/00 **
** CASE NO.: 14852 SAS NO.: D. NO.: X712 MD NO: X712 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49876 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SB-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
55UJ	CHLOROMETHANE
55UJ	VINYL CHLORIDE
55UJ	BROMOMETHANE
55UJ	CHLOROETHANE
55UJ	TRICHLOROFLUOROMETHANE
55UJ	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
550UJ	ACETONE
550UJ	CARBON DISULFIDE
110UJ	METHYLENE CHLORIDE
55UJ	TRANS-1,2-DICHLOROETHENE
55UJ	1,1-DICHLOROETHANE
550UJ	VINYL ACETATE
55UJ	CIS-1,2-DICHLOROETHENE
55UJ	2,2 DICHLOROPROPANE
550UJ	METHYL ETHYL KETONE
55UJ	BROMOCHLOROMETHANE
55UJ	CHLOROFORM
55UJ	1,1,1-TRICHLOROETHANE
55UJ	1,1-DICHLOROPROPENE
55UJ	CARBON TETRACHLORIDE
55UJ	1,2-DICHLOROETHANE
55UJ	BENZENE
55UJ	TRICHLOROETHENE(TRICHLOROETHYLENE)
55UJ	1,2-DICHLOROPROPANE
55UJ	DIBROMOMETHANE
55UJ	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
55UJ	CIS-1,3-DICHLOROPROPENE
550UJ	METHYL ISOBUTYL KETONE
55UJ	TOLUENE
55UJ	TRANS-1,3-DICHLOROPROPENE
55UJ	1,1,2-TRICHLOROETHANE
55UJ	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
55UJ	1,3-DICHLOROPROPANE
550UJ	METHYL BUTYL KETONE
55UJ	DIBROMOCHLOROMETHANE
55UJ	CHLOROBENZENE
55UJ	1,1,1,2-TETRACHLOROETHANE
55UJ	ETHYL BENZENE
55UJ	(M- AND/OR P-)XYLENE
55UJ	O-XYLENE
55UJ	STYRENE
55UJ	BROMOFORM
55UJ	BROMOBENZENE
55UJ	1,1,2,2-TETRACHLOROETHANE
55UJ	1,2,3-TRICHLOROPROPANE
55UJ	O-CHLOROTOLUENE
55UJ	P-CHLOROTOLUENE
55UJ	1,3-DICHLOROBENZENE
55UJ	1,4-DICHLOROBENZENE
55UJ	1,2-DICHLOROBENZENE
24.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90 883 SAMPLE NO. 49876 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SB-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
840U	BIS(2 CHLOROETHYL) ETHER
840U	BIS(2-CHLOROISOPROPYL) ETHER
840U	N-NITROSODI-N-PROPYLAMINE
840U	HEXACHLOROETHANE
840U	NITROBENZENE
840U	ISOPHORONE
840U	BIS(2-CHLOROETHOXY) METHANE
840U	1,2,4-TRICHLOROBENZENE
840U	NAPHTHALENE
840U	4-CHLOROANILINE
840U	HEXACHLOROBUTADIENE
840U	2-METHYLNAPHTHALENE
840U	HEXACHLOROCYCLOPENTADIENE (HCCP)
840U	2 CHLORONAPHTHALENE
840U	2-NITROANILINE
840U	DIMETHYL PHTHALATE
840U	ACENAPHTHYLENE
840U	2,6-DINITROTOLUENE
840U	3 NITROANILINE
840U	ACENAPHTHENE
840U	DIBENZOFURAN
840U	2,4-DINITROTOLUENE
840U	DIETHYL PHTHALATE
840U	FLUORENE
840U	4-CHLOROPHENYL PHENYL ETHER
840U	4-NITROANILINE
840U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
840U	4-BROMOPHENYL PHENYL ETHER
840U	HEXACHLOROBENZENE (HCB)
840U	PHENANTHRENE
840U	ANTHRACENE
840U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
840U	FLUORANTHENE
840U	PYRENE
840U	BENZYL BUTYL PHTHALATE
840U	3,3'-DICHLOROBENZIDINE
840U	BENZO(A)ANTHRACENE
840U	CHRYSENE
840U	BIS(2-ETHYLHEXYL) PHTHALATE
840U	DI-N-OCTYLPHTHALATE
840U	BENZO(B AND/OR K)FLUORANTHENE
840U	BENZO-A-PYRENE
840U	INDENO (1,2,3 CD) PYRENE
840U	DIBENZO(A,H)ANTHRACENE
840U	BENZO(GHI)PERYLENE
840U	PHENOL
840U	2-CHLOROPHENOL
1700U	BENZYL ALCOHOL
840U	2-METHYLPHENOL
840U	(3-AND/OR 4-)METHYLPHENOL
840U	2-NITROPHENOL
840U	2,4-DIMETHYLPHENOL
1700U	BENZOIC ACID
840U	2,4-DICHLOROPHENOL
840U	4-CHLORO-3-METHYLPHENOL
840U	2,4,6-TRICHLOROPHENOL
840U	2,4,5-TRICHLOROPHENOL
1700U	2,4-DINITROPHENOL
1700U	4-NITROPHENOL
840U	2,3,4,6-TETRACHLOROPHENOL
1700U	2-METHYL-4,6-DINITROPHENOL
1700U	PENTACHLOROPHENOL
24.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50155 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00
D. NUMBER: X718

UG/KG	ANALYTICAL RESULTS
11U	ALPHA-BHC
11U	BETA-BHC
11U	DELTA-BHC
11U	GAMMA-BHC (LINDANE)
11U	HEPTACHLOR
11U	ALDRIN
11U	HEPTACHLOR EPOXIDE
11U	ENDOSULFAN I (ALPHA)
21U	DIELDRIN
21U	4,4'-DDE (P,P'-DDE)
21U	ENDRIN
21U	ENDOSULFAN II (BETA)
21U	4,4'-DDD (P,P'-DDD)
21U	ENDOSULFAN SULFATE
21U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
110U	METHOXYCHLOR
21U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
110U	GAMMA-CHLORDANE /2
110U	ALPHA-CHLORDANE /2
210U	TOXAPHENE
110U	PCB-1016 (AROCLOR 1016)
110U	PCB-1221 (AROCLOR 1221)
110U	PCB-1232 (AROCLOR 1232)
110U	PCB-1242 (AROCLOR 1242)
110U	PCB-1248 (AROCLOR 1248)
210U	PCB-1254 (AROCLOR 1254)
210U	PCB-1260 (AROCLOR 1260)
24	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO 50155 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-03
CASE.NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00
D. NO.: X718 MD NO: X718

RESULTS	UNITS	PARAMETER
1.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90 883 SAMPLE NO 49877 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST. TN
COLLECTION START. 09/13/90 1015 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
44U	CHLOROMETHANE
44U	VINYL CHLORIDE
44U	BROMOMETHANE
44U	CHLOROETHANE
44U	TRICHLOROFLUOROMETHANE
44U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
440U	ACETONE
440U	CARBON DISULFIDE
88U	METHYLENE CHLORIDE
44U	TRANS-1,2-DICHLOROETHENE
44U	1,1-DICHLOROETHANE
440U	VINYL ACETATE
44U	CIS-1,2-DICHLOROETHENE
44U	2,2-DICHLOROPROPANE
440U	METHYL ETHYL KETONE
44U	BROMOCHLOROMETHANE
44U	CHLOROFORM
44U	1,1,1-TRICHLOROETHANE
44U	1,1-DICHLOROPROPENE
44U	CARBON TETRACHLORIDE
44U	1,2-DICHLOROETHANE
44U	BENZENE
44U	TRICHLOROETHENE(TRICHLOROETHYLENE)
44U	1,2-DICHLOROPROPANE
44U	DIBROMOMETHANE
44U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
44U	CIS-1,3-DICHLOROPROPENE
440U	METHYL ISOBUTYL KETONE
44U	TOLUENE
44U	TRANS-1,3-DICHLOROPROPENE
44U	1,1,2-TRICHLOROETHANE
44U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
44U	1,3-DICHLOROPROPANE
440U	METHYL BUTYL KETONE
44U	DIBROMOCHLOROMETHANE
44U	CHLOROBENZENE
44U	1,1,1,2 TETRACHLOROETHANE
44U	ETHYL BENZENE
44U	(M- AND/OR P-)XYLENE
44U	O-XYLENE
44U	STYRENE
44U	BROMOFORM
44U	BROMOBENZENE
44U	1,1,2,2-TETRACHLOROETHANE
44U	1,2,3-TRICHLOROPROPANE
44U	O-CHLOROTOLUENE
44U	P CHLOROTOLUENE
44U	1,3-DICHLOROBENZENE
44U	1,4-DICHLOROBENZENE
44U	1,2-DICHLOROBENZENE
5.7	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

** PROJECT NO. 90 883 SAMPLE NO. 49877 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD CITY: NEWPORT ST: TN **
** STATION ID: SB-04 COLLECTION START: 09/13/90 1015 STOP: 00/00/00 **

UG/KG	ANALYTICAL RESULTS
700U	BIS(2 CHLOROETHYL) ETHER
700U	BIS(2-CHLOROISOPROPYL) ETHER
700U	N-NITROSODI-N-PROPYLAMINE
700U	HEXACHLOROETHANE
700U	NITROBENZENE
700U	ISOPHORONE
700U	BIS(2-CHLOROETHOXY) METHANE
700U	1 2,4-TRICHLOROBENZENE
700U	NAPHTHALENE
700U	4-CHLOROANILINE
700U	HEXACHLOROBUTADIENE
700U	2-METHYLNAPHTHALENE
700U	HEXACHLOROCYCLOPENTADIENE (HCCP)
700U	2 CHLORONAPHTHALENE
700U	2-NITROANILINE
700U	DIMETHYL PHTHALATE
700U	ACENAPHTHYLENE
700U	2,6-DINITROTOLUENE
700U	3-NITROANILINE
700U	ACENAPHTHENE
700U	DIBENZOFURAN
700U	2,4-DINITROTOLUENE
700U	DIETHYL PHTHALATE
700U	FLUORENE
700U	4-CHLOROPHENYL PHENYL ETHER
700U	4-NITROANILINE
700U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
700U	4-BROMOPHENYL PHENYL ETHER
700U	HEXACHLOROBENZENE (HCB)
700U	PHENANTHRENE
700U	ANTHRACENE
700U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
700U	FLUORANTHENE
700U	PYRENE
700U	BENZYL BUTYL PHTHALATE
700U	3,3'-DICHLOROBENZIDINE
700U	BENZO(A)ANTHRACENE
700U	CHRYSENE
700U	BIS(2-ETHYLHEXYL) PHTHALATE
700U	DI-N-OCTYL PHTHALATE
700U	BENZO(B AND/OR K)FLUORANTHENE
700U	BENZO-A-PYRENE
700U	INDENO (1,2,3 CD) PYRENE
700U	DIBENZO(A,H)ANTHRACENE
700U	BENZO(GHI)PERYLENE
700U	PHENOL
700U	2-CHLOROPHENOL
1400U	BENZYL ALCOHOL
700U	2-METHYLPHENOL
700U	(3-AND/OR 4-)METHYLPHENOL
700U	2-NITROPHENOL
700U	2,4-DIMETHYLPHENOL
1400U	BENZOIC ACID
700U	2,4-DICHLOROPHENOL
700U	4-CHLORO-3-METHYLPHENOL
700U	2,4,6-TRICHLOROPHENOL
700U	2,4,5-TRICHLOROPHENOL
1400U	2,4-DINITROPHENOL
1400U	4-NITROPHENOL
700U	2,3,4,6-TETRACHLOROPHENOL
1400U	2-METHYL-4,6-DINITROPHENOL
1400U	PENTACHLOROPHENOL
5.7	PERCENT MOISTURE

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50154 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1015 STOP: 00/00/00
D. NUMBER: X717

UG/KG	ANALYTICAL RESULTS
8.5U	ALPHA-BHC
8.5U	BETA-BHC
8.5U	DELTA-BHC
8.5U	GAMMA-BHC (LINDANE)
8.5U	HEPTACHLOR
8.5U	ALDRIN
8.5U	HEPTACHLOR EPOXIDE
8.5U	ENDOSULFAN I (ALPHA)
17U	DIELDRIN
17U	4,4'-DDE (P,P'-DDE)
17U	ENDRIN
17U	ENDOSULFAN II (BETA)
17U	4,4'-DDD (P,P'-DDD)
17U	ENDOSULFAN SULFATE
17U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
85U	METHOXYCHLOR
17U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
85U	GAMMA-CHLORDANE /2
85U	ALPHA-CHLORDANE /2
170U	TOXAPHENE
85U	PCB-1016 (AROCLOR 1016)
85U	PCB-1221 (AROCLOR 1221)
85U	PCB-1232 (AROCLOR 1232)
85U	PCB-1242 (AROCLOR 1242)
85U	PCB-1248 (AROCLOR 1248)
170U	PCB-1254 (AROCLOR 1254)
170U	PCB-1260 (AROCLOR 1260)
6	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA NOT ANALYZED *NAI INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798   SAMPLE NO. 50154   SAMPLE TYPE: SOIL   PROG ELEM: NSF   COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU   CITY: NEWPORT   ST: TN
STATION ID: SB-04   COLLECTION START: 09/13/90 1015   STOP: 00/00/00
CASE NO.: 14852   SAS NO.:   D. NO.: X717   MD NO: X717

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49866 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY. A HARVEY
SOURCE: HEYWOOD-WAKEFIELD CITY: NEWPORT ST: TN
STATION ID. SD-01 COLLECTION START: 09/12/90 1445 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
810U	BIS(2 CHLOROETHYL) ETHER
810U	BIS(2-CHLOROISOPROPYL) ETHER
810U	N-NITROSODI-N-PROPYLAMINE
810U	HEXACHLOROETHANE
810U	NITROBENZENE
810U	ISOPHORONE
810U	BIS(2-CHLOROETHOXY) METHANE
810U	1,2,4-TRICHLOROBENZENE
810U	NAPHTHALENE
810U	4-CHLOROANILINE
810U	HEXACHLOROBUTADIENE
810U	2-METHYLNAPHTHALENE
810U	HEXACHLOROCYCLOPENTADIENE (HCCP)
810U	2 CHLORONAPHTHALENE
810U	2-NITROANILINE
810U	DIMETHYL PHTHALATE
810U	ACENAPHTHYLENE
810U	2,6-DINITROTOLUENE
810U	3-NITROANILINE
810U	ACENAPHTHENE
810U	DIBENZOFURAN
810U	2,4-DINITROTOLUENE
810U	DIETHYL PHTHALATE
810U	FLUORENE
810U	4-CHLOROPHENYL PHENYL ETHER
810U	4-NITROANILINE
810U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
810U	4-BROMOPHENYL PHENYL ETHER
810U	HEXACHLOROBENZENE (HCB)
810U	PHENANTHRENE
810U	ANTHRACENE
810U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
810U	FLUORANTHENE
810U	PYRENE
810U	BENZYL BUTYL PHTHALATE
810U	3,3'-DICHLOROBENZIDINE
810U	BENZO(A)ANTHRACENE
810U	CHRYSENE
810U	BIS(2-ETHYLHEXYL) PHTHALATE
810U	DI-N-OCTYLPHTHALATE
810U	BENZO(B AND/OR K)FLUORANTHENE
810U	BENZO-A-PYRENE
810U	INDENO (1,2,3 CD) PYRENE
810U	DIBENZO(A,H)ANTHRACENE
810U	BENZO(GHI)PERYLENE
810U	PHENOL
810U	2-CHLOROPHENOL
1600U	BENZYL ALCOHOL
810U	2-METHYLPHENOL
810U	(3-AND/OR 4-)METHYLPHENOL
810U	2-NITROPHENOL
810U	2,4-DIMETHYLPHENOL
1600U	BENZOIC ACID
810U	2,4-DICHLOROPHENOL
810U	4-CHLORO-3-METHYLPHENOL
810U	2,4,6-TRICHLOROPHENOL
810U	2,4,5-TRICHLOROPHENOL
1600U	2,4-DINITROPHENOL
1600U	4-NITROPHENOL
810U	2,3,4,6-TETRACHLOROPHENOL
1600U	2-METHYL-4,6-DINITROPHENOL
1600U	PENTACHLOROPHENOL
19.8	PERCENT MOISTURE

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50144 SAMPLE TYPE: SOIL
PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU
CITY: NEWPORT ST: TN
STATION ID: SD-01
COLLECTION START: 09/12/90 1445 STOP: 00/00/00
CASE NUMBER: 14852 SAS NUMBER:
D. NUMBER: X707

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
100U	ALPHA-BHC	1000U	METHOXYCHLOR
100U	BETA-BHC	200U	ENDRIN KETONE
100U	DELTA-BHC		CHLORDANE (TECH. MIXTURE) /1
100U	GAMMA-BHC (LINDANE)	1000U	GAMMA-CHLORDANE /2
100U	HEPTACHLOR	1000U	ALPHA-CHLORDANE /2
100U	ALDRIN	2000U	TOXAPHENE
100U	HEPTACHLOR EPOXIDE	1000U	PCB-1016 (AROCLOR 1016)
100U	ENDOSULFAN I (ALPHA)	1000U	PCB-1221 (AROCLOR 1221)
200U	DIELDRIN	1000U	PCB-1232 (AROCLOR 1232)
200U	4,4'-DDE (P,P'-DDE)	1000U	PCB-1242 (AROCLOR 1242)
200U	ENDRIN	1000U	PCB-1248 (AROCLOR 1248)
200U	ENDOSULFAN II (BETA)	2000U	PCB-1254 (AROCLOR 1254)
200U	4,4'-DDD (P,P'-DDD)	2000U	PCB-1260 (AROCLOR 1260)
200U	ENDOSULFAN SULFATE	21	PERCENT MOISTURE
200U	4,4'-DDT (P,P'-DDT)		

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-798 SAMPLE NO. 50144 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SD-01 COLLECTION START: 09/12/90 1445 STOP: 00/00/00 **
** CASE NO.: 14852 SAS NO.: D. NO.: X707 MD NO: X707 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO. 49867 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SD-02

PROG ELEM: NSF COLLECTED BY. A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/12/90 1450 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
980U	BIS(2 CHLOROETHYL) ETHER
980U	BIS(2-CHLOROISOPROPYL) ETHER
980U	N-NITROSODI-N-PROPYLAMINE
980U	HEXACHLOROETHANE
980U	NITROBENZENE
980U	ISOPHORONE
980U	BIS(2-CHLOROETHOXY) METHANE
980U	1,2,4-TRICHLOROBENZENE
980U	NAPHTHALENE
980U	4-CHLOROANILINE
980U	HEXACHLOROBUTADIENE
980U	2-METHYLNAPHTHALENE
980U	HEXACHLOROCYCLOPENTADIENE (HCCP)
980U	2-CHLORONAPHTHALENE
980U	2-NITROANILINE
980U	DIMETHYL PHTHALATE
980U	ACENAPHTHYLENE
980U	2,6-DINITROTOLUENE
980U	3-NITROANILINE
980U	ACENAPHTHENE
980U	DIBENZOFURAN
980U	2,4-DINITROTOLUENE
980U	DIETHYL PHTHALATE
980U	FLUORENE
980U	4-CHLOROPHENYL PHENYL ETHER
980U	4-NITROANILINE
980U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
980U	4-BROMOPHENYL PHENYL ETHER
980U	HEXACHLOROBENZENE (HCB)
980U	PHENANTHRENE
980U	ANTHRACENE
980U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
980U	FLUORANTHENE
980U	PYRENE
980U	BENZYL BUTYL PHTHALATE
980U	3,3'-DICHLOROBENZIDINE
980U	BENZO(A)ANTHRACENE
980U	CHRYSENE
980U	BIS(2-ETHYLHEXYL) PHTHALATE
980U	DI-N-OCTYLPHTHALATE
980U	BENZO(B AND/OR K)FLUORANTHENE
980U	BENZO-A-PYRENE
980U	INDENO (1,2,3-CD) PYRENE
980U	DIBENZO(A,H)ANTHRACENE
980U	BENZO(GHI)PERYLENE
980U	PHENOL
980U	2-CHLOROPHENOL
2000U	BENZYL ALCOHOL
980U	2-METHYLPHENOL
980U	(3-AND/OR 4-)METHYLPHENOL
980U	2-NITROPHENOL
980U	2,4-DIMETHYLPHENOL
2000U	BENZOIC ACID
980U	2,4-DICHLOROPHENOL
980U	4-CHLORO-3-METHYLPHENOL
980U	2,4,6-TRICHLOROPHENOL
980U	2,4,5-TRICHLOROPHENOL
2000U	2,4-DINITROPHENOL
2000U	4-NITROPHENOL
980U	2,3,4,6-TETRACHLOROPHENOL
2000U	2-METHYL-4,6-DINITROPHENOL
2000U	PENTACHLOROPHENOL
32.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA REGION IV ESD, ATHENS, GA

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50145 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID. SD-02
CASE NUMBER 14852 SAS NUMBER:

PROG ELEM. NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1450 STOP: 00/00/00
D. NUMBER X708

UG/KG	ANALYTICAL RESULTS
12U	ALPHA-BHC
12U	BETA-BHC
12U	DELTA-BHC
12U	GAMMA-BHC (LINDANE)
12U	HEPTACHLOR
12U	ALDRIN
12U	HEPTACHLOR EPOXIDE
12U	ENDOSULFAN I (ALPHA)
24U	DIELDRIN
24U	4,4'-DDE (P,P'-DDE)
24U	ENDRIN
24U	ENDOSULFAN II (BETA)
24U	4,4'-DDD (P,P'-DDD)
24U	ENDOSULFAN SULFATE
24U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
120U	METHOXYCHLOR
24U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
120U	GAMMA-CHLORDANE /2
120U	ALPHA-CHLORDANE /2
240U	TOXAPHENE
120U	PCB-1016 (AROCLOR 1016)
120U	PCB-1221 (AROCLOR 1221)
120U	PCB-1232 (AROCLOR 1232)
120U	PCB-1242 (AROCLOR 1242)
120U	PCB-1248 (AROCLOR 1248)
240U	PCB-1254 (AROCLOR 1254)
240U	PCB-1260 (AROCLOR 1260)
33	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50145 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN
STATION ID: SD-02 COLLECTION START: 09/12/90 1450 STOP: 00/00/00
CASE NO.: 14852 SAS NO.: D. NO.: X708 MD NO: X708

RESULTS	UNITS	PARAMETER
1.5U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO 90-798 SAMPLE NO 50146 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-03
CASE NUMBER 14852 SAS NUMBER

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00
D. NUMBER: X709

UG/KG	ANALYTICAL RESULTS
150U	ALPHA-BHC
150U	BETA-BHC
150U	DELTA-BHC
150U	GAMMA-BHC (LINDANE)
150U	HEPTACHLOR
150U	ALDRIN
150U	HEPTACHLOR EPOXIDE
150U	ENDOSULFAN I (ALPHA)
310U	DIELDRIN
310U	4,4'-DDE (P,P'-DDE)
310U	ENDRIN
310U	ENDOSULFAN II (BETA)
310U	4,4'-DDD (P,P'-DDD)
310U	ENDOSULFAN SULFATE
310U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
1500U	METHOXYCHLOR
310U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
1500U	GAMMA-CHLORDANE /2
1500U	ALPHA-CHLORDANE /2
3100U	TOXAPHENE
1500U	PCB-1016 (AROCLOR 1016)
1500U	PCB-1221 (AROCLOR 1221)
1500U	PCB-1232 (AROCLOR 1232)
1500U	PCB-1242 (AROCLOR 1242)
1500U	PCB-1248 (AROCLOR 1248)
3100U	PCB-1254 (AROCLOR 1254)
3100U	PCB-1260 (AROCLOR 1260)
22	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA NOT ANALYZED *NAI INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA. 11/02/90

SPECIFIED ANALYSIS DATA REPORT

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**   PROJECT NO. 90-798    SAMPLE NO. 50146  SAMPLE TYPE: SOIL      PROG ELEM: NSF   COLLECTED BY: A HARVEY             **
**   SOURCE: HEYWOOD-WAKEFIELD DU                                   CITY: NEWPORT             ST: TN                    **
**   STATION ID: SD-03                                              COLLECTION START: 09/12/90  1500   STOP: 00/00/00  **
**   CASE NO.: 14852          SAS NO.:                              D. NO.: X709               MD NO: X709             **
**                                                                                                                      **
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RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO 49869 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SD-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START 09/12/90 1520 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
750U	BIS(2 CHLOROETHYL) ETHER
750U	BIS(2-CHLOROISOPROPYL) ETHER
750U	N-NITROSODI N-PROPYLAMINE
750U	HEXACHLOROETHANE
750U	NITROBENZENE
750U	ISOPHORONE
750U	BIS(2-CHLOROETHOXY) METHANE
750U	1,2,4-TRICHLOROBENZENE
750U	NAPHTHALENE
750U	4-CHLOROANILINE
750U	HEXACHLOROBUTADIENE
750U	2-METHYLNAPHTHALENE
750U	HEXACHLOROCYCLOPENTADIENE (HCCP)
750U	2 CHLORONAPHTHALENE
750U	2-NITROANILINE
750U	DIMETHYL PHTHALATE
750U	ACENAPHTHYLENE
750U	2,6-DINITROTOLUENE
750U	3-NITROANILINE
750U	ACENAPHTHENE
750U	DIBENZOFURAN
750U	2,4-DINITROTOLUENE
750U	DIETHYL PHTHALATE
750U	FLUORENE
750U	4-CHLOROPHENYL PHENYL ETHER
750U	4-NITROANILINE
750U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
750U	4-BROMOPHENYL PHENYL ETHER
750U	HEXACHLOROBENZENE (HCB)
750U	PHENANTHRENE
750U	ANTHRACENE
750U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
750U	FLUORANTHENE
750U	PYRENE
750U	BENZYL BUTYL PHTHALATE
750U	3,3'-DICHLOROBENZIDINE
750U	BENZO(A)ANTHRACENE
750U	CHRYSENE
750U	BIS(2-ETHYLHEXYL) PHTHALATE
750U	DI-N-OCTYLPHTHALATE
750U	BENZO(B AND/OR K)FLUORANTHENE
750U	BENZO-A-PYRENE
750U	INDENO (1,2,3 CD) PYRENE
750U	DIBENZO(A,H)ANTHRACENE
750U	BENZO(GHI)PERYLENE
750U	PHENOL
750U	2-CHLOROPHENOL
1500U	BENZYL ALCOHOL
750U	2-METHYLPHENOL
750U	(3-AND/OR 4-)METHYLPHENOL
750U	2-NITROPHENOL
750U	2,4-DIMETHYLPHENOL
1500U	BENZOIC ACID
750U	2,4-DICHLOROPHENOL
750U	4-CHLORO-3-METHYLPHENOL
750U	2,4,6-TRICHLOROPHENOL
750U	2,4,5-TRICHLOROPHENOL
1500U	2,4-DINITROPHENOL
1500U	4-NITROPHENOL
750U	2,3,4,6-TETRACHLOROPHENOL
1500U	2-METHYL-4,6-DINITROPHENOL
1500U	PENTACHLOROPHENOL
12.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50147 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-04
CASE NUMBER: 14852 SAS NUMBER.

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1520 STOP: 00/00/00
D. NUMBER: X710

UG/KG	ANALYTICAL RESULTS
9.4U	ALPHA-BHC
9.4U	BETA-BHC
9.4U	DELTA-BHC
9.4U	GAMMA-BHC (LINDANE)
9.4U	HEPTACHLOR
9.4U	ALDRIN
9.4U	HEPTACHLOR EPOXIDE
9.4U	ENDOSULFAN I (ALPHA)
19U	DIELDRIN
19U	4,4'-DDE (P,P'-DDE)
19U	ENDRIN
19U	ENDOSULFAN II (BETA)
19U	4,4'-DDD (P,P'-DDD)
19U	ENDOSULFAN SULFATE
19U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
94U	METHOXYCHLOR
19U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
94U	GAMMA-CHLORDANE /2
94U	ALPHA-CHLORDANE /2
190U	TOXAPHENE
94U	PCB-1016 (AROCLOR 1016)
94U	PCB-1221 (AROCLOR 1221)
94U	PCB-1232 (AROCLOR 1232)
94U	PCB-1242 (AROCLOR 1242)
94U	PCB-1248 (AROCLOR 1248)
190U	PCB-1254 (AROCLOR 1254)
190U	PCB-1260 (AROCLOR 1260)
15	PERCENT MOISTURE

FOOTNOTES
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*R QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***

** PROJECT NO. 90-798 SAMPLE NO. 50147 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SD-04 COLLECTION START: 09/12/90 1520 STOP: 00/00/00 **
** CASE.NO.: 14852 SAS NO.: D. NO.: X710 MD NO: X710 **

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

METALS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50142 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1205 STOP: 00/00/00
MD NUMBER: X705

MG/KG	ANALYTICAL RESULTS
[redacted]	
20UR	ANTIMONY
[redacted]	
2.1	BERYLLIUM
1.2U	CADMIUM
[redacted]	

MG/KG	ANALYTICAL RESULTS
[redacted]	
0.4U	MERCURY
[redacted]	
0.98U	SELENIUM
[redacted]	
750U	SODIUM
1.5U	THALLIUM
NA	TIN
[redacted]	
100U	ZINC
18	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50148 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1600 STOP: 00/00/00
MD NUMBER: X711

ANALYTICAL RESULTS

MG/KG	
[redacted]	[redacted]
20UR	ANTIMONY
[redacted]	[redacted]
[redacted]	[redacted]
2U	BERYLLIUM
1.1U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	COPPER
[redacted]	IRON
[redacted]	LEAD
[redacted]	MAGNESIUM

ANALYTICAL RESULTS

MG/KG	
[redacted]	[redacted]BE
0.3U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]UM
0.87U	SELENIUM
1.7UR	SILVER
670U	SODIUM
1.3U	THALLIUM
NA	TIN
[redacted]	[redacted]UM
70U	ZINC
08	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50153 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-03
CASE NUMBER: 14852

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1005 STOP: 00/00/00
MD NUMBER: X716

SAS NUMBER:

ANALYTICAL RESULTS

MG/KG	
[redacted]	ANTIMONY
20UR	[redacted]
[redacted]	BERYLLIUM
2U	CADMIUM
1.2U	[redacted]
[redacted]	COPPER
1	[redacted]
20U	[redacted]
[redacted]	[redacted]
4600	[redacted]

ANALYTICAL RESULTS

MG/KG	
[redacted]	MERCURY
0.12U	[redacted]
[redacted]	SELENIUM
9.8U	SILVER
2UR	SODIUM
760U	THALLIUM
1.5U	TIN
NA	[redacted]
[redacted]	ZINC
80U	PERCENT MOISTURE
18	

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50152 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1000 STOP: 00/00/00
MD NUMBER: X715

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
20UR	ANTIMONY
2U	ARSENIC
[redacted]	[redacted]
1U	BERYLLIUM
1.2U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
30U	COPPER
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
0.12U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
9.8U	SELENIUM
2UR	SILVER
750U	SODIUM
1.5U	THALLIUM
NA	TIN
[redacted]	[redacted]
70U	ZINC
18	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50150 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-05
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1530 STOP: 00/00/00
MD NUMBER: X713

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]	[redacted]	[redacted]ESE
40UR	ANTIMONY	0.7U	MERCURY
6U	ARSENIC	[redacted]	[redacted]KEL
[redacted]	[redacted]	710U	POTASSIUM
1.5U	BERYLLIUM	3.1U	SELENIUM
3.8U	CADMIUM	6.1UR	SILVER
[redacted]	[redacted]	2400U	SODIUM
[redacted]	[redacted]	4.6U	THALLIUM
20U	COBALT	NA	TIN
80U	COPPER	20U	VANADIUM
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	74	PERCENT MOISTURE
600	[redacted]		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50151 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-06
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00
MD NUMBER: X714

ANALYTICAL RESULTS

MG/KG	
[redacted]	[redacted]
20UR	ANTIMONY
1U	ARSENIC
[redacted]	[redacted]
0.68U	BERYLLIUM
1.7U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

ANALYTICAL RESULTS

MG/KG	
[redacted]	[redacted]
0.17U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
20U	SELENIUM
2.7UR	SILVER
1100U	SODIUM
2U	THALLIUM
NA	TIN
[redacted]	[redacted]
[redacted]	[redacted]
41	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49865 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SB-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/12/90 1315 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
52U	CHLOROMETHANE
52U	VINYL CHLORIDE
52U	BROMOMETHANE
52U	CHLOROETHANE
52U	TRICHLOROFLUOROMETHANE
52U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
520U	ACETONE
520U	CARBON DISULFIDE
52U	METHYLENE CHLORIDE
52U	TRANS-1,2-DICHLOROETHENE
52U	1,1-DICHLOROETHANE
520U	VINYL ACETATE
52U	CIS-1,2-DICHLOROETHENE
52U	2,2-DICHLOROPROPANE
520U	METHYL ETHYL KETONE
52U	BROMOCHLOROMETHANE
52U	CHLOROFORM
52U	1,1,1-TRICHLOROETHANE
52U	1,1-DICHLOROPROPENE
52U	CARBON TETRACHLORIDE
52U	1,2-DICHLOROETHANE
52U	BENZENE
52U	TRICHLOROETHENE(TRICHLOROETHYLENE)
52U	1,2 DICHLOROPROPANE
52U	DIBROMOMETHANE
52U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
52U	CIS-1,3-DICHLOROPROPENE
520U	METHYL ISOBUTYL KETONE
52U	TOLUENE
52U	TRANS-1,3-DICHLOROPROPENE
52U	1,1,2-TRICHLOROETHANE
52U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
52U	1,3-DICHLOROPROPANE
520U	METHYL BUTYL KETONE
52U	DIBROMOCHLOROMETHANE
52U	CHLOROBENZENE
52U	1,1,1,2 TETRACHLOROETHANE
52U	ETHYL BENZENE
52U	(M- AND/OR P-)XYLENE
52U	O-XYLENE
52U	STYRENE
52U	BROMOFORM
52U	BROMOBENZENE
52U	1,1,2,2-TETRACHLOROETHANE
52U	1,2,3-TRICHLOROPROPANE
52U	O-CHLOROTOLUENE
52U	P-CHLOROTOLUENE
52U	1,3-DICHLOROBENZENE
52U	1,4-DICHLOROBENZENE
52U	1,2-DICHLOROBENZENE
19.1	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90 883 SAMPLE NO. 49871 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1625 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
55U	CHLOROMETHANE
55U	VINYL CHLORIDE
55U	BROMOMETHANE
55U	CHLOROETHANE
[redacted]	[redacted]
55U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
550U	ACETONE
550U	CARBON DISULFIDE
55U	METHYLENE CHLORIDE
55U	TRANS-1,2-DICHLOROETHENE
55U	1,1-DICHLOROETHANE
550U	VINYL ACETATE
55U	CIS-1,2-DICHLOROETHENE
55U	2,2 DICHLOROPROPANE
550U	METHYL ETHYL KETONE
55U	BROMOCHLOROMETHANE
55U	CHLOROFORM
55U	1,1,1-TRICHLOROETHANE
55U	1,1-DICHLOROPROPENE
55U	CARBON TETRACHLORIDE
55U	1,2-DICHLOROETHANE
55U	BENZENE
55U	TRICHLOROETHENE(TRICHLOROETHYLENE)
55U	1,2-DICHLOROPROPANE
55U	DIBROMOMETHANE
55U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
55U	CIS-1,3-DICHLOROPROPENE
550U	METHYL ISOBUTYL KETONE
55U	TOLUENE
55U	TRANS-1,3-DICHLOROPROPENE
55U	1,1,2-TRICHLOROETHANE
55U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
55U	1,3-DICHLOROPROPANE
550U	METHYL BUTYL KETONE
55U	DIBROMOCHLOROMETHANE
55U	CHLOROBENZENE
55U	1,1,1,2 TETRACHLOROETHANE
55U	ETHYL BENZENE
55U	(M- AND/OR P-)XYLENE
55U	O-XYLENE
55U	STYRENE
55U	BROMOFORM
55U	BROMOBENZENE
55U	1,1,2,2-TETRACHLOROETHANE
55U	1,2,3-TRICHLOROPROPANE
55U	O-CHLOROTOLUENE
55U	P-CHLOROTOLUENE
55U	1,3-DICHLOROBENZENE
55U	1,4-DICHLOROBENZENE
55U	1,2-DICHLOROBENZENE
23.8	PERCENT MOISTURE

REMARKS

REMARKS

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*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49866 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SD-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START 09/12/90 1445 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
52U	CHLOROMETHANE
52U	VINYL CHLORIDE
52U	BROMOMETHANE
52U	CHLOROETHANE
[redacted]	[redacted]
52U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
520U	ACETONE
520U	CARBON DISULFIDE
52U	METHYLENE CHLORIDE
52U	TRANS-1,2-DICHLOROETHENE
52U	1,1-DICHLOROETHANE
520U	VINYL ACETATE
52U	CIS-1,2-DICHLOROETHENE
52U	2,2-DICHLOROPROPANE
520U	METHYL ETHYL KETONE
52U	BROMOCHLOROMETHANE
52U	CHLOROFORM
52U	1,1,1-TRICHLOROETHANE
52U	1,1-DICHLOROPROPENE
52U	CARBON TETRACHLORIDE
52U	1,2-DICHLOROETHANE
52U	BENZENE
52U	TRICHLOROETHENE(TRICHLOROETHYLENE)
52U	1,2-DICHLOROPROPANE
52U	DIBROMOMETHANE
52U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
52U	CIS-1,3-DICHLOROPROPENE
520U	METHYL ISOBUTYL KETONE
52U	TOLUENE
52U	TRANS-1,3-DICHLOROPROPENE
52U	1,1,2-TRICHLOROETHANE
52U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
52U	1,3-DICHLOROPROPANE
520U	METHYL BUTYL KETONE
52U	DIBROMOCHLOROMETHANE
52U	CHLOROBENZENE
52U	1,1,1,2 TETRACHLOROETHANE
52U	ETHYL BENZENE
52U	(M- AND/OR P-)XYLENE
52U	O-XYLENE
52U	STYRENE
52U	BROMOFORM
52U	BROMOBENZENE
52U	1,1,2,2-TETRACHLOROETHANE
52U	1,2,3-TRICHLOROPROPANE
52U	O-CHLOROTOLUENE
52U	P-CHLOROTOLUENE
52U	1,3-DICHLOROBENZENE
52U	1,4-DICHLOROBENZENE
52U	1,2-DICHLOROBENZENE
19.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49867 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SD-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1450 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
62U	CHLOROMETHANE
62U	VINYL CHLORIDE
62U	BROMOMETHANE
62U	CHLOROETHANE
[redacted]	[redacted]
62U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
620U	ACETONE
620U	CARBON DISULFIDE
62U	METHYLENE CHLORIDE
62U	TRANS-1,2-DICHLOROETHENE
62U	1,1-DICHLOROETHANE
620U	VINYL ACETATE
62U	CIS-1,2-DICHLOROETHENE
62U	2,2-DICHLOROPROPANE
620U	METHYL ETHYL KETONE
62U	BROMOCHLOROMETHANE
62U	CHLOROFORM
62U	1,1,1-TRICHLOROETHANE
62U	1,1-DICHLOROPROPENE
62U	CARBON TETRACHLORIDE
62U	1,2-DICHLOROETHANE
62U	BENZENE
62U	TRICHLOROETHENE(TRICHLOROETHYLENE)
62U	1,2-DICHLOROPROPANE
62U	DIBROMOMETHANE
62U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
62U	CIS-1,3-DICHLOROPROPENE
620U	METHYL ISOBUTYL KETONE
62U	TOLUENE
62U	TRANS-1,3-DICHLOROPROPENE
62U	1,1,2-TRICHLOROETHANE
62U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
62U	1,3-DICHLOROPROPANE
620U	METHYL BUTYL KETONE
62U	DIBROMOCHLOROMETHANE
62U	CHLOROBENZENE
62U	1,1,1,2-TETRACHLOROETHANE
62U	ETHYL BENZENE
62U	(M- AND/OR P-)XYLENE
62U	O-XYLENE
62U	STYRENE
62U	BROMOFORM
62U	BROMOBENZENE
62U	1,1,2,2-TETRACHLOROETHANE
62U	1,2,3-TRICHLOROPROPANE
62U	O-CHLOROTOLUENE
62U	P-CHLOROTOLUENE
62U	1,3-DICHLOROBENZENE
62U	1,4-DICHLOROBENZENE
62U	1,2-DICHLOROBENZENE
32.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/04/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

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**   PROJECT NO. 90-883    SAMPLE NO. 49867  SAMPLE TYPE: SOIL         PROG ELEM: NSF    COLLECTED BY: A HARVEY                    **
**   SOURCE: HEYWOOD-WAKEFIELD                                         CITY: NEWPORT                ST: TN                           **
**   STATION ID: SD-02                                                 COLLECTION START: 09/12/90  1150   STOP: 00/00/00             **
**                                                                                                                                   **
*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ***
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ANALYTICAL RESULTS UG/KG

[redacted]

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO 49868 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID. SD-03

PROG ELEM: NSF COLLECTED BY. A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/12/90 1500 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
58U	CHLOROMETHANE
58U	VINYL CHLORIDE
58U	BROMOMETHANE
58U	CHLOROETHANE
58U	TRICHLOROFLUOROMETHANE
58U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
580U	ACETONE
580U	CARBON DISULFIDE
58U	METHYLENE CHLORIDE
58U	TRANS-1,2-DICHLOROETHENE
58U	1,1-DICHLOROETHANE
580U	VINYL ACETATE
58U	CIS-1,2-DICHLOROETHENE
58U	2,2-DICHLOROPROPANE
580U	METHYL ETHYL KETONE
58U	BROMOCHLOROMETHANE
58U	CHLOROFORM
58U	1,1,1-TRICHLOROETHANE
58U	1,1-DICHLOROPROPENE
58U	CARBON TETRACHLORIDE
58U	1,2-DICHLOROETHANE
58U	BENZENE
58U	TRICHLOROETHENE(TRICHLOROETHYLENE)
58U	1,2-DICHLOROPROPANE
58U	DIBROMOMETHANE
58U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
58U	CIS-1,3-DICHLOROPROPENE
580U	METHYL ISOBUTYL KETONE
58U	TOLUENE
58U	TRANS-1,3-DICHLOROPROPENE
58U	1,1,2-TRICHLOROETHANE
58U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
58U	1,3-DICHLOROPROPANE
580U	METHYL BUTYL KETONE
58U	DIBROMOCHLOROMETHANE
58U	CHLOROBENZENE
58U	1,1,1,2 TETRACHLOROETHANE
58U	ETHYL BENZENE
58U	(M- AND/OR P-)XYLENE
58U	O-XYLENE
58U	STYRENE
58U	BROMOFORM
58U	BROMOBENZENE
58U	1,1,2,2-TETRACHLOROETHANE
58U	1,2,3-TRICHLOROPROPANE
58U	O-CHLOROTOLUENE
58U	P-CHLOROTOLUENE
58U	1,3-DICHLOROBENZENE
58U	1,4-DICHLOROBENZENE
58U	1,2-DICHLOROBENZENE
21.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

EXTRACTABLE ORGANICS DATA REPORT 10/04/90

PROJECT NO. 90-883 SAMPLE NO 49868 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SD-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
830U	BIS(2 CHLOROETHYL) ETHER
830U	BIS(2-CHLOROISOPROPYL) ETHER
830U	N-NITROSODI-N-PROPYLAMINE
830U	HEXACHLOROETHANE
830U	NITROBENZENE
830U	ISOPHORONE
830U	BIS(2-CHLOROETHOXY) METHANE
830U	1,2,4-TRICHLOROBENZENE
830U	NAPHTHALENE
830U	4-CHLOROANILINE
830U	HEXACHLOROBUTADIENE
830U	2-METHYLNAPHTHALENE
830U	HEXACHLOROCYCLOPENTADIENE (HCCP)
830U	2 CHLORONAPHTHALENE
830U	2-NITROANILINE
830U	DIMETHYL PHTHALATE
830U	ACENAPHTHYLENE
830U	2,6-DINITROTOLUENE
830U	3-NITROANILINE
830U	ACENAPHTHENE
830U	DIBENZOFURAN
830U	2,4-DINITROTOLUENE
830U	DIETHYL PHTHALATE
830U	FLUORENE
830U	4-CHLOROPHENYL PHENYL ETHER
830U	4-NITROANILINE
830U	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
830U	4-BROMOPHENYL PHENYL ETHER
830U	HEXACHLOROBENZENE (HCB)
830U	PHENANTHRENE
830U	ANTHRACENE
830U	DI-N-BUTYLPHTHALATE

UG/KG	ANALYTICAL RESULTS
[redacted]	
[redacted]	
830U	BENZYL BUTYL PHTHALATE
830U	3,3'-DICHLOROBENZIDINE
830U	BENZO(A)ANTHRACENE
[redacted]	
830U	BIS(2-ETHYLHEXYL) PHTHALATE
830U	DI-N-OCTYLPHTHALATE
[redacted]	
830U	BENZO-A-PYRENE
830U	INDENO (1,2,3 CD) PYRENE
830U	DIBENZO(A,H)ANTHRACENE
830U	BENZO(GHI)PERYLENE
830U	PHENOL
830U	2-CHLOROPHENOL
1700U	BENZYL ALCOHOL
830U	2-METHYLPHENOL
830U	(3-AND/OR 4-)METHYLPHENOL
830U	2-NITROPHENOL
830U	2,4-DIMETHYLPHENOL
1700U	BENZOIC ACID
830U	2,4-DICHLOROPHENOL
830U	4-CHLORO-3-METHYLPHENOL
830U	2,4,6-TRICHLOROPHENOL
830U	2,4,5-TRICHLOROPHENOL
1700U	2,4-DINITROPHENOL
1700U	4-NITROPHENOL
830U	2,3,4,6-TETRACHLOROPHENOL
1700U	2-METHYL-4,6-DINITROPHENOL
1700U	PENTACHLOROPHENOL
21.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/04/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO 90-883 SAMPLE NO. 49868 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD CITY. NEWPORT ST TN
STATION ID: SD-03 COLLECTION START: 09/12/90 1500 STOP. 00/00/00

ANALYTICAL RESULTS UG/KG

N **PETROLEUM** PRODUCT

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT
*R QC INDICATES THAT DATA UNUSABLE COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO 49869 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SD-04

PROG ELEM: NSF COLLECTED BY. A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START. 09/12/90 1520 STOP 00/00/00

UG/KG	ANALYTICAL RESULTS
57U	CHLOROMETHANE
57U	VINYL CHLORIDE
57U	BROMOMETHANE
57U	CHLOROETHANE
[redacted]	[redacted]
57U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
570U	ACETONE
570U	CARBON DISULFIDE
57U	METHYLENE CHLORIDE
57U	TRANS-1,2-DICHLOROETHENE
57U	1,1-DICHLOROETHANE
570U	VINYL ACETATE
57U	CIS-1,2-DICHLOROETHENE
57U	2,2 DICHLOROPROPANE
570U	METHYL ETHYL KETONE
57U	BROMOCHLOROMETHANE
57U	CHLOROFORM
57U	1,1,1-TRICHLOROETHANE
57U	1,1-DICHLOROPROPENE
57U	CARBON TETRACHLORIDE
57U	1,2-DICHLOROETHANE
57U	BENZENE
57U	TRICHLOROETHENE(TRICHLOROETHYLENE)
57U	1,2 DICHLOROPROPANE
57U	DIBROMOMETHANE
57U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
57U	CIS-1,3-DICHLOROPROPENE
570U	METHYL ISOBUTYL KETONE
57U	TOLUENE
57U	TRANS-1,3-DICHLOROPROPENE
57U	1,1,2-TRICHLOROETHANE
57U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
57U	1,3-DICHLOROPROPANE
570U	METHYL BUTYL KETONE
57U	DIBROMOCHLOROMETHANE
57U	CHLOROBENZENE
57U	1,1,1,2 TETRACHLOROETHANE
57U	ETHYL BENZENE
57U	(M- AND/OR P-)XYLENE
57U	O-XYLENE
57U	STYRENE
57U	BROMOFORM
57U	BROMOBENZENE
57U	1,1,2,2-TETRACHLOROETHANE
57U	1,2,3-TRICHLOROPROPANE
57U	O-CHLOROTOLUENE
57U	P-CHLOROTOLUENE
57U	1,3-DICHLOROBENZENE
57U	1,4-DICHLOROBENZENE
57U	1,2-DICHLOROBENZENE
12.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/04/90

MISCELLANEOUS EXTRACTABLE COMPOUNDS - DATA REPORT

PROJECT NO. 90-883 SAMPLE NO 49869 SAMPLE TYPE: SOIL
PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD
CITY: NEWPORT ST: TN
STATION ID: SD-04
COLLECTION START: 09/12/90 1520 STOP: 00/00/00

ANALYTICAL RESULTS UG/KG

N PETROLEUM PRODUCT

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50143 SAMPLE TYPE:
SOURCE:
STATION ID: SB-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1315 STOP: 00/00/00
MD NUMBER: X706

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
20000	ALUMINUM	710	MANGANESE
20UR	ANTIMONY	0.4U	MERCURY
3	ARSENIC	15	NICKEL
100	BARIUM	3700	POTASSIUM
2.5	BERYLLIUM	1U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
900	CALCIUM	770U	SODIUM
60J	CHROMIUM	1.5U	THALLIUM
15	COBALT	NA	TIN
30U	COPPER	47	VANADIUM
33000	IRON	90	ZINC
18	LEAD	20	PERCENT MOISTURE
5100	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50149 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1625 STOP: 00/00/00
MD NUMBER: X712

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
20UR	ANTIMONY
[redacted]	[redacted]
[redacted]	[redacted]
2U	BERYLLIUM
1.3U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
20U	COPPER
[redacted]	[redacted]
[redacted]	[redacted]
3400	MAGNESIUM

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
0.3U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
20UJ	SELENIUM
2.1UR	SILVER
800U	SODIUM
1.6U	THALLIUM
NA	TIN
[redacted]	[redacted]
70U	ZINC
23	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50155 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00
MD NUMBER: X718

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
20UR	ANTIMONY
2U	ARSENIC
[redacted]	[redacted]
[redacted]	[redacted]
1.3U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
20U	COPPER
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]SE
0.3U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
20U	SELENIUM
2.1UR	SILVER
790U	SODIUM
1.5U	THALLIUM
NA	TIN
[redacted]	[redacted]
[redacted]	[redacted]
22	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

METALS DATA REPORT

** PROJECT NO. 90-798 SAMPLE NO. 50154 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SB-04 COLLECTION START: 09/13/90 1015 STOP: 00/00/00 **
** CASE NUMBER: 14852 SAS NUMBER: MD NUMBER: X717 **

MG/KG	ANALYTICAL RESULTS
[redacted]	
20UR	ANTIMONY
2U	ARSENIC
[redacted]	
2U	BERYLLIUM
1.2U	CADMIUM
[redacted]	
20U	COPPER
[redacted]	

MG/KG	ANALYTICAL RESULTS
[redacted]	
0.2U	MERCURY
[redacted]	
9.8U	SELENIUM
2UR	SILVER
750U	SODIUM
1.5U	THALLIUM
NA	TIN
[redacted]	
18	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD. ATHENS. GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50144 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1445 STOP: 00/00/00
MD NUMBER: X707

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
20UR	ANTIMONY
2U	ARSENIC
[redacted]	[redacted]
2U	BERYLLIUM
1.2U	CADMIUM
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
20U	COPPER
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]
0.3U	MERCURY
[redacted]	[redacted]
[redacted]	[redacted]
9.9U	SELENIUM
2UR	SILVER
760U	SODIUM
1.5U	THALLIUM
NA	TIN
[redacted]	[redacted]
100U	ZINC
19	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA. 11/02/90

METALS DATA REPORT

PROJECT NO. 90-798   SAMPLE NO. 50145   SAMPLE TYPE: SOIL   PROG ELEM: NSF   COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU   CITY: NEWPORT   ST: TN
STATION ID: SD-02   COLLECTION START: 09/12/90 1450   STOP: 00/00/00
CASE NUMBER: 14852   SAS NUMBER: MD NUMBER: X708

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
[illegible]	ALUMINUM	[illegible]	[illegible]
20UR	ANTIMONY	0.5U	MERCURY
[illegible]	ARSENIC	[illegible]	NICKEL
[illegible]	BARIUM	400	POTASSIUM
0.61U	BERYLLIUM	20U	SELENIUM
1.5U	CADMIUM	2.4UR	SILVER
41000	CALCIUM	930U	SODIUM
300J	CHROMIUM	1.8U	THALLIUM
5U	COBALT	NA	TIN
40U	COPPER	7.3U	VANADIUM
4400	IRON	[illegible]	ZINC
140	LEAD	34	PERCENT MOISTURE
5100	MAGNESIUM		

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50146 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00
MD NUMBER: X709

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]	[redacted]	[redacted]
20UR	ANTIMONY	0.3U	MERCURY
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
2U	BERYLLIUM	10U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
[redacted]	[redacted]	770U	SODIUM
[redacted]	[redacted]	1.5U	THALLIUM
[redacted]	[redacted]	NA	TIN
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	TIN	[redacted]	[redacted]
[redacted]	LEAD	20	PERCENT MOISTURE
[redacted]	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50147 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1520 STOP: 00/00/00
MD NUMBER: X710

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
[redacted]	[redacted]	[redacted]	[redacted]
20UR	ANTIMONY	0.3U	MERCURY
2U	ARSENIC	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
0.47U	BERYLLIUM	0.95U	SELENIUM
1.2U	CADMIUM	1.9UR	SILVER
[redacted]	[redacted]	730U	SODIUM
[redacted]	[redacted]	1.4U	THALLIUM
[redacted]	[redacted]	NA	[redacted]
30U	COPPER	[redacted]	[redacted]
[redacted]	[redacted]	80U	ZINC
[redacted]	[redacted]	16	PERCENT MOISTURE
[redacted]	[redacted]		

REMARKS ***REMARKS***

FOOTNOTES
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APPENDIX C

APPENDIX C

SUMMARY OF GEOPHYSICAL METHODS

The following sections are from "Geophysical Techniques for Sensing Buried Wastes and Waste Migration" by Glaccum, R. A., and M. R. Noel, August, 1983, Technos, Inc., for Environmental Monitoring Systems Laboratory, ORD., USEPA, Las Vegas, Nevada.

ELECTROMAGNETICS (EM)*

The electromagnetic (EM) method provides a means of measuring the electrical conductivity of subsurface soil, rock, and ground water. Electrical conductivity is a function of the type of soil and rock, its porosity, its permeability, and the fluids which fill the pore space. In most cases the conductivity (specific conductance) of the pore fluids will dominate the measurement. Accordingly, the EM method is applicable both to assessment of natural geohydrologic conditions and to mapping of many types of contaminant plumes. Additionally, trench boundaries, buried wastes and drums, as well as metallic utility lines can be located with EM techniques.

Natural variations in subsurface conductivity may be caused by changes in soil moisture content, ground water specific conductance, depth of soil cover over rock, and thickness of soil and rock layers. Changes in basic soil or rock types, and structural features such as fractures or voids may also produce changes in conductivity. Localized deposits of natural organic, clay, sand, gravel, or saltrich zones will also affect subsurface conductivity.

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*The term electromagnetic has been used in contemporary literature as a descriptive term for other geophysical methods, including GPR and metal detectors which are based on electromagnetic principles. However, this document will use electromagnetic (EM) to specifically imply the measurement of subsurface conductivities by low-frequency electromagnetic induction. This is in keeping with the traditional use of the term in the geophysical industry from which the EM methods originated. While the authors recognize that there are many electromagnetic systems and manufacturers, the discussion in this section is based solely on instruments which are calibrated to read in electrical conductivity units and which have been effectively and extensively used at hazardous waste sites. There is only one manufacturer of such instruments at the time of this writing.

Many contaminants will produce an increase in free ion concentration when introduced into the soil or ground water systems. This increase over background conductivity enables detection and mapping of contaminated soil and ground water at Hazardous Waste Sites (HWS), landfills, and impoundments. Large amounts of organic fluids such as diesel fuel can displace the normal soil moisture, causing a decrease in conductivity which may also be mapped, although this is not commonly done. The mapping of a plume will usually define the local flow direction of contaminants. Contaminant migration rates can be established by comparing measurements taken at different times.

The absolute values of conductivity for geologic materials (and contaminants) are not necessarily diagnostic in themselves, but the variations in conductivity, laterally and with depth, are significant. It is these variations which enable the investigator to rapidly find anomalous conditions.

Since the EM method does not require ground contact, measurements may be made quite rapidly. Lateral variations in conductivity can be detected and mapped by a field technique called profiling. Profiling measurements may be made to depths ranging from 0.75 to 60 meters. The data is recorded using strip chart and magnetic tape recorders. This continuous measurement allows increased rates of data acquisition and improved resolution for mapping small geohydrologic features. Further, recorded data enhanced by computer processing has proved invaluable in the evaluation of complex hazardous waste sites. The excellent lateral resolution obtained from EM profiling data has been used to advantage in efforts to outline closely-spaced burial pits, to reveal the migration of contaminants into the surrounding soil, and to delineate fracture patterns.

Vertical variations in conductivity can also be detected by the EM method. A station measurement technique called sounding is employed for this purpose. Data can be acquired from depths by combining results from a variety of EM instruments, each requiring different field application techniques. Other EM systems are capable of sounding to depth of one-thousand feet or more, but have not yet been used at HWS and are not adaptable to continuous measurements.

Profiling is the most cost-effective use of the EM method. Continuous profiling can be used in many applications to increase resolution, data density, and permit total site coverage at critical sites.

At HWS, applications of EM can provide:

- Assessment of natural geohydrologic conditions;
- Locating and mapping of burial trenches and pits containing drums and/or bulk wastes;
- Determination of flow direction in both unsaturated and saturated zones;
- Rate of plume movement by comparing measurement taken at different times;
- Locating and mapping of utility pipes and cables which may affect other geophysical measurements, or whose trench may provide a permeable pathway for contaminant flow.

Although there is available a wide variety of EM equipment, most of it is intended for geophysical exploration of mineral deposits. These units have not been used at HWS and do not provide a simple conductivity reading. This document discusses only those instruments which are designed and calibrated to read directly in units of conductivity.

Conductance is measured with electronic instrumentation consisting of a transmitter coil and receiver coil. The transmitter coil radiates an electromagnetic field which induces eddy currents in the earth below the instrument. Each of these eddy current loops, in turn, generates a secondary electromagnetic field which is proportional to the magnitude of the current flowing within that loop. A part of the secondary magnetic field from each loop is intercepted by the receiver coil and produces an output voltage which (within limits) is linearly related to subsurface conductivity. This reading is a bulk measurement of conductivity, e.g., the cumulative response to subsurface conditions ranging all the way from the surface to the effective depth of the instrument.

The sampling depth of EM equipment is related to the instrument's coil spacing. Instruments with coil spacings of one, four, ten, twenty, and forty meters are commercially available. The nominal sampling depth of an EM system is taken to be approximately 1.5 times the coil spacing.

The EM sounding method can rarely identify more than two or three layers with reasonable confidence. The greater the contrast in the conductivity values of each layer, the better the results. Often, the more detailed resistivity sounding method is used to complement EM profiling data.

The results of sounding analysis are usually presented as a vertical section, in which the conductivity layers are identified as a function of depth. The analyst may be able to correlate these layers to geohydrologic units believed to exist at the site.

Although the EM technique can be used for profiling or sounding, profiling is the most effective use of the EM method. Profiling makes possible the rapid mapping of subsurface conductivity changes, and the location, delineation, and assessment of spatial variables resulting from changes in the natural setting or from many contaminants.

EM is a very effective reconnaissance tool. The use of qualitative non-recorded data can provide initial interpretation in the field. If site conditions are complex, the use of a high-density survey grid, continuously-recording instruments, and computer processing may be necessary, in order to properly evaluate subsurface conditions. When continuously-recording instruments are used, total site coverage is feasible. More quantitative information can be obtained by using conductivity data from different depth ranges. At present, three different systems must be used to acquire data from 0.75 to 60 meters. Very often, however, data from two standard depths, e.g. six and fifteen meters, is adequate to furnish depth information.

Capabilities

- The EM profile method permits rapid data acquisition, resulting in high-density and high-resolution surveys.
- Profiling data may be acquired from various discrete depths, ranging from 0.75 meters to 60 meters.
- Continuously-recording instruments (to fifteen meter depth) can increase survey speed, density, and resolution permitting total site coverage, if required.
- EM reads directly in conductivity units (mm/m) permitting use of raw data in the field, and correlation to specific conductance of ground water samples.
- EM can map local and general changes in the natural geohydrologic setting.
- EM can detect and measure the boundaries of a conductivity plume.
- Direction of plume flow can be determined from an EM conductivity map.
- EM measurements taken at different times can provide the means to compute movement rates of conservative contaminants.
- EM can detect and map burial pits and trenches of both bulk and drummed wastes.
- EM can detect and map the location of buried metallic utility lines.

Limitations

- EM has less sounding (vertical) resolution than the resistivity method due to its limited number of depth intervals.
- The acquisition of data from depths of 0.75 to 60 meters requires the use of three different EM systems.
- Continuous data can be obtained only to depths up to approximately fifteen meters.
- An EM measurement is influenced by the shallower materials more than the deeper ones; this must be considered when evaluating the data.
- EM measurements become non-linear in zones of very high conductivity.
- The EM method is susceptible to noise from a number of sources, including natural atmospheric noise, powerlines, radio transmitters, buried metallic trash, pipes, cables, nearby fences, vehicles, and buildings.

MAGNETOMETER

Magnetic measurements are commonly used to map regional geologic structure and to explore for minerals. They are also used to locate pipes and survey stakes or to map archeological sites. They are commonly used at HWS to locate buried drums and trenches.

A magnetometer measures the intensity of the earth's magnetic field. The presence of ferrous metals creates variations in the local strength of that field, permitting their detection. A magnetometer's response is proportional to the mass of the ferrous target. Typically, a single drum can be detected at distances up to six meters, while massive piles of drums can be detected at distances up to twenty meters or more.

Some magnetometers require the operator to stop and take discrete measurements; other instruments permit the acquisition of continuous data as the magnetometer is moved across the site. This continuous coverage is much more suitable for high resolution requirements and the mapping of extensive areas.

The effectiveness of a magnetometer can be reduced or totally inhibited by noise or interference from time-variable changes in the earth's field and spatial variations caused by magnetic minerals in the soil, or iron and steel debris, ferrous pipes, fences, buildings, and vehicles. Many of these problems can be avoided by careful selection of instruments and field techniques.

At HWS, magnetometers may be used to:

- Locate buried steel containers, such as 55-gallon drums;
- Define boundaries of trenches filled with ferrous containers;
- Locate ferrous underground utilities, such as iron piles or tanks, and the permeable pathways often associated with them;
- Select drilling locations that are clear of buried drums, underground utilities, and other obstructions.

A magnetometer measures the intensity of the earth's magnetic field. Variations in this field may be caused by the natural distribution of iron oxides within the soil and rock or by the presence of buried iron or steel objects. (The magnetometer does not respond to nonferrous metals such as aluminum, copper, tin, and brass).

The earth's magnetic field behaves much as if there were a large bar magnet embedded in the earth. Although the earth's field intensity varies considerably throughout the United States, its average value is approximately 50,000 gammas.* The angle of the magnetic field with respect to the earth's surface also varies. In the U.S., this angle of inclination ranges approximately sixty to seventy-five degrees from the horizontal.

The intensity of the earth's magnetic field changes daily with sunspots and ionospheric conditions which can cause large and sometimes rapid variations. With time, these variations produce unwanted signals (noise) and can substantially affect magnetic measurements.

If the magnetic properties of the soil and rock were perfectly uniform, there would be no local magnetic anomalies; however, a concentration of natural iron minerals, or a buried iron object, will cause a local magnetic anomaly which can be detected at the surface.

Typical magnetic anomalies at HWS will range from one to hundreds of gammas for small discrete targets, depending on their depth. Massive piles of buried drums will result in anomalies of from one-hundred to one-thousand gammas or more.

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*The unit of magnetic measurement is the gamma. Recently, the gamma unit has been renamed the Nano Tesla. At this time, most instruments are still labeled in gammas, as are specification sheets, existing literature, and field data; hence all references to magnetic data in this document are expressed in gammas.

While several factors influence the response of a magnetometer, the mass of a buried target and its depth are the most important. A magnetometer's response is directly proportional to the mass of ferrous metal present and varies by one over the distance cubed ($1/d^3$) for total measurements. If a gradiometer is used, the response falls off even faster, as one over the distance to the fourth power ($1d^4$). With sensors of equal sensitivity, the total field system provides the greater working range. Typically a single drum can be detected at distances up to six meters or more. There is a wide variety of magnetometers available commercially; specific performance is highly dependent upon the type of magnetometer and the field conditions. Theoretically, the number of drums may be calculated, however, such results should be considered only approximations because of the number of variables associated with targets, site conditions, and calculations. Actual results may vary considerably.

A magnetometer with continuous recording capabilities can be used to produce a strip chart of the field data, which is helpful in assessing signal-to-noise ratio, anomaly shape, target location, and provides a means of exercising quality control over field data. This continuous coverage is much more suitable for high-resolution requirements and the mapping of extensive areas.

The effectiveness of a magnetometer can be reduced or totally inhibited by noise or interference from time-variable changes in the earth's field and spatial variations caused by magnetic minerals in the soil, or iron and steel debris, ferrous pipes, fences, buildings, and vehicles. Many of these problems can be avoided by careful selection of instruments and field techniques.

Capabilities

- Magnetometers respond to ferrous metals (iron or steel) only.
- Individual drums can be detected at depths up to six meters.
- Large masses of drums can be detected at depths of six to twenty meters.
- Magnetometers can provide a greater depth range than metal detectors.
- Interpretation of their data may be used to provide estimates of the number and depth of buried drums.
- They can provide a continuous response along a traverse line.
- They may be mounted on vehicles for coverage of a large site.

Limitations

- In general, magnetometers are susceptible to noise from many different sources, including steel fences, vehicles, buildings, iron debris, natural soil minerals, and underground utilities.
- Low cost units are limited in depth range (but their limitations make them insensitive to many of the above sources of noise).
- Total field instruments are also sensitive to fluctuations in the earth's magnetic field which can seriously affect data.
- Data is of limited use in determining the number and depth of targets.
- Complex site conditions may require the use of highly skilled operators, special equipment, and the recording and processing of data, along with skilled interpretation.

MAG FIELD DATA SHEET

STATION		Reading	Reading	Reading	Average (gammas)	Comments
X	Y					
0	0	53,657	53,657	53,657	53,657	
1	0	647	647	647	647	
2	0	658	658	658	658	
3	0	625	625	625	625	
4	0	362	366	362	363	
4	1	626	626	626	626	
3	1	646	646	646	646	
2	1	658	658	658	658	
1	1	659	659	659	659	
0	1	652	652	652	652	
0	2	658	657	657	657	
1	2	669	669	669	669	
2	2	655	655	655	655	
3	2	641	641	641	641	
4	2	623	623	622	623	
4	3	637	637	637	637	
3	3	651	652	651	651	
2	3	659	659	659	659	
1	3	666	666	666	666	
0	3	673	672	672	672	
0	4	662	662	662	662	
1	4	672	672	672	672	
2	4	668	668	668	668	
3	4	659	659	660	659	
4	4	645	645	646	645	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 1

MAG FIELD DATA SHEET

STATION		Reading	Reading	Reading	Average (gammas)	Comments
X	Y					
4	5	53,632	53,632	53,631	53,632	Close to powerline
3	5	655	655	655	655	
2	5	661	661	661	661	
1	5	666	666	666	666	
0	5	656	656	656	656	
0	6	671	671	670	671	
1	6	668	667	667	667	
2	6	659	659	659	659	
3	6	639	639	639	639	
4	6	612	612	613	612	Close to powerline
4	7	527	524	524	525	Close to powerline
3	7	476	476	479	477	Close to truck
2	7	641	641	641	641	
1	7	659	659	659	659	
0	7	669	669	669	669	
0	8	654	654	654	654	
1	8	660	660	660	660	
2	8	641	641	641	641	
4	9	618	618	618	618	Gravel area, powerline
3	9	632	633	632	632	
2	9	651	651	650	651	
1	9	661	662	661	661	
0	9	659	659	659	659	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 1

MAG FIELD DATA SHEET

STATION		Reading	Reading	Reading	Average (gammas)	Comments
X	Y					
0	0	53,660	53,661	53,664	53,662	Close to powerline
0	1	657	656	657	657	
0	2	650	650	650	650	
0	3	646	646	646	646	
0	4	641	641	641	641	
0	5	637	636	636	636	
1	5	629	628	628	625	
1	4	594	595	594	594	
1	3	657	656	656	656	
1	2	649	649	649	649	
1	1	653	653	653	633	
1	0	660	660	660	660	Close to powerline
2	0	633	633	633	633	Close to powerline
2	1	650	650	650	650	
2	2	648	648	648	648	
2	3	645	645	645	645	
2	4	640	640	640	640	
2	5	617	617	617	617	
3	5	639	640	640	640	
3	4	634	634	634	634	
3	3	642	642	642	642	
3	2	656	656	656	656	
3	1	642	641	641	641	
3	0	621	621	622	621	Close to powerline
4	0	581	581	582	583	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 2

MAG FIELD DATA SHEET

STATION		Reading	Reading	Reading	Average (gammas)	Comments
X	Y					
4	1	53,643	53,643	53,643	53,643	Close to powerline
4	2	650	650	650	650	
4	3	648	648	648	648	
4	4	643	643	642	643	
4	5	624	624	624	624	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 2

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
0	0	0.60	10	6.0	
1	0	0.68	10	6.8	Under powerline
2	0	0.76	10	7.6	Under powerline
3	0	0.74	10	7.4	
4	0	0.54	10	5.6	
4	1	0.52	10	5.2	
3	1	0.42	10	4.2	
2	1	0.38	10	3.8	
1	1	0.36	10	3.6	
0	1	0.36	10	3.6	
0	2	0.38	10	3.8	
1	2	0.34	10	3.4	
2	2	0.36	10	3.6	
3	2	0.39	10	3.9	
4	2	0.54	10	5.4	
4	3	0.65	10	6.5	
3	3	0.44	10	4.4	
2	3	0.38	10	3.8	
1	3	0.34	10	3.4	
0	3	0.42	10	4.2	
0	4	0.72	10	7.2	
1	4	0.46	10	4.6	
2	4	0.36	10	3.6	
3	4	0.38	10	3.8	
4	4	0.54	10	6.5	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 1

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
4	5	0.66	10	6.6	
3	5	0.44	10	4.4	
2	5	0.42	10	4.2	
1	5	0.59	10	5.9	
0	5	0.62	10	6.2	
0	6	0.52	10	5.2	
1	6	0.66	10	6.6	
2	6	0.46	10	4.6	
3	6	0.47	10	4.7	
4	6	0.66	10	6.6	
4	7	0.90	10	9.0	Adjacent to gas tank
3	7	0.38	10	3.8	
2	7	0.66	10	6.6	
1	7	0.64	10	6.4	
0	7	0.42	10	4.2	
0	8	0.48	10	4.8	
1	8	0.58	10	5.8	
2	8	0.75	10	7.5	
3	8	0.44	10	4.4	Adjacent to gas tank
4	8	0.32	30	9.6	
4	9	0.78	10	7.8	
3	9	0.66	10	6.6	
2	9	0.78	10	7.8	
1	9	0.68	10	6.8	
0	9	0.84	10	8.4	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 1

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
0	10	0.34	30	10.2	
1	10	0.88	10	8.8	
2	10	0.76	10	7.6	
3	10	0.90	10	9.0	
4	10	0.76	10	7.6	Close to powerline
4	11	0.38	30	11.4	Close to powerline
3	11	0.32	30	9.6	
2	11	0.30	30	9.0	
1	11	0.40	30	12.0	
0	11	0.46	30	13.8	
0	12	0.50	30	15.0	
1	12	0.48	30	14.4	
2	12	0.38	30	11.4	
3	12	0.35	30	10.5	
4	12	0.52	30	15.6	Close to powerline
4	13	0.48	30	14.4	
3	13	0.46	30	13.8	
2	13	0.48	30	14.4	
1	13	0.54	30	16.2	
0	13	0.48	30	14.4	
0	14	0.37	30	11.1	
1	14	0.41	30	12.3	
2	14	0.46	30	13.8	
3	14	0.48	30	14.4	
4	14	0.54	30	16.2	Close to powerline

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 1

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
4	15	0.69	30	20.7	Close to powerline
3	15	0.68	30	20.4	
2	15	0.48	30	14.4	
1	15	0.32	30	9.6	
0	15	0.79	10	7.9	
0	16	0.86	10	8.6	
1	16	0.54	10	5.4	
2	16	0.80	10	8.0	
3	16	0.68	30	20.4	Edge of gravel parking lot
4	16	0.82	30	24.6	In gravel lot
4	17	0.80	30	24.0	In gravel lot
3	17	0.50	30	15.0	Edge of gravel lot
2	17	0.50	10	5.0	
1	17	0.44	10	4.4	
0	17	0.70	10	7.0	
0	18	0.62	10	6.2	
1	18	0.50	10	5.0	
2	18	0.47	10	4.7	
3	18	0.96	10	7.6	Gravel lot
4	18	0.52	30	15.6	
4	19	0.36	30	10.8	
3	19	0.80	10	8.0	Gravel lot
2	19	0.50	10	5.0	Gravel lot
1	19	0.48	10	4.8	
0	19	0.64	10	6.4	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 1

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
0	0	0.40	10	4.0	Close to powerlines
0	1	0.30	10	3.0	
0	2	0.48	10	4.8	
0	3	0.32	30	9.6	
0	4	0.66	10	6.6	
0	5	0.94	10	9.4	
1	5	0.60	10	6.0	
1	4	0.72	3	2.2	Negative value for 90°
1	3	0.32	10	3.2	
1	2	0.70	3	2.1	
1	1	0.75	3	2.3	
1	0	0.34	10	3.4	Close to powerline
2	0	0.32	10	3.2	Close to powerline
2	1	0.70	3	2.1	
2	2	0.72	3	2.2	
2	3	0.78	3	2.3	
2	4	0.94	3	2.8	
2	5	0.70	10	7.0	
3	5	0.34	10	3.4	
3	4	0.66	10	6.6	
3	3	0.72	3	2.2	
3	2	0.66	3	1.9	
3	1	0.72	3	2.2	
3	0	0.30	10	3.0	
4	0	0.32	10	3.2	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 2

EM FIELD DATA SHEET

STATION		Instrument Reading	SCALE	Conductivity mmho/m	Comments
X	Y				
4	1	0.80	3	2.4	
4	2	0.70	3	2.1	
4	3	0.70	3	2.1	
4	4	0.80	3	2.4	
4	5	0.30	10	3.0	

* Field data sheet is an extension of Geophysical Logbook F4-2528.

Location Grid Area 2

APPENDIX D

Site Inspection Report

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

EPA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER
HEYWOOD-WAKEFIELD COMPANY	CHEMWOOD DRIVE

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG. DIST.
NEWPORT	TN	37821	COCKE		

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
35 59 20.0	083 12 02.0	☒ A PRIVATE ☐ B FEDERAL ____ ☐ C STATE ☐ D COUNTY ☐ E MUNICIPAL ☐ F OTHER ____ ☐ G UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION (Month Day Year)	02 SITE STATUS	03 YEARS OF OPERATION
9 0	☒ ACTIVE ☐ INACTIVE	1957 / 1982 (Beginning Year / Ending Year) ____ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A EPA ☒ B EPA CONTRACTOR NUS CORPORATION (Name of firm) ☐ C MUNICIPAL ☐ D MUNICIPAL CONTRACTOR ____ (Name of firm)
☐ E STATE ☐ F STATE CONTRACTOR ____ (Name of firm) ☐ G OTHER ____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
ANDREW HARVEY	GEOLOGIST	NUS CORP	(404) 938-7710

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
WENDELL C. MCLENDON	FIELD TECHNICIAN	NUS CORP.	(404) 938-7710
TRISHA HARRIS	ENVIRONMENTAL SPECIALIST	NUS CORP.	(404) 938-7710
RON WILDE	ENVIRONMENTAL SCIENTIST	NUS CORP	(404) 938-7710
MARK HITCHCOCK	FIELD TECHNICIAN	NUS CORP	(404) 938-7710
GREG THOMAS	GEOLOGIST	NUS CORP	(404) 938-7710

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
MIKE MULLANEY	PRESIDENT, EASTERN PLATING	NEWPORT, TN	(615) 623-0062
TOM MCNEALY	PLANT MANAGER	NEWPORT, TN	(615) 623-0062
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	SEPTEMBER 11-13, 1990	HOT, HAZY, PARTLY CLOUDY WITH CHANCE OF RAIN

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
RAMONA KLEIN	U.S. ENVIRONMENTAL PROTECTION AGENCY	(404) 347-5065

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
WENDELL C. MCLENDON	—	NUS CORPORATION	(404) 938-7710	04 11 91 (Month Day Year)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

PHYSICAL STATES

A. SOLID
X B. POWDER, FINES
X C. SLUDGE
D. OTHER _____ (Specify)
E. SLURRY
X F. LIQUID
G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities, not to be added)

TONS _____
CUBIC YARDS _____
NO. OF DRUMS 77

03 WASTE CHARACTERISTICS (Check all that apply)

X A. TOXIC
B. CORROSIVE
C. RADIOACTIVE
X D. PERSISTENT
E. SOLUBLE
F. INFECTIOUS
G. FLAMMABLE
H. IGNITABLE
I. HIGHLY VOLATILE
J. EXPLOSIVE
K. REACTIVE
L. INCOMPATIBLE
M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	2255 +	GALLONS	
OLW	OILY WASTE			
SOL	SOLVENTS	UNKNOWN		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	UNKNOWN		

IV. HAZARDOUS SUBSTANCES See Appendix for most frequently cited CAS Numbers.

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU	ELECTROPLATING SLUDGE	999	DRUMS	UNKNOWN	
SOL	SPENT ELECTROPLATING SOLVENTS	999	TANKS	UNKNOWN	
MES	LEAD	—	DRUMS	230	mg/kg
MES	ZINC	—	DRUMS	450	mg/kg
MES	CHROMIUM	7440413	DRUMS	200	mg/kg
MES	NICKEL	7440020	DRUMS	140	mg/kg
MES	COPPER	—	DRUMS	170	mg/kg

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
TN	0003382330

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE _____) — X POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

SPILLS FROM WASTEWATER TREATMENT PLANT COULD POSSIBLY CONTAMINATE GROUNDWATER.

01 X B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE _____) — X POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

REMOTE POTENTIAL. THE SITE IS LOCATED IN AN ARTIFICIALLY ENCLOSED BASIN, BUT SURFACE WATER THAT DRAINS FROM NORTH SIDE OF PLANT TRAVELS APPROXIMATELY 0.4 MILES TO THE PIGEON RIVER

01 X C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

REMOTE POTENTIAL

01 X D. FIRE EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

REMOTE POTENTIAL

01 X E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE _____) — X POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

WORKERS COULD COME IN CONTACT WITH CONTAMINATED SOILS.

01 X F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — X ALLEGED
03 AREA POTENTIALLY AFFECTED ≈ 1 (Acres) — 04 NARRATIVE DESCRIPTION

CHROMIUM, ZINC, NICKEL, COPPER AND LEAD WERE FOUND IN SURFACE SOIL SAMPLES

01 X G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

REMOTE POTENTIAL

01 X H. WORKER EXPOSURE INJURY — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

WORKERS COULD COME IN CONTACT WITH CONTAMINATED SOILS.

01 ☐ I. POPULATION EXPOSURE INJURY — 02 ☐ OBSERVED (DATE _____) — X POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

THE SITE IS EASILY ACCESSIBLE AND NOT FENCED.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IN	D003382330

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL X ALLEGED
04 NARRATIVE DESCRIPTION

THERE ARE SEVERAL SMALL AREAS OF STRESSED VEGETATION ON THE EASTERN PORTION OF THE SITE

01 X K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

NOT DOCUMENTED

01 X L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

NOT DOCUMENTED

01 X M. UNSTABLE CONTAINMENT OF WASTES (Spills, Runoff, Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

NONE OBSERVED.

01 X N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

NONE OBSERVED.

01 X O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

REMOTE POTENTIAL. WATER FLOWS TO THE EASTERN PORTION OF THE PROPERTY AND PERCOLATES INTO THE GROUND OR EVAPORATES.

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

NOT DOCUMENTED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

NONE OBSERVED

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE, EPA FILE MATERIAL, FIELD NOTES

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Enter all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
A NPDES	TN 000 1392	6-13-74	10-16-83	FOR DISCHARGE INTO PATTON CREEK
B UIC				
C AIR				
D RCRA LARGE GENERATOR				EASTERN PLATING COMPANY
E RCRA INTERIM STATUS				
F SPCC PLAN				
G STATE (Specify)				
H LOCAL (Specify)				
I OTHER (Specify)				
J NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
A SURFACE IMPOUNDMENT		
B PILES		
X C DRUMS, ABOVE GROUND	77	
D TANK, ABOVE GROUND		
E TANK, BELOW GROUND		
F LANDFILL		
G LANDFARM		
H OPEN DUMP		
OTHER (Specify)		

04 TREATMENT (Check all that apply)
A INCINERATION
B UNDERGROUND INJECTION
C CHEMICAL/PHYSICAL
D BIOLOGICAL
E WASTE OIL PROCESSING
F SOLVENT RECOVERY
G OTHER RECYCLING/RECOVERY
X H OTHER SENT OFFSITE TO PERMITTED FACILITY (Specify)

05 OTHER

X A BUILDINGS ON SITE

3

06 AREA OF SITE

≈ 39

07 COMMENTS

IN 1984, DURING A RCRA CLOSURE INSPECTION, CHEMICAL WASTE MANAGEMENT REMOVED 77 DRUMS OF SLUDGE AND FREE LIQUIDS FROM HEYWOOD-WAKEFIELD CO.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

X A ADEQUATE, SECURE ☐ B MODERATE X C INADEQUATE, POOR ☐ D INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☐ YES ☐ NO

02 COMMENTS ~~THE SITE~~ ACCESS TO THE SITE IS NOT RESTRICTED BY GATES OR FENCES

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

STATE, EPA FILE MATERIAL, FIELD NOTES

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE: TN
02 SITE NUMBER: D003382330

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as appropriate)

	SURFACE	WELL
COMMUNITY	A ☒	B ☐
NON-COMMUNITY	C ☒	

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A ☐	B ☐	C ☐
D ☐	E ☐	F ☐

03 DISTANCE TO SITE
A UPGRADIENT (mi)
B _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☒ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 774 HOMES, 2010 PERSONS

03 DISTANCE TO NEAREST DRINKING WATER WELL 0.8 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
≈15 (ft)	EAST	1 (ft)	_____ (gpd)	☐ YES ☒ NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

ALL PRIVATE WELLS ARE LOCATED UPGRADIENT OF THE SITE.

10 RECHARGE AREA
☒ YES
☐ NO
COMMENTS: RECHARGE BY PERCOLATION OF PRECIPITATION

11 DISCHARGE AREA
☐ YES
☐ NO
COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION, DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED, POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
PIGEON RIVER	☐	0.4 (mi)
FRENCH BROAD RIVER, DOUGLAS LAKE	☐	4.1 (mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A 292 (NO. OF PERSONS)	B 3608 (NO. OF PERSONS)	C 11,368 (NO. OF PERSONS)

02 DISTANCE TO NEAREST POPULATION 0.4 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE _____

04 DISTANCE TO NEAREST OFF-SITE BUILDING >0.1 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site (for example, densely populated urban area)

THE SITE IS LOCATED IN AN INDUSTRIAL AREA. POPULATION INCREASES AS DISTANCE FROM SITE INCREASES.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

A 10^{-1} – 10^{-4} cm/sec X B 10^{-4} – 10^{-6} cm/sec C 10^{-4} – 10^{-3} cm/sec D GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

A IMPERMEABLE (Less than 10^{-7} cm/sec) X B RELATIVELY IMPERMEABLE (10^{-4} – 10^{-6} cm/sec) C RELATIVELY PERMEABLE (10^{-2} – 10^{-4} cm/sec) D VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
≈ 6 (ft)	? (ft)	UNKNOWN

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
11 (in)	2.8 (in)	1 %	SE	2 %

09 FLOOD POTENTIAL

SITE IS IN — YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A — (mi) OTHER: B — (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES: SEVERAL

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AG LAND
A 0 (mi)	B ≈ 0.7 (mi)	C _____ (mi)	D _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

THE SITE OCCUPIES APPROXIMATELY 38 ACRES OF LAND AT AN ELEVATION OF ABOUT 1,030 FEET ABOVE MEAN SEA LEVEL (amsl). THE SITE APPEARS TO BE LEVEL. TOPOGRAPHY OF THE SURROUNDING AREA CONSISTS OF DISCONTINUOUS NORTHEAST TRENDING MOUNTAINOUS RIDGES AND BROAD, FLAT STREAM VALLEYS. ELEVATIONS IN THE AREA RANGE BETWEEN 1,008 AND 2,420 FEET amsl.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE, EPA FILES.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D003382330

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	0		
SURFACE WATER	0		
WASTE	0		
AIR	0	FOR ALL SAMPLES:	
RUNOFF SEDIMENT	4	ORGANICS: GULF SOUTH ENVIRONMENTAL LABS	
SPILL		NEW ORLEANS, LA	
SOIL	10	INORGANIC: CHEMTECH CONSULTING GROUP, LTD.	
VEGETATION	0	NEW YORK, NY	
OTHER			

III. FIELD MEASUREMENTS TAKEN N/A

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE X GROUND ☐ AERIAL

02 IN CUSTODY OF NUS CORPORATION FILES
Name of organization or individual

03 MAPS X YES ☐ NO

04 LOCATION OF MAPS NUS CORPORATION FILES

V. OTHER FIELD DATA COLLECTED Provide narrative description

A GEOPHYSICAL SURVEY WAS COMPLETED ON THE PROPERTY (SEE SSI REPORT).

VI. SOURCES OF INFORMATION Cite specific references, e.g., state files, sample analysis, reports

STATE, EPA FILES, NUS CORPORATION LOGBOOKS FOR HEYWOOD-WAKEFIELD CO.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D063382330

II. CURRENT OWNER(S) | **PARENT COMPANY** (if applicable)

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
EASTERN PLATING CO.			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
CHEMWOOD DR			

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
NEWPORT	TN	37821			

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
VIRCO MANUFACTURING			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
CHEMWOOD DR			

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
NEWPORT	TN	37821			

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER
HEYWOOD-WAKEFIELD CO.	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
CHEMWOOD DR.	

05 CITY	06 STATE	07 ZIP CODE
NEWPORT	TN	37821

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable, list most recent first)

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IN	D003382330

II. CURRENT OPERATOR (Provide if different from owner)			OPERATOR'S PARENT COMPANY (If applicable)		
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER				

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)			PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)		
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD				

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
TN	D003382330

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER	
EASTERN PLATING CO.		LARGE GENERATOR STATUS
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
CHEMWOOD DRIVE		
05 CITY / 06 STATE	07 ZIP CODE	
NEWPORT TN	37821	

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SEE SI REPORT.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IN	D003382330

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☒ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION WASTE WAS SHIPPED TO SCA SERVICES HAZARDOUS WASTE LANDFILL AT PINEWOOD, S.C.

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ O. EMERGENCY DIKING SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NOT DOCUMENTED

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
TN	D003582530

II PAST RESPONSE ACTIVITIES (Continued)

01 [ ] R BARRIER WALLS CONSTRUCTED 04 DESCRIPTION N/A	02 DATE	03 AGENCY
01 [ ] S CAPPING/COVERING 04 DESCRIPTION N/A	02 DATE	03 AGENCY
01 [ ] T BULK TANKAGE REPAIRED 04 DESCRIPTION NOT DOCUMENTED	02 DATE	03 AGENCY
01 [ ] U GROUT CURTAIN CONSTRUCTED 04 DESCRIPTION N/A	02 DATE	03 AGENCY
01 [ ] V BOTTOM SEALED 04 DESCRIPTION N/A	02 DATE	03 AGENCY
01 [ ] W GAS CONTROL 04 DESCRIPTION N/A	02 DATE	03 AGENCY
01 [ ] X FIRE CONTROL 04 DESCRIPTION NOT DOCUMENTED	02 DATE	03 AGENCY
01 [ ] Y LEACHATE TREATMENT 04 DESCRIPTION UNKNOWN	02 DATE	03 AGENCY
01 [ ] Z AREA EVACUATED 04 DESCRIPTION NOT DOCUMENTED	02 DATE	03 AGENCY
01 [ ] 1 ACCESS TO SITE RESTRICTED 04 DESCRIPTION NO	02 DATE	03 AGENCY
01 [ ] 2 POPULATION RELOCATED 04 DESCRIPTION UNKNOWN	02 DATE	03 AGENCY
01 [ ] 3 OTHER REMEDIAL ACTIVITIES 04 DESCRIPTION	02 DATE	03 AGENCY

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

STATE, EPA FILE MATERIAL

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IN	D003382330

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION ✓ YES NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY ENFORCEMENT ACTION

A "REQUEST FOR ORDER CIVIL PENALTY AND DAMAGE ASSESSMENT" WAS ENTERED ON APRIL 15, 1983 FOR RCRA STORAGE OF HAZARDOUS WASTE AT THE SITE AFTER THE PLANT CEASED OPERATIONS. HEYWOOD-WAKEFIELD COMPANY CEASED OPERATIONS IN 1982 AND DECLARED A CHAPTER 7 BANKRUPTCY.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports.)

STATE, EPA FILE MATERIAL

APPENDIX

I. FEEDSTOCKS

CAS Number	Chemical Name
1. 7664-41-7	Ammonia
2. 7440-36-0	Antimony
3. 1309-64-4	Antimony Trioxide
4. 7440-38-2	Arsenic
5. 1327-53-3	Arsenic Trioxide
6. 21109-95-5	Barium Sulfide
7. 7726-95-6	Bromine
8. 106-99-0	Butadiene
9. 7440-43-9	Cadmium
10. 7782-50-5	Chlorine
11. 12737-27-8	Chromite
12. 7440-47-3	Chromium
13. 7440-48-4	Cobalt
14. 1317-38-0	Cupric Oxide
15. 7758-98-7	Cupric Sulfate
16. 1317-39-1	Cuprous Oxide
17. 74-85-1	Ethylene
18. 7647-01-0	Hydrochloric Acid
19. 7664-39-3	Hydrogen Fluoride
20. 1335-25-7	Lead Oxide
21. 7439-97-6	Mercury
22. 74-82-8	Methane
23. 91-20-3	Napthalene
24. 7440-02-0	Nickel
25. 7697-37-2	Nitric Acid
26. 7723-14-0	Phosphorus
27. 7778-50-9	Potassium Dichromate
28. 1310-58-3	Potassium Hydroxide
29. 115-07-1	Propylene
30. 10588-01-9	Sodium Dichromate
31. 1310-73-2	Sodium Hydroxide
32. 7646-78-8	Stannic Chloride
33. 7772-99-8	Stannous Chloride
34. 7664-93-9	Sulfuric Acid
35. 108-88-3	Toluene
36. 1330-20-7	Xylene
37. 7646-85-7	Zinc Chloride
38. 7733-02-0	Zinc Sulfate

II. HAZARDOUS SUBSTANCES

CAS Number	Chemical Name
1. 75-07-0	Acetaldehyde
2. 64-19-7	Acetic Acid
3. 108-24-7	Acetic Anhydride
4. 75-86-5	Acetone Cyanohydrin
5. 506-96-7	Acetyl Bromide
6. 75-36-5	Acetyl Chloride
7. 107-02-8	Acrolein
8. 107-13-1	Acrylonitrile
9. 124-04-9	Adipic Acid
10. 309-00-2	Aldrin
11. 10043-01-3	Aluminum Sulfate
12. 107-18-6	Allyl Alcohol
13. 107-05-1	Allyl Chloride
14. 7664-41-7	Ammonia
15. 631-61-8	Ammonium Acetate
16. 1863-63-4	Ammonium Benzoate
17. 1066-33-7	Ammonium Bicarbonate
18. 7789-09-5	Ammonium Bichromate
19. 1341-49-7	Ammonium Bifluoride
20. 10192-30-0	Ammonium Bisulfite
21. 1111-78-0	Ammonium Carbamate
22. 12125-02-9	Ammonium Chloride
23. 7788-98-9	Ammonium Chromate
24. 3012-65-5	Ammonium Citrate, Dibasic
25. 13826-83-0	Ammonium Fluoborate
26. 12125-01-8	Ammonium Fluoride
27. 1336-21-6	Ammonium Hydroxide
28. 6009-70-7	Ammonium Oxalate
29. 16919-19-0	Ammonium Silicofluoride
30. 7773-06-0	Ammonium Sulfamate
31. 12135-76-1	Ammonium Sulfide
32. 10196-04-0	Ammonium Sulfite
33. 14307-43-8	Ammonium Tartrate
34. 1762-95-4	Ammonium Thiocyanate
35. 7783-18-8	Ammonium Thiosulfate
36. 628-63-7	Amyl Acetate
37. 62-53-3	Aniline
38. 7647-18-9	Antimony Pentachloride
39. 7789-61-9	Antimony Tribromide
40. 10025-91-9	Antimony Trichloride
41. 7783-56-4	Antimony Trifluoride
42. 1309-64-4	Antimony Trioxide
43. 1303-32-8	Arsenic Disulfide
44. 1303-28-2	Arsenic Pentoxide
45. 7784-34-1	Arsenic Trichloride
46. 1327-53-3	Arsenic Trioxide
47. 1303-33-9	Arsenic Trisulfide
48. 542-62-1	Barium Cyanide
49. 71-43-2	Benzene
50. 65-85-0	Benzoic Acid
51. 100-47-0	Benzonitrile
52. 98-88-4	Benzoyl Chloride
53. 100-44-7	Benzyl Chloride
54. 7440-41-7	Beryllium
55. 7787-47-5	Beryllium Chloride
56. 7787-49-7	Beryllium Fluoride
57. 13597-99-4	Beryllium Nitrate
58. 123-86-4	Butyl Acetate
59. 84-74-2	n-Butyl Phthalate
60. 109-73-9	Butylamine
61. 107-92-6	Butyric Acid
62. 543-90-8	Cadimium Acetate
63. 7789-42-6	Cadmium Bromide
64. 10108-64-2	Cadmium Chloride
65. 7778-44-1	Calcium Arsenate
66. 52740-16-6	Calcium Arsenite
67. 75-20-7	Calcium Carbide
68. 13765-19-0	Calcium Chromate
69. 592-01-8	Calcium Cyanide
70. 26264-06-2	Calcium Dodecylbenzene Sulfonate
71. 7778-54-3	Calcium Hypochlorite
72. 133-06-2	Captan
73. 63-25-2	Carbaryl
74. 1563-66-2	Carbofuran
75. 75-15-0	Carbon Disulfide
76. 56-23-5	Carbon Tetrachloride
77. 57-74-9	Chlordane
78. 7782-50-5	Chlorine
79. 108-90-7	Chlorobenzene
80. 67-66-3	Chloroform
81. 7790-94-5	Chlorosulfonic Acid
82. 2921-88-2	Chlorpyrifos
83. 1066-30-4	Chromic Acetate
84. 7738-94-5	Chromic Acid
85. 10101-53-8	Chromic Sulfate
86. 10049-05-5	Chromous Chloride
87. 544-18-3	Cobaltous Formate
88. 14017-41-5	Cobaltous Sulfamate
89. 56-72-4	Coumaphos
90. 1319-77-3	Cresol
91. 4170-30-3	Crotonaldehyde
92. 142-71-2	Cupric Acetate
93. 12002-03-8	Cupric Acetoarsenite
94. 7447-39-4	Cupric Chloride
95. 3251-23-8	Cupric Nitrate
96. 5893-66-3	Cupric Oxalate
97. 7758-98-7	Cupric Sulfate
98. 10380-29-7	Cupric Sulfate Ammoniated
99. 815-82-7	Cupric Tartrate
100. 506-77-4	Cyanogen Chloride
101. 110-82-7	Cyclohexane
102. 94-75-7	2,4-D Acid
103. 94-11-1	2,4-D Esters
104. 50-29-3	DDT
105. 333-41-5	Diazinon
106. 1918-00-9	Dicamba
107. 1194-65-6	Dichlobenil
108. 117-80-6	Dichlone
109. 25321-22-6	Dichlorobenzene (all isomers)
110. 266-38-19-7	Dichloropropane (all isomers)
111. 26952-23-8	Dichloropropene (all isomers)
112. 8003-19-8	Dichloropropene-Dichloropropane Mixture
113. 75-99-0	2-2-Dichloropropionic Acid
114. 62-73-7	Dichlorvos
115. 60-57-1	Dieldrin
116. 109-89-7	Diethylamine
117. 124-40-3	Dimethylamine
118. 25154-54-5	Dinitrobenzene (all isomers)
119. 51-28-5	Dinitrophenol
120. 25321-14-6	Dinitrotoluene (all isomers)
121. 85-00-7	Diquat
122. 298-04-4	Disulfoton
123. 330-54-1	Diuron
124. 27176-87-0	Dodecylbenzenesulfonic Acid
125. 115-29-7	Endosulfan (all isomers)
126. 72-20-8	Endrin and Metabolites
127. 106-89-8	Epichlorohydrin
128. 563-12-2	Ethion
129. 100-41-4	Ethyl Benzene
130. 107-15-3	Ethylenediamine
131. 106-93-4	Ethylene Dibromide
132. 107-06-2	Ethylene Dichloride
133. 60-00-4	EDTA
134. 1185-57-5	Ferric Ammonium Citrate
135. 2944-67-4	Ferric Ammonium Oxalate
136. 7705-08-0	Ferric Chloride

II. HAZARDOUS SUBSTANCES

CAS Number	Chemical Name
137. 7783-50-8	Ferric Fluoride
138. 10421-48-4	Ferric Nitrate
139. 10028-22-5	Ferric Sulfate
140. 10045-89-3	Ferrous Ammonium Sulfate
141. 7758-94-3	Ferrous Chloride
142. 7720-78-7	Ferrous Sulfate
143. 206-44-0	Fluoranthene
144. 50-00-0	Formaldehyde
145. 64-18-6	Formic Acid
146. 110-17-8	Fumaric Acid
147. 98-01-1	Furfural
148. 86-50-0	Guthion
149. 76-44-8	Heptachlor
150. 118-74-1	Hexachlorobenzene
151. 87-68-3	Hexachlorobutadiene
152. 67-72-1	Hexachloroethane
153. 70-30-4	Hexachlorophene
154. 77-47-4	Hexachlorocyclopentadiene
155. 7647-01-0	Hydrochloric Acid (Hydrogen Chloride)
156. 7664-39-3	Hydrofluoric Acid (Hydrogen Fluoride)
157. 74-90-8	Hydrogen Cyanide
158. 7783-06-4	Hydrogen Sulfide
159. 78-79-5	Isoprene
160. 42504-46-1	Isopropanolamine Dodecylbenzenesulfonate
161. 115-32-2	Kelthane
162. 143-50-0	Kepone
163. 301-04-2	Lead Acetate
164. 3687-31-8	Lead Arsenate
165. 7758-95-4	Lead Chloride
166. 13814-96-5	Lead Fluoborate
167. 7783-46-2	Lead Fluoride
168. 10101-63-0	Lead Iodide
169. 18256-98-9	Lead Nitrate
170. 7428-48-0	Lead Stearate
171. 15739-80-7	Lead Sulfate
172. 1314-87-0	Lead Sulfide
173. 592-87-0	Lead Thiocyanate
174. 58-89-9	Lindane
175. 14307-35-8	Lithium Chromate
176. 121-75-5	Malthion
177. 110-16-7	Maleic Acid
178. 108-31-6	Maleic Anhydride
179. 2032-65-7	Mercaptodimethur
180. 592-04-1	Mercuric Cyanide
181. 10045-94-0	Mercuric Nitrate
182. 7783-35-9	Mercuric Sulfate
183. 592-85-8	Mercuric Thiocyanate
184. 10415-75-5	Mercurous Nitrate
185. 72-43-5	Methoxychlor
186. 74-93-1	Methyl Mercaptan
187. 80-62-6	Methyl Methacrylate
188. 298-00-0	Methyl Parathion
189. 7786-34-7	Mevinphos
190. 315-18-4	Mexacarbate
191. 75-04-7	Monoethylamine
192. 74-89-5	Monomethylamine
193. 300-76-5	Naled
194. 91-20-3	Naphthalene
195. 1338-24-5	Naphthenic Acid
196. 7440-02-0	Nickel
197. 15699-18-0	Nickel Ammonium Sulfate
198. 37211-05-5	Nickel Chloride
199. 12054-48-7	Nickel Hydroxide
200. 14216-75-2	Nickel Nitrate
201. 7786-81-4	Nickel Sulfate
202. 7697-37-2	Nitric Acid
203. 98-95-3	Nitrobenzene
204. 10102-44-0	Nitrogen Dioxide
205. 25154-55-6	Nitrophenol (all isomers)
206. 1321-12-6	Nitrotoluene
207. 30525-89-4	Paraformaldehyde
208. 56-38-2	Parathion
209. 608-93-5	Pentachlorobenzene
210. 87-86-5	Pentachlorophenol
211. 85-01-8	Phenanthrene
212. 108-95-2	Phenol
213. 75-44-5	Phosgene
214. 7664-38-2	Phosphoric Acid
215. 7723-14-0	Phosphorus
216. 10025-87-3	Phosphorus Oxychloride
217. 1314-80-3	Phosphorus Pentasulfide
218. 7719-12-2	Phosphorus Trichloride
219. 7784-41-0	Potassium Arsenate
220. 10124-50-2	Potassium Arsenite
221. 7778-50-9	Potassium Bichromate
222. 7789-00-6	Potassium Chromate
223. 7722-64-7	Potassium Permanganate
224. 2312-35-8	Propargite
225. 79-09-4	Propionic Acid
226. 123-62-6	Propionic Anhydride
227. 1336-36-3	Polychlorinated Biphenyls
228. 151-50-8	Potassium Cyanide
229. 1310-58-3	Potassium Hydroxide
230. 75-56-9	Propylene Oxide
231. 121-29-9	Pyrethrins
232. 91-22-5	Quinoline
233. 108-46-3	Resorcinol
234. 7446-08-4	Selenium Oxide
235. 7761-88-8	Silver Nitrate
236. 7631-89-2	Sodium Arsenate
237. 7784-46-5	Sodium Arsenite
238. 10588-01-9	Sodium Bichromate
239. 1333-83-1	Sodium Bifluoride
240. 7631-90-5	Sodium Bisulfite
241. 7775-11-3	Sodium Chromate
242. 143-33-9	Sodium Cyanide
243. 25155-30-0	Sodium Dodecylbenzene Sulfonate
244. 7681-49-4	Sodium Fluoride
245. 16721-80-5	Sodium Hydrosulfide
246. 1310-73-2	Sodium Hydroxide
247. 7681-52-9	Sodium Hypochlorite
248. 124-41-4	Sodium Methylate
249. 7632-00-0	Sodium Nitrate
250. 7558-79-4	Sodium Phosphate, Dibasic
251. 7601-54-9	Sodium Phosphate, Tribasic
252. 10102-18-8	Sodium Selenite
253. 7789-06-2	Strontium Chromate
254. 57-24-9	Strychnine and Salts
255. 100-420-5	Styrene
256. 12771-08-3	Sulfur Monochloride
257. 7664-93-9	Sulfuric Acid
258. 93-76-5	2,4,5-T Acid
259. 2008-46-0	2,4,5-T Amines
260. 93-79-8	2,4,5-T Esters
261. 13560-99-1	2,4,5-T Salts
262. 93-72-1	2,4,5-TP Acid
263. 32534-95-5	2,4,5-TP Acid Esters
264. 72-54-8	TDE
265. 95-94-3	Tetrachlorobenzene
266. 127-18-4	Tetrachloroethane
267. 78-00-2	Tetraethyl Lead
268. 107-49-3	Tetraethyl Pyrophosphate
269. 7446-18-6	Thallium (I) Sulfate
270. 108-88-3	Toluene
271. 8001-35-2	Toxaphene
272. 12002-48-1	Trichlorobenzene (all isomers)
273. 52-68-6	Trichlorfon
274. 25323-89-1	Trichloroethane (all isomers)
275. 79-01-6	Trichloroethylene
276. 25167-82-2	Trichlorophenol (all isomers)
277. 27323-41-7	Triethanolamine Dodecylbenzenesulfonate
278. 121-44-8	Triethylamine
279. 75-50-3	Trimethylamine
280. 541-09-3	Uranyl Acetate
281. 10102-06-4	Uranyl Nitrate
282. 1314-62-1	Vanadium Pentoxide
283. 27774-13-6	Vanadyl Sulfate
284. 108-05-4	Vinyl Acetate
285. 75-35-4	Vinylidene Chloride
286. 1300-71-6	Xylenol
287. 557-34-6	Zinc Acetate
288. 52628-25-8	Zinc Ammonium Chloride
289. 1332-07-6	Zinc Borate
290. 7699-45-8	Zinc Bromide
291. 3486-35-9	Zinc Carbonate
292. 7646-85-7	Zinc Chloride
293. 557-21-1	Zinc Cyanide
294. 7783-49-3	Zinc Fluoride
295. 557-41-5	Zinc Formate
296. 7779-86-4	Zinc Hydrosulfite
297. 7779-88-6	Zinc Nitrate
298. 127-82-2	Zinc Phenolsulfonate
299. 1314-84-7	Zinc Phosphide
300. 16871-71-9	Zinc Silicofluoride
301. 7733-02-0	Zinc Sulfate
302. 13746-89-9	Zirconium Nitrate
303. 16923-95-8	Zirconium Potassium Fluoride
304. 14644-61-2	Zirconium Sulfate
305. 10026-11-6	Zirconium Tetrachloride

991

PB

Mike Mullaney, President
ern Plating Company
wood Drive
port, Tennessee 37821

r Mr. Mullaney:

ease find enclosed a copy of the Heywood-Wakefield Company,
creening Site Inspection Report. Environmental sampling for
his inspection was conducted at the site in September, 1990

f you have any questions concerning this report, please contact
me at (404) 347-5065.

Sincerely,

Robert Morris
Environmental Engineer

Enclosure

RM:m:11/5/91x5065 Disk: Morris #5 Doc: mullaney

MORRIS DEIHL

U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV, ATHENS, GEORGIA

MEMORANDUM

DATE: SEP 24 1990

SUBJECT: Document Review, FIT Screening Site Inspection Study Plan, Revision 0, Heywood-Wakefield Company Site, Newport, Cocke County, Tennessee; ESD Project No. 90E-582

FROM: Fred Sloan
Hazardous Waste Section
Environmental Compliance Branch
Environmental Services Division

TO: Al Hanke, Chief
Site Assessment Section
Waste Programs Branch
Waste Management Division

THRU: William R. Bokey, Chief
Hazardous Waste Section
Environmental Compliance Branch
Environmental Services Division

Following are comments to the subject document:

- The plan should include information on the contents of the drums that were removed.

If you have any questions or comments please call me at FTS 250-3390.

cc: Finger/Wright
Bokey/Hall
Knight
Franklin

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

ENVIRONMENTAL SERVICES DIVISION
ATHENS, GEORGIA 30613

SISB/SAS
RECEIVED
SEP 13 1990
EPA - REGION IV
ATLANTA, GA.

MEMORANDUM

DATE: September 7, 1990

SUBJECT: Screening Site Inspection Study Plans

FROM: Pat Stamp
Laboratory Quality Control Specialist
Laboratory Evaluation & Quality Assurance Section

TO: Al Hanke, Chief
Site Assessment Section
Waste Programs Branch
Waste Management Division

THRU: Wade Knight, Chief
Laboratory Evaluation & Quality Assurance Section

We have reviewed the following subject documents and have no comments:

1. Georgia-Power-Plant Wansley, Roopville, Georgia
2. Aiken County Landfill, Clearwater, South Carolina
3. Aiken County Landfill(Former), Clearwater, South Carolina
4. Berkeley County Landfill, Oakley, South Carolina
5. Greenwood Mills Landfill, Joanna, South Carolina
6. Heywood-Wakefield Company, Newport, Tennessee
7. M&M Polishing and Plating, Inc., LaFollette, Tennessee
8. Old Jellico Dump, Jellico, Tennessee
9. Old Loudon City Dump, Loudon, Tennessee
10. Paramount Dump-Woodbury, Woodbury, Tennessee

NUS CORPORATION

1382 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404 938 7710

C-586-8-0-245

August 27, 1990

Mr. Michael Carter
Environmental Protection Agency
College State Road
Athens, Georgia 30613

AUG 28 90

Subject: Study Plan
Revision 0
Heywood-Wakefield Company
Newport, Cocke County, Tennessee
EPA ID No.: TND003382330
TDD No. F4-9008-32

Dear Mr Carter:

Attached, please find two copies of the Study Plan for Heywood-Wakefield Company in Newport, Cocke County, Tennessee.

If you have any questions or comments, please contact me at NUS Corporation.

Very truly yours,

Andrew W. Harvey

Andrew W Harvey
Project Manager

Approved:

Greg Schank

AWH/jec

Enclosures (2)

AUG 30 1990

R-586-8-0-27

STUDY PLAN
SCREENING SITE INSPECTION, PHASE II
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE
EPA ID #: TND003382330

Prepared Under
TDD No. F4-9008-32
CONTRACT NO. 68-01-7346

Revision 0

FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

AUGUST 27, 1990

NUS CORPORATION
SUPERFUND DIVISION

Prepared By	Reviewed By	Approved By
Andrew W. Harvey Project Manager	for Roger Franklin Assistant Regional Project Manager	Phil Blackwell Regional Project Manager

AUG 30 1990

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STUDY PLAN

SCREENING SITE INSPECTION, PHASE II

HEYWOOD-WAKEFIELD COMPANY

NEWPORT, COCKE COUNTY, TENNESSEE

EPA ID #TN003382330

TDD NO. F4-9008-32

1.0 INTRODUCTION

The NUS Corporation Region 4 Field Investigation Team (FIT) has been tasked by the U S Environmental Protection Agency (EPA), Waste Management Division to conduct a Screening Site Inspection (SSI) at the Heywood-Wakefield Company facility in Cocke County, Tennessee The inspection will be performed under the authority of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) Tasks will be performed to satisfy the requirements stated in Phase II of Technical Directive Document (TDD) number F4-9008-32

1.1 Objectives

The objectives of this Phase II inspection will be to determine the nature of contaminants present at the site and to determine if a release of these substances has occurred or may occur. Further, this inspection will seek to determine the possible pathways by which contamination could migrate from the site and the populations and environments it would potentially affect. Through these objectives, a recommendation will be made regarding future activities at the site

Specific elements are:

- Obtain information to prepare a site-specific preliminary HRS
- Provide EPA the necessary information to make decisions on any other actions warranted at the site

1.2 Scope of Work

The scope of this investigation will include the following activities:

- Obtain and review background materials relevant to HRS scoring of site
- Obtain aerial photographs and maps of site, if possible
- Obtain information on local water systems
- Evaluate target populations associated with the groundwater, surface water, air and onsite exposure pathways
- Conduct a survey of private wells
- Determine location and distance to nearest potable well
- Develop a site sketch
- Conduct a geophysical screening of site to determine whether buried drums may be present,
- Collect environmental samples

1.3 Schedule

The sampling schedule has been defined for the week of September 10, 1990.

1.4 Personnel

Project Manager - Andrew W. Harvey
Other personnel as required

1.5 Permits and Authorization Requirements

EPA is responsible for obtaining access to the site and permission to take photographs of site. In addition, EPA is responsible for all permits which may be required to accomplish this task.

1.6 Site History and Description

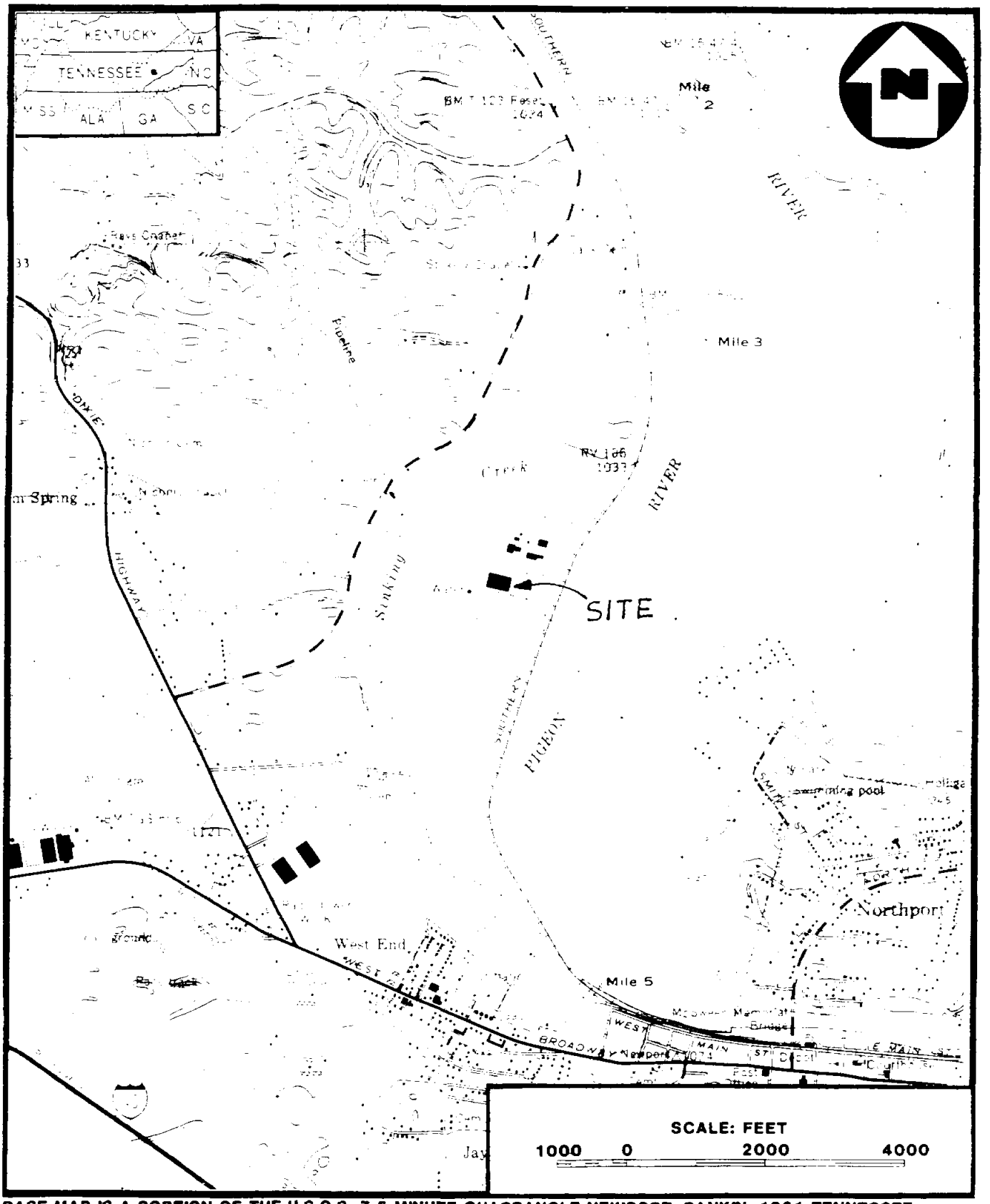
The Heywood-Wakefield Company is located in the industrial park on Chemwood Drive approximately 1 mile northwest of the city of Newport, Cocke County, Tennessee (Figure 1). Geographically, the facility is located at 36°59'10" N latitude and 83°12'07" W longitude (Ref. 1). The site location is shown in Figure 1, and the site layout is shown in Figure 2.

The Heywood-Wakefield Company began hand production of school desks and various metal seatings in 1957. In 1963, implementation of automation upgraded the process to an electroplating line (Ref. 2). The main waste associated with the facility is RCRA listed F006 - "wastewater treatment sludges from electroplating operations...", containing the hazardous constituents cadmium, hexavalent chromium, nickel, and cyanide in the complexed state (Refs. 3, 4).

In 1978, approximately 200 pounds of plating sludge waste produced at the facility was allowed to be disposed of at the Cocke County Landfill (Ref. 5). Prior to 1978, waste material ("Majority constituents: 55 percent wood flour and 45 percent inert materials") collected by air pollution control equipment, approximately 200 pounds per day, was buried on the Heywood-Wakefield Company grounds (Ref. 6). Following the implementation of RCRA, manifests kept at the facility indicate that the wastes were shipped to SCA Services hazardous waste landfill at Pinewood, South Carolina (Ref. 7). A release from the onsite wastewater treatment plant occurred in 1982 (Ref. 7).

Heywood-Wakefield Company ceased operations in 1982 and declared a chapter 11 bankruptcy (Refs. 8, 9). A "Request for Order Civil Penalty and Damage Assessment" was entered on April 15, 1983 for RCRA storage of hazardous waste at the facility after the plant ceased operations (Ref. 9).

In March 1984, representatives from the state of Tennessee Division of Solid Waste Management performed a RCRA closure inspection. During the inspection, Chemical Waste Management, Inc. removed 59 drums from a locked building, 8 drums from the plant yard, and 10 drums were used to contain free liquids from the sludge drums in order to handle the waste types separately (Ref. 3).

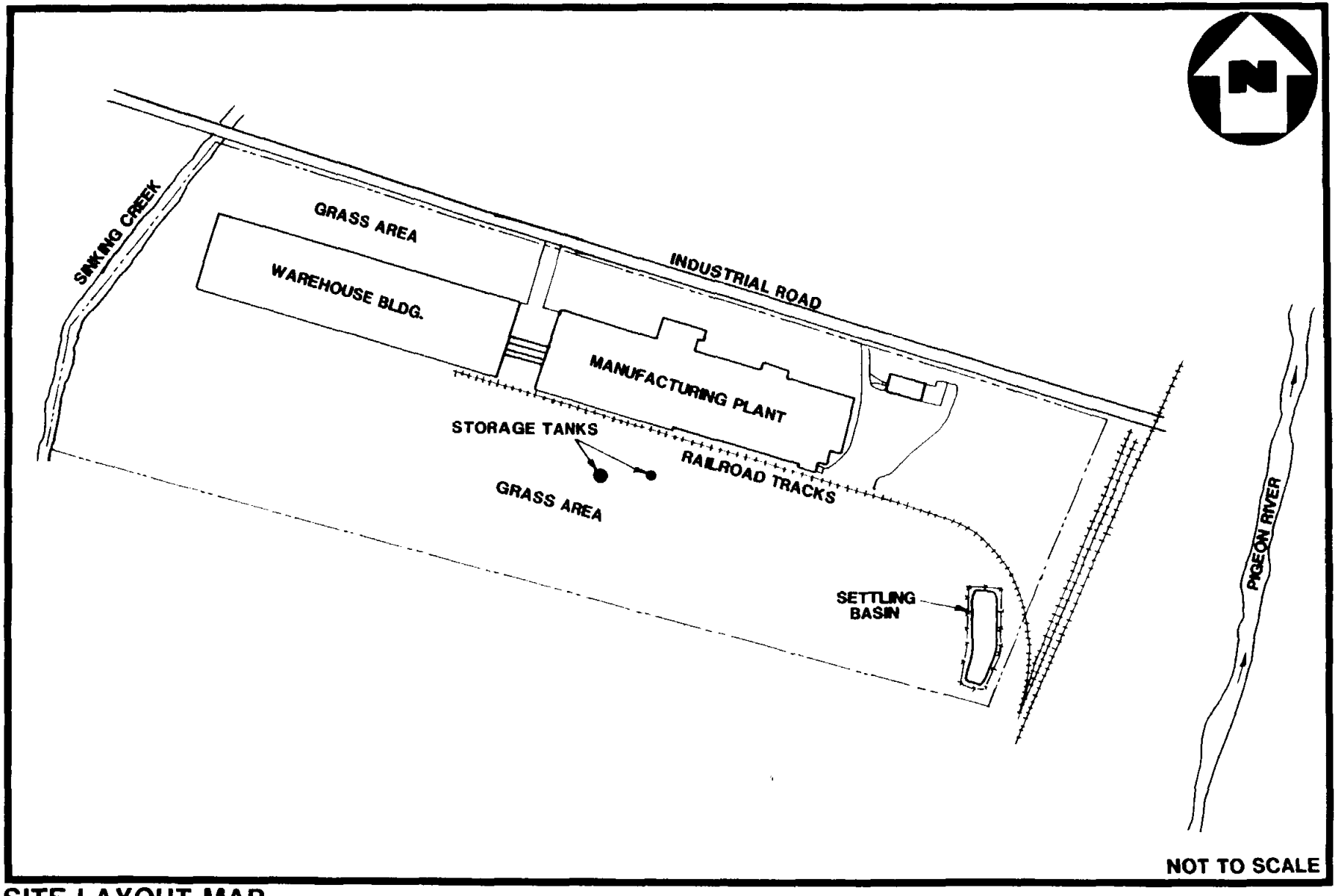


BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE NEWPORT, RANKIN, 1961 TENNESSEE.

SITE LOCATION MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 1

NUS CORPORATION



SITE LAYOUT MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 2

NUS CORPORATION

Currently, the facility property is occupied by Virco Manufacturing, Electric Voice, the offices of Great Lakes Chemical Industries, and Eastern Plating Company, which occupies the main plant building and operates the electroplating line formerly used by Heywood-Wakefield Company, was served with a notice of noncompliance for illegal discharges having high concentrations of chromium, nickel, and lead (Ref. 11)

1.7 Regional Hydrogeology

The site is in the Valley and Ridge Physiographic Province which is typified primarily by faulted and folded carbonate rocks which result in northeast to southwest trending ridges and valleys (Ref. 12, p. 132). Groundwater in this region is found in fractures and solution features in the upper 300 feet of the rocks and the overlying regolith (Ref. 12, p. 44). This is a region of karst topography (Ref. 13). The aquifer normally used in this area is the carbonates of the Knox Group, and while the depth to water is variable, it can be found as shallow as 15 feet below land surface (bls) (Ref. 12, pp. 134-137). In the site vicinity, the wells are completed in the Siever Shale with depths to water ranging from 7 to 71 feet bls (Ref. 12, p. 137). The silty to sandy residuum of the Siever shale represents the layer of lowest hydraulic conductivity between the surface and the aquifer (Ref. 12, p. 44). The net annual rainfall is 11.0 inches, and the 1-year, 24-hour rainfall is 2.8 inches (Refs. 14, pp. 43, 63; 15, p. 93)

2.0 GEOPHYSICAL SCREENING

A geophysical screening will be conducted at the site for the purpose of delineating the location of waste disposal areas. Since the exact locations of these disposal areas are unknown, it is felt that geophysical techniques provide the most viable alternative for locating subsurface waste materials associated with these areas. The most suitable geophysical technique applicable in this geologic setting is believed to be electromagnetics. If proper subsurface conditions exist at the site, this technique will provide the necessary data needed to accurately define any subsurface waste materials. The results will then be used in determining optimum sampling locations in these areas

A noncontacting ground conductivity meter (Geonics-EM-31) will be used to conduct the survey. A summary of geophysical methods is provided in Appendix A.

3.0 SAMPLING INVESTIGATION

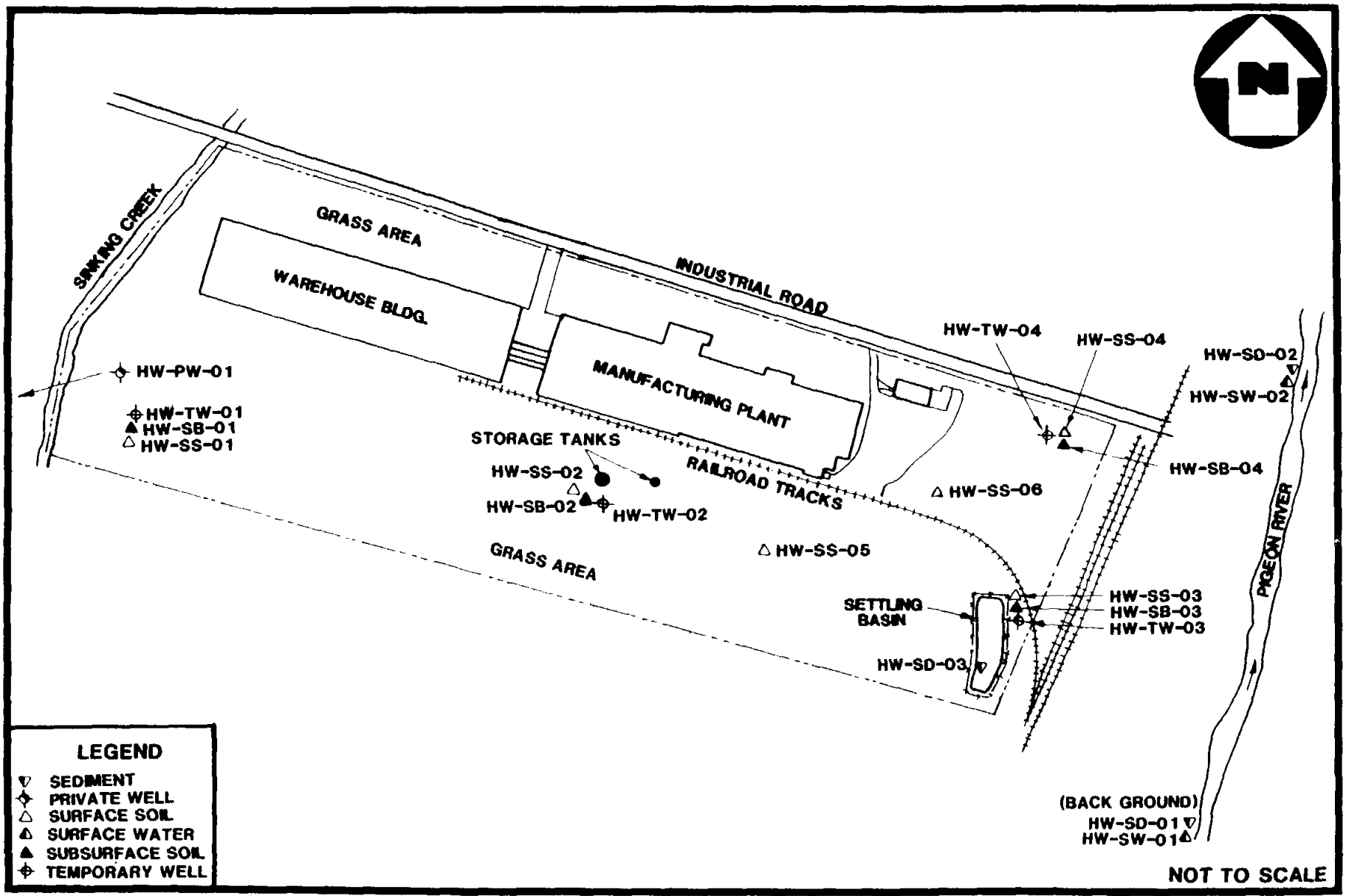
The sampling investigation will include the collection of up to 20 environmental samples. Samples will be analyzed for the complete Target Compound List (TCL), and analyses will be performed under the Contract Laboratory Program (CLP).

3.1 Sampling Locations

The sampling investigation will include the collection of surface soil, subsurface soil, sediment, surface water, and groundwater samples. One surface soil, one subsurface soil, and one groundwater sample will be collected from an upgradient location, to serve as background samples. Three surface soils, three subsurface soils, and three groundwater samples will be collected from suspected disposal areas or from downgradient locations. Two surface soils will be collected at intermediate downgradient locations. Three sediment samples will be collected, one from the settling basin in the southeast corner of the site, and two from the Pigeon River along the surface water pathway. In addition, two surface water samples will be collected from the Pigeon River, in the same location as the two sediment samples, with one taken upstream to serve as a background samples. Also, the nearest private or municipal well will be identified and sampled. The sample locations are tentative and may change as field conditions warrant, however, the anticipated sample locations are shown in Figure 3, and the sample code, descriptions, and rationale are presented in Table 1. Based on a topographic map, drainage appears to flow from west to east, because the elevation decreases in that direction.

3.2 Analytical and Container Requirements

Sample containers used will be in accordance with the requirements specified in the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986. The following is a description of the analysis and types of containers required.



SAMPLE LOCATION MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 3

NUS CORPORATION

TABLE 1

SAMPLE LOCATIONS AND RATIONALE
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

Sample Code	Sample Type	Location	Rationale
HW-SS-01	Surface Soil	Southwest corner of site	Background sample
HW-SS-02	Surface Soil	On site, near storage tank	Determine presence or absence of contamination
HW-SS-03	Surface Soil	On site, near settling basin	Determine presence or absence of contamination
HW-SS-04	Surface Soil	Northeast corner of site	Determine presence or absence of contamination
HW-SS-05	Surface Soil	On site, between storage tank and settling basin	Determine presence or absence of contamination
HW-SS-06	Surface Soil	On site, in grassy area due east of main building	Determine presence or absence of contamination
HW-SB-01	Subsurface Soil	Southwest corner of site	Background sample
HW-SB-02	Subsurface Soil	On site, near storage tank	Determine the presence or absence of contamination
HW-SB-03	Subsurface Soil	On site, near settling basin	Determine the presence or absence of contamination
HW-SB-04	Subsurface Soil	Northeast corner of site	Determine the presence or absence of contamination
HW-SD-01	Sediment	Off site, upstream from Pigeon River	Background sample
HW-SD-02	Sediment	Offsite drainage pathway, Pigeon River	Determine presence or absence of contamination
HW-SD-03	Sediment	Settling basin, southeast corner of site	Determine the presence or absence of contamination
HW-SW-01	Surface Water	Off site, upgradient from Pigeon River	Background sample
HW-SW-02	Surface Water	Offsite drainage pathway, Pigeon river	Determine presence or absence of contamination
HW-TW-01	Groundwater	Southwest corner of site	Background sample

HW - Heywood-Wakefield Company
SS - Surface Soil
SB - Subsurface Soil
SD - Sediment
SW - Surface Water
TW - Groundwater, Temporary Well
PW - Groundwater, Private Well

TABLE 1

SAMPLE LOCATIONS AND RATIONALE
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

Sample Code	Sample Type	Location	Rationale
HW-TW-02	Groundwater	On site, near storage tank	Determine presence or absence of contamination
HW-TW-03	Groundwater	On site, near settling basin	Determine presence or absence of contamination
HW-TW-04	Groundwater	Northeast corner of site	Determine presence or absence of contamination
HW-PW-01	Groundwater	Offsite private well nearest site	Background sample

HW - Heywood-Wakefield Company
SS - Surface Soil
SB - Subsurface Soil
SD - Sediment
SW - Surface Water
TW - Groundwater, Temporary Well
PW - Groundwater, Private Well

Analyses	Container	Preservatives**
Ext. Organics, Water	1 gal., amber glass*	None
Volatile Organics, Water	40 ml., glass vial*	4 drops conc. HCL to pH < 2
Metals, Water	1 liter, plastic	50% HNO_3 to pH < 2
Cyanide, Water	1 liter, plastic	NaOH to pH > 12
Ext. Organics, Soil/Sediment	8 oz., glass*	None
Volatile Organics Soil/Sediment	4 oz., glass*	None
Inorganics, Soil/Sediment	8 oz., glass*	None

* Sample container lids are lined with teflon.

** All samples will be iced to 4 C upon collection.

3.3 Methodology

All sample collection, sample preservation, and chain-of-custody procedures used during this investigation will be in accordance with the standard operating procedures as specified in Section 3 and 4 of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986.

All laboratory analyses and laboratory quality assurance procedures used during this investigation will be in accordance with standard procedures and protocols as specified in the Analytical Support Branch Operations and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division; revised June 1, 1985 or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the contract analytical laboratory program.

REFERENCES

1. U S Geological Survey, 7 5 minute series Topographic Quadrangle Maps of Tennessee: Newport 1961, Rankin 1961

2. History of Heywood-Wakefield Company and map, Newport, Tennessee, obtained from Tennessee Department of Health and Environment (TDH&E) files in Knoxville

3. Potential Hazardous Waste Site Preliminary Assessment (EPA Form 2070-12) and attachments for Heywood-Wakefield Company. Filed by Charles R Rush, TDH&E, September 9, 1986

4. NUS Corporation Field Logbook No. F4-1555 for Heywood-Wakefield Company, TDD No F4-8907-27. Documentation of facility reconnaissance, August 15-16, 1989

5. Walter O'Neil, Heywood-Wakefield Company, letter to Larry K. Ledford, Tennessee Department of Public Health, July 13, 1978. Subject: Air pollution control equipment waste disposal practices.

6. Rick Brown, Tennessee Department of Public Health, Division of Solid Waste Management, Notice of Violation letter to Forrest Ellison, Heywood-Wakefield Company, April 21, 1982 Subject: Hazardous waste inspection report.

7. Tennessee Department of Public Health, Request for Order Civil Penalty and Damage Assessment for Heywood-Wakefield Company, Case Number 82-344 before the Tennessee Solid Waste Disposal Control Board, April 15, 1983.

8. Rick Brown, TDH&E, Hazardous Waste Inspection Report, obtained from TDH&E files in Knoxville, Tennessee.

9. Site layout map for Heywood-Wakefield Company, obtained from TDH&E files in Knoxville, Tennessee.

10. Earl C. Leming, Manager, TDH&E Division of Water Pollution Control, letter to Tom McNealy, Plant Manager, Eastern Plating, January 26, 1989. Subject: Notice of Noncompliance, Illegal Discharges.

11 Rick Brown, TDH&E, Division of Solid Waste Management, Hazardous Waste Inspection Report,dated March 9, 1984.

12 G.D. DeBuchananne and R.M. Richardson, 1956, Groundwater Resources of East Tennessee, Tennessee Division of Geology, Bulletin 58, Part 1

13 Robert A. Miller, Geological Hazards Map of Tennessee, Environmental Geology Ser es No. 5 (State of Tennessee, 1977)

14. U.S. Department of Commerce, Climatic Atlas of the United States (Washington, D.C.: GPO, June 1968) Reprint: 1983, National Oceanic and Atmospheric Administration.

15 U.S. Department of Commerce, Rainfall Frequency Atlas of the United States, Technical Paper No. 40 (Washington, D.C.: GPO, 1963), p. 93

APPENDIX A

SUMMARY OF GEOPHYSICAL METHODS

The following sections are from "Geophysical Techniques for Sensing Buried Wastes and Waste Migration" by Glaccum, R. A., and M. R. Noel, August, 1983, Technos, Inc., for Environmental Monitoring Systems Laboratory, ORD., USEPA, Las Vegas, Nevada.

ELECTROMAGNETICS (EM)*

The electromagnetic (EM) method provides a means of measuring the electrical conductivity of subsurface soil, rock, and ground water. Electrical conductivity is a function of the type of soil and rock, its porosity, its permeability, and the fluids which fill the pore space. In most cases the conductivity (specific conductance) of the pore fluids will dominate the measurement. Accordingly, the EM method is applicable both to assessment of natural geohydrologic conditions and to mapping of many types of contaminant plumes. Additionally, trench boundaries, buried wastes and drums, as well as metallic utility lines can be located with EM techniques.

Natural variations in subsurface conductivity may be caused by changes in soil moisture content, ground water specific conductance, depth of soil cover over rock, and thickness of soil and rock layers. Changes in basic soil or rock types, and structural features such as fractures or voids may also produce changes in conductivity. Localized deposits of natural organic, clay, sand, gravel, or saltrich zones will also affect subsurface conductivity.

---

*The term electromagnetic has been used in contemporary literature as a descriptive term for other geophysical methods, including GPR and metal detectors which are based on electromagnetic principles. However, this document will use electromagnetic (EM) to specifically imply the measurement of subsurface conductivities by low-frequency electromagnetic induction. This is in keeping with the traditional use of the term in the geophysical industry from which the EM methods originated. While the authors recognize that there are many electromagnetic systems and manufacturers, the discussion in this section is based solely on instruments which are calibrated to read in electrical conductivity units and which have been effectively and extensively used at hazardous waste sites. There is only one manufacturer of such instruments at the time of this writing.

Many contaminants will produce an increase in free ion concentration when introduced into the soil or ground water systems. This increase over background conductivity enables detection and mapping of contaminated soil and ground water at Hazardous Waste Sites (HWS), landfills, and impoundments. Large amounts of organic fluids such as diesel fuel can displace the normal soil moisture, causing a decrease in conductivity which may also be mapped, although this is not commonly done. The mapping of a plume will usually define the local flow direction of contaminants. Contaminant migration rates can be established by comparing measurements taken at different times.

The absolute values of conductivity for geologic materials (and contaminants) are not necessarily diagnostic in themselves, but the variations in conductivity, laterally and with depth, are significant. It is these variations which enable the investigator to rapidly find anomalous conditions.

Since the EM method does not require ground contact, measurements may be made quite rapidly. Lateral variations in conductivity can be detected and mapped by a field technique called profiling. Profiling measurements may be made to depths ranging from 0.75 to 60 meters. The data is recorded using strip chart and magnetic tape recorders. This continuous measurement allows increased rates of data acquisition and improved resolution for mapping small geohydrologic features. Further, recorded data enhanced by computer processing has proved invaluable in the evaluation of complex hazardous waste sites. The excellent lateral resolution obtained from EM profiling data has been used to advantage in efforts to outline closely-spaced burial pits, to reveal the migration of contaminants into the surrounding soil, and to delineate fracture patterns.

Vertical variations in conductivity can also be detected by the EM method. A station measurement technique called sounding is employed for this purpose. Data can be acquired from depths by combining results from a variety of EM instruments, each requiring different field application techniques. Other EM systems are capable of sounding to depth of one-thousand feet or more, but have not yet been used at HWS and are not adaptable to continuous measurements.

Profiling is the most cost-effective use of the EM method. Continuous profiling can be used in many applications to increase resolution, data density, and permit total site coverage at critical sites.

At HWS, applications of EM can provide:

- Assessment of natural geohydrologic conditions;
- Locating and mapping of burial trenches and pits containing drums and/or bulk wastes;
- Determination of flow direction in both unsaturated and saturated zones;
- Rate of plume movement by comparing measurement taken at different times;
- Locating and mapping of utility pipes and cables which may affect other geophysical measurements, or whose trench may provide a permeable pathway for contaminant flow.

Although there is available a wide variety of EM equipment, most of it is intended for geophysical exploration of mineral deposits. These units have not been used at HWS and do not provide a simple conductivity reading. This document discusses only those instruments which are designed and calibrated to read directly in units of conductivity.

Conductance is measured with electronic instrumentation consisting of a transmitter coil and receiver coil. The transmitter coil radiates an electromagnetic field which induces eddy currents in the earth below the instrument. Each of these eddy current loops, in turn, generates a secondary electromagnetic field which is proportional to the magnitude of the current flowing within that loop. A part of the secondary magnetic field from each loop is intercepted by the receiver coil and produces an output voltage which (within limits) is linearly related to subsurface conductivity. This reading is a bulk measurement of conductivity, e.g., the cumulative response to subsurface conditions ranging all the way from the surface to the effective depth of the instrument.

The sampling depth of EM equipment is related to the instrument's coil spacing. Instruments with coil spacings of one, four, ten, twenty, and forty meters are commercially available. The nominal sampling depth of an EM system is taken to be approximately 1.5 times the coil spacing.

The EM sounding method can rarely identify more than two or three layers with reasonable confidence. The greater the contrast in the conductivity values of each layer, the better the results. Often, the more detailed resistivity sounding method is used to complement EM profiling data.

The results of sounding analysis are usually presented as a vertical section, in which the conductivity layers are identified as a function of depth. The analyst may be able to correlate these layers to geohydrologic units believed to exist at the site.

Although the EM technique can be used for profiling or sounding, profiling is the most effective use of the EM method. Profiling makes possible the rapid mapping of subsurface conductivity changes, and the location, delineation, and assessment of spatial variables resulting from changes in the natural setting or from many contaminants.

EM is a very effective reconnaissance tool. The use of qualitative non-recorded data can provide initial interpretation in the field. If site conditions are complex, the use of a high-density survey grid, continuously-recording instruments, and computer processing may be necessary, in order to properly evaluate subsurface conditions. When continuously-recording instruments are used, total site coverage is feasible. More quantitative information can be obtained by using conductivity data from different depth ranges. At present, three different systems must be used to acquire data from 0.75 to 60 meters. Very often, however, data from two standard depths, e.g. six and fifteen meters, is adequate to furnish depth information.

Capabilities

- The EM profile method permits rapid data acquisition, resulting in high-density and high-resolution surveys.
- Profiling data may be acquired from various discrete depths, ranging from 0.75 meters to 60 meters.
- Continuously-recording instruments (to fifteen meter depth) can increase survey speed, density, and resolution permitting total site coverage, if required.
- EM reads directly in conductivity units (mm/m) permitting use of raw data in the field, and correlation to specific conductance of ground water samples.
- EM can map local and general changes in the natural geohydrologic setting.
- EM can detect and measure the boundaries of a conductivity plume.
- Direction of plume flow can be determined from an EM conductivity map.
- EM measurements taken at different times can provide the means to compute movement rates of conservative contaminants.
- EM can detect and map burial pits and trenches of both bulk and drummed wastes.
- EM can detect and map the location of buried metallic utility lines.

Limitations

- EM has less sounding (vertical) resolution than the resistivity method due to its limited number of depth intervals.
- The acquisition of data from depths of 0.75 to 60 meters requires the use of three different EM systems.
- Continuous data can be obtained only to depths up to approximately fifteen meters
- An EM measurement is influenced by the shallower materials more than the deeper ones; this must be considered when evaluating the data.
- EM measurements become non-linear in zones of very high conductivity
- The EM method is susceptible to noise from a number of sources, including natural atmospheric noise, powerlines, radio transmitters, buried metallic trash, pipes, cables, nearby fences, vehicles, and buildings

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV
Environmental Services Division
College Station Road, Athens, Ga. 30613

*****MEMORANDUM******

DATE: 11/03/90

SUBJECT: Results of Metals Analysis;
90-798 HEYWOOD-WAKEFIELD DU
NEWPORT TN
CASE NO: 14852

FROM: Robert W. Knight
Chief, Laboratory Evaluation/Quality Assurance Section

TO: PHIL BLACKWELL

Attached are the results of analysis of samples collected as part of the subject project.

As a result of the Quality Assurance Review, certain data qualifiers may have been placed on the data. Attached is a DATA QUALIFIER REPORT which explains the reasons that these qualifiers were required.

If you have any questions please contact me.

ATTACHMENT

cc:

INORGANIC DATA QUALIFIERS REPORT

Case Number: 14852
Project Number: 90-798
Site: Heywood-Wakefield Dump, Newport, TN

Element	Flag	Samples Affected	Reason
Be	U	All positives >IDL but <CRDL	Baseline instability
Al, Cu, Pb, Hg, Mn, Zn	U	All positives)IDL but <10X contaminant level	Positives in Blanks
Ag	J R	All positives All negatives	Matrix spike recovery = 0%
Sb	J R	All positives All negatives	Matrix spike recovery = 21.3%
Cr	J	All positives	Matrix spike recovery = 304%

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA. 11/02/90

METALS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50142 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN
STATION ID: SS-01 COLLECTION START: 09/12/90 1205 STOP: 00/00/00
CASE NUMBER: 14852 SAS NUMBER: MD NUMBER: X705

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
34000	ALUMINUM	990	MANGANESE
20UR	ANTIMONY	0.4U	MERCURY
4.2	ARSENIC	18	NICKEL
230	BARIUM	3400	POTASSIUM
2.1	BERYLLIUM	0.98U	SELENIUM
1.2U	CADMIUM	9.1J	SILVER
1600	CALCIUM	750U	SODIUM
84J	CHROMIUM	1.5U	THALLIUM
22	COBALT	NA	TIN
27	COPPER	48	VANADIUM
38000	IRON	100U	ZINC
21	LEAD	18	PERCENT MOISTURE
4800	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

METALS DATA REPORT

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** PROJECT NO. 90-798 SAMPLE NO. 50143 SAMPLE TYPE: PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: CITY: NEWPORT ST: TN **
** STATION ID: SB-01 COLLECTION START: 09/12/90 1315 STOP: 00/00/00 **
** CASE NUMBER: 14852 SAS NUMBER: MD NUMBER: X706 **

*** ***

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
26000	ALUMINUM	710	MANGANESE
20UR	ANTIMONY	0.4U	MERCURY
3	ARSENIC	15	NICKEL
160	BARIUM	3700	POTASSIUM
2.5	BERYLLIUM	1U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
990	CALCIUM	770U	SODIUM
69J	CHROMIUM	1.5U	THALLIUM
15	COBALT	NA	TIN
30U	COPPER	47	VANADIUM
33000	IRON	82	ZINC
13	LEAD	20	PERCENT MOISTURE
5100	MAGNESIUM		

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

METALS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50144 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1445 STOP: 00/00/00
MD NUMBER: X707

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
21000	ALUMINUM	720	MANGANESE
20UR	ANTIMONY	0.3U	MERCURY
2U	ARSENIC	44	NICKEL
210	BARIUM	3200	POTASSIUM
2U	BERYLLIUM	9.9U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
2900	CALCIUM	760U	SODIUM
51J	CHROMIUM	1.5U	THALLIUM
14	COBALT	NA	TIN
20U	COPPER	32	VANADIUM
26000	IRON	100U	ZINC
27	LEAD	19	PERCENT MOISTURE
5100	MAGNESIUM		

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50145 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1450 STOP: 00/00/00
MD NUMBER: X708

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
3000	ALUMINUM	88	MANGANESE
20UR	ANTIMONY	0.5U	MERCURY
5.1	ARSENIC	840	NICKEL
52	BARIUM	490	POTASSIUM
0.61U	BERYLLIUM	20U	SELENIUM
1.5U	CADMIUM	2.4UR	SILVER
41000	CALCIUM	930U	SODIUM
380J	CHROMIUM	1.8U	THALLIUM
5U	COBALT	NA	TIN
40U	COPPER	7.3U	VANADIUM
4400	IRON	200	ZINC
140	LEAD	34	PERCENT MOISTURE
5100	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50146 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00
MD NUMBER: X709

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
14000	ALUMINUM	420	MANGANESE
20UR	ANTIMONY	0.3U	MERCURY
2.5	ARSENIC	39	NICKEL
160	BARIUM	2500	POTASSIUM
2U	BERYLLIUM	10U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
38000	CALCIUM	770U	SODIUM
53J	CHROMIUM	1.5U	THALLIUM
8.9	COBALT	NA	TIN
24	COPPER	19	VANADIUM
17000	IRON	420	ZINC
47	LEAD	20	PERCENT MOISTURE
14000	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

METALS DATA REPORT

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** PROJECT NO. 90-798 SAMPLE NO. 50147 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SD-04 COLLECTION START: 09/12/90 1520 STOP: 00/00/00 **
** CASE NUMBER: 14852 SAS NUMBER: MD NUMBER: X710 **

*** ***

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
14000	ALUMINUM	450	MANGANESE
20UR	ANTIMONY	0.3U	MERCURY
2U	ARSENIC	86	NICKEL
200	BARIUM	2900	POTASSIUM
0.47U	BERYLLIUM	0.95U	SELENIUM
1.2U	CADMIUM	1.9UR	SILVER
23000	CALCIUM	730U	SODIUM
40J	CHROMIUM	1.4U	THALLIUM
8.7	COBALT	NA	TIN
30U	COPPER	23	VANADIUM
17000	IRON	80U	ZINC
38	LEAD	16	PERCENT MOISTURE
8100	MAGNESIUM		

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

METALS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50148 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1600 STOP: 00/00/00
MD NUMBER: X711

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
15000	ALUMINUM	470	MANGANESE
20UR	ANTIMONY	0.3U	MERCURY
2.5	ARSENIC	11	NICKEL
170	BARIUM	2500	POTASSIUM
2U	BERYLLIUM	0.87U	SELENIUM
1.1U	CADMIUM	1.7UR	SILVER
1800	CALCIUM	670U	SODIUM
18J	CHROMIUM	1.3U	THALLIUM
9.8	COBALT	NA	TIN
13	COPPER	25	VANADIUM
19000	IRON	70U	ZINC
13	LEAD	08	PERCENT MOISTURE
3800	MAGNESIUM		

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

** PROJECT NO. 90-798 SAMPLE NO. 50149 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SB-02 COLLECTION START: 09/12/90 1625 STOP: 00/00/00 **
** CASE NUMBER: 14852 SAS NUMBER: MD NUMBER: X712 **

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
19000	ALUMINUM	420	MANGANESE
20UR	ANTIMONY	0.3U	MERCURY
3.6	ARSENIC	13	NICKEL
270	BARIUM	1700	POTASSIUM
2U	BERYLLIUM	20UJ	SELENIUM
1.3U	CADMIUM	2.1UR	SILVER
2500	CALCIUM	800U	SODIUM
18J	CHROMIUM	1.6U	THALLIUM
11	COBALT	NA	TIN
20U	COPPER	32	VANADIUM
28000	IRON	70U	ZINC
16	LEAD	23	PERCENT MOISTURE
3400	MAGNESIUM		

REMARKS ***REMARKS***

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

METALS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50150 SAMPLE TYPE: SOIL
PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU
CITY: NEWPORT ST: TN
STATION ID: SS-05
COLLECTION START: 09/12/90 1530 STOP: 00/00/00
CASE NUMBER: 14852 SAS NUMBER:
MD NUMBER: X713

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
3400	ALUMINUM	140	MANGANESE
40UR	ANTIMONY	0.7U	MERCURY
6U	ARSENIC	36	NICKEL
100	BARIUM	710U	POTASSIUM
1.5U	BERYLLIUM	3.1U	SELENIUM
3.8U	CADMIUM	6.1UR	SILVER
4600	CALCIUM	2400U	SODIUM
95J	CHROMIUM	4.6U	THALLIUM
20U	COBALT	NA	TIN
80U	COPPER	20U	VANADIUM
25000	IRON	450	ZINC
230	LEAD	74	PERCENT MOISTURE
690	MAGNESIUM		

REMARKS

REMARKS

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50151 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-06
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00
MD NUMBER: X714

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
14000	ALUMINUM	480	MANGANESE
20UR	ANTIMONY	0.17U	MERCURY
1U	ARSENIC	140	NICKEL
180	BARIUM	2900	POTASSIUM
0.68U	BERYLLIUM	20U	SELENIUM
1.7U	CADMIUM	2.7UR	SILVER
1900	CALCIUM	1100U	SODIUM
280J	CHROMIUM	2U	THALLIUM
11	COBALT	NA	TIN
170	COPPER	22	VANADIUM
19000	IRON	630	ZINC
26	LEAD	41	PERCENT MOISTURE
3600	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

** PROJECT NO. 90-798 SAMPLE NO. 50152 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SS-04 COLLECTION START: 09/13/90 1000 STOP: 00/00/00 **
** CASE NUMBER: 14852 SAS NUMBER: MD NUMBER: X715 **

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
17000	ALUMINUM	470	MANGANESE
20UR	ANTIMONY	0.12U	MERCURY
2U	ARSENIC	13	NICKEL
180	BARIUM	3200	POTASSIUM
1U	BERYLLIUM	9.8U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
2000	CALCIUM	750U	SODIUM
24J	CHROMIUM	1.5U	THALLIUM
11	COBALT	NA	TIN
30U	COPPER	28	VANADIUM
20000	IRON	70U	ZINC
15	LEAD	18	PERCENT MOISTURE
4800	MAGNESIUM		

REMARKS ***REMARKS***

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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

METALS DATA REPORT

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** PROJECT NO. 90-798 SAMPLE NO. 50153 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SS-03 COLLECTION START: 09/13/90 1005 STOP: 00/00/00 **
** CASE NUMBER: 14852 SAS NUMBER: MD NUMBER: X716 **

*** ***

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
19000	ALUMINUM	650	MANGANESE
20UR	ANTIMONY	0.12U	MERCURY
2.8	ARSENIC	20	NICKEL
240	BARIUM	3400	POTASSIUM
2U	BERYLLIUM	9.8U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
1600	CALCIUM	760U	SODIUM
25J	CHROMIUM	1.5U	THALLIUM
12	COBALT	NA	TIN
20U	COPPER	28	VANADIUM
23000	IRON	80U	ZINC
24	LEAD	18	PERCENT MOISTURE
4600	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

METALS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50154 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN
STATION ID: SB-04 COLLECTION START: 09/13/90 1015 STOP: 00/00/00
CASE NUMBER: 14852 SAS NUMBER: MD NUMBER: X717

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
18000	ALUMINUM	490	MANGANESE
20UR	ANTIMONY	0.2U	MERCURY
2U	ARSENIC	12	NICKEL
190	BARIUM	3200	POTASSIUM
2U	BERYLLIUM	9.8U	SELENIUM
1.2U	CADMIUM	2UR	SILVER
2000	CALCIUM	750U	SODIUM
23J	CHROMIUM	1.5U	THALLIUM
10	COBALT	NA	TIN
20U	COPPER	25	VANADIUM
21000	IRON	82	ZINC
15	LEAD	18	PERCENT MOISTURE
4900	MAGNESIUM		

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

METALS DATA REPORT 11/02/90

PROJECT NO. 90-798 SAMPLE NO. 50155 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00
MD NUMBER: X718

MG/KG	ANALYTICAL RESULTS	MG/KG	ANALYTICAL RESULTS
21000	ALUMINUM	550	MANGANESE
20UR	ANTIMONY	0.3U	MERCURY
2U	ARSENIC	23	NICKEL
280	BARIUM	3600	POTASSIUM
1.7	BERYLLIUM	20U	SELENIUM
1.3U	CADMIUM	2.1UR	SILVER
1500	CALCIUM	790U	SODIUM
29J	CHROMIUM	1.5U	THALLIUM
14	COBALT	NA	TIN
20U	COPPER	31	VANADIUM
27000	IRON	130	ZINC
20	LEAD	22	PERCENT MOISTURE
5400	MAGNESIUM		

REMARKS ***REMARKS***

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV
Environmental Services Division
College Station Road, Athens, Ga. 30613

*****MEMORANDUM******

DATE: 11/03/90

SUBJECT: Results of Specified Analysis;
90-798 HEYWOOD-WAKEFIELD DU
NEWPORT TN
CASE NO: 14852

FROM: Robert W. Knight
Chief, Laboratory Evaluation/Quality Assurance Section

TO: PHIL BLACKWELL

Attached are the results of analysis of samples collected as part of the subject project.

As a result of the Quality Assurance Review, certain data qualifiers may have been placed on the data. Attached is a DATA QUALIFIER REPORT which explains the reasons that these qualifiers were required.

If you have any questions please contact me.

ATTACHMENT

INORGANIC DATA QUALIFIERS REPORT

Case Number: 14852
Project Number: 90-798
Site: Heywood-Wakefield Dump, Newport, TN

Element	Flag	Samples Affected	Reason
Be	U	All positives >IDL but <CRDL	Baseline instability
Al, Cu, Pb, Hg, Mn, Zn	U	All positives)IDL but <10X contaminant level	Positives in Blanks
Ag	J R	All positives All negatives	Matrix spike recovery = 0%
Sb	J R	All positives All negatives	Matrix spike recovery = 21.3%
Cr	J	All positives	Matrix spike recovery = 304%

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50142 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN
STATION ID: SS-01 COLLECTION START: 09/12/90 1205 STOP: 00/00/00
CASE.NO.: 14852 SAS NO.: D. NO.: X705 MD NO: X705

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50143 SAMPLE TYPE: PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: CITY: NEWPORT ST: TN
STATION ID: SB-01 COLLECTION START: 09/12/90 1315 STOP: 00/00/00
CASE.NO.: 14852 SAS NO.: D. NO.: X706 MD NO: X706

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

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**   PROJECT NO. 90-798   SAMPLE NO. 50144  SAMPLE TYPE: SOIL        PROG ELEM: NSF   COLLECTED BY: A HARVEY                **
**   SOURCE: HEYWOOD-WAKEFIELD DU                                    CITY: NEWPORT              ST: TN                      **
**   STATION ID: SD-01                                               COLLECTION START: 09/12/90  1445   STOP: 00/00/00     **
**   CASE.NO.: 14852          SAS NO.:                               D. NO.: X707               MD NO: X707                 **
**                                                                                                                          **
*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ***
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RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-798 SAMPLE NO. 50145 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SD-02 COLLECTION START: 09/12/90 1450 STOP: 00/00/00 **
** CASE.NO.: 14852 SAS NO.: D. NO.: X708 MD NO: X708 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.5U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-798   SAMPLE NO. 50146   SAMPLE TYPE: SOIL   PROG ELEM: NSF   COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU   CITY: NEWPORT   ST: TN **
** STATION ID: SD-03   COLLECTION START: 09/12/90 1500   STOP: 00/00/00 **
** CASE.NO.: 14852   SAS NO.:   D. NO.: X709   MD NO: X709 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

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**   PROJECT NO. 90-798    SAMPLE NO. 50147  SAMPLE TYPE: SOIL        PROG ELEM: NSF   COLLECTED BY: A HARVEY                  **
**   SOURCE: HEYWOOD-WAKEFIELD DU                                     CITY: NEWPORT                ST: TN                     **
**   STATION ID: SD-04                                                COLLECTION START: 09/12/90  1520   STOP: 00/00/00       **
**   CASE.NO.: 14852           SAS NO.:                               D. NO.: X710                MD NO: X710                 **
**                                                                                                                             **
*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ***
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RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50148 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN
STATION ID: SS-02 COLLECTION START: 09/12/90 1600 STOP: 00/00/00
CASE.NO.: 14852 SAS NO.: D. NO.: X711 MD NO: X711

RESULTS	UNITS	PARAMETER
1.1U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-798 SAMPLE NO. 50149 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SB-02 COLLECTION START: 09/12/90 1625 STOP: 00/00/00 **
** CASE.NO.: 14852 SAS NO.: D. NO.: X712 MD NO: X712 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-798 SAMPLE NO. 50150 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SS-05 COLLECTION START: 09/12/90 1530 STOP: 00/00/00 **
** CASE.NO.: 14852 SAS NO.: D. NO.: X713 MD NO: X713 **
** **
*** ***

RESULTS	UNITS	PARAMETER
3.8U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

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**   PROJECT NO. 90-798   SAMPLE NO. 50151   SAMPLE TYPE: SOIL       PROG ELEM: NSF   COLLECTED BY: A HARVEY              **
**   SOURCE: HEYWOOD-WAKEFIELD DU                                    CITY: NEWPORT             ST: TN                     **
**   STATION ID: SS-06                                               COLLECTION START: 09/13/90  0950   STOP: 00/00/00    **
**   CASE.NO.: 14852          SAS NO.:                               D. NO.: X714              MD NO: X714                **
**                                                                                                                        **
*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ***
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RESULTS	UNITS	PARAMETER
1.7U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN   *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-798 SAMPLE NO. 50152 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SS-04 COLLECTION START: 09/13/90 1000 STOP: 00/00/00 **
** CASE.NO.: 14852 SAS NO.: D. NO.: X715 MD NO: X715 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

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**  PROJECT NO. 90-798   SAMPLE NO. 50153  SAMPLE TYPE: SOIL       PROG ELEM: NSF   COLLECTED BY: A HARVEY                **
**  SOURCE: HEYWOOD-WAKEFIELD DU                                   CITY: NEWPORT              ST: TN                      **
**  STATION ID: SS-03                                              COLLECTION START: 09/13/90  1005   STOP: 00/00/00      **
**  CASE.NO.: 14852          SAS NO.:                              D. NO.: X716               MD NO: X716                 **
**                                                                                                                        **
*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ***
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RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE   *NA-NOT ANALYZED   *NAI-INTERFERENCES   *J-ESTIMATED VALUE   *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50154 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-04
CASE NO.: 14852 SAS NO.:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1015 STOP: 00/00/00
D. NO.: X717 MD NO: X717

RESULTS	UNITS	PARAMETER
1.2U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

11/02/90

SPECIFIED ANALYSIS DATA REPORT

*** ***
** PROJECT NO. 90-798 SAMPLE NO. 50155 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SB-03 COLLECTION START: 09/13/90 1020 STOP: 00/00/00 **
** CASE.NO.: 14852 SAS NO.: D. NO.: X718 MD NO: X718 **
** **
*** ***

RESULTS	UNITS	PARAMETER
1.3U	MG/KG	CYANIDE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV
Environmental Services Division
College Station Road, Athens, Ga. 30613

*****MEMORANDUM******

DATE: 10/25/90

SUBJECT: Results of Pesticide/PCB Analysis;
90-798 HEYWOOD-WAKEFIELD DU
NEWPORT TN
CASE NO: 14852

FROM: Robert W. Knight
Chief, Laboratory Evaluation/Quality Assurance Section

TO: PHIL BLACKWELL

Attached are the results of analysis of samples collected as part of the subject project.

As a result of the Quality Assurance Review, certain data qualifiers may have been placed on the data. Attached is a DATA QUALIFIER REPORT which explains the reasons that these qualifiers were required.

If you have any questions please contact me.

ATTACHMENT

CC:

ORGANIC DATA QUALIFIER REPORT

Case Number 14852 Project Number 90-798 SAS Number

Site ID. Heywood-Wakefield Dump, Newport, TN.

Affected Samples	Compound or Fraction	Flag Used	Reason
Pesticides			
DX711	endrin ketone	N	tentative identification

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50142 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1205 STOP: 00/00/00
D. NUMBER: X705

UG/KG	ANALYTICAL RESULTS
9.6U	ALPHA-BHC
9.6U	BETA-BHC
9.6U	DELTA-BHC
9.6U	GAMMA-BHC (LINDANE)
9.6U	HEPTACHLOR
9.6U	ALDRIN
9.6U	HEPTACHLOR EPOXIDE
9.6U	ENDOSULFAN I (ALPHA)
19U	DIELDRIN
19U	4,4'-DDE (P,P'-DDE)
19U	ENDRIN
19U	ENDOSULFAN II (BETA)
19U	4,4'-DDD (P,P'-DDD)
19U	ENDOSULFAN SULFATE
19U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
96U	METHOXYCHLOR
19U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
96U	GAMMA-CHLORDANE /2
96U	ALPHA-CHLORDANE /2
190U	TOXAPHENE
96U	PCB-1016 (AROCLOR 1016)
96U	PCB-1221 (AROCLOR 1221)
96U	PCB-1232 (AROCLOR 1232)
96U	PCB-1242 (AROCLOR 1242)
96U	PCB-1248 (AROCLOR 1248)
190U	PCB-1254 (AROCLOR 1254)
190U	PCB-1260 (AROCLOR 1260)
17	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION
*C-CONFIRMED BY GCMS 1 WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50143 SAMPLE TYPE:
SOURCE:
STATION ID: SB-01
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1315 STOP: 00/00/00
D. NUMBER: X706

UG/KG	ANALYTICAL RESULTS
9.9U	ALPHA-BHC
9.9U	BETA-BHC
9.9U	DELTA-BHC
9.9U	GAMMA-BHC (LINDANE)
9.9U	HEPTACHLOR
9.9U	ALDRIN
9.9U	HEPTACHLOR EPOXIDE
9.9U	ENDOSULFAN I (ALPHA)
20U	DIELDRIN
20U	4,4'-DDE (P,P'-DDE)
20U	ENDRIN
20U	ENDOSULFAN II (BETA)
20U	4,4'-DDD (P,P'-DDD)
20U	ENDOSULFAN SULFATE
20U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
99U	METHOXYCHLOR
20U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
99U	GAMMA-CHLORDANE /2
99U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
99U	PCB-1016 (AROCLOR 1016)
99U	PCB-1221 (AROCLOR 1221)
99U	PCB-1232 (AROCLOR 1232)
99U	PCB-1242 (AROCLOR 1242)
99U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
19	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

*** ***

** PROJECT NO. 90-798 SAMPLE NO. 50144 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY **
** SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN **
** STATION ID: SD-01 COLLECTION START: 09/12/90 1445 STOP: 00/00/00 **
** CASE NUMBER: 14852 SAS NUMBER: D. NUMBER: X707 **

*** ***

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
100U	ALPHA-BHC	1000U	METHOXYCHLOR
100U	BETA-BHC	200U	ENDRIN KETONE
100U	DELTA-BHC		CHLORDANE (TECH. MIXTURE) /1
100U	GAMMA-BHC (LINDANE)	1000U	GAMMA-CHLORDANE /2
100U	HEPTACHLOR	1000U	ALPHA-CHLORDANE /2
100U	ALDRIN	2000U	TOXAPHENE
100U	HEPTACHLOR EPOXIDE	1000U	PCB-1016 (AROCLOR 1016)
100U	ENDOSULFAN I (ALPHA)	1000U	PCB-1221 (AROCLOR 1221)
200U	DIELDRIN	1000U	PCB-1232 (AROCLOR 1232)
200U	4,4'-DDE (P,P'-DDE)	1000U	PCB-1242 (AROCLOR 1242)
200U	ENDRIN	1000U	PCB-1248 (AROCLOR 1248)
200U	ENDOSULFAN II (BETA)	2000U	PCB-1254 (AROCLOR 1254)
200U	4,4'-DDD (P,P'-DDD)	2000U	PCB-1260 (AROCLOR 1260)
200U	ENDOSULFAN SULFATE	21	PERCENT MOISTURE
200U	4,4'-DDT (P,P'-DDT)		

FOOTNOTES
*A AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50145 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD DU CITY: NEWPORT ST: TN
STATION ID: SD-02 COLLECTION START: 09/12/90 1450 STOP: 00/00/00
CASE NUMBER: 14852 SAS NUMBER: D. NUMBER: X708

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
12U	ALPHA-BHC	120U	METHOXYCHLOR
12U	BETA-BHC	24U	ENDRIN KETONE
12U	DELTA-BHC		CHLORDANE (TECH. MIXTURE) /1
12U	GAMMA-BHC (LINDANE)	120U	GAMMA-CHLORDANE /2
12U	HEPTACHLOR	120U	ALPHA-CHLORDANE /2
12U	ALDRIN	240U	TOXAPHENE
12U	HEPTACHLOR EPOXIDE	120U	PCB-1016 (AROCLOR 1016)
12U	ENDOSULFAN I (ALPHA)	120U	PCB-1221 (AROCLOR 1221)
24U	DIELDRIN	120U	PCB-1232 (AROCLOR 1232)
24U	4,4'-DDE (P,P'-DDE)	120U	PCB-1242 (AROCLOR 1242)
24U	ENDRIN	120U	PCB-1248 (AROCLOR 1248)
24U	ENDOSULFAN II (BETA)	240U	PCB-1254 (AROCLOR 1254)
24U	4,4'-DDD (P,P'-DDD)	240U	PCB-1260 (AROCLOR 1260)
24U	ENDOSULFAN SULFATE	33	PERCENT MOISTURE
24U	4,4'-DDT (P,P'-DDT)		

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50146 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00
D. NUMBER: X709

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
150U	ALPHA-BHC	1500U	METHOXYCHLOR
150U	BETA-BHC	310U	ENDRIN KETONE
150U	DELTA-BHC		CHLORDANE (TECH. MIXTURE) /1
150U	GAMMA-BHC (LINDANE)	1500U	GAMMA-CHLORDANE /2
150U	HEPTACHLOR	1500U	ALPHA-CHLORDANE /2
150U	ALDRIN	3100U	TOXAPHENE
150U	HEPTACHLOR EPOXIDE	1500U	PCB-1016 (AROCLOR 1016)
150U	ENDOSULFAN I (ALPHA)	1500U	PCB-1221 (AROCLOR 1221)
310U	DIELDRIN	1500U	PCB-1232 (AROCLOR 1232)
310U	4,4'-DDE (P,P'-DDE)	1500U	PCB-1242 (AROCLOR 1242)
310U	ENDRIN	1500U	PCB-1248 (AROCLOR 1248)
310U	ENDOSULFAN II (BETA)	3100U	PCB-1254 (AROCLOR 1254)
310U	4,4'-DDD (P,P'-DDD)	3100U	PCB-1260 (AROCLOR 1260)
310U	ENDOSULFAN SULFATE	22	PERCENT MOISTURE
310U	4,4'-DDT (P,P'-DDT)		

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50147 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SD-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1520 STOP: 00/00/00
D. NUMBER: X710

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
9.4U	ALPHA-BHC	94U	METHOXYCHLOR
9.4U	BETA-BHC	19U	ENDRIN KETONE
9.4U	DELTA-BHC		CHLORDANE (TECH. MIXTURE) /1
9.4U	GAMMA-BHC (LINDANE)	94U	GAMMA-CHLORDANE /2
9.4U	HEPTACHLOR	94U	ALPHA-CHLORDANE /2
9.4U	ALDRIN	190U	TOXAPHENE
9.4U	HEPTACHLOR EPOXIDE	94U	PCB-1016 (AROCLOR 1016)
9.4U	ENDOSULFAN I (ALPHA)	94U	PCB-1221 (AROCLOR 1221)
19U	DIELDRIN	94U	PCB-1232 (AROCLOR 1232)
19U	4,4'-DDE (P,P'-DDE)	94U	PCB-1242 (AROCLOR 1242)
19U	ENDRIN	94U	PCB-1248 (AROCLOR 1248)
19U	ENDOSULFAN II (BETA)	190U	PCB-1254 (AROCLOR 1254)
19U	4,4'-DDD (P,P'-DDD)	190U	PCB-1260 (AROCLOR 1260)
19U	ENDOSULFAN SULFATE	15	PERCENT MOISTURE
19U	4,4'-DDT (P,P'-DDT)		

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50148 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1600 STOP: 00/00/00
D. NUMBER: X711

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
8.9U	ALPHA-BHC	89U	METHOXYCHLOR
8.9U	BETA-BHC	32N	ENDRIN KETONE
8.9U	DELTA-BHC		CHLORDANE (TECH. MIXTURE) /1
8.9U	GAMMA-BHC (LINDANE)	89U	GAMMA-CHLORDANE /2
8.9U	HEPTACHLOR	89U	ALPHA-CHLORDANE /2
8.9U	ALDRIN	180U	TOXAPHENE
8.9U	HEPTACHLOR EPOXIDE	89U	PCB-1016 (AROCLOR 1016)
8.9U	ENDOSULFAN I (ALPHA)	89U	PCB-1221 (AROCLOR 1221)
18U	DIELDRIN	89U	PCB-1232 (AROCLOR 1232)
18U	4,4'-DDE (P,P'-DDE)	89U	PCB-1242 (AROCLOR 1242)
18U	ENDRIN	89U	PCB-1248 (AROCLOR 1248)
18U	ENDOSULFAN II (BETA)	180U	PCB-1254 (AROCLOR 1254)
18U	4,4'-DDD (P,P'-DDD)	180U	PCB-1260 (AROCLOR 1260)
18U	ENDOSULFAN SULFATE	10	PERCENT MOISTURE
18U	4,4'-DDT (P,P'-DDT)		

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50149 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-02
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1625 STOP: 00/00/00
D. NUMBER: X712

UG/KG	ANALYTICAL RESULTS
11U	ALPHA-BHC
11U	BETA-BHC
11U	DELTA-BHC
11U	GAMMA-BHC (LINDANE)
11U	HEPTACHLOR
11U	ALDRIN
11U	HEPTACHLOR EPOXIDE
11U	ENDOSULFAN I (ALPHA)
21U	DIELDRIN
21U	4,4'-DDE (P,P'-DDE)
21U	ENDRIN
21U	ENDOSULFAN II (BETA)
21U	4,4'-DDD (P,P'-DDD)
21U	ENDOSULFAN SULFATE
21U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
110U	METHOXYCHLOR
21U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
110U	GAMMA-CHLORDANE /2
110U	ALPHA-CHLORDANE /2
210U	TOXAPHENE
110U	PCB-1016 (AROCLOR 1016)
110U	PCB-1221 (AROCLOR 1221)
110U	PCB-1232 (AROCLOR 1232)
110U	PCB-1242 (AROCLOR 1242)
110U	PCB-1248 (AROCLOR 1248)
210U	PCB-1254 (AROCLOR 1254)
210U	PCB-1260 (AROCLOR 1260)
24	PERCENT MOISTURE

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50150 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-05
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1530 STOP: 00/00/00
D. NUMBER: X713

UG/KG	ANALYTICAL RESULTS
480U	ALPHA-BHC
480U	BETA-BHC
480U	DELTA-BHC
480U	GAMMA-BHC (LINDANE)
480U	HEPTACHLOR
480U	ALDRIN
480U	HEPTACHLOR EPOXIDE
480U	ENDOSULFAN I (ALPHA)
960U	DIELDRIN
960U	4,4'-DDE (P,P'-DDE)
960U	ENDRIN
960U	ENDOSULFAN II (BETA)
960U	4,4'-DDD (P,P'-DDD)
960U	ENDOSULFAN SULFATE
960U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
4800U	METHOXYCHLOR
960U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
4800U	GAMMA-CHLORDANE /2
4800U	ALPHA-CHLORDANE /2
9600U	TOXAPHENE
4800U	PCB-1016 (AROCLOR 1016)
4800U	PCB-1221 (AROCLOR 1221)
4800U	PCB-1232 (AROCLOR 1232)
4800U	PCB-1242 (AROCLOR 1242)
4800U	PCB-1248 (AROCLOR 1248)
9600U	PCB-1254 (AROCLOR 1254)
9600U	PCB-1260 (AROCLOR 1260)
75	PERCENT MOISTURE

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50151 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-06
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00
D. NUMBER: X714

UG/KG	ANALYTICAL RESULTS
14U	ALPHA-BHC
14U	BETA-BHC
14U	DELTA-BHC
14U	GAMMA-BHC (LINDANE)
14U	HEPTACHLOR
14U	ALDRIN
14U	HEPTACHLOR EPOXIDE
14U	ENDOSULFAN I (ALPHA)
27U	DIELDRIN
27U	4,4'-DDE (P,P'-DDE)
27U	ENDRIN
27U	ENDOSULFAN II (BETA)
27U	4,4'-DDD (P,P'-DDD)
27U	ENDOSULFAN SULFATE
27U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
140U	METHOXYCHLOR
27U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
140U	GAMMA-CHLORDANE /2
140U	ALPHA-CHLORDANE /2
270U	TOXAPHENE
140U	PCB-1016 (AROCLOR 1016)
140U	PCB-1221 (AROCLOR 1221)
140U	PCB-1232 (AROCLOR 1232)
140U	PCB-1242 (AROCLOR 1242)
140U	PCB-1248 (AROCLOR 1248)
270U	PCB-1254 (AROCLOR 1254)
270U	PCB-1260 (AROCLOR 1260)
41	PERCENT MOISTURE

FOOTNOTES
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*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50152 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1000 STOP: 00/00/00
D. NUMBER: X715

UG/KG	ANALYTICAL RESULTS
9.8U	ALPHA-BHC
9.8U	BETA-BHC
9.8U	DELTA-BHC
9.8U	GAMMA-BHC (LINDANE)
9.8U	HEPTACHLOR
9.8U	ALDRIN
9.8U	HEPTACHLOR EPOXIDE
9.8U	ENDOSULFAN I (ALPHA)
20U	DIELDRIN
20U	4,4'-DDE (P,P'-DDE)
20U	ENDRIN
20U	ENDOSULFAN II (BETA)
20U	4,4'-DDD (P,P'-DDD)
20U	ENDOSULFAN SULFATE
20U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
98U	METHOXYCHLOR
20U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
98U	GAMMA-CHLORDANE /2
98U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
98U	PCB-1016 (AROCLOR 1016)
98U	PCB-1221 (AROCLOR 1221)
98U	PCB-1232 (AROCLOR 1232)
98U	PCB-1242 (AROCLOR 1242)
98U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
18	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.
*R-QC INDICATES THAT DATA UNUSABLE. COMPOUND MAY OR MAY NOT BE PRESENT. RESAMPLING AND REANALYSIS IS NECESSARY FOR VERIFICATION.
*C-CONFIRMED BY GCMS 1. WHEN NO VALUE IS REPORTED. SEE CHLORDANE CONSTITUENTS.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PESTICIDES/PCB'S DATA REPORT 10/24/90

PROJECT NO. 90-798 SAMPLE NO. 50153 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SS-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1005 STOP: 00/00/00
D. NUMBER: X716

UG/KG	ANALYTICAL RESULTS
9.9U	ALPHA-BHC
9.9U	BETA-BHC
9.9U	DELTA-BHC
9.9U	GAMMA-BHC (LINDANE)
9.9U	HEPTACHLOR
9.9U	ALDRIN
9.9U	HEPTACHLOR EPOXIDE
9.9U	ENDOSULFAN I (ALPHA)
20U	DIELDRIN
20U	4,4'-DDE (P,P'-DDE)
20U	ENDRIN
20U	ENDOSULFAN II (BETA)
20U	4,4'-DDD (P,P'-DDD)
20U	ENDOSULFAN SULFATE
20U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
99U	METHOXYCHLOR
20U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
99U	GAMMA-CHLORDANE /2
99U	ALPHA-CHLORDANE /2
200U	TOXAPHENE
99U	PCB-1016 (AROCLOR 1016)
99U	PCB-1221 (AROCLOR 1221)
99U	PCB-1232 (AROCLOR 1232)
99U	PCB-1242 (AROCLOR 1242)
99U	PCB-1248 (AROCLOR 1248)
200U	PCB-1254 (AROCLOR 1254)
200U	PCB-1260 (AROCLOR 1260)
19	PERCENT MOISTURE

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50154 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-04
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1015 STOP: 00/00/00
D. NUMBER: X717

UG/KG	ANALYTICAL RESULTS
8.5U	ALPHA-BHC
8.5U	BETA-BHC
8.5U	DELTA-BHC
8.5U	GAMMA-BHC (LINDANE)
8.5U	HEPTACHLOR
8.5U	ALDRIN
8.5U	HEPTACHLOR EPOXIDE
8.5U	ENDOSULFAN I (ALPHA)
17U	DIELDRIN
17U	4,4'-DDE (P,P'-DDE)
17U	ENDRIN
17U	ENDOSULFAN II (BETA)
17U	4,4'-DDD (P,P'-DDD)
17U	ENDOSULFAN SULFATE
17U	4,4'-DDT (P,P'-DDT)

UG/KG	ANALYTICAL RESULTS
85U	METHOXYCHLOR
17U	ENDRIN KETONE
	CHLORDANE (TECH. MIXTURE) /1
85U	GAMMA-CHLORDANE /2
85U	ALPHA-CHLORDANE /2
170U	TOXAPHENE
85U	PCB-1016 (AROCLOR 1016)
85U	PCB-1221 (AROCLOR 1221)
85U	PCB-1232 (AROCLOR 1232)
85U	PCB-1242 (AROCLOR 1242)
85U	PCB-1248 (AROCLOR 1248)
170U	PCB-1254 (AROCLOR 1254)
170U	PCB-1260 (AROCLOR 1260)
6	PERCENT MOISTURE

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/24/90

PESTICIDES/PCB'S DATA REPORT

PROJECT NO. 90-798 SAMPLE NO. 50155 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD DU
STATION ID: SB-03
CASE NUMBER: 14852 SAS NUMBER:

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00
D. NUMBER: X718

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
11U	ALPHA-BHC	110U	METHOXYCHLOR
11U	BETA-BHC	21U	ENDRIN KETONE
11U	DELTA-BHC		CHLORDANE (TECH. MIXTURE) /1
11U	GAMMA-BHC (LINDANE)	110U	GAMMA-CHLORDANE /2
11U	HEPTACHLOR	110U	ALPHA-CHLORDANE /2
11U	ALDRIN	210U	TOXAPHENE
11U	HEPTACHLOR EPOXIDE	110U	PCB-1016 (AROCLOR 1016)
11U	ENDOSULFAN I (ALPHA)	110U	PCB-1221 (AROCLOR 1221)
21U	DIELDRIN	110U	PCB-1232 (AROCLOR 1232)
21U	4,4'-DDE (P,P'-DDE)	110U	PCB-1242 (AROCLOR 1242)
21U	ENDRIN	110U	PCB-1248 (AROCLOR 1248)
21U	ENDOSULFAN II (BETA)	210U	PCB-1254 (AROCLOR 1254)
21U	4,4'-DDD (P,P'-DDD)	210U	PCB-1260 (AROCLOR 1260)
21U	ENDOSULFAN SULFATE	24	PERCENT MOISTURE
21U	4,4'-DDT (P,P'-DDT)		

FOOTNOTES
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV
COLLEGE STATION RD.
ATHENS, GA. 30613

SISD/SAS
RECEIVED
OCT 11 1990
EPA - REGION IV
ATLANTA, GA.

*****MEMORANDUM******

DATE: 10/03/90

SUBJECT: Results of Purgeable Organic Analysis;
90-883 HEYWOOD-WAKEFIELD
NEWPORT TN

FROM: Tom B. Bennett, Jr.
Chief, Organic Chemistry Section

TO: PHIL BLACKWELL

Attached are the results of analysis of samples collected as part of the subject project.

If you have any questions please contact me.

ATTACHMENT

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49863 SAMPLE TYPE: SEDIMBLK
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: TB-01S

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/10/90 0815 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
40U	CHLOROMETHANE
40U	VINYL CHLORIDE
40U	BROMOMETHANE
40U	CHLOROETHANE
40U	TRICHLOROFLUOROMETHANE
40U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
400U	ACETONE
400U	CARBON DISULFIDE
40U	METHYLENE CHLORIDE
40U	TRANS-1,2-DICHLOROETHENE
40U	1,1-DICHLOROETHANE
400U	VINYL ACETATE
40U	CIS-1,2-DICHLOROETHENE
40U	2,2-DICHLOROPROPANE
400U	METHYL ETHYL KETONE
40U	BROMOCHLOROMETHANE
40U	CHLOROFORM
40U	1,1,1-TRICHLOROETHANE
40U	1,1-DICHLOROPROPENE
40U	CARBON TETRACHLORIDE
40U	1,2-DICHLOROETHANE
40U	BENZENE
40U	TRICHLOROETHENE(TRICHLOROETHYLENE)
40U	1,2-DICHLOROPROPANE
40U	DIBROMOMETHANE
40U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
40U	CIS-1,3-DICHLOROPROPENE
400U	METHYL ISOBUTYL KETONE
40U	TOLUENE
40U	TRANS-1,3-DICHLOROPROPENE
40U	1,1,2-TRICHLOROETHANE
40U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
40U	1,3-DICHLOROPROPANE
400U	METHYL BUTYL KETONE
40U	DIBROMOCHLOROMETHANE
40U	CHLOROBENZENE
40U	1,1,1,2-TETRACHLOROETHANE
40U	ETHYL BENZENE
40U	(M- AND/OR P-)XYLENE
40U	O-XYLENE
40U	STYRENE
40U	BROMOFORM
40U	BROMOBENZENE
40U	1,1,2,2-TETRACHLOROETHANE
40U	1,2,3-TRICHLOROPROPANE
40U	O-CHLOROTOLUENE
40U	P-CHLOROTOLUENE
40U	1,3-DICHLOROBENZENE
40U	1,4-DICHLOROBENZENE
40U	1,2-DICHLOROBENZENE
10.0	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49864 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1205 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
47U	CHLOROMETHANE
47U	VINYL CHLORIDE
47U	BROMOMETHANE
47U	CHLOROETHANE
47U	TRICHLOROFLUOROMETHANE
47U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
470U	ACETONE
470U	CARBON DISULFIDE
47U	METHYLENE CHLORIDE
47U	TRANS-1,2-DICHLOROETHENE
47U	1,1-DICHLOROETHANE
470U	VINYL ACETATE
47U	CIS-1,2-DICHLOROETHENE
47U	2,2-DICHLOROPROPANE
470U	METHYL ETHYL KETONE
47U	BROMOCHLOROMETHANE
47U	CHLOROFORM
47U	1,1,1-TRICHLOROETHANE
47U	1,1-DICHLOROPROPENE
47U	CARBON TETRACHLORIDE
47U	1,2-DICHLOROETHANE
47U	BENZENE
47U	TRICHLOROETHENE(TRICHLOROETHYLENE)
47U	1,2-DICHLOROPROPANE
47U	DIBROMOMETHANE
47U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
47U	CIS-1,3-DICHLOROPROPENE
470U	METHYL ISOBUTYL KETONE
47U	TOLUENE
47U	TRANS-1,3-DICHLOROPROPENE
47U	1,1,2-TRICHLOROETHANE
47U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
47U	1,3-DICHLOROPROPANE
470U	METHYL BUTYL KETONE
47U	DIBROMOCHLOROMETHANE
47U	CHLOROBENZENE
47U	1,1,1,2 TETRACHLOROETHANE
47U	ETHYL BENZENE
47U	(M- AND/OR P-)XYLENE
47U	O-XYLENE
47U	STYRENE
47U	BROMOFORM
47U	BROMOBENZENE
47U	1,1,2,2-TETRACHLOROETHANE
47U	1,2,3-TRICHLOROPROPANE
47U	O-CHLOROTOLUENE
47U	P-CHLOROTOLUENE
47U	1,3-DICHLOROBENZENE
47U	1,4-DICHLOROBENZENE
47U	1,2-DICHLOROBENZENE
17.9	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49865 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-01

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1315 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
52U	CHLOROMETHANE
52U	VINYL CHLORIDE
52U	BROMOMETHANE
52U	CHLOROETHANE
52U	TRICHLOROFLUOROMETHANE
52U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
520U	ACETONE
520U	CARBON DISULFIDE
52U	METHYLENE CHLORIDE
52U	TRANS-1,2-DICHLOROETHENE
52U	1,1-DICHLOROETHANE
520U	VINYL ACETATE
52U	CIS-1,2-DICHLOROETHENE
52U	2,2-DICHLOROPROPANE
520U	METHYL ETHYL KETONE
52U	BROMOCHLOROMETHANE
52U	CHLOROFORM
52U	1,1,1-TRICHLOROETHANE
52U	1,1-DICHLOROPROPENE
52U	CARBON TETRACHLORIDE
52U	1,2-DICHLOROETHANE
52U	BENZENE
52U	TRICHLOROETHENE(TRICHLOROETHYLENE)
52U	1,2-DICHLOROPROPANE
52U	DIBROMOMETHANE
52U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
52U	CIS-1,3-DICHLOROPROPENE
520U	METHYL ISOBUTYL KETONE
52U	TOLUENE
52U	TRANS-1,3-DICHLOROPROPENE
52U	1,1,2-TRICHLOROETHANE
52U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
52U	1,3-DICHLOROPROPANE
520U	METHYL BUTYL KETONE
52U	DIBROMOCHLOROMETHANE
52U	CHLOROBENZENE
52U	1,1,1,2-TETRACHLOROETHANE
52U	ETHYL BENZENE
52U	(M- AND/OR P-)XYLENE
52U	O-XYLENE
52U	STYRENE
52U	BROMOFORM
52U	BROMOBENZENE
52U	1,1,2,2-TETRACHLOROETHANE
52U	1,2,3-TRICHLOROPROPANE
52U	O-CHLOROTOLUENE
52U	P-CHLOROTOLUENE
52U	1,3-DICHLOROBENZENE
52U	1,4-DICHLOROBENZENE
52U	1,2-DICHLOROBENZENE
19.1	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

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** PROJECT NO. 90-883    SAMPLE NO. 49866  SAMPLE TYPE: SOIL        PROG ELEM: NSF   COLLECTED BY: A HARVEY
** SOURCE: HEYWOOD-WAKEFIELD                                        CITY: NEWPORT                ST: TN
** STATION ID: SD-01                                                COLLECTION START: 09/12/90  1445   STOP: 00/00/00
```

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
52U	CHLOROMETHANE	52U	CIS-1,3-DICHLOROPROPENE
52U	VINYL CHLORIDE	520U	METHYL ISOBUTYL KETONE
52U	BROMOMETHANE	52U	TOLUENE
52U	CHLOROETHANE	52U	TRANS-1,3-DICHLOROPROPENE
28J	TRICHLOROFLUOROMETHANE	52U	1,1,2-TRICHLOROETHANE
52U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)	52U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
520U	ACETONE	52U	1,3-DICHLOROPROPANE
520U	CARBON DISULFIDE	520U	METHYL BUTYL KETONE
52U	METHYLENE CHLORIDE	52U	DIBROMOCHLOROMETHANE
52U	TRANS-1,2-DICHLOROETHENE	52U	CHLOROBENZENE
52U	1,1-DICHLOROETHANE	52U	1,1,1,2-TETRACHLOROETHANE
520U	VINYL ACETATE	52U	ETHYL BENZENE
52U	CIS-1,2-DICHLOROETHENE	52U	(M- AND/OR P-)XYLENE
52U	2,2-DICHLOROPROPANE	52U	O-XYLENE
520U	METHYL ETHYL KETONE	52U	STYRENE
52U	BROMOCHLOROMETHANE	52U	BROMOFORM
52U	CHLOROFORM	52U	BROMOBENZENE
52U	1,1,1-TRICHLOROETHANE	52U	1,1,2,2-TETRACHLOROETHANE
52U	1,1-DICHLOROPROPENE	52U	1,2,3-TRICHLOROPROPANE
52U	CARBON TETRACHLORIDE	52U	O-CHLOROTOLUENE
52U	1,2-DICHLOROETHANE	52U	P-CHLOROTOLUENE
52U	BENZENE	52U	1,3-DICHLOROBENZENE
52U	TRICHLOROETHENE(TRICHLOROETHYLENE)	52U	1,4-DICHLOROBENZENE
52U	1,2-DICHLOROPROPANE	52U	1,2-DICHLOROBENZENE
52U	DIBROMOMETHANE	19.8	PERCENT MOISTURE
52U	BROMODICHLOROMETHANE		

REMARKS ***REMARKS***

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

** PROJECT NO. 90-883 SAMPLE NO. 49867 SAMPLE TYPE: SOIL
** SOURCE: HEYWOOD-WAKEFIELD
** STATION ID: SD-02
**
PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1450 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
62U	CHLOROMETHANE
62U	VINYL CHLORIDE
62U	BROMOMETHANE
62U	CHLOROETHANE
31J	TRICHLOROFLUOROMETHANE
62U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
620U	ACETONE
620U	CARBON DISULFIDE
62U	METHYLENE CHLORIDE
62U	TRANS-1,2-DICHLOROETHENE
62U	1,1-DICHLOROETHANE
620U	VINYL ACETATE
62U	CIS-1,2-DICHLOROETHENE
62U	2,2-DICHLOROPROPANE
620U	METHYL ETHYL KETONE
62U	BROMOCHLOROMETHANE
62U	CHLOROFORM
62U	1,1,1-TRICHLOROETHANE
62U	1,1-DICHLOROPROPENE
62U	CARBON TETRACHLORIDE
62U	1,2-DICHLOROETHANE
62U	BENZENE
62U	TRICHLOROETHENE(TRICHLOROETHYLENE)
62U	1,2-DICHLOROPROPANE
62U	DIBROMOMETHANE
62U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
62U	CIS-1,3-DICHLOROPROPENE
620U	METHYL ISOBUTYL KETONE
62U	TOLUENE
62U	TRANS-1,3-DICHLOROPROPENE
62U	1,1,2-TRICHLOROETHANE
62U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
62U	1,3-DICHLOROPROPANE
620U	METHYL BUTYL KETONE
62U	DIBROMOCHLOROMETHANE
62U	CHLOROBENZENE
62U	1,1,1,2-TETRACHLOROETHANE
62U	ETHYL BENZENE
62U	(M- AND/OR P-)XYLENE
62U	O-XYLENE
62U	STYRENE
62U	BROMOFORM
62U	BROMOBENZENE
62U	1,1,2,2-TETRACHLOROETHANE
62U	1,2,3-TRICHLOROPROPANE
62U	O-CHLOROTOLUENE
62U	P-CHLOROTOLUENE
62U	1,3-DICHLOROBENZENE
62U	1,4-DICHLOROBENZENE
62U	1,2-DICHLOROBENZENE
32.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49868 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SD-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1500 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
58U	CHLOROMETHANE
58U	VINYL CHLORIDE
58U	BROMOMETHANE
58U	CHLOROETHANE
20J	TRICHLOROFLUOROMETHANE
58U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
580U	ACETONE
580U	CARBON DISULFIDE
58U	METHYLENE CHLORIDE
58U	TRANS-1,2-DICHLOROETHENE
58U	1,1-DICHLOROETHANE
580U	VINYL ACETATE
58U	CIS-1,2-DICHLOROETHENE
58U	2,2-DICHLOROPROPANE
580U	METHYL ETHYL KETONE
58U	BROMOCHLOROMETHANE
58U	CHLOROFORM
58U	1,1,1-TRICHLOROETHANE
58U	1,1-DICHLOROPROPENE
58U	CARBON TETRACHLORIDE
58U	1,2-DICHLOROETHANE
58U	BENZENE
58U	TRICHLOROETHENE(TRICHLOROETHYLENE)
58U	1,2-DICHLOROPROPANE
58U	DIBROMOMETHANE
58U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
58U	CIS-1,3-DICHLOROPROPENE
580U	METHYL ISOBUTYL KETONE
58U	TOLUENE
58U	TRANS-1,3-DICHLOROPROPENE
58U	1,1,2-TRICHLOROETHANE
58U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
58U	1,3-DICHLOROPROPANE
580U	METHYL BUTYL KETONE
58U	DIBROMOCHLOROMETHANE
58U	CHLOROBENZENE
58U	1,1,1,2-TETRACHLOROETHANE
58U	ETHYL BENZENE
58U	(M- AND/OR P-)XYLENE
58U	O-XYLENE
58U	STYRENE
58U	BROMOFORM
58U	BROMOBENZENE
58U	1,1,2,2-TETRACHLOROETHANE
58U	1,2,3-TRICHLOROPROPANE
58U	O-CHLOROTOLUENE
58U	P-CHLOROTOLUENE
58U	1,3-DICHLOROBENZENE
58U	1,4-DICHLOROBENZENE
58U	1,2-DICHLOROBENZENE
21.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49869 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SD-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1520 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
57U	CHLOROMETHANE
57U	VINYL CHLORIDE
57U	BROMOMETHANE
57U	CHLOROETHANE
12J	TRICHLOROFLUOROMETHANE
57U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
570U	ACETONE
570U	CARBON DISULFIDE
57U	METHYLENE CHLORIDE
57U	TRANS-1,2-DICHLOROETHENE
57U	1,1-DICHLOROETHANE
570U	VINYL ACETATE
57U	CIS-1,2-DICHLOROETHENE
57U	2,2-DICHLOROPROPANE
570U	METHYL ETHYL KETONE
57U	BROMOCHLOROMETHANE
57U	CHLOROFORM
57U	1,1,1-TRICHLOROETHANE
57U	1,1-DICHLOROPROPENE
57U	CARBON TETRACHLORIDE
57U	1,2-DICHLOROETHANE
57U	BENZENE
57U	TRICHLOROETHENE(TRICHLOROETHYLENE)
57U	1,2-DICHLOROPROPANE
57U	DIBROMOMETHANE
57U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
57U	CIS-1,3-DICHLOROPROPENE
570U	METHYL ISOBUTYL KETONE
57U	TOLUENE
57U	TRANS-1,3-DICHLOROPROPENE
57U	1,1,2-TRICHLOROETHANE
57U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
57U	1,3-DICHLOROPROPANE
570U	METHYL BUTYL KETONE
57U	DIBROMOCHLOROMETHANE
57U	CHLOROBENZENE
57U	1,1,1,2-TETRACHLOROETHANE
57U	ETHYL BENZENE
57U	(M- AND/OR P-)XYLENE
57U	O-XYLENE
57U	STYRENE
57U	BROMOFORM
57U	BROMOBENZENE
57U	1,1,2,2-TETRACHLOROETHANE
57U	1,2,3-TRICHLOROPROPANE
57U	O-CHLOROTOLUENE
57U	P-CHLOROTOLUENE
57U	1,3-DICHLOROBENZENE
57U	1,4-DICHLOROBENZENE
57U	1,2-DICHLOROBENZENE
12.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

10/02/90

PURGEABLE ORGANICS DATA REPORT

PROJECT NO. 90-883 SAMPLE NO. 49870 SAMPLE TYPE: SOIL PROG ELEM: NSF COLLECTED BY: A HARVEY
SOURCE: HEYWOOD-WAKEFIELD CITY: NEWPORT ST: TN
STATION ID: SS-02 COLLECTION START: 09/12/90 1600 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS	UG/KG	ANALYTICAL RESULTS
47U	CHLOROMETHANE	47U	CIS-1,3-DICHLOROPROPENE
47U	VINYL CHLORIDE	470U	METHYL ISOBUTYL KETONE
47U	BROMOMETHANE	47U	TOLUENE
47U	CHLOROETHANE	47U	TRANS-1,3-DICHLOROPROPENE
9.6J	TRICHLOROFLUOROMETHANE	47U	1,1,2-TRICHLOROETHANE
47U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)	47U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
470U	ACETONE	47U	1,3-DICHLOROPROPANE
470U	CARBON DISULFIDE	470U	METHYL BUTYL KETONE
47U	METHYLENE CHLORIDE	47U	DIBROMOCHLOROMETHANE
47U	TRANS-1,2-DICHLOROETHENE	47U	CHLOROBENZENE
47U	1,1-DICHLOROETHANE	47U	1,1,1,2-TETRACHLOROETHANE
470U	VINYL ACETATE	47U	ETHYL BENZENE
47U	CIS-1,2-DICHLOROETHENE	47U	(M- AND/OR P-)XYLENE
47U	2,2-DICHLOROPROPANE	47U	O-XYLENE
470U	METHYL ETHYL KETONE	47U	STYRENE
47U	BROMOCHLOROMETHANE	47U	BROMOFORM
47U	CHLOROFORM	47U	BROMOBENZENE
47U	1,1,1-TRICHLOROETHANE	47U	1,1,2,2-TETRACHLOROETHANE
47U	1,1-DICHLOROPROPENE	47U	1,2,3-TRICHLOROPROPANE
47U	CARBON TETRACHLORIDE	47U	O-CHLOROTOLUENE
47U	1,2-DICHLOROETHANE	47U	P-CHLOROTOLUENE
47U	BENZENE	47U	1,3-DICHLOROBENZENE
47U	TRICHLOROETHENE(TRICHLOROETHYLENE)	47U	1,4-DICHLOROBENZENE
47U	1,2-DICHLOROPROPANE	47U	1,2-DICHLOROBENZENE
47U	DIBROMOMETHANE	11.4	PERCENT MOISTURE
47U	BROMODICHLOROMETHANE		

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49871 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-02

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1625 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
55U	CHLOROMETHANE
55U	VINYL CHLORIDE
55U	BROMOMETHANE
55U	CHLOROETHANE
10J	TRICHLOROFLUOROMETHANE
55U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
550U	ACETONE
550U	CARBON DISULFIDE
55U	METHYLENE CHLORIDE
55U	TRANS-1,2-DICHLOROETHENE
55U	1,1-DICHLOROETHANE
550U	VINYL ACETATE
55U	CIS-1,2-DICHLOROETHENE
55U	2,2-DICHLOROPROPANE
550U	METHYL ETHYL KETONE
55U	BROMOCHLOROMETHANE
55U	CHLOROFORM
55U	1,1,1-TRICHLOROETHANE
55U	1,1-DICHLOROPROPENE
55U	CARBON TETRACHLORIDE
55U	1,2-DICHLOROETHANE
55U	BENZENE
55U	TRICHLOROETHENE(TRICHLOROETHYLENE)
55U	1,2-DICHLOROPROPANE
55U	DIBROMOMETHANE
55U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
55U	CIS-1,3-DICHLOROPROPENE
550U	METHYL ISOBUTYL KETONE
55U	TOLUENE
55U	TRANS-1,3-DICHLOROPROPENE
55U	1,1,2-TRICHLOROETHANE
55U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
55U	1,3-DICHLOROPROPANE
550U	METHYL BUTYL KETONE
55U	DIBROMOCHLOROMETHANE
55U	CHLOROBENZENE
55U	1,1,1,2-TETRACHLOROETHANE
55U	ETHYL BENZENE
55U	(M- AND/OR P-)XYLENE
55U	O-XYLENE
55U	STYRENE
55U	BROMOFORM
55U	BROMOBENZENE
55U	1,1,2,2-TETRACHLOROETHANE
55U	1,2,3-TRICHLOROPROPANE
55U	O-CHLOROTOLUENE
55U	P-CHLOROTOLUENE
55U	1,3-DICHLOROBENZENE
55U	1,4-DICHLOROBENZENE
55U	1,2-DICHLOROBENZENE
23.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49872 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-05

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/12/90 1530 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
380U	CHLOROMETHANE
380U	VINYL CHLORIDE
380U	BROMOMETHANE
380U	CHLOROETHANE
380U	TRICHLOROFLUOROMETHANE
380U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
3800U	ACETONE
3800U	CARBON DISULFIDE
380U	METHYLENE CHLORIDE
380U	TRANS-1,2-DICHLOROETHENE
380U	1,1-DICHLOROETHANE
3800U	VINYL ACETATE
380U	CIS-1,2-DICHLOROETHENE
380U	2,2-DICHLOROPROPANE
3800U	METHYL ETHYL KETONE
380U	BROMOCHLOROMETHANE
380U	CHLOROFORM
380U	1,1,1-TRICHLOROETHANE
380U	1,1-DICHLOROPROPENE
380U	CARBON TETRACHLORIDE
380U	1,2-DICHLOROETHANE
380U	BENZENE
380U	TRICHLOROETHENE(TRICHLOROETHYLENE)
380U	1,2-DICHLOROPROPANE
380U	DIBROMOMETHANE
380U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
380U	CIS-1,3-DICHLOROPROPENE
3800U	METHYL ISOBUTYL KETONE
120J	TOLUENE
380U	TRANS-1,3-DICHLOROPROPENE
380U	1,1,2-TRICHLOROETHANE
380U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
380U	1,3-DICHLOROPROPANE
3800U	METHYL BUTYL KETONE
380U	DIBROMOCHLOROMETHANE
380U	CHLOROBENZENE
380U	1,1,1,2 TETRACHLOROETHANE
380U	ETHYL BENZENE
380U	(M- AND/OR P-)XYLENE
380U	O-XYLENE
380U	STYRENE
380U	BROMOFORM
380U	BROMOBENZENE
380U	1,1,2,2-TETRACHLOROETHANE
380U	1,2,3-TRICHLOROPROPANE
380U	O-CHLOROTOLUENE
380U	P-CHLOROTOLUENE
380U	1,3-DICHLOROBENZENE
380U	1,4-DICHLOROBENZENE
380U	1,2-DICHLOROBENZENE
73.8	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49873 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-06

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 0950 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
80U	CHLOROMETHANE
80U	VINYL CHLORIDE
80U	BROMOMETHANE
80U	CHLOROETHANE
80U	TRICHLOROFLUOROMETHANE
80U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
800U	ACETONE
800U	CARBON DISULFIDE
80U	METHYLENE CHLORIDE
80U	TRANS-1,2-DICHLOROETHENE
80U	1,1-DICHLOROETHANE
800U	VINYL ACETATE
80U	CIS-1,2-DICHLOROETHENE
80U	2,2-DICHLOROPROPANE
800U	METHYL ETHYL KETONE
80U	BROMOCHLOROMETHANE
80U	CHLOROFORM
80U	1,1,1-TRICHLOROETHANE
80U	1,1-DICHLOROPROPENE
80U	CARBON TETRACHLORIDE
80U	1,2-DICHLOROETHANE
80U	BENZENE
80U	TRICHLOROETHENE(TRICHLOROETHYLENE)
80U	1,2-DICHLOROPROPANE
80U	DIBROMOMETHANE
80U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
80U	CIS-1,3-DICHLOROPROPENE
800U	METHYL ISOBUTYL KETONE
80U	TOLUENE
80U	TRANS-1,3-DICHLOROPROPENE
80U	1,1,2-TRICHLOROETHANE
80U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
80U	1,3-DICHLOROPROPANE
800U	METHYL BUTYL KETONE
80U	DIBROMOCHLOROMETHANE
80U	CHLOROBENZENE
80U	1,1,1,2-TETRACHLOROETHANE
80U	ETHYL BENZENE
80U	(M- AND/OR P-)XYLENE
80U	O-XYLENE
80U	STYRENE
80U	BROMOFORM
80U	BROMOBENZENE
80U	1,1,2,2-TETRACHLOROETHANE
80U	1,2,3-TRICHLOROPROPANE
80U	O-CHLOROTOLUENE
80U	P-CHLOROTOLUENE
80U	1,3-DICHLOROBENZENE
80U	1,4-DICHLOROBENZENE
80U	1,2-DICHLOROBENZENE
37.7	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49874 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SS-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1000 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
53U	CHLOROMETHANE
53U	VINYL CHLORIDE
53U	BROMOMETHANE
53U	CHLOROETHANE
53U	TRICHLOROFLUOROMETHANE
53U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
530U	ACETONE
530U	CARBON DISULFIDE
53U	METHYLENE CHLORIDE
53U	TRANS-1,2-DICHLOROETHENE
53U	1,1-DICHLOROETHANE
530U	VINYL ACETATE
53U	CIS-1,2-DICHLOROETHENE
53U	2,2-DICHLOROPROPANE
530U	METHYL ETHYL KETONE
53U	BROMOCHLOROMETHANE
53U	CHLOROFORM
53U	1,1,1-TRICHLOROETHANE
53U	1,1-DICHLOROPROPENE
53U	CARBON TETRACHLORIDE
53U	1,2-DICHLOROETHANE
53U	BENZENE
53U	TRICHLOROETHENE(TRICHLOROETHYLENE)
53U	1,2-DICHLOROPROPANE
53U	DIBROMOMETHANE
53U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
53U	CIS-1,3-DICHLOROPROPENE
530U	METHYL ISOBUTYL KETONE
53U	TOLUENE
53U	TRANS-1,3-DICHLOROPROPENE
53U	1,1,2-TRICHLOROETHANE
53U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
53U	1,3-DICHLOROPROPANE
530U	METHYL BUTYL KETONE
53U	DIBROMOCHLOROMETHANE
53U	CHLOROBENZENE
53U	1,1,1,2-TETRACHLOROETHANE
53U	ETHYL BENZENE
53U	(M- AND/OR P-)XYLENE
53U	O-XYLENE
53U	STYRENE
53U	BROMOFORM
53U	BROMOBENZENE
53U	1,1,2,2-TETRACHLOROETHANE
53U	1,2,3-TRICHLOROPROPANE
53U	O-CHLOROTOLUENE
53U	P-CHLOROTOLUENE
53U	1,3-DICHLOROBENZENE
53U	1,4-DICHLOROBENZENE
53U	1,2-DICHLOROBENZENE
5.4	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
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SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

** PROJECT NO. 90-883 SAMPLE NO. 49875 SAMPLE TYPE: SOIL
** SOURCE: HEYWOOD-WAKEFIELD
** STATION ID: SS-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1005 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
51UJ	CHLOROMETHANE
51UJ	VINYL CHLORIDE
51UJ	BROMOMETHANE
51UJ	CHLOROETHANE
51UJ	TRICHLOROFLUOROMETHANE
51UJ	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
510UJ	ACETONE
510UJ	CARBON DISULFIDE
100UJ	METHYLENE CHLORIDE
51UJ	TRANS-1,2-DICHLOROETHENE
51UJ	1,1-DICHLOROETHANE
510UJ	VINYL ACETATE
51UJ	CIS-1,2-DICHLOROETHENE
51UJ	2,2-DICHLOROPROPANE
510UJ	METHYL ETHYL KETONE
51UJ	BROMOCHLOROMETHANE
51UJ	CHLOROFORM
51UJ	1,1,1-TRICHLOROETHANE
51UJ	1,1-DICHLOROPROPENE
51UJ	CARBON TETRACHLORIDE
51UJ	1,2-DICHLOROETHANE
51UJ	BENZENE
51UJ	TRICHLOROETHENE(TRICHLOROETHYLENE)
51UJ	1,2-DICHLOROPROPANE
51UJ	DIBROMOMETHANE
51UJ	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
51UJ	CIS-1,3-DICHLOROPROPENE
510UJ	METHYL ISOBUTYL KETONE
51UJ	TOLUENE
51UJ	TRANS-1,3-DICHLOROPROPENE
51UJ	1,1,2-TRICHLOROETHANE
51UJ	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
51UJ	1,3-DICHLOROPROPANE
510UJ	METHYL BUTYL KETONE
51UJ	DIBROMOCHLOROMETHANE
51UJ	CHLOROBENZENE
51UJ	1,1,1,2-TETRACHLOROETHANE
51UJ	ETHYL BENZENE
51UJ	(M- AND/OR P-)XYLENE
51UJ	O-XYLENE
51UJ	STYRENE
51UJ	BROMOFORM
51UJ	BROMOBENZENE
51UJ	1,1,2,2-TETRACHLOROETHANE
51UJ	1,2,3-TRICHLOROPROPANE
51UJ	O-CHLOROTOLUENE
51UJ	P-CHLOROTOLUENE
51UJ	1,3-DICHLOROBENZENE
51UJ	1,4-DICHLOROBENZENE
51UJ	1,2-DICHLOROBENZENE
18.5	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49876 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-03

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1020 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
55UJ	CHLOROMETHANE
55UJ	VINYL CHLORIDE
55UJ	BROMOMETHANE
55UJ	CHLOROETHANE
55UJ	TRICHLOROFLUOROMETHANE
55UJ	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
550UJ	ACETONE
550UJ	CARBON DISULFIDE
110UJ	METHYLENE CHLORIDE
55UJ	TRANS-1,2-DICHLOROETHENE
55UJ	1,1-DICHLOROETHANE
550UJ	VINYL ACETATE
55UJ	CIS-1,2-DICHLOROETHENE
55UJ	2,2-DICHLOROPROPANE
550UJ	METHYL ETHYL KETONE
55UJ	BROMOCHLOROMETHANE
55UJ	CHLOROFORM
55UJ	1,1,1-TRICHLOROETHANE
55UJ	1,1-DICHLOROPROPENE
55UJ	CARBON TETRACHLORIDE
55UJ	1,2-DICHLOROETHANE
55UJ	BENZENE
55UJ	TRICHLOROETHENE(TRICHLOROETHYLENE)
55UJ	1,2-DICHLOROPROPANE
55UJ	DIBROMOMETHANE
55UJ	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
55UJ	CIS-1,3-DICHLOROPROPENE
550UJ	METHYL ISOBUTYL KETONE
55UJ	TOLUENE
55UJ	TRANS-1,3-DICHLOROPROPENE
55UJ	1,1,2-TRICHLOROETHANE
55UJ	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
55UJ	1,3-DICHLOROPROPANE
550UJ	METHYL BUTYL KETONE
55UJ	DIBROMOCHLOROMETHANE
55UJ	CHLOROBENZENE
55UJ	1,1,1,2-TETRACHLOROETHANE
55UJ	ETHYL BENZENE
55UJ	(M- AND/OR P-)XYLENE
55UJ	O-XYLENE
55UJ	STYRENE
55UJ	BROMOFORM
55UJ	BROMOBENZENE
55UJ	1,1,2,2-TETRACHLOROETHANE
55UJ	1,2,3-TRICHLOROPROPANE
55UJ	O-CHLOROTOLUENE
55UJ	P-CHLOROTOLUENE
55UJ	1,3-DICHLOROBENZENE
55UJ	1,4-DICHLOROBENZENE
55UJ	1,2-DICHLOROBENZENE
24.3	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-REGION IV ESD, ATHENS, GA.

PURGEABLE ORGANICS DATA REPORT 10/02/90

PROJECT NO. 90-883 SAMPLE NO. 49877 SAMPLE TYPE: SOIL
SOURCE: HEYWOOD-WAKEFIELD
STATION ID: SB-04

PROG ELEM: NSF COLLECTED BY: A HARVEY
CITY: NEWPORT ST: TN
COLLECTION START: 09/13/90 1015 STOP: 00/00/00

UG/KG	ANALYTICAL RESULTS
44U	CHLOROMETHANE
44U	VINYL CHLORIDE
44U	BROMOMETHANE
44U	CHLOROETHANE
44U	TRICHLOROFLUOROMETHANE
44U	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
440U	ACETONE
440U	CARBON DISULFIDE
88U	METHYLENE CHLORIDE
44U	TRANS-1,2-DICHLOROETHENE
44U	1,1-DICHLOROETHANE
440U	VINYL ACETATE
44U	CIS-1,2-DICHLOROETHENE
44U	2,2-DICHLOROPROPANE
440U	METHYL ETHYL KETONE
44U	BROMOCHLOROMETHANE
44U	CHLOROFORM
44U	1,1,1-TRICHLOROETHANE
44U	1,1-DICHLOROPROPENE
44U	CARBON TETRACHLORIDE
44U	1,2-DICHLOROETHANE
44U	BENZENE
44U	TRICHLOROETHENE(TRICHLOROETHYLENE)
44U	1,2-DICHLOROPROPANE
44U	DIBROMOMETHANE
44U	BROMODICHLOROMETHANE

UG/KG	ANALYTICAL RESULTS
44U	CIS-1,3-DICHLOROPROPENE
440U	METHYL ISOBUTYL KETONE
44U	TOLUENE
44U	TRANS-1,3-DICHLOROPROPENE
44U	1,1,2-TRICHLOROETHANE
44U	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
44U	1,3-DICHLOROPROPANE
440U	METHYL BUTYL KETONE
44U	DIBROMOCHLOROMETHANE
44U	CHLOROBENZENE
44U	1,1,1,2 TETRACHLOROETHANE
44U	ETHYL BENZENE
44U	(M- AND/OR P-)XYLENE
44U	O-XYLENE
44U	STYRENE
44U	BROMOFORM
44U	BROMOBENZENE
44U	1,1,2,2-TETRACHLOROETHANE
44U	1,2,3-TRICHLOROPROPANE
44U	O-CHLOROTOLUENE
44U	P-CHLOROTOLUENE
44U	1,3-DICHLOROBENZENE
44U	1,4-DICHLOROBENZENE
44U	1,2-DICHLOROBENZENE
5.7	PERCENT MOISTURE

REMARKS

REMARKS

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES *J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN *L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM QUANTITATION LIMIT.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

4WD-WPB

? 1990

Mr. Michael D. Mullaney
Eastern Plating, Incorporated
Route 7, Box 26
Chemwood Drive
Newport, TN 37821

RE: 4-RIN-2571-90

Dear Mr. Mullaney:

This is in response to the Freedom of Information Act (FOIA) request you submitted for information from Region IV files regarding the following:

Eastern Plating, Inc., Newport, TN
Chemwood Properties, Inc., Newport, TN
Barclay's American Bank, Newport, TN
Heywood-Wakefield Company, Newport, TN → TN11 [illegible]

We have no information responsive to your request for Eastern Plating, Inc., Chemwood Properties, Inc., or Barclay's American Bank. Please find enclosed the requested materials for Heywood-Wakefield Company.

Fees for this information are waived as de minimis.

Should you have any questions, please call Ms. Ramona J. Klein at (404) 347-5065.

Sincerely yours,

H. Kirk Lucius
Freedom of Information Coordinator

Enclosures

RK:rk:Doc 2571:Disk Klein (Pers):9/28/90:x5065

4WD-SAS	4WD-SAS	4WD-SAS	4WD-WPB
KLEIN	DEIHL	HANKE	LUCIUS

POOR LEGIBILITY

PORTIONS OF THIS DOCUMENT MAY BE UNREADABLE, DUE TO THE QUALITY OF THE ORIGINAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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

4WD-WPB

SEP 0 5 1990

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Mike Mullaney
Eastern Plating Incorporated
Route 7 Box 26
Chemwood Drive
Newport, Tennessee 37821

RE: Heywood-Wakefield Company
Newport, Cocke County, TN
TND003382330

Dear Mr. Mullaney:

The United States Environmental Protection Agency (EPA), pursuant to the authority and requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42, U.S.C. 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act (SARA), Public Law 99-499, is planning to conduct an investigation of the above-referenced site. The Heywood-Wakefield site is located in Newport, Cocke County, Tennessee. EPA has reason to believe that there may be a release or threat of a release of hazardous substances from the site into the surrounding environment. The purpose of the investigation is to determine the nature and extent of contamination at the site and to determine what, if any, further response action would be appropriate.

As per your telephone conversation with me on August 24, 1990, EPA was granted permission for access to your property beginning on or about September 10, 1990, and continuing through the completion of the investigation on or about September 14, 1990. Activities to be conducted during the investigation may include:

1. Inspect, sketch, and photograph the premises;

2. Collect surface and subsurface soil samples;

3. Collect groundwater and subsurface water samples;

4. Collect sediment samples;

5. Conduct air monitoring;

6. Transportation of equipment onto and about the site as necessary to accomplish the activities above, including trucks and sampling equipment.

The above sampling activity will be conducted by personnel from EPA Region IV's Field Investigation Team (FIT). Mr. Andrew Harvey of FIT will contact you prior to the actual site visit to make final arrangements and note any changes.

Split samples will be made available if requested. However, you will be required to furnish your own containers as well as your own laboratory analyses.

If you have any questions, please contact me at (404) 347-5065. Your cooperation in this matter is appreciated.

Sincerely,

Ramona J. Klein
Environmental Scientist

cc: Gordon Caruthers, TDHE
Andrew Harvey, NUS Corporation

RK:sw:Doc Access 13:Disk Klein #1:8/28/90:x5065

4WD-SAS	4WD-SAS
RJK	
KLEIN	DEIHL

NUS CORPORATION

1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404 938 7710

SISB/SAS
RECEIVED
SEP 05 1990
EPA - REGION IV
ATLANTA, GA.

C-586-8-0-240

August 27, 1990

Ms. Ramona Klein
Waste Programs Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Subject: Geophysical Screening
Heywood-Wakefield Company
Newport, Cocke County, Tennessee
EPA ID No. TND003382330

Dear Ms. Klein:

A geophysical screening is proposed for the Heywood-Wakefield Company site for the purpose of delineating the location of former disposal areas. Since the exact locations of these disposal areas are unknown, it is felt that geophysical techniques provide the most viable alternative for locating subsurface waste materials associated with these areas. The most suitable geophysical technique applicable in this geologic setting is believed to be electromagnetics. If proper subsurface conditions exist at the site this technique will provide the necessary data needed to accurately define any subsurface waste materials. The results will then be used in determining optimum sampling locations in these areas.

This letter is to notify you of our proposal before opening the TDD for the geophysical screening. Please contact me if you have any questions.

Very truly yours,

Robert Hutcheson

Robert Hutcheson
Project Manager

Approved:

Greg Schank

RH/jec

NUS CORPORATION
1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404 938 7710

RECEIVED
AUG 31 1990
RESOURCES

C-586-8-0-246

August 27, 1990

Mr. A.R. Hanke
Waste Programs Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Subject: Study Plan
Revision 0
Heywood-Wakefield Company
Newport, Cocke County, Tennessee
EPA ID No.: TND003382330
TDD No. F4-9008-32

Dear Mr. Hanke:

Attached, please find one copy of the Study Plan for Heywood-Wakefield Company in Newport, Cocke County, Tennessee.

If you have any questions or comments, please contact me at NUS Corporation.

Very truly yours,

Andrew W. Harvey

Andrew W. Harvey
Project Manager

Approved:

Greg Schank

AWH/jec

Enclosure (1)

R-586-8-0-27

STUDY PLAN
SCREENING SITE INSPECTION, PHASE II
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE
EPA ID #: TND003382330

Prepared Under
TDD No. F4-9008-32
CONTRACT NO. 68-01-7346

Revision 0

FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

AUGUST 27, 1990

NUS CORPORATION
SUPERFUND DIVISION

Prepared By	Reviewed By	Approved By
Andrew W. Harvey Project Manager	for Roger Franklin Assistant Regional Project Manager	Phil Blackwell Regional Project Manager

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STUDY PLAN

SCREENING SITE INSPECTION, PHASE II

HEYWOOD-WAKEFIELD COMPANY

NEWPORT, COCKE COUNTY, TENNESSEE

EPA ID #TN003382330

TDD NO. F4-9008-32

1.0 INTRODUCTION

The NUS Corporation Region 4 Field Investigation Team (FIT) has been tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division to conduct a Screening Site Inspection (SSI) at the Heywood-Wakefield Company facility in Cocke County, Tennessee. The inspection will be performed under the authority of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Tasks will be performed to satisfy the requirements stated in Phase II of Technical Directive Document (TDD) number F4-9008-32.

1.1 Objectives

The objectives of this Phase II inspection will be to determine the nature of contaminants present at the site and to determine if a release of these substances has occurred or may occur. Further, this inspection will seek to determine the possible pathways by which contamination could migrate from the site and the populations and environments it would potentially affect. Through these objectives, a recommendation will be made regarding future activities at the site.

Specific elements are:

- Obtain information to prepare a site-specific preliminary HRS
- Provide EPA the necessary information to make decisions on any other actions warranted at the site

1.2 Scope of Work

The scope of this investigation will include the following activities:

- Obtain and review background materials relevant to HRS scoring of site
- Obtain aerial photographs and maps of site, if possible
- Obtain information on local water systems
- Evaluate target populations associated with the groundwater, surface water, air and onsite exposure pathways
- Conduct a survey of private wells
- Determine location and distance to nearest potable well
- Develop a site sketch
- Conduct a geophysical screening of site to determine whether buried drums may be present,
- Collect environmental samples

1.3 Schedule

The sampling schedule has been defined for the week of September 10, 1990.

1.4 Personnel

Project Manager - Andrew W. Harvey
Other personnel as required

1.5 Permits and Authorization Requirements

EPA is responsible for obtaining access to the site and permission to take photographs of site. In addition, EPA is responsible for all permits which may be required to accomplish this task.

1.6 Site History and Description

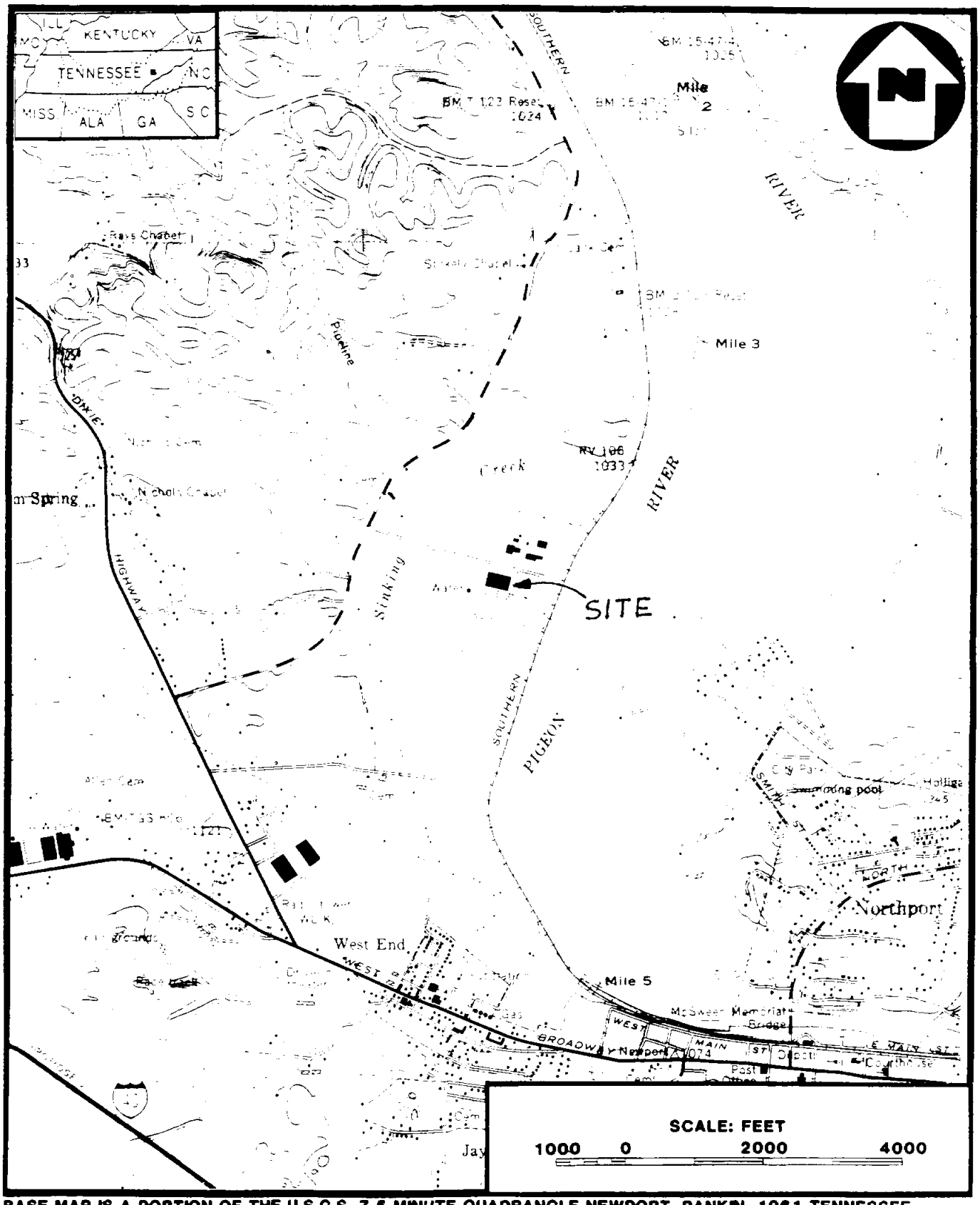
The Heywood-Wakefield Company is located in the industrial park on Chemwood Drive approximately 1 mile northwest of the city of Newport, Cocke County, Tennessee (Figure 1). Geographically, the facility is located at 36°59'10" N latitude and 83°12'07" W longitude (Ref. 1). The site location is shown in Figure 1, and the site layout is shown in Figure 2.

The Heywood-Wakefield Company began hand production of school desks and various metal seatings in 1957. In 1963, implementation of automation upgraded the process to an electroplating line (Ref. 2). The main waste associated with the facility is RCRA listed F006 - "wastewater treatment sludges from electroplating operations...", containing the hazardous constituents cadmium, hexavalent chromium, nickel, and cyanide in the complexed state (Refs. 3, 4).

In 1978, approximately 200 pounds of plating sludge waste produced at the facility was allowed to be disposed of at the Cocke County Landfill (Ref. 5). Prior to 1978, waste material ("Majority constituents: 55 percent wood flour and 45 percent inert materials") collected by air pollution control equipment, approximately 200 pounds per day, was buried on the Heywood-Wakefield Company grounds (Ref. 6). Following the implementation of RCRA, manifests kept at the facility indicate that the wastes were shipped to SCA Services hazardous waste landfill at Pinewood, South Carolina (Ref. 7). A release from the onsite wastewater treatment plant occurred in 1982 (Ref. 7).

Heywood-Wakefield Company ceased operations in 1982 and declared a chapter 11 bankruptcy (Refs. 8, 9). A "Request for Order Civil Penalty and Damage Assessment" was entered on April 15, 1983 for RCRA storage of hazardous waste at the facility after the plant ceased operations (Ref. 9).

In March 1984, representatives from the state of Tennessee Division of Solid Waste Management performed a RCRA closure inspection. During the inspection, Chemical Waste Management, Inc. removed 59 drums from a locked building, 8 drums from the plant yard, and 10 drums were used to contain free liquids from the sludge drums in order to handle the waste types separately (Ref. 3).

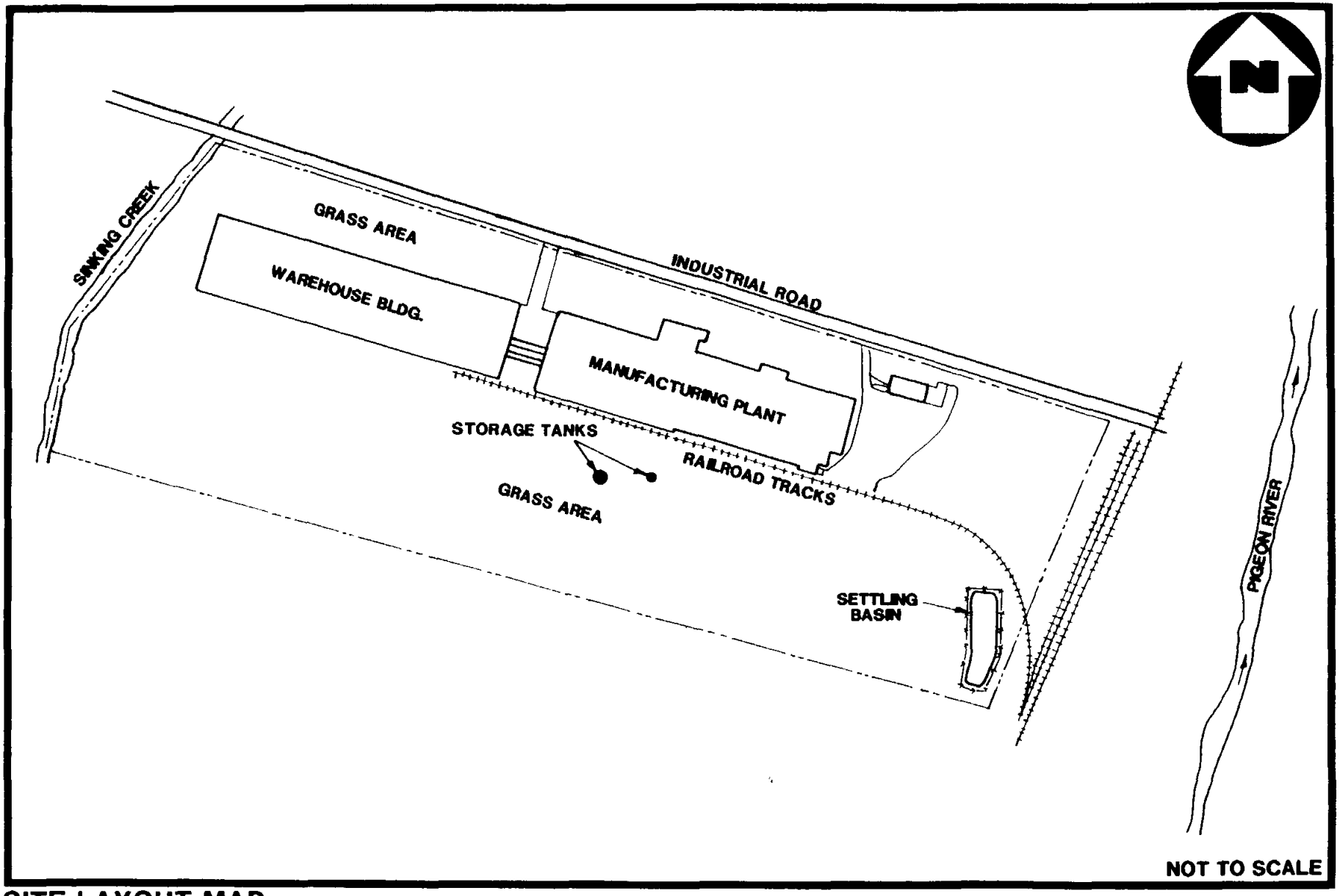


BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE NEWPORT, RANKIN, 1961 TENNESSEE.

SITE LOCATION MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 1

NUS CORPORATION



SITE LAYOUT MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 2

NUS CORPORATION

Currently, the facility property is occupied by Virco Manufacturing, Electric Voice, the offices of Great Lakes Chemical Industries, and Eastern Plating Company, which occupies the main plant building and operates the electroplating line formerly used by Heywood-Wakefield Company, was served with a notice of noncompliance for illegal discharges having high concentrations of chromium, nickel, and lead (Ref. 11).

1.7 Regional Hydrogeology

The site is in the Valley and Ridge Physiographic Province which is typified primarily by faulted and folded carbonate rocks which result in northeast to southwest trending ridges and valleys (Ref. 12, p. 132). Groundwater in this region is found in fractures and solution features in the upper 300 feet of the rocks and the overlying regolith (Ref. 12, p. 44). This is a region of karst topography (Ref. 13). The aquifer normally used in this area is the carbonates of the Knox Group, and while the depth to water is variable, it can be found as shallow as 15 feet below land surface (bls) (Ref. 12, pp. 134-137). In the site vicinity, the wells are completed in the Siever Shale with depths to water ranging from 7 to 71 feet bls (Ref. 12, p. 137). The silty to sandy residuum of the Siever shale represents the layer of lowest hydraulic conductivity between the surface and the aquifer (Ref. 12, p. 44). The net annual rainfall is 11.0 inches, and the 1-year, 24-hour rainfall is 2.8 inches (Refs. 14, pp. 43, 63; 15, p. 93)

2.0 GEOPHYSICAL SCREENING

A geophysical screening will be conducted at the site for the purpose of delineating the location of waste disposal areas. Since the exact locations of these disposal areas are unknown, it is felt that geophysical techniques provide the most viable alternative for locating subsurface waste materials associated with these areas. The most suitable geophysical technique applicable in this geologic setting is believed to be electromagnetics. If proper subsurface conditions exist at the site, this technique will provide the necessary data needed to accurately define any subsurface waste materials. The results will then be used in determining optimum sampling locations in these areas.

A noncontacting ground conductivity meter (Geonics-EM-31) will be used to conduct the survey. A summary of geophysical methods is provided in Appendix A.

3.0 SAMPLING INVESTIGATION

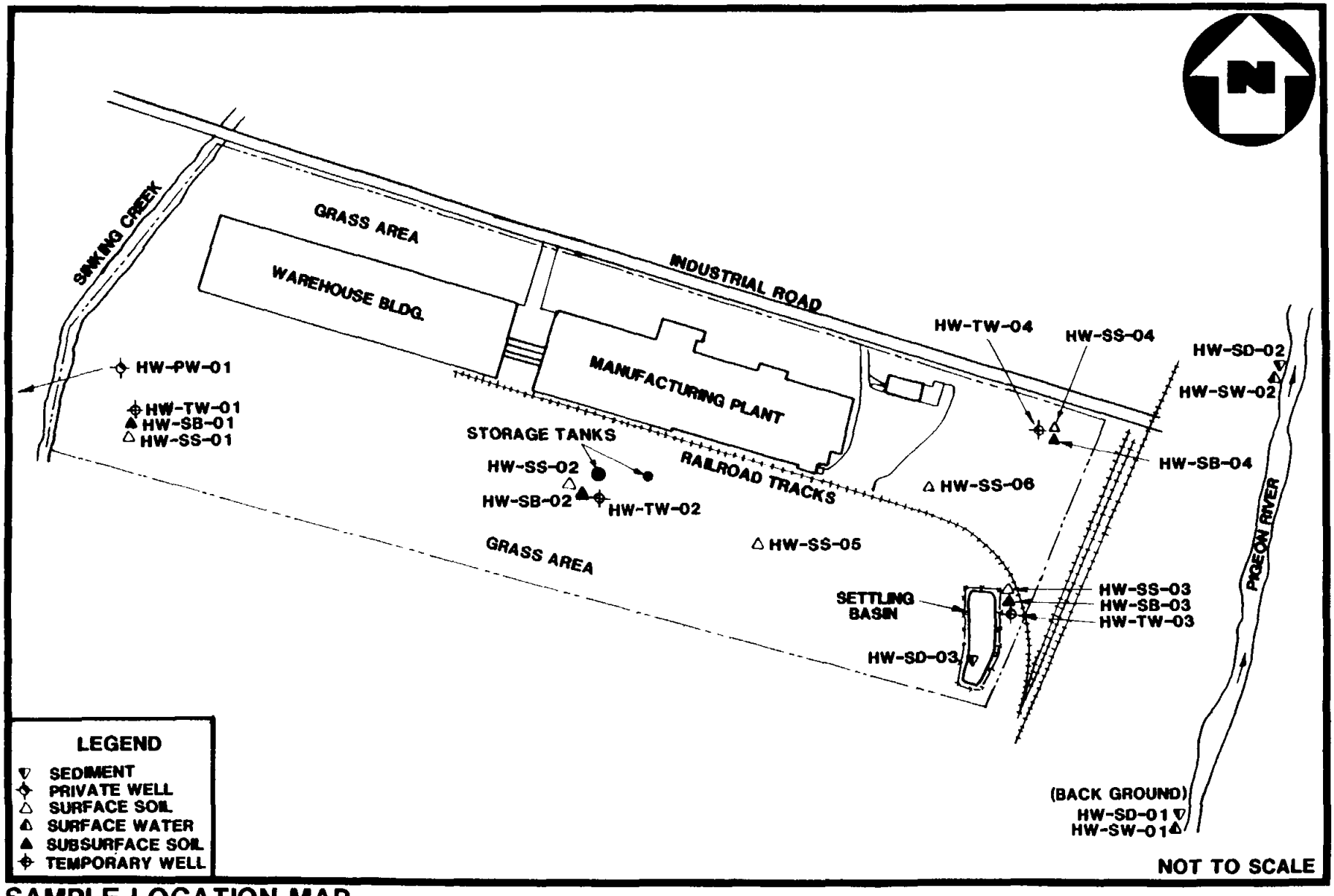
The sampling investigation will include the collection of up to 20 environmental samples. Samples will be analyzed for the complete Target Compound List (TCL), and analyses will be performed under the Contract Laboratory Program (CLP).

3.1 Sampling Locations

The sampling investigation will include the collection of surface soil, subsurface soil, sediment, surface water, and groundwater samples. One surface soil, one subsurface soil, and one groundwater sample will be collected from an upgradient location, to serve as background samples. Three surface soils, three subsurface soils, and three groundwater samples will be collected from suspected disposal areas or from downgradient locations. Two surface soils will be collected at intermediate downgradient locations. Three sediment samples will be collected, one from the settling basin in the southeast corner of the site, and two from the Pigeon River along the surface water pathway. In addition, two surface water samples will be collected from the Pigeon River, in the same location as the two sediment samples, with one taken upstream to serve as a background samples. Also, the nearest private or municipal well will be identified and sampled. The sample locations are tentative and may change as field conditions warrant, however, the anticipated sample locations are shown in Figure 3, and the sample code, descriptions, and rationale are presented in Table 1. Based on a topographic map, drainage appears to flow from west to east, because the elevation decreases in that direction.

3.2 Analytical and Container Requirements

Sample containers used will be in accordance with the requirements specified in the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986. The following is a description of the analysis and types of containers required.



SAMPLE LOCATION MAP
HEYWOOD - WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

FIGURE 3

NUS CORPORATION

TABLE 1

SAMPLE LOCATIONS AND RATIONALE
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

Sample Code	Sample Type	Location	Rationale
HW-SS-01	Surface Soil	Southwest corner of site	Background sample
HW-SS-02	Surface Soil	On site, near storage tank	Determine presence or absence of contamination
HW-SS-03	Surface Soil	On site, near settling basin	Determine presence or absence of contamination
HW-SS-04	Surface Soil	Northeast corner of site	Determine presence or absence of contamination
HW-SS-05	Surface Soil	On site, between storage tank and settling basin	Determine presence or absence of contamination
HW-SS-06	Surface Soil	On site, in grassy area due east of main building	Determine presence or absence of contamination
HW-SB-01	Subsurface Soil	Southwest corner of site	Background sample
HW-SB-02	Subsurface Soil	On site, near storage tank	Determine the presence or absence of contamination
HW-SB-03	Subsurface Soil	On site, near settling basin	Determine the presence or absence of contamination
HW-SB-04	Subsurface Soil	Northeast corner of site	Determine the presence or absence of contamination
HW-SD-01	Sediment	Off site, upstream from Pigeon River	Background sample
HW-SD-02	Sediment	Offsite drainage pathway, Pigeon River	Determine presence or absence of contamination
HW-SD-03	Sediment	Settling basin, southeast corner of site	Determine the presence or absence of contamination
HW-SW-01	Surface Water	Off site, upgradient from Pigeon River	Background sample
HW-SW-02	Surface Water	Offsite drainage pathway, Pigeon river	Determine presence or absence of contamination
HW-TW-01	Groundwater	Southwest corner of site	Background sample

HW - Heywood-Wakefield Company
SS - Surface Soil
SB - Subsurface Soil
SD - Sediment
SW - Surface Water
TW - Groundwater, Temporary Well
PW - Groundwater, Private Well

TABLE 1

SAMPLE LOCATIONS AND RATIONALE
HEYWOOD-WAKEFIELD COMPANY
NEWPORT, COCKE COUNTY, TENNESSEE

Sample Code	Sample Type	Location	Rationale
HW-TW-02	Groundwater	On site, near storage tank	Determine presence or absence of contamination
HW-TW-03	Groundwater	On site, near settling basin	Determine presence or absence of contamination
HW-TW-04	Groundwater	Northeast corner of site	Determine presence or absence of contamination
HW-PW-01	Groundwater	Offsite private well nearest site	Background sample

HW - Heywood-Wakefield Company
SS - Surface Soil
SB - Subsurface Soil
SD - Sediment
SW - Surface Water
TW - Groundwater, Temporary Well
PW - Groundwater, Private Well

Analyses	Container	Preservatives**
Ext. Organics, Water	1 gal., amber glass*	None
Volatile Organics, Water	40 ml., glass vial*	4 drops conc. HCL to pH < 2
Metals, Water	1 liter, plastic	50% HNO_3 to pH < 2
Cyanide, Water	1 liter, plastic	NaOH to pH > 12
Ext. Organics, Soil/Sediment	8 oz., glass*	None
Volatile Organics Soil/Sediment	4 oz., glass*	None
Inorganics, Soil/Sediment	8 oz., glass*	None

* Sample container lids are lined with teflon.

** All samples will be iced to 4 C upon collection.

3.3 Methodology

All sample collection, sample preservation, and chain-of-custody procedures used during this investigation will be in accordance with the standard operating procedures as specified in Section 3 and 4 of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986.

All laboratory analyses and laboratory quality assurance procedures used during this investigation will be in accordance with standard procedures and protocols as specified in the Analytical Support Branch Operations and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division; revised June 1, 1985 or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the contract analytical laboratory program.

REFERENCES

1. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Tennessee: Newport 1961, Rankin 1961.

2. History of Heywood-Wakefield Company and map, Newport, Tennessee, obtained from Tennessee Department of Health and Environment (TDH&E) files in Knoxville

3. Potential Hazardous Waste Site Preliminary Assessment (EPA Form 2070-12) and attachments for Heywood-Wakefield Company. Filed by Charles R. Rush, TDH&E, September 9, 1986.

4. NUS Corporation Field Logbook No. F4-1555 for Heywood-Wakefield Company, TDD No F4-8907-27. Documentation of facility reconnaissance, August 15-16, 1989

5. Walter O'Neil, Heywood-Wakefield Company, letter to Larry K. Ledford, Tennessee Department of Public Health, July 13, 1978. Subject: Air pollution control equipment waste disposal practices.

6. Rick Brown, Tennessee Department of Public Health, Division of Solid Waste Management, Notice of Violation letter to Forrest Ellison, Heywood-Wakefield Company, April 21, 1982. Subject: Hazardous waste inspection report.

7. Tennessee Department of Public Health, Request for Order Civil Penalty and Damage Assessment for Heywood-Wakefield Company, Case Number 82-344 before the Tennessee Solid Waste Disposal Control Board, April 15, 1983.

8. Rick Brown, TDH&E, Hazardous Waste Inspection Report, obtained from TDH&E files in Knoxville, Tennessee.

9. Site layout map for Heywood-Wakefield Company, obtained from TDH&E files in Knoxville, Tennessee.

10. Earl C. Leming, Manager, TDH&E Division of Water Pollution Control, letter to Tom McNealy, Plant Manager, Eastern Plating, January 26, 1989. Subject: Notice of Noncompliance, Illegal Discharges.

11. Rick Brown, TDH&E, Division of Solid Waste Management, Hazardous Waste Inspection Report,dated March 9, 1984.

12. G.D. DeBuchananne and R.M. Richardson, 1956, Groundwater Resources of East Tennessee, Tennessee Division of Geology, Bulletin 58, Part 1

13. Robert A. Miller, Geological Hazards Map of Tennessee, Environmental Geology Series No. 5 (State of Tennessee, 1977)

14. U.S. Department of Commerce, Climatic Atlas of the United States (Washington, D.C.: GPO, June 1968) Reprint: 1983, National Oceanic and Atmospheric Administration

15. U.S. Department of Commerce, Rainfall Frequency Atlas of the United States, Technical Paper No. 40 (Washington, D.C.: GPO, 1963), p. 93.

APPENDIX A

SUMMARY OF GEOPHYSICAL METHODS

The following sections are from "Geophysical Techniques for Sensing Buried Wastes and Waste Migration" by Glaccum, R. A., and M. R. Noel, August, 1983, Technos, Inc., for Environmental Monitoring Systems Laboratory, ORD, USEPA, Las Vegas, Nevada.

ELECTROMAGNETICS (EM)*

The electromagnetic (EM) method provides a means of measuring the electrical conductivity of subsurface soil, rock, and ground water. Electrical conductivity is a function of the type of soil and rock, its porosity, its permeability, and the fluids which fill the pore space. In most cases the conductivity (specific conductance) of the pore fluids will dominate the measurement. Accordingly, the EM method is applicable both to assessment of natural geohydrologic conditions and to mapping of many types of contaminant plumes. Additionally, trench boundaries, buried wastes and drums, as well as metallic utility lines can be located with EM techniques.

Natural variations in subsurface conductivity may be caused by changes in soil moisture content, ground water specific conductance, depth of soil cover over rock, and thickness of soil and rock layers. Changes in basic soil or rock types, and structural features such as fractures or voids may also produce changes in conductivity. Localized deposits of natural organic, clay, sand, gravel, or saltrich zones will also affect subsurface conductivity.

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*The term electromagnetic has been used in contemporary literature as a descriptive term for other geophysical methods, including GPR and metal detectors which are based on electromagnetic principles. However, this document will use electromagnetic (EM) to specifically imply the measurement of subsurface conductivities by low-frequency electromagnetic induction. This is in keeping with the traditional use of the term in the geophysical industry from which the EM methods originated. While the authors recognize that there are many electromagnetic systems and manufacturers, the discussion in this section is based solely on instruments which are calibrated to read in electrical conductivity units and which have been effectively and extensively used at hazardous waste sites. There is only one manufacturer of such instruments at the time of this writing.

Many contaminants will produce an increase in free ion concentration when introduced into the soil or ground water systems. This increase over background conductivity enables detection and mapping of contaminated soil and ground water at Hazardous Waste Sites (HWS), landfills, and impoundments. Large amounts of organic fluids such as diesel fuel can displace the normal soil moisture, causing a decrease in conductivity which may also be mapped, although this is not commonly done. The mapping of a plume will usually define the local flow direction of contaminants. Contaminant migration rates can be established by comparing measurements taken at different times.

The absolute values of conductivity for geologic materials (and contaminants) are not necessarily diagnostic in themselves, but the variations in conductivity, laterally and with depth, are significant. It is these variations which enable the investigator to rapidly find anomalous conditions.

Since the EM method does not require ground contact, measurements may be made quite rapidly. Lateral variations in conductivity can be detected and mapped by a field technique called profiling. Profiling measurements may be made to depths ranging from 0.75 to 60 meters. The data is recorded using strip chart and magnetic tape recorders. This continuous measurement allows increased rates of data acquisition and improved resolution for mapping small geohydrologic features. Further, recorded data enhanced by computer processing has proved invaluable in the evaluation of complex hazardous waste sites. The excellent lateral resolution obtained from EM profiling data has been used to advantage in efforts to outline closely-spaced burial pits, to reveal the migration of contaminants into the surrounding soil, and to delineate fracture patterns.

Vertical variations in conductivity can also be detected by the EM method. A station measurement technique called sounding is employed for this purpose. Data can be acquired from depths by combining results from a variety of EM instruments, each requiring different field application techniques. Other EM systems are capable of sounding to depth of one-thousand feet or more, but have not yet been used at HWS and are not adaptable to continuous measurements.

Profiling is the most cost-effective use of the EM method. Continuous profiling can be used in many applications to increase resolution, data density, and permit total site coverage at critical sites.

ACCESS INFORMATION SHEET

Site Name:	Heywood-Wakefield Co.	**FIT Project Manager:**	Andrew W. Harvey
Site Address:	Chemwood Drive (Ind. Park) Newport/Cocke Co./Tennessee 37821	**FIT State Coordinator:**	Jerald Tittle
		EPA Contact:	Ramona Klein
		Field Date:	Week of Sept. 10, 1990
EPA ID #:	TND003382330	**TDD Number:**	F4-9008-32

	File Information	Verification
Facility Owner/Operator **Address** **Phone No.** **Principal Contact**	Eastern Plating Company Rankin Road Industrial Park Newport/Cocke Co./Tennessee (615) 623-0062 Tom McNeely Mike [illegible]	
Landowner **Address** **Phone No.** **Principal Contact (if different from above)**	Chemwood Properties 1606 Camdon St. Chattanooga, Tn. 37406 (615) 624-9018 (Eastern Plating is a large stockholder)	
Date of Information	8/17/90	

Date Access Required (3 weeks prior to field date)	Week of 9/10/90	**Date Information Submitted to EPA**	8/17/90

Comments:

NUS CORPORATION
1927 LAKESIDE PARKWAY
SUITE 614
TUCKER, GEORGIA 30084
404 938-7710

SISB/SAS
RECEIVED
AUG 31 1989
EPA - REGION IV
ATLANTA, GA.

C-586-8-9-225

August 28, 1989

Mr. A. R. Hanke
Site Investigation and Support Branch
Waste Management Division
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Date:
Site Disposition:
EPA Project Manager:

Subject: Screening Site Inspection, Phase I
Heywood-Wakefield Company
Newport, Cocke County, Tennessee
EPA ID No. TND003382330
TDD No. F4-8907-27

Dear Mr. Hanke:

FIT 4 conducted a Screening Site Inspection at the Heywood-Wakefield Company on Chemwood Drive in Newport, Cocke County, Tennessee. Phase I included a review of EPA and state file material, completion of a target survey, and an offsite reconnaissance of the facility and the surrounding area.

The facility formerly manufactured metal desks. The frames of the desks were plated at the site. The plant began operation in 1957 and went bankrupt in 1982 (Refs. 1, 2). The facility is currently occupied by Eastern Plating, Virco Manufacturing, a warehouse for Electric Voice, and offices for Great Lakes Chemical Industries (GLI) (Ref. 3).

Waste disposal practices during Heywood-Wakefield's period of operation are not completely clear. Approximately 200 pounds per day of waste material was generated from air pollution control equipment, and was disposed onsite. According to the company, the waste contained ground wood chips and inert materials (Ref. 4). Spent plating solution was discharged into a treatment system prior to disposal into the Pigeon River under a NPDES permit, and treated plating sludge was drummed (Refs. 1, 5, 6). It was originally shipped offsite to the Cocke County landfill and later disposal at the SCA Services facility in Pinewood, South Carolina (Ref. 7). After Heywood-Wakefield's closure, approximately 60 drums of waste were found inside the locked plant building and 8 were discovered in the lot near the old processing building (Ref. 2). The drums contained a treatment sludge consisting of chromium, nickel, and spent solvents. The drums were removed in 1984 by Chemical Waste Management, and they were disposed at its Emelle, Alabama facility (Ref. 2). A settling pond for site drainage is also located at the southeast corner of the facility (Ref. 8). Sediment and stormwater samples collected from the facility in 1989 by the Tennessee Department of Health and Environment showed elevated levels of chromium, nickel, and lead (Ref 9). Heywood-Wakefield was notified several times that it was not in compliance with RCRA regulations, however, the current owner, Eastern Plating has filed as a RCRA generator (Refs. 6, 10).

The site is in the Valley and Ridge Physiographic Province which is typified primarily by faulted and folded carbonate rocks which result in northeast to southwest trending ridges and valleys (Ref. 11, p. 132). Groundwater in this region is found in fractures and solution features in the upper 300 feet of the rocks and the overlying regolith (Ref. 11, p. 44). This is a region of karst topography (Ref. 12). The aquifer normally used in this area is the carbonates of the Knox Group, and while the depth to water is variable, it can be found as shallow as 15 feet below land surface (Ref. 11, p. 134-137). In the site vicinity, the wells are completed in the Siever Shale with depths to water ranging from 7 to 71 feet bls (Ref. 11, p. 137). The silty to sandy residium of the Siever shale represents the layer of lowest hydraulic conductivity between the surface and the aquifer (Ref. 11, p. 44). The net annual rainfall is 11.0 inches and the 1 year-24 hour rainfall is 2.8 inches (Refs. 13, pp. 43, 63 and 14, p. 93).

Numerous private wells and one public well are located within a 4-mile radius of the facility. About 200 private wells are located in those areas not served by the Newport Utilities Board, and their depths range from 100 to 300 feet (Ref. 11, p. 134-137). The L.W. Hooper system serves about 328 residents from two wells and a spring, and it is also interconnected with the Newport system (Ref. 15). The Newport water system receives its water from an intake on the French Broad River and serves 14,588 residents (Ref. 16).

Surface water runoff from the facility drains to a stormwater pond. It is not known whether runoff discharges to the Pigeon River, a tributary of the French Broad River. The rivers join about 3 miles downstream of the site and form a lake. It is unlikely that site contaminants could reach the intake.

The facility is located in an industrial park. The population residing within one mile of the facility is estimated at 342 people (Ref. 17). Access to the facility is not restricted.

Based upon the presence of contamination, the target population and the enclosures, a Screening Site Inspection - Phase II is recommended on a high priority basis. Should you have any questions, please contact me at NUS Corporation.

Very truly yours,

Bob Donaghue

Bob Donaghue
Project Manager

Approved:

Greg Schank

BD/dwf

Enclosures

cc. Charlie Stevens

REFERENCES

1. History of Heywood-Wakefield Company and map, Newport, Tennessee, obtained from Tennessee Department of Health and Environment (TDH &E) files in Knoxville.

2. Potential Hazardous Waste Site Preliminary Assessment (EPA Form 2070-12) and attachments for Heywood-Wakefield Company. Filed by Charles R. Rush, TDH&E, September 9, 1986.

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4. Walter O'Neil, Heywood-Wakefield Company, letter to Larry K. Ledford, Tennessee Department of Public Health, July 13, 1978. Subject: Air pollution control equipment waste disposal practices.

5. Rick Brown, Tennessee Department of Public Health, Division of Solid Waste Management, Notice of Violation letter to Forrest Ellison, Heywood-Wakefield Company, dated April 21, 1982. Subject: Hazardous waste inspection report.

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11. G.D. DeBuchananne and R.M. Richardson, 1956, "Groundwater Resources of East Tennessee," Tennessee Division of Geology, Bulletin 58, Part 1.

12. Robert A. Miller, "Geological Hazards Map of Tennessee," Environmental Geology Series No. 5 (State of Tennessee, 1977).

13. U.S. Department of Commerce, "Climatic Atlas of the United States," (Washington, D.C.: GPO, June 1968) Reprint: 1983, National Oceanic and Atmospheric Administration.

14. U.S. Department of Commerce, "Rainfall Frequency Atlas of the United States," Technical Paper No. 40, (Washington, D.C.: GPO, 1963, p. 93).

15. Tennessee Department of Health and Environment, Drinking Water Division, Public Water System Data for L.W. Hooper Water System in Newport, Tennessee, dated October 9, 1987.

16. Tennessee Department of Health and Environment, Drinking Water Division, Public Water System Data for Newport Utilities Board in Newport, Tennessee, dated October 9, 1987.

17. U.S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of Tennessee, Rankin, 1961 and Newport, 1961.

RECONNAISSANCE CHECKLIST FOR HRS2 CONCERNS

Instructions: Obtain as much "up front" information as possible prior to conducting fieldwork. Complete the form in as much detail as you can, providing attachments as necessary. Cite the source for all information obtained.

Site Name: Heywood-Wakefield Company
City, County, State: Newport, Cocke County, Tennessee
EPA ID No.: TND003382330
Person responsible for form: Bob Donaghue
Date: 8/16/89

Air Pathway

Describe any potential air emission sources onsite: None

Identify any sensitive environments within 4 miles: None

Identify the maximally exposed individual (nearest residence or regularly occupied building - workers do count): Workers at Virco Manufacturing and Eastern Plating at former Heywood-Wakefield site

Groundwater Pathway

Identify any areas of karst terrain: This is a karst area.

Identify additional population due to consideration of wells completed in overlying aquifers to the AOC: None

Do significant targets exist between 3 and 4 miles from the site? Some private wells are located within this radius.

Is the AOC a sole source aquifer according to Safe Drinking Water Act? (i.e. is the site located in Dade, Broward, Volusia, Putnam, or Flagler County, Florida): No

Surface Water Pathway

Are there intakes located on the extended 15-mile migration pathway? Newport has an intake at River Mile 82 of the French Broad River, however it is upstream of the site.

Are there recreational areas, sensitive environments, or human food chain targets (fisheries) along the extended pathway? The Pigeon and French Broad Rivers are used for recreational fishing.

Onsite Exposure Pathway

Is there waste or contaminated soil onsite at 2 feet below land surface or higher? yes, sediment samples collected in the storm drainage system contained lead, chromium.

Is the site accessible to non-employees (workers do not count)?
yes

Are there residences, schools, or day care centers onsite or in close proximity? The nearest residence is about one mile from the site

Are there barriers to travel (e.g., a river) within one mile?
Pigeon River 1200 feet east of the site

RCRA/NPL POLICY QUESTIONNAIRE FOR INITIAL SCREENING

Site Name: Heywood-Wakefield Co

City: Newport State: Tennessee

EPA I.D. Number: TND 003382330

Type of Facility: Generator X Transporter ____ Disposal ____
Treatment ____ Storage (more than 90 days) ____

I. RCRA APPLICABILITY	yes	no
Has this facility treated, stored or disposed of a RCRA hazardous waste since Nov. 19, 1980?	X	
Has a RCRA Facility Assessment (RFA) been performed on this site?		X
Does the facility have a RCRA operating or post-closure permit? If so, date issued _____		X
Did the facility file a RCRA Part A application?		X
If so:		
1) Does the facility currently have interim status?		X
2) Did the facility withdraw its interim status?		X
3) Is the facility a known or possible protective filer?		X
Is the facility a late (after Nov. 19, 1980) or non-filer that has been identified by EPA or the State?	X	

STOP HERE IF ALL ANSWERS TO QUESTIONS IN SECTION I ARE NO

II. FINANCIAL STATUS		
Is the facility owned by an entity that has filed for bankruptcy under federal or State laws?	X	

III. RCRA ENFORCEMENT STATUS		
Has the facility lost authorization to operate or had its interim status revoked?		X
Has the facility been involved in any other RCRA enforcement action?		X

HAZARD RANKING SYSTEM SCORING SUMMARY

FOR

HEYWOOD-WAKEFIELD COMPANY
EPA SITE NUMBER TND003382330
NEWPORT
COCKE COUNTY, FL
EPA REGION: 4

SCORE STATUS: IN PREPARATION

SCORED BY BOB DONAGHUE
OF NUS CORPORATION
ON 08/23/89

DATE OF THIS REPORT: 08/23/89
DATE OF LAST MODIFICATION: 08/23/89

GROUND WATER ROUTE SCORE	:	49.39
SURFACE WATER ROUTE SCORE	:	6.55
AIR ROUTE SCORE	:	0.00
MIGRATION SCORE	:	28.80

HRS GROUND WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
DEPTH TO WATER TABLE	70 FEET		
DEPTH TO BOTTOM OF WASTE	6 FEET		
DEPTH TO AQUIFER OF CONCERN	64 FEET	2	4
PRECIPITATION	43.0 INCHES		
EVAPORATION	33.0 INCHES		
NET PRECIPITATION	10.0 INCHES	2	2
PERMEABILITY	1.0X10-3 CM/SEC	2	2
PHYSICAL STATE		3	3
TOTAL ROUTE CHARACTERISTICS SCORE:			11
3. CONTAINMENT		3	3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:LEAD			18
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TARGETS			
GROUND WATER USE		3	9
DISTANCE TO NEAREST WELL	3000 FEET		
AND	MATRIX VALUE	24	24
TOTAL POPULATION SERVED	1088 PERSONS		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	1088		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			33

GROUND WATER ROUTE SCORE (Sgw) = 49.39

HRS SURFACE WATER ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0
2. ROUTE CHARACTERISTICS			
SITE LOCATED IN SURFACE WATER	NO		
SITE WITHIN CLOSED BASIN	NO		
FACILITY SLOPE	2.9 %		
INTERVENING SLOPE	2.9 %	0	0
24-HOUR RAINFALL	2.8 INCHES	2	2
DISTANCE TO DOWN-SLOPE WATER	1200 FEET	2	4
PHYSICAL STATE	3		3
TOTAL ROUTE CHARACTERISTICS SCORE:			9
3. CONTAINMENT	3		3
4. WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE:LEAD			18
WASTE QUANTITY CUBIC YDS	2501		
DRUMS	0		
GALLONS	0		
TONS	0		
TOTAL	2501 CU. YDS	8	8
TOTAL WASTE CHARACTERISTICS SCORE:			26
5. TARGETS			
SURFACE WATER USE		2	6
DISTANCE TO SENSITIVE ENVIRONMENTS		0	0
COASTAL WETLANDS	NONE		
FRESH-WATER WETLANDS	NONE		
CRITICAL HABITAT	NONE		
DISTANCE TO STATIC WATER	> 3 MILES		
DISTANCE TO WATER SUPPLY INTAKE	> 3 MILES		
AND	MATRIX VALUE	0	0
TOTAL POPULATION SERVED	0		
NUMBER OF HOUSES	0		
NUMBER OF PERSONS	0		
NUMBER OF CONNECTIONS	0		
NUMBER OF IRRIGATED ACRES	0		
TOTAL TARGETS SCORE:			6

SURFACE WATER ROUTE SCORE (Ssw) = 6.55

HRS AIR ROUTE SCORE

CATEGORY/FACTOR	RAW DATA	ASN. VALUE	SCORE
1. OBSERVED RELEASE	NO	0	0

2. WASTE CHARACTERISTICS

REACTIVITY:

MATRIX VALUE

INCOMPATIBILITY

TOXICITY

WASTE QUANTITY CUBIC YARDS
DRUMS
GALLONS
TONS

TOTAL

TOTAL WASTE CHARACTERISTICS SCORE: N/A

3. TARGETS

POPULATION WITHIN 4-MILE RADIUS
- 0 to 0.25 mile
- 0 to 0.50 mile
- 0 to 1.0 mile
- 0 to 4.0 miles

DISTANCE TO SENSITIVE ENVIRONMENTS
- COASTAL WETLANDS
- FRESH-WATER WETLANDS
- CRITICAL HABITAT

DISTANCE TO LAND USES
- COMMERCIAL/INDUSTRIAL
- PARK/FOREST/RESIDENTIAL
- AGRICULTURAL LAND
- PRIME FARMLAND
- HISTORIC SITE WITHIN VIEW?

TOTAL TARGETS SCORE: N/A

AIR ROUTE SCORE (Sa) = 0.00

HAZARD RANKING SYSTEM SCORING CALCULATIONS
FOR
SITE: HEYWOOD-WAKEFIELD COMPANY
AS OF 08/23/99

GROUND WATER ROUTE SCORE

ROUTE CHARACTERISTICS		11
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	33

= 28314 /57,330 X 100 = 49.39 = S_{gw}

SURFACE WATER ROUTE SCORE

ROUTE CHARACTERISTICS		9
CONTAINMENT	X	3
WASTE CHARACTERISTICS	X	26
TARGETS	X	6

= 4212 /64,350 X 100 = 6.55 = S_{sw}

AIR ROUTE SCORE

OBSERVED RELEASE 0 /35,100 X 100 = 0.00 = S_{air}

SUMMARY OF MIGRATION SCORE CALCULATIONS

	S	S^2
GROUND WATER ROUTE SCORE (S_{gw})	49.39	2439.37
SURFACE WATER ROUTE SCORE (S_{sw})	6.55	42.90
AIR ROUTE SCORE (S_{air})	0.00	0.00
$S^2_{gw} + S^2_{sw} + S^2_{air}$		2482.27
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}$		49.82
$S_M = \sqrt{(S^2_{gw} + S^2_{sw} + S^2_{air})}/1.73$		28.80

M.2 - REGIONAL UTILITY MAINTENANCE FORM

SITE: HEYWOOD-WAKEFIELD CO

EPA ID: TND003382330

REG CODE: OSIP-01 * ACTION: _ *

DESCRIPTION: METAL PLATING * _____ *

* _____ *

DATE1: * __/__/__ *

DATE2: * __/__/__ *

DATE3: * __/__/__ *

FREE FIELD: * _____ *

REG CODE: 4NFA-01 * ACTION: _ *

DESCRIPTION: NO FURTHER ACTION * _____ *

* _____ *

DATE1: * __/__/__ *

DATE2: * __/__/__ *

DATE3: * __/__/__ *

FREE FIELD: * _____ *

REG CODE: 4PEN-01 * ACTION: _ *

DESCRIPTION: LOW SCORING SITE * _____ *

* _____ *

DATE1: * __/__/__ *

DATE2: * __/__/__ *

* __/__/__

* _____

ACTION: _

EPA ID : TND003382330

SITE NAME: HEYWOOD-WAKEFIELD CO SOURCE: H

STREET : OFF RANKIN RD CONG DIST: 01

CITY : NEWPORT ZIP: 37821

CNTY NAME: COCKE CNTY CODE : 029

LATITUDE : 35/44/02.8 LONGITUDE : 084/19/04.7

LL-SOURCE: R LL-ACCURACY:

SMSA : HYDRO UNIT: 06010106

INVENTORY IND: Y REMEDIAL IND: Y REMOVAL IND: N FED FAC IND: N

NPL IND: N NPL LISTING DATE: NPL DELISTING DATE:

SITE/SPILL IDS:

RPM NAME: RPM PHONE: - -

SITE CLASSIFICATION: SITE APPROACH:

DIOXIN TIER: REG FLD1: REG FLD2: 5

RESP TERM: PENDING ( ) NO FURTHER ACTION ( )

ENF DISP: NO VIABLE RESP PARTY ( ) VOLUNTARY RESPONSE ( )
ENFORCED RESPONSE ( ) COST RECOVERY ( )

SITE DESCRIPTION:

PENDING (_) NO FURTHER ACTION (_)

ACTION: _

SITE: HEYWOOD-WAKEFIELD CO

EPA ID: TND003382330 PROGRAM CODE: H01 PROGRAM TYPE: _

PROGRAM QUALIFIER: ALIAS LINK :

PROGRAM NAME: SITE EVALUATION

DESCRIPTION:

* ACTION: _ *

SITE: HEYWOOD-WAKEFIELD CO
PROGRAM: SITE EVALUATION

EPA ID: TND003382330 PROGRAM CODE: H01 EVENT TYPE: DS1

FMS CODE: EVENT QUALIFIER : EVENT LEAD: E * _ ___ _ *

EVENT NAME: DISCOVERY STATUS: * _____ _ *

DESCRIPTION:

* _____ *
* _____ *
* _____ *
* _____ *

ORIGINAL	CURRENT	ACTUAL			
START:	START:	START:	__/__/__	__/__/__	__/__/__
COMP :	COMP :	COMP : 06/01/80	__/__/__	__/__/__	__/__/__

HQ COMMENT:

* _____ *

RG COMMENT:

* _____ *

COOP AGR #	AMENDMENT #	STATUS	STATE %
			0

EVENT MAINTENANCE FORM

ACTION: _

SITE: HEYWOOD-WAKEFIELD CO
PROGRAM: SITE EVALUATION

EPA ID: TND003382330 PROGRAM CODE: H01 EVENT TYPE: PA1

FMS CODE: EVENT QUALIFIER : EVENT LEAD: S

EVENT NAME: PRELIMINARY ASSESSMENT STATUS:

DESCRIPTION:

THIS SITE IS NOW A RCRA GENERATOR SITE THEREFORE NO FURTHER
ACTION SHOULD BE REQUIRED UNDER CERCLA.

ORIGINAL	CURRENT	ACTUAL
START:	START:	START:
COMP :	COMP :	COMP : 11/04/86

HQ COMMENT:

RG COMMENT:

COOP AGR #	AMENDMENT #	STATUS	STATE %
			0

M.2 - COMMENT MAINTENANCE FORM

SITE: HEYWOOD-WAKEFIELD CO

EPA ID: TND003382330

COM NO	COMMENT	ACTION
001	"NO" PART A- ON FILE	* _ _____ *
		* _____ *

Potential Hazardous Waste Site

PRELIMINARY ASSESSMENT

HEYWOOD-WAKEFIELD COMPANY

COCKE COUNTY, NEWPORT, TENNESSEE

TND 003382330

PRELIMINARY ASSESSMENT
HEYWOOD-WAKEFIELD COMPANY
TND 003382330

The Heywood-Wakefield Company was located off of Rankin Road, north of Newport, Cocke County, Tennessee, and was a manufacturer of metal desks for schools. The frames of the desks were metal plated at the Plant. The company went bankrupt and ceased production in about 1982.

There were approximately 60 drums of waste left on site after the plant closure. Most of the drums were contained in an old plant building that was kept locked, but during clean-up procedures approximately eight drums with waste in them were discovered in the back lot behind the old process building. It is unknown what drum storage or waste disposal policies were used during the plants productive years.

The site lies in a valley between and within one mile of Sinking Creek and the Pigeon River. It is located one mile north, northwest of Newport, Tennessee and is located in a highly faulted area of the Appalacian Mountains. Migration of any contamination could result in the contamination of both ground and surface water.

The plants by-product sludge contained both chromium and nickel and spent solvents. The site was cleaned up in 1984 by Chemical Waste Management Inc. and hazardous waste was transported and properly disposed of by Chemical Waste Management at the Emelle, Alabama facility. For these reasons a low priority was assigned and should be inspected on a time available basis.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D 003380330

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
Heywood-Wakefield Company	Route 7				
03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG. DIST.
Newport	TN	37821	Cocke	29	1
09 COORDINATES LATITUDE	LONGITUDE				
35° 84' 30"	83° 12' 00"				

10 DIRECTIONS TO SITE (Starting from nearest public road)

US. 70 west from Newport, TN. North on Dixie Highway to Rankin Road. East on Rankin Road. The road to the site is the second right off of Rankin Road.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)		
Heywood-Wakefield Company	Rural Rt. #7		
03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Newport	TN	37821	(615) 623-3042
07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)		
Forrest Ellison	Off Rankin Road		
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
Newport	TN	37821	(615) 623-3042

13 TYPE OF OWNERSHIP (Check one)

☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL

☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: ___/___/___ (Month Day Year) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ (Month Day Year) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☒ YES DATE 3/8/84 (Month Day Year)
☐ NO

BY (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)

CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)

☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION

1961 (Beginning Year) 1982 (Ending Year) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Site was an old electroplating plant with drums of electroplating sludge and solvents on site.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

If waste was allowed to be spilled on ground, then soil, groundwater, and surface water contamination is possible.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents.)

☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☒ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
		( )

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Charles R. Rush	TDH&E	Superfund	(615) 741-6287	9 9 86 (Month Day Year)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
TN	D 003382330

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [ ] A SOLID
- [ ] B POWDER, FINES
- [X] C SLUDGE
- [ ] D OTHER _____ (Specify)
- [ ] E SLURRY
- [X] F LIQUID
- [ ] G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

NO. OF DRUMS 41 +

03 WASTE CHARACTERISTICS (Check all that apply)

- [X] A TOXIC
- [ ] B CORROSIVE
- [ ] C RADIOACTIVE
- [X] D PERSISTENT
- [ ] E SOLUBLE
- [ ] F INFECTIOUS
- [ ] G FLAMMABLE
- [ ] H IGNITABLE
- [ ] I HIGHLY VOLATILE
- [ ] J EXPLOSIVE
- [ ] K REACTIVE
- [ ] L INCOMPATIBLE
- [ ] M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	2255 +	gallons	
OLW	OILY WASTE			
SOL	SOLVENTS	unknown		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	unknown		

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently used CAS numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU	electroplating sludge	999	Drums		
SOL	Spent electroplating solvents	999	Tanks		
MES	Chromium	7440473	Drums		
MES	Nickle	7440020	Drums		

V. FEEDSTOCKS (See Appendix for CAS numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., State files, sample analysis, reports)

See references.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
TN	D 003392330

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: <100 — 04 NARRATIVE DESCRIPTION

Due to the highly fractured nature of the mountainous area, there exists the potential for groundwater contamination.

01 [X] B. SURFACE WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 — 04 NARRATIVE DESCRIPTION

If migration of contaminants occures the possibility exists that it could go to the Pigeon River and Sinking Creek since both are within one mile of the site.

01 [ ] C. CONTAMINATION OF AIR — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [X] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: < 100 — 04 NARRATIVE DESCRIPTION

Some of the drums were stored in a back lot and the condition is unknown. If leakage occured there is a possibility of contact contamination.

01 [X] F. CONTAMINATION OF SOIL — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED: 1.0 (ACRES) — 04 NARRATIVE DESCRIPTION

Some of drums were stored in a back lot and if leakage occured, there will be soil contamination.

01 [ ] G. DRINKING WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] H. WORKER EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [ ] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: TN | 02 SITE NUMBER: D 003382330

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/flowing liquids) — 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: < 100 — 04 NARRATIVE DESCRIPTION
Drums were stored outside in a back lot of the plant with no barriers and it is possible leakage could occur.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: < 100

IV. COMMENTS

The drums were all removed from this site in 1984.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

See references.

REFERENCES

Nashville Central Superfund Files.

Chestnut Hill, Tenn. 7½ Minute Quadrangle Topographic Map (1961) 164-NE.

Newport, Tenn. 7½ Minute Quadrangle Topographic Map (1961) 173-NW.

Rankin, Tenn. 7½ Minute Quadrangle Topographic Map (1961) 172-SW.

CRR/ib

AGREEMENT #84-009C

WASTE TRANSPORTATION AND DISPOSAL AGREEMENT

On this 9th day of January, 19 84, the parties, Barclays American Business Credit, a _____ corporation, with its principal offices at _____, (hereinafter called "Generator"), and Emelle, Alabama Division of Chemical Waste Management, Inc., a Delaware corporation, with its principal offices at P.O. Box 55, Emelle, Alabama 35459, (hereinafter referred to as "Disposer"), have agreed as follows:

1. WASTE MATERIALS. During the term of this Agreement, Generator will provide to Disposer Generator's entire output of certain waste materials generated at Heywood Wakefield Rankin Road, Newport, Tennessee (up to a maximum of 80 drums per one time), the chemical composition and physical characteristics of which materials are described in the "Generator's Waste Material Profile Sheet", Code designation MAR-D24992, attached hereto, and incorporated herein.

2. DISPOSER SERVICES. Disposer agrees to provide Generator the following services, as indicated by the initials of Disposer on one or more of the following sections:

a. mcw Loading of the described waste materials onto transportation vehicles, cars or vessels.

b. ____ Transportation of the described waste materials from _____ to the permitted storage facility at _____

c. mcw Transportation of the described waste materials from Heywood Wakefield Newport, Tennessee to the disposal facility next following.

d. mcw Disposal of the described waste materials, in a manner permitted by law, at the following facility:
Chemical Waste Management, Inc., Highway 17 @ Mile Marker 163, Emelle, Alabama 35459

HAZARDOUS WASTE INSPECTION REPORT

NAME OF FACILITY
Heywood-Wakefield Company

I. D. NUMBER
TND003382230

ADDRESS AND LOCATION
off Rankin Road
Newport, Tennessee

OWNER/OPERATOR/PRINCIPAL CONTACT
None (the company is bankrupt and out of business). Sam Sprattlin of Barclay's Bank, a creditor of the company, is acting as the contact for the company in its dealings with the State.

MAILING ADDRESS
None (No employees or contacts of the company can now be reached at this location).

TELEPHONE
None

DATE/TIME OF INSPECTION
March 8, 1984, 2:00 P.M.

REPORT PREPARED BY:
Rick Brown
Division of Solid Waste Management
East Tennessee Regional Health Office
1522 Cherokee Trail
Knoxville, Tennessee 37920

NAME(S) OF PARTICIPANTS/TITLES/AFFILIATIONS
Rick Brown, Environmental Engineer, Division of Solid Waste Management
Larry Trapp, Chemical Waste Management, Inc.

PURPOSE OF INSPECTION
This was a closure inspection for an inactive storage facility. We were notified that the hazardous wastes were to be removed on this date, in accordance with an agreement between the Division and Barclay's Bank. The purpose of the inspection was to verify that all hazardous wastes and hazardous waste residues were removed.

FACILITY DESCRIPTION
The Heywood-Wakefield Company used to manufacture metal desks for schools. The desk frames were plated at the plant. The plating wastewater was treated in an on-site wastewater treatment plant, and a wastewater treatment sludge (F006) was generated. This waste was stored in drums, most of which were stored inside a locked building, although a few were placed outside in the plant yard.

There has been no production at the plant for almost two years, and all personnel except for a security guard have been gone for over a year. The portion of the plant where the plating was done has been leased to another company, Eastern Plating Company, which has reactivated the plating line and the wastewater treatment system. They have notified as a generator.

Up until the time of this inspection all of the drums containing waste generated by Heywood-Wakefield have remained where they were when Heywood-Wakefield abandoned the plant. At the time of this inspection the wastes were being loaded into a trailer and the site was being cleaned up by personnel from Chemical Waste Management, Inc. The wastes from Heywood-Wakefield's operations make up one trailer load; when this is gone, none of Heywood-Wakefield's wastes will remain at the site.

INSPECTION FINDINGS

The Heywood-Wakefield Company has been in enforcement for some time due to their improper storage of hazardous wastes, and has been ordered to remove the wastes. Barclay's Bank, a creditor of Heywood-Wakefield, agreed to remove the hazardous wastes, and contracted with Chemical Waste Management to have this done. This inspection verified that the wastes were removed and that the site was cleaned up.

RECOMMENDATIONS/REMARKS

Heywood Wakefield had told us that they had put all of their drums of hazardous waste inside a locked building for storage. However, Chemical Waste Management found some of the same plating sludge in eight supposedly "empty" drums on the plant yard and agreed to include them in the cleanup project. This brought the total of drums up to 67. Also, a number of the drums contained free liquids on top of the sludge. These liquids were pumped off into other drums so that they could be handled separately. Ten more drums were generated from removing the liquids. Two drums were in very bad condition; the bottom fell out of one drum when it was moved. These were placed inside recovery drums. Some waste material had to be cleaned up around these leaky drums. Fortunately, they were on a concrete base so no soil was contaminated. Also, some water was spilled on the floor when the liquid portion of the waste was transferred. All spilled waste was cleaned up using absorbents, brooms, and shovels, and was drummed for shipment.

I stayed until the last drums were being loaded and the spillage on the floor was being cleaned up. Mr. Larry Trapp of Chemical Waste Management told me that he had been empowered by Mr. Sam Sprattlin of Barclay's Bank to sign the generator's copy of the manifest. I requested that copies of the manifest be submitted to this office when the project is completed.

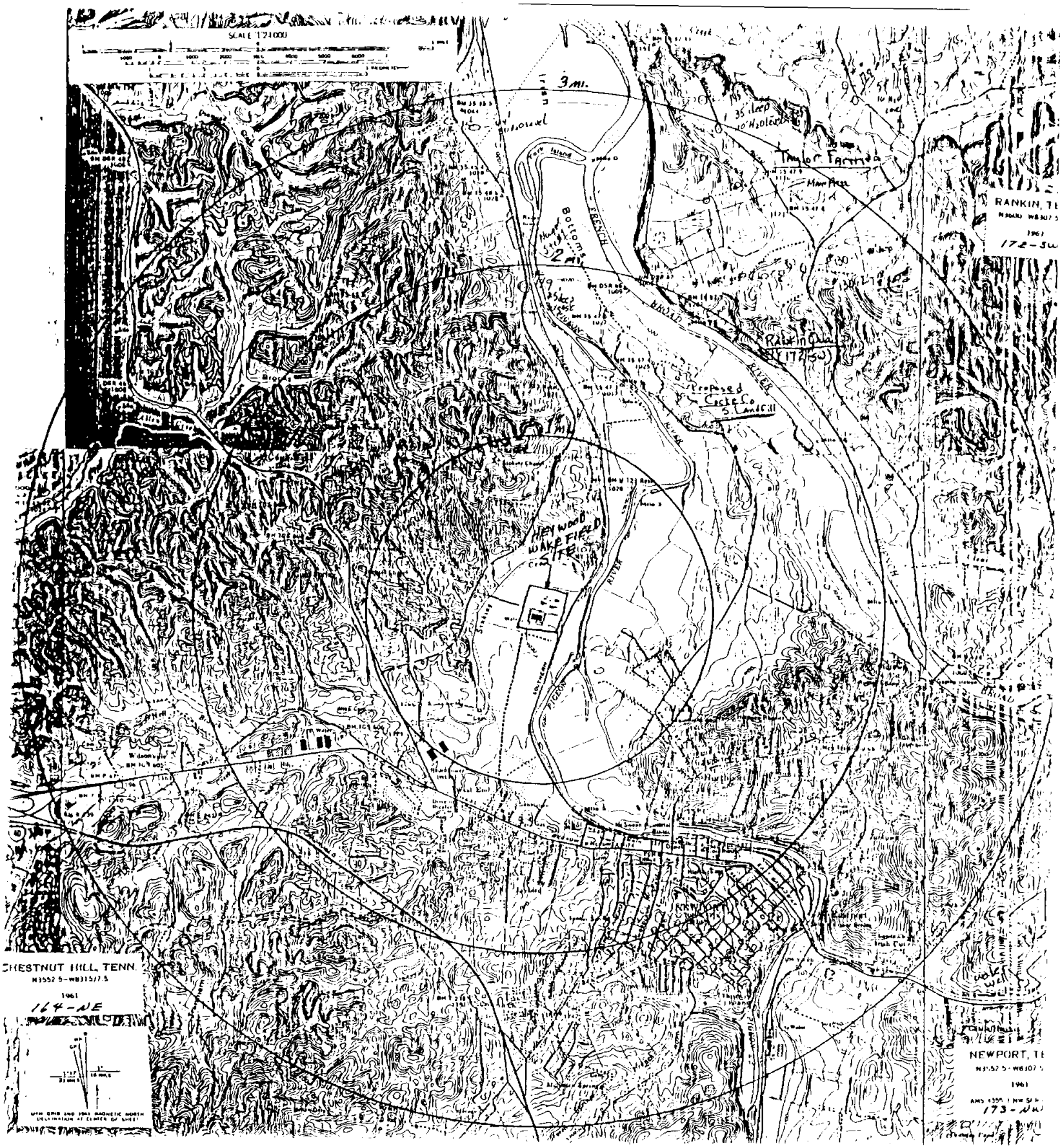
Rick Brown

Rick Brown

March 9, 1984
DATE

RSB:pjm M/5

ATTACHMENTS/EXHIBITS


SCALE 1:24 000
3 mi.
2 mi.
Taylor Farmer
Main Area
Bottoms
FRENCH
BROAD
RIVER
Proposed Cocke Co. S. Landfill
HEYWOOD WAKEFIELD SITE
RANKIN, TE
1961
172-SW
CHESTNUT HILL, TENN.
N3552.5-W8315/7.5
1961
164-NE
NEWPORT, TE
1961
173-NW

SITE SCREENING - PRELIMINARY SITE SCORING

FACILITY NAME Heywood-Wakefield Company
TND 003382870

LOCATION Off Rankin Road. North of Newport, Cocke County

PERSON(S) IN CHARGE OF FACILITY

NAME OF REVIEWER SHW (CRR)

DATE 8/31/87

COMMENTS

Prior to the RCRA, the waste went to Cocke County landfill. Heywood-Wakefield went bankrupt in 1982. Site was cleaned up in 1984. Presently, Eastern Plating Company with a generator status has reactivated the plating line & wastewater treatment system. Further evaluation by Tenn State Superfund is recommended

PRELIMINARY SITE SCORING

SCORES: S_m = 11.0 (S_{gw} = 17.6 S_{sw} = 7.2 S_a = NR)

S_{dc} = NR

PA. — completed on 09/09/86 by CRR

Site Inspection - conducted on 03/08/84 by State

SITE SCREENING - PRELIMINARY SITE SCORING

PRELIMINARY GROUNDWATER SCORE

1) OBSERVED RELEASE	0 45		0
2) ROUTE CHARACTERISTICS			
AQUIFER DEPTH	0 1 2 (3)	X2	6
Assume Karst 0-20 feet			
NET PRECIPITATION	0 1 (2) 3		2
46 - 33 = 13			
PERMEABILITY	0 1 2 (3)		3
highly fractured			
PHYSICAL STATE	0 1 2 (3)		3
Solvent, Liquid sludge			
	TOTAL ROUTE SCORE		14
3) CONTAINMENT	0 1 2 (3)		3
4) WASTE CHARACTERISTICS			
TOXICITY/PERSISTENCE	0 3 6 9 12 15 (18)		18
electroplating sludge & Solvents Chromium & Nickel			
WASTE QUANTITY	0 1 (2) 3 4 5 6 7 8		2
~60 drums			
	TOTAL WASTE SCORE		20
5) TARGETS			
GROUNDWATER USE:	0 1 (2) 3	X3	6
Spring well for community public water supply within ~4 miles radius; possible hold out	within 3 miles radius		
WELL DISTANCE/	0 4 (6) 8 10 12 16 18		
POPULATION SERVED	20 24 30 32 35 40		6
Assume 1-100 people on well water, 1-2 miles			
	TOTAL TARGETS SCORE		12

OBSERVED RELEASE: MULTIPLY (1) X (4) X (5)
NO OBSERVED RELEASE: MULTIPLY (2) X (3) X (4) X (5) 10080

DIVIDE BY 57330 AND MULTIPLY BY 100 S_{gw} 17.6

SITE SCREENING - PRELIMINARY SITE SCORING

PRELIMINARY SURFACE WATER SCORE

1) OBSERVED RELEASE	0 45		0
2) ROUTE CHARACTERISTICS			
TERRAIN/FACILITY SLOPE	0 (1) 2 3		1
3.5%			
1yr. 24 hr. RAINFALL	0 1 2 (3)		3
>3			
SURFACE WATER DISTANCE	0 1 2 (3)	x2	6
< 1000			
PHYSICAL STATE	0 1 2 (3)		3
	TOTAL ROUTE SCORE		13
3) CONTAINMENT	0 1 2 (3)		3
4) WASTE CHARACTERISTICS			
TOXICITY/ PERSISTENCE	0 3 6 9 12 15 (18)		18
Chromium, Nickel			
WASTE QUANTITY	0 1 (2) 3 4 5 6 7 8		2
60 drums			
	TOTAL WASTE SCORE		20
5) TARGETS			
SURFACE WATER USE	0 1 (2) 3	x3	6
Trout Stream, recreation & Irrigation			
SENSITIVE ENVIRONMENT DISTANCE	0 1 2 3	x2	0
State Scenic Hwy Class 3			
POPULATION SERVED/ WATER INTAKE DISTANCE	0 4 6 8 10 12 16 18 20 24 30 32 35 40		0
	TOTAL TARGETS SCORE		6

OBSERVED RELEASE: MULTIPLY (1) X (4) X (5)
NO OBSERVED RELEASE: MULTIPLY (2) X (3) X (4) X (5) 4680

DIVIDE BY 64350 AND MULTIPLY BY 100 S_{sw} 7.2

SITE SCREENING - PRELIMINARY SITE SCORING

PRELIMINARY DIRECT CONTACT SCORE

1)OBSERVED INCIDENT	0 45		___
2) ACCESSIBILITY	0 1 2 3		___
3) CONTAINMENT	0 15		___
4) WASTE CHARACTERISTICS			
TOXICITY	0 1 2 3	X5	___
5) TARGETS			
POPULATION WITHIN 1 mi. RADIUS	0 1 2 3 4 5	X4	___
DISTANCE TO CRITICAL HABITAT	0 1 2 3	X4	___
	TOTAL TARGETS SCORE		___

OBSERVED INCIDENT: MULTIPLY (1) X (4) X (5)
NO OBSERVED INCIDENT: MULTIPLY (2) X (3) X (4) X (5) ____

DIVIDE BY 21600 AND MULTIPLY BY 100 S_{oc} ____

SITE SCREENING - PRELIMINARY SITE SCORING

PRELIMINARY AIR ROUTE WORK SHEET

1) OBSERVED RELEASE	0 45		___
2) WASTE CHARACTERISTICS			
REACTIVITY & INCOMPATIBILITY	0 1 2 3		___
TOXICITY	0 1 2 3	X3	___
HAZARDOUS WASTE QUANTITY	0 1 2 3 4 5 6 7 8		___
	TOTAL WASTE SCORE		___
3) TARGETS			
POPULATION IN 4-MILE RADIUS	0 9 12 15 18 21 24 27 30		___
DISTANCE TO SENSITIVE ENVIRONMENT	0 1 2 3	X2	___
LAND USE	0 1 2 3		___
	TOTAL TARGETS SCORE		___

MULTIPLY (1) X (2) X (3) _____

DIVIDE BY 35,100 AND MULTIPLY BY 100 S_a ____

SITE SCREENING - PRELIMINARY SITE SCORING

	S	S^2
GROUNDWATER ROUTE SCORE (S_{gw})	17.6	309.76
SURFACE WATER ROUTE SCORE (S_{sw})	7.2	51.8
AIR ROUTE SCORE (S_a)		

$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}/1.73 = S_M =$ 11.0