

35185



1927 LAKESIDE PARKWAY  
SUITE 614  
ROCKY HILL, GEORGIA 30084  
404-938-7710

Site:	MULLS GAP
Break:	1.9
Other:	V.2

SISB/SAE  
 RECEIVED  
 FEB 25 1991  
 EPA - REGION IV

February 1991

DATE REPORT 2-25-91  
 DEPOSITION NF RAP  
 SAM LOCATIONS D. Vaughn - 10506/1213

1 9 0001

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

Subject: Final Screening Site Inspection, Phase II  
 Revision 0  
 CTS of Asheville, Inc.  
 Skyland, Buncombe County, North Carolina  
 EPA ID No. NCD003149556  
 TDD No. F4-9004-52

Dear Mr. Hanke:

Enclosed please find two (2) copies of the Final Screening Site Inspection Report, Phase II, Revision 0 for CTS of Asheville, Inc. located in Skyland, Buncombe County, North Carolina.

Please contact me if you have any questions concerning this report.

Very truly yours,

Approved:

*Stephany Fine*  
 Stephany Fine  
 Project Manager

*[Signature]*

SF/tb

Enclosures (2)

**FINAL REPORT**  
**SCREENING SITE INSPECTION, PHASE II**  
**CTS OF ASHEVILLE, INC.**  
**SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA**  
**EPA ID #: NCD003149556**

Prepared Under  
TDD No. F4-9004-52  
CONTRACT NO. 68-01-7346

Revision 0

FOR THE

WASTE MANAGEMENT DIVISION  
U.S. ENVIRONMENTAL PROTECTION AGENCY

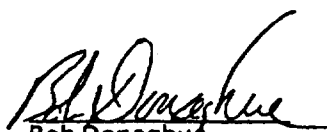
FEBRUARY 22, 1991

NUS CORPORATION  
SUPERFUND DIVISION

Prepared By

  
Stephany Pine  
Project Manager

Reviewed By

  
Bob Donaghue  
Assistant Regional  
Project Manager

Approved By

  
Phil Blackwell  
Regional Project Manager

1 9 0003

**NOTICE**

The information in this document has been funded wholly by the United States Environmental Protection Agency (EPA) under Contract Number 68-01-7346 and is considered proprietary to the EPA.

This information is not to be released to third parties without the expressed or written consent of the EPA.

## TABLE OF CONTENTS

<u>Section No.</u>	<u>Page</u>
<b>EXECUTIVE SUMMARY</b>	<b>ES-1</b>
<b>1.0 INTRODUCTION</b>	<b>1</b>
1.1 Objectives	1
1.2 Scope of Work	1
<b>2.0 SITE CHARACTERIZATION</b>	<b>2</b>
2.1 Site Background and History	2
2.2 Site Description	3
2.2.1 Site Features	3
2.2.2 Waste Characteristics	3
<b>3.0 REGIONAL POPULATIONS AND ENVIRONMENTS</b>	<b>6</b>
3.1 Population and Land Use	6
3.1.1 Demography	6
3.1.2 Land Use	6
3.2 Surface Water	6
3.2.1 Climatology	6
3.2.2 Overland Drainage	6
3.2.3 Potentially Affected Water Bodies	7
3.3 Groundwater	7
3.3.1 Hydrogeology	7
3.3.2 Aquifer Use	8
3.4 Summary of Potentially Affected Populations and Environments	8
<b>4.0 FIELD INVESTIGATION</b>	<b>9</b>
4.1 Sample Collection	9
4.1.1 Sample Collection Methodology	9
4.1.2 Duplicate Samples	9
4.1.3 Description of Samples and Sample Locations	9
4.1.4 Field Measurements	9
4.2 Sample Analysis	16
4.2.1 Analytical Support and Methodology	16
4.2.2 Analytical Data Quality	16
4.2.3 Presentation of Analytical Results	16
4.2.3.1 Soil Samples	27
4.2.3.2 Sediment Samples	28
4.2.3.3 Surface and Groundwater Samples	28
<b>5.0 SUMMARY</b>	<b>29</b>
<b>REFERENCES</b>	<b>30</b>
<b>APPENDIX A Topographic Map</b>	
<b>APPENDIX B Analytical Results</b>	
<b>APPENDIX C Site Inspection Report</b>	

**TABLES**

<u>Number</u>		<u>Page</u>
Table 1	Sample Codes, Descriptions, Locations, and Rationale	11
Table 2	Field Measurements	15
Table 3	Inorganic Analyses - Soil Samples	17
Table 4	Organic Analyses - Soil Samples	19
Table 5	Inorganic Analyses - Sediment Samples	22
Table 6	Organic Analyses - Sediment Samples	23
Table 7	Inorganic Analyses - Water Samples	25
Table 8	Organic Analyses - Water Samples	26

**FIGURES**

Figure 1	Site Location Map	4
Figure 2	Site Layout Map	5
Figure 3	Sample Location Map	10

## EXECUTIVE SUMMARY

1 9 0006

CTS of Asheville, Inc., which is located in Skyland, Buncombe County, North Carolina, operated as an electroplating facility from 1964 to 1987. Wastes included electroplating sludge and spent solvents. Prior to 1980, wastes that could not be reclaimed were discharged into the city sewer system. After 1980, wastes were stored in drums and tanks for offsite disposal.

Skyland is located in the Blue Ridge Physiographic Province of North Carolina. The geology of the area consists of thick regolith over folded and faulted igneous and metamorphic rock. The source of groundwater in the area is the surficial, unconfined, soil and crystalline rock aquifer system.

The groundwater pathway is potentially of concern because there are approximately 397 private wells located within 3 miles of the facility. The air pathway is potentially of concern because 3,887 people live within 1 mile of the facility. The surface water pathway is potentially of concern because it is used for swimming, fishing, and boating. The onsite exposure pathway is not of concern because a fence limits access to the facility.

Eighteen environmental samples were collected during the field investigation associated with this study. Several organic and inorganic substances were found in soil, sediment, and surface water samples at elevated levels. These included cadmium, magnesium, manganese, vanadium, beryllium, barium, nickel, zinc, 1,2-dichloroethene, trichloroethene, and vinyl chloride. Nickel and zinc were used in electroplating, and some of the solvents were used to degrease equipment.

Based on the analysis of possible migration pathways, the results of the sampling investigation, and the information obtained from the references, it is recommended that no further remedial action be planned for CTS of Asheville, Inc.

## 1.0 INTRODUCTION

1 9 0007

The NUS Corporation Region 4 Field Investigation Team (FIT) was tasked by the U S Environmental Protection Agency (EPA), Waste Management Division to conduct a Screening Site Inspection (SSI) at the CTS of Asheville, Inc. site in Skyland, Buncombe County, North Carolina. 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 F4-9004-52. The field investigation was conducted on June 25-26, 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 background materials relevant to HRS scoring of site.
- Evaluate target populations associated with the groundwater, surface water, air, and onsite exposure pathways.
- Determine the location and distance to nearest potable well.
- Develop a site sketch.
- Collect environmental samples.

## 2.0 SITE CHARACTERIZATION

### 2.1 SITE BACKGROUND AND HISTORY

CTS of Asheville, Inc. operated as an electroplating facility from 1964 to 1987 (Refs. 1; 2; 3, p. 2). During this time, Arden Electroplating was contracted to do the electroplating work (Ref. 4). The facility electroplated electrical components with tin, nickel, zinc, and silver. Prior to 1980, wastes that could not be reclaimed were discharged into the city sewer system. After 1980, wastes were separated and stored in drums and tanks to be disposed of off site (Ref. 1). Electroplating sludge was disposed of by SCA of Pinewood, South Carolina. Solvents were disposed of by Environmental Recycling Company (Ref. 5). There has been no record of spills or onsite disposal of waste (Ref. 1). The facility was inactive until 1990, when Dove Energy Systems leased the property (Ref. 6). The property was owned at the time by Stan Greenburg and John Powell of Coldwell Banker - Gatewood Realty (Ref. 7). Dove Energy Systems is a manufacturer of corn burning stoves. The company was in the process of moving into the facility at the time of FIT's sampling investigation in June (Ref. 6).

CTS of Asheville, Inc. filed a RCRA Notification of Hazardous Waste Activity in July 1980 for generator status (Ref. 1). However, according to a report on CTS by Law Environmental, no RCRA permits have been issued to the facility (Ref. 3, p. 3). In July 1983, the North Carolina Solid and Hazardous Waste Management Branch conducted a RCRA compliance inspection of the facility. No problems were noted at that time (Ref. 5). The CTS facility has a permit (number 010) from the Metropolitan Sewage District to discharge plant effluent to the city's publicly owned treatment works and air permits (numbers 20120, 20113, 20112, and 20090) assigned from the Western Carolina Air Pollution Agency (Ref. 5). In 1986, CTS of Asheville was reclassified as a small-quantity generator under RCRA (Ref. 8). According to the March 1990, North Carolina Alphabetical List of Hazardous Waste facilities, Dove Energy Systems is not currently regulated under RCRA (Ref. 9).

In 1987, Law Environmental conducted a site assessment of CTS of Asheville, Inc. The assessment included the collection of samples from several areas of the facility (Ref. 3, p. 4). Trichloroethylene was detected in all of the soil samples (Ref. 3, p. 17). Tetrachloroethene, xylene, decane, and hexane were detected in electroplating areas inside the building (Ref. 3, p. 18).



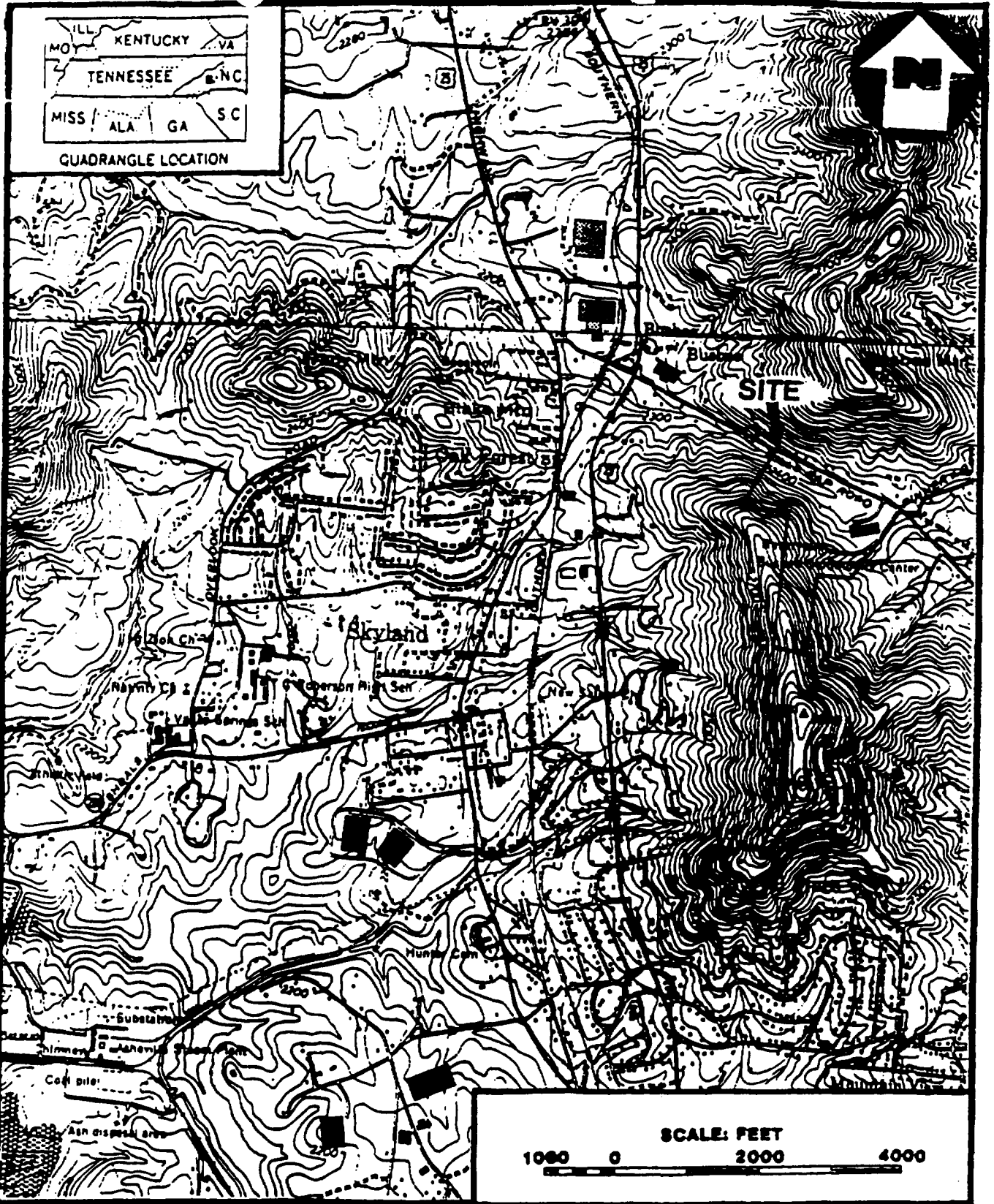
## 2.2 SITE DESCRIPTION

### 2.2.1 Site Features

The CTS of Asheville, inc. facility is located on Mills Gap Road in Skyland, North Carolina. The site location is shown in Figure 1, and the site layout is shown in Figure 2. The facility is 57 acres in size and consists mainly of a one-story, brick building located near the road (Refs. 1, 2). The building contains an electroplating room, a main plant room, a warehouse, and a hazardous waste storage area. The electroplating room has drainage conduit that leads to a sump. There are several storage tanks located on the property. They contain acetone and trichloroethylene (Ref. 3, p. 2, 3, Figures 2, 3). A portion of the property surrounding the building is fenced, and there is a guard house located near the entrance. The unfenced portion of the property behind the facility is comprised of a large, wooded ridge (Ref. 2).

### 2.2.2 Waste Characteristics

Waste generated from electroplating processes included electroplating sludge and solvents (Ref. 1). The sludge was from electroplating with tin, nickel, zinc, and silver and may have contained these metals. The solvents included acetone and ethyl acetate which were used for resistant coatings. 1,1,1-Trichloroethane was used for degreasing equipment (Ref. 5). Sulfuric acid and sodium hydroxide were also used in the electroplating process (Ref. 3, p. 12).

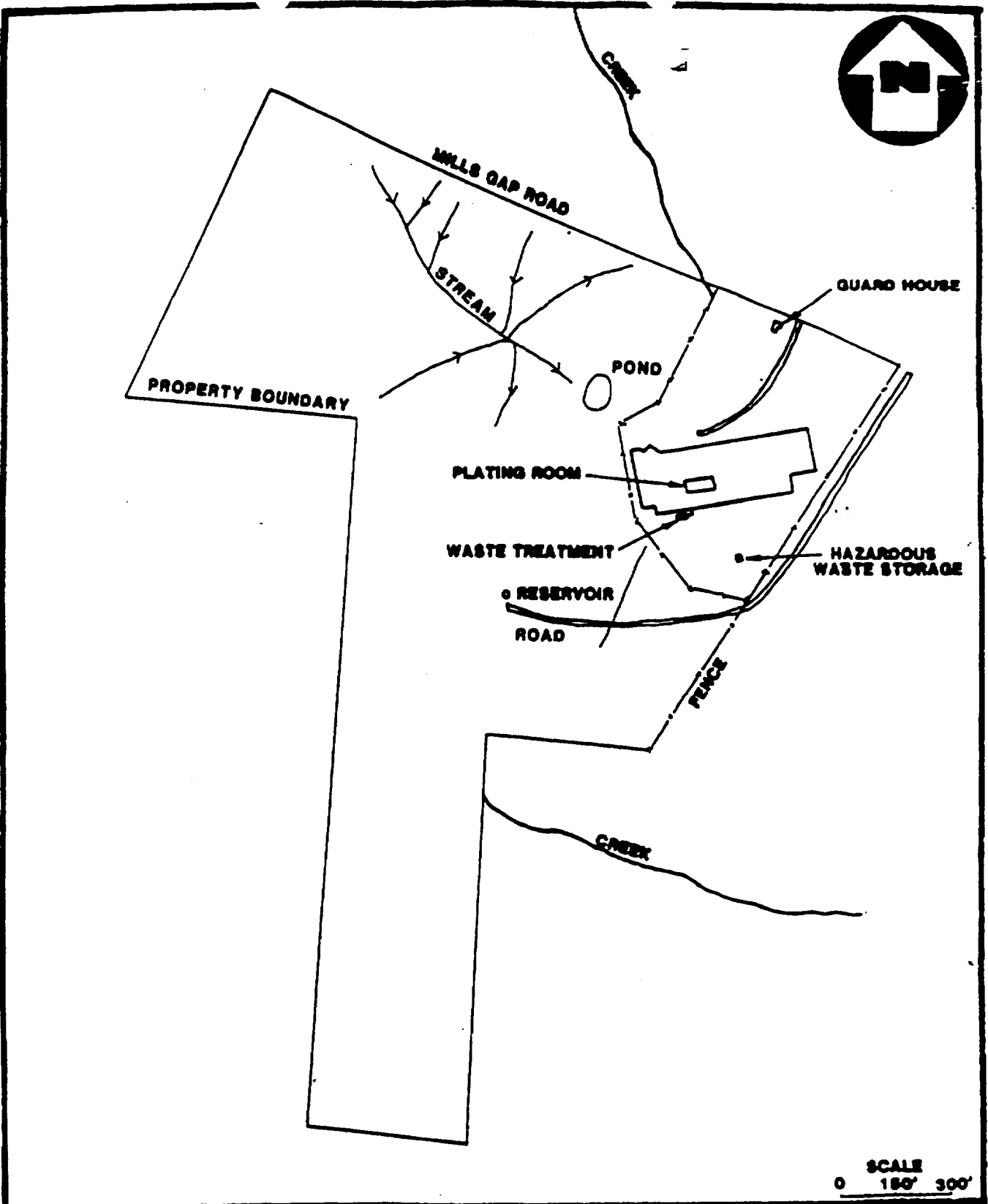


BASE MAP IS A PORTION OF THE U.S.G.S. 7.5 MINUTE QUADRANGLE SKYLAND 1978, ASHEVILLE 1961, NORTH CAROLINA.

**SITE LOCATION MAP  
CTS OF ASHVILLE, INC.  
SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA**

FIGURE 1





**SITE LAYOUT MAP  
 CTS OF ASHVILLE, INC.  
 SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA**

**FIGURE 2**



### 3.0 REGIONAL POPULATIONS AND ENVIRONMENTS

#### 3.1 POPULATION AND LAND USE

##### 3.1.1 Demography

CTS of Asheville, Inc. is located in the small town of Skyland approximately 5 miles southeast of the city of Asheville in North Carolina. The land near the facility is residential with some commercial and industrial areas (Appendix A). The total population within 4 miles of the facility is 18,768. The distribution is 3,887 between 0 and 1 mile, 3,169 between 1 and 2 miles, 6,812 between 2 and 3 miles, and 4,900 between 3 and 4 miles (Ref. 10). The nearest residence is located 500 feet northeast of the facility. The nearest school is Valley Springs School which is located 10,000 feet to the southwest (Appendix A).

##### 3.1.2 Land Use

Within 4 miles of the facility, the area is comprised of residential, commercial, industrial, and undeveloped property. The residential, commercial, and industrial property is mainly to the west and south. The undeveloped property is mainly to the northeast. There are several schools, churches, and parks in the area. The nearest church is Chapel Hill Church which is located 2,500 feet to the east. A portion of the Blue Ridge Parkway is located within 3 miles of the facility. The Busbee Community Center is located 750 feet to the southeast (Appendix A).

There are several endangered and threatened species found throughout Buncombe County (Ref. 11). However, there are apparently no sensitive environments located within 4 miles of the facility (Ref. 12).

#### 3.2 SURFACE WATER

##### 3.2.1 Climatology

CTS of Asheville, Inc. is located in southern Buncombe County (Appendix A). The normal annual precipitation for this area is 52.0 inches, and the mean annual lake evaporation is 35.0 inches. This results in a net annual precipitation of 17 inches. The average temperature ranges from 40°F in January to 75°F in July (Ref. 13, p. 1, 13, 43, 63). The 1-year, 24-hour rainfall is 3.0 inches (Ref. 14, p. 93).

### 3.2.2 Overland Drainage

Surface water run-off from the facility flows southeast 500 feet to an unnamed, perennial stream. This stream flows southeast 3,500 feet to Robinson Creek. Robinson Creek flows south 3.0 miles to Cane Creek. Cane Creek flows southwest 4.5 miles to the French Broad River. The French Broad River flows northwest 6.7 miles to the end of the surface water pathway (Appendix A). Surface water run-off also flows northwest 700 feet to Dingle Creek. Dingle Creek flows west 3.8 miles to the French Broad River. The French Broad River flows northwest 11.0 miles to complete the 15-mile, surface water pathway (Appendix A). Water that flows into storm drains near the facility is channeled to municipal sewer lines. The effluent from these lines is treated and discharged into the French Broad River (Ref. 15).

### 3.2.3 Potentially Affected Water Bodies

The French Broad River could potentially be affected by contaminants from the facility. Swimming, boating, and fishing occur on the river (Ref. 16). There are no surface water intakes located on the surface water pathway (Ref. 17).

## 3.3 GROUNDWATER

### 3.3.1 Hydrogeology

CTS of Asheville is located in the Blue Ridge Physiographic Province and groundwater region of western North Carolina (Refs. 18, plate 28; 19, p. 251). This region is characterized by thick regolith over folded and faulted igneous and metamorphic rocks (Ref. 19, p. 252). The topography of the area consists of rolling hills and high mountains with narrow stream valleys. Topographic relief near the facility ranges from 2,000 to 3,000 feet above mean sea level (Appendix A). The soil in the area is clay-rich from the weathering of the bedrock. Near rivers and streams, the soil becomes more sandy from the alluvium (Ref. 19, p. 252).

In the Skyland area, the bedrock consists mainly of biotite gneiss and garnet-muscovite schist alternating in northeast trending belts (Ref. 20, Figure 5). There are also smaller amounts of hornblende gneiss, granitic intrusives, pegmatites, and quartz veins (Ref. 20, p. 78). The source of groundwater in the area is the surficial, unconfined, soil and crystalline rock aquifer system. Water is contained in the pore spaces of weathered rock and soil and in the joints and fractures of the bedrock. Water levels are variable in this aquifer (Ref. 21, p. 8, 9). The depth to the water table

beneath the facility is approximately 50 feet below land surface (bls). The direction of groundwater flow is to the east (Appendix A). The regolith represents the layer with the lowest hydraulic conductivity, with typical values ranging between  $1.0 \times 10^{-7}$  and  $1.0 \times 10^{-5}$  cm/sec (Ref. 22, p. 29).

Wells in the area have an average depth of 154 feet bls (Ref. 23, p. 27). Many of these wells are for domestic use. Well yields vary with topography and location and range from less than 10 to several hundred gallons per minute (gpm) (Ref. 23, p. 2). The average yield for all wells in the area is 17.2 gpm. This average ranges from 9.7 gpm on ridges to 33.3 gpm in draws (Ref. 23, p. 27).

### 3.3.2 Aquifer Use

Most of the area within 3 miles of the facility is served by municipal water systems (Appendix A). The Asheville-Buncombe County Water System serves 57,500 connections. It receives water from two surface water intakes located at Beetree Reservoir and Northfork Reservoir. Both reservoirs are located northeast of the facility and are not on the surface water pathway (Ref. 2). The Hendersonville Water Department serves approximately 5,000 connections and receives water from surface water intakes located at Hendersonville Reservoir, Bradley Creek, and Yellow Gap Creek (Refs. 2, 16). The Biltmore Forest Water System serves 600 connections and receives water from the Asheville-Buncombe County Water Department (Ref. 24). Areas not served by these water systems receive water from private wells. Based on a topographic map house count, an estimated 397 private wells are within 3 miles of the facility, and 317 wells are between 3 and 4 miles of the facility. The nearest private well is located 4,000 feet to the northwest (Appendix A).

### 3.4 SUMMARY OF POTENTIALLY AFFECTED POPULATIONS AND ENVIRONMENTS

The groundwater pathway, the air pathway, and the surface water pathway are of concern for the CTS facility. The groundwater pathway is of concern because there are approximately 397 private wells within 3 miles of the facility. These wells are completed in the surficial, unconfined, soil and crystalline rock aquifer system. The air pathway is of concern because 3,887 people live within 1 mile of the facility. The surface water pathway is of concern because fishing, boating, and swimming occur on the French Broad River. The onsite exposure pathway is not of concern because access to the facility is limited by a fence and a wooded ridge.

## 4.0 FIELD INVESTIGATION

### 4.1 SAMPLE COLLECTION

#### 4.1.1 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 Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986.

#### 4.1.2 Duplicate Samples

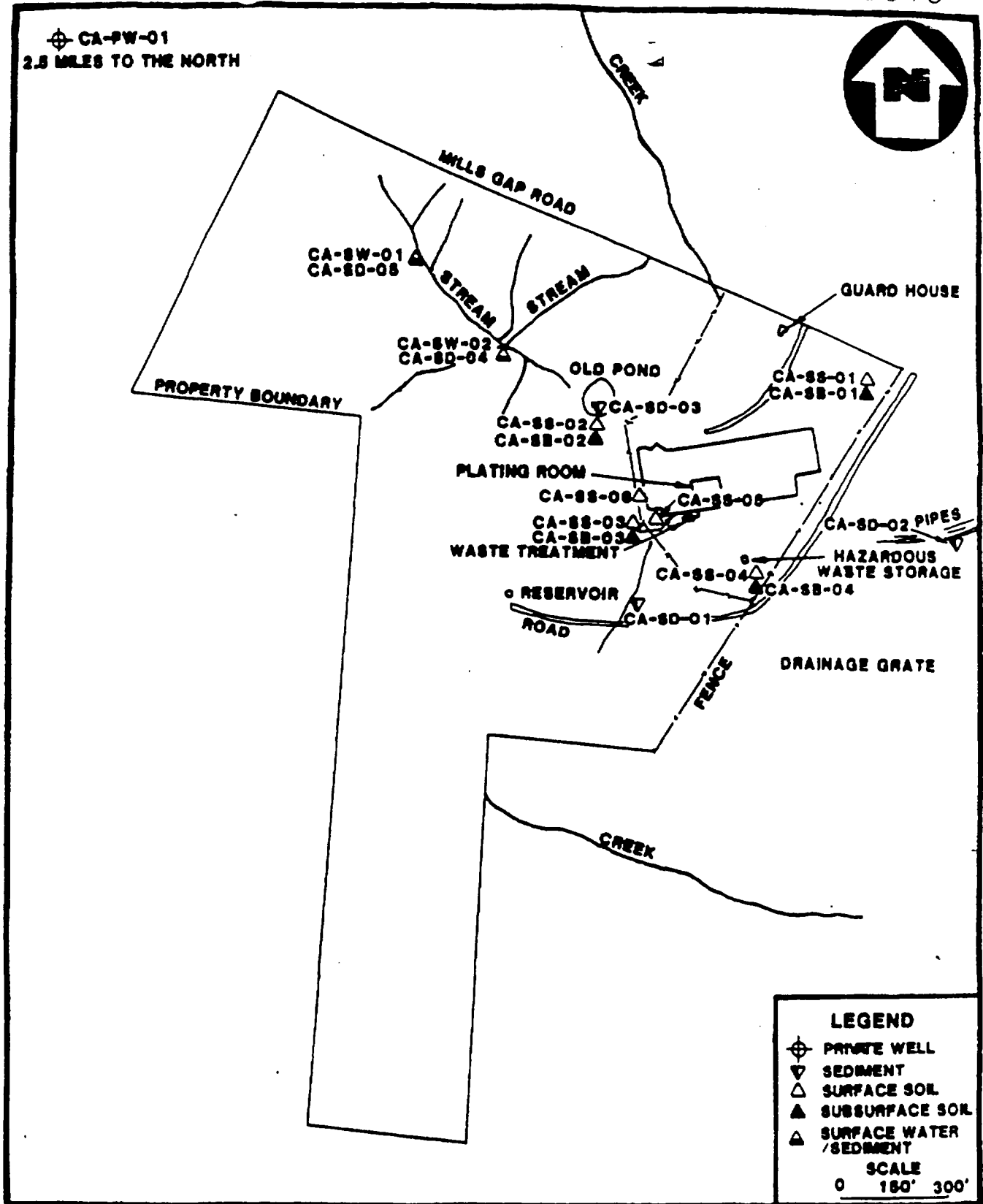
No duplicate samples were collected. Duplicates were offered to Stan Greenburg of CTS of Asheville, but he declined the samples.

#### 4.1.3 Description of Samples and Sample Locations

Eighteen environmental samples were collected during the investigation. These consisted of six surface soil samples, four subsurface soil samples, five sediment samples, two surface water samples, and one private well sample. Samples were collected on June 25-26, 1990. Sample locations are shown in Figure 3, and sample codes, locations, descriptions, and rationale are give in Table 1. Surface soil, subsurface soil, sediment, and surface water samples (CA-SS-01, CA-SB-01, CA-SD-01, and CA-SW-01) were taken to establish background conditions. Additional samples were taken to determine the presence or absence of contaminants on site. The only private well sampled was the one nearest to the facility. It was sampled to establish the presence or absence of contaminants in the groundwater (Ref. 25).

#### 4.1.4 Field Measurements

The pH, temperature, and conductivity were measured and recorded for each water sample at the time of collection. These measurements, along with the date and time for each water sample collected, are shown in Table 2.



**SAMPLE LOCATION MAP  
 CTS OF ASHVILLE, INC.  
 SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA**

**FIGURE 3**



TABLE 1

SAMPLE CODES, DESCRIPTIONS, LOCATION, AND RATIONALE  
 CTS OF ASHEVILLE, INC.  
 SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA

Sample Code	Description/Location	Rationale	Date (1990)	Time
CA-SS-01	A surface soil sample was collected upgradient of the facility at a depth of 0-2 feet.	Collected to establish background conditions.	6/25	1110
CA-SS-02	A surface soil sample was collected in the area of an old lagoon/pond located northwest of the building at a depth of 0-2 feet	Collected to determine the extent of migration of contaminants from the old lagoon/pond area	6/25	1225
CA-SS-03	A surface soil sample was collected near a waste treatment area south of the building at a depth of 0-2 feet	Collected to determine migration of contaminants from the waste storage area	6/25	1400
CA-SS-04	A surface soil sample was collected near a hazardous waste storage area on the south side of the property at a depth of 0-2 feet.	Collected to determine the extent of contamination in the hazardous waste storage area.	6/25	1500
CA-SS-05	A surface soil sample was collected in the waste treatment area south of the building at a depth of 0-2 feet.	Collected to determine the extent of contamination in the waste treatment area	6/26	1000
CA-SS-06	A surface soil sample was collected on the west side of the facility at a depth of 0-2 feet beneath a spray nozzle where the soil was stained black.	Collected to determine the contamination of the stained soil.	6/26	1010

CA CTS of Asheville  
 SS Surface Soil  
 SB Subsurface Soil

SD Sediment  
 SW Surface Water  
 PW Private Well - Groundwater

19 0017

TABLE 1

SAMPLE CODES, DESCRIPTIONS, LOCATION, AND RATIONALE  
 CTS OF ASHEVILLE, INC.  
 SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA

Sample Code	Description/Location	Rationale	Date (1990)	Time
CA-SB-01	A subsurface soil sample was collected at a depth of 4 feet, upgradient of the facility.	Collected to establish background conditions.	6/25	1120
CA-SB-02	A subsurface soil sample was collected at a depth of 3.5 feet in the area of an old lagoon/pond.	Collected to determine the extent of migration of contaminants from the old lagoon/pond area	6/25	1240
CA-SB-03	A subsurface soil sample was collected at a depth of 4 feet near a waste treatment area south of the building.	Collected to determine migration of contaminants from the waste treatment area.	6/25	1425
CA-SB-04	A subsurface soil sample was collected near a hazardous waste storage area on the south side of the property.	Collected to determine the extent of contamination in the hazardous waste storage area.	6/25	1505
CA-SD-01	A sediment sample was collected in a wet-weather, drainage area southwest of the fenced-in area at a depth of 0-2 feet	Collected to establish background conditions.	6/25	1325
CA-SD-02	A sediment sample was collected from a small stream draining the east side of the property at a depth of 0-2 feet	Collected to determine the extent of sediment contamination downgradient of the site.	6/26	0930

CA CTS of Asheville  
 SS Surface Soil  
 SB Subsurface Soil

SD Sediment  
 SW Surface Water  
 PW Private Well - Groundwater

1 9 0018

TABLE 1

SAMPLE CODES, DESCRIPTIONS, LOCATION, AND RATIONALE  
 CTS OF ASHEVILLE, INC.  
 SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA

Sample Code	Description/Location	Rationale	Date (1990)	Time
CA-SD-03	A sediment sample was collected at an old lagoon/pond area at a depth of 0-2 feet.	Collected to determine contamination of the old lagoon/pond area.	6/26	0900
CA-SD-04	A sediment sample collected at the intersection of two small streams northwest of the facility. It was taken upstream of SD-03 at a depth of 0-2 feet.	Collected to determine the migration of contamination to stream sediments.	6/26	0950
CA-SD-05	A sediment sample was collected upgradient at the confluence of several streams northwest of the facility at a depth of 0-2 feet.	Collected to determine the migration of contaminants from several streams.	6/26	1025
CA-SW-01	A surface water sample was collected upgradient at the confluence of several streams northwest of the facility.	Collected to establish background conditions.	6/26	1020
CA-SW-02	A surface water sample was collected at the intersection of two small streams northwest of the facility.	Collected to determine contamination to surface water.	6/26	0940
CA-PW-01	A private well sample was collected from the well of Laurie Boalos, 1 Forest Run, Asheville, N.C.	Collected to determine the extent of migration of contamination.	6/25	1220

CA CTS of Asheville  
 SS Surface Soil  
 SB Subsurface Soil

SD Sediment  
 SW Surface Water  
 PW Private Well - Groundwater

1 9 0019

TABLE 2  
FIELD MEASUREMENTS  
CTS OF ASHEVILLE, INC.  
SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA

Sample Code	Date	Time	pH	Temperature (°F)	Conductivity (umhos/cm)
CA-PW-01	6/25/90	1216	6.22	61.7	80
CA-SW-02	6/26/90	0940	6.30	67.0	350
CA-SW-01	6/26/90	1020	6.50	68.0	1250

CA CTS of Asheville, inc.  
PW Private Well - Groundwater  
SW Surface Water

## 4.2 SAMPLE ANALYSIS

### 4.2.1 Analytical Support and Methodology

All samples collected were analyzed under the Contract Laboratory Program (CLP) and analyzed for all parameters listed in the Target Compound List (TCL). Organic analysis of soil and water samples was performed by National Environmental Test, Bartlett Division, in Bartlett, Illinois. Inorganic analysis of soil and water was performed by Southwest Laboratory of Oklahoma, Inc. in Broken Arrow, Oklahoma.

All laboratory analyses and laboratory quality assurance procedures used during this investigation were 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.

### 4.2.2 Analytical Data Quality

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 to its presence. The complete analytical data sheets are presented in Appendix B.

### 4.2.3 Presentation of Analytical Results

The following sections present a discussion of the analytical results from the environmental samples collected during the investigation at the CTS of Asheville, Inc. facility. The results of the soil sampling are summarized in Tables 3 and 4. The results of sediment sampling are presented in Tables 5 and 6. The results of the surface water and groundwater sampling are presented in Tables 7 and 8. Any sample results for a particular parameter greater than three times the background level for that

TABLE 3  
SUMMARY OF INORGANIC ANALYTICAL RESULTS  
SOIL SAMPLES  
CTS OF ASHEVILLE, INC  
SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA

PARAMETERS (mg/kg)	Surface Soils						Subsurface Soils			
	Background	On Site					Background	On Site		
	CA-SS-01	CA-SS-02	CA-SS-03	CA-SS-04	CA-SS-05	CA-SS-06	CA-SB-01	CA-SB-02	CA-SB-03	CA-SB-04
ALUMINUM	6900J	31000J	42000J	7300J	25000J	29000J	20000J	34000J	43000J	22000J
ANTIMONY	8U			1J	-					
ARSENIC	2U	28	-	-			-			
BARIUM	93	100	260	77	220	190	49	110	290	170
BERYLLIUM	1U	16	45	-	26	23	1U	32	42	
CADMIUM	0.65U	-	19		36	26				
CALCIUM	3000									
CHROMIUM	54	40	44	14	36	42	29	54	46	38
COBALT	34			10						
COPPER	20U	35	-	-			20U	41		
IRON	10000	40000	47000	16000	42000	45000	32000	55000	44000	50000
LEAD	500	24	27	11	28	50	16	22	15	31
MAGNESIUM	2100	4400	10000	2200	7300	8200	880	5800	9800	7600
MANGANESE	250	440	1100	210	460	850	110	880	1000	880
NICKEL	79			62						

- 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.

1 9 0022

TABLE 3

SUMMARY OF INORGANIC ANALYTICAL RESULTS  
 SOIL SAMPLES  
 CTS OF ASHEVILLE, INC  
 SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA

PARAMETERS (mg/kg)	Surface Soils						Subsurface Soils			
	Background	On Site					Background	On Site		
	CA-SS-01	CA-SS-02	CA-SS-03	CA-SS-04	CA-SS-05	CA-SS-06	CA-SB-01	CA-SB-02	CA-SB-03	CA-SB-04
POTASSIUM	1700	2900	11000	3100	8200	9600	670	4400	11000	11000
SILVER	2U	49	100	55	750	45	11	36	17	49
VANADIUM	16	52	59	18	55	60	47	65	57	58
ZINC	83	103	180	32	200	160	24	81	150	110

- 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.

1 9 0023

**TABLE 4**  
**SUMMARY OF ORGANIC ANALYTICAL RESULTS**  
**SOIL SAMPLES**  
**CTS OF ASHEVILLE, INC.**  
**SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA**

PARAMETERS (ug/kg)	Surface Soils						Subsurface Soils			
	Background	On Site					Background	On Site		
	CA-SS-01	CA-SS-02	CA-SS-03	CA-SS-04	CA-SS-05	CA-SS-06	CA-SB-01	CA-SB-02	CA-SB-03	CA-SB-04
<b>PURGEABLE COMPOUNDS</b>										
CARBON DISULFIDE	50J	33		-	-			-		-
UNIDENTIFIED COMPOUNDS/NO (1)	40J2	-	30J1	90J3	40J1	200J2	20J1	200J2	200J3	200J2
DIOXANE (1)		40JN								
DICHLOROETHYLETHER (1)		10JN								
<b>EXTRACTABLE COMPOUNDS</b>										
ACENAPHTHENE	120J	-	-	-	-	-		-	-	-
DIBENZOFURAN	100J	-	-	-	-	-		-	-	-
FLUORENE	86J	-	-	-	-	-		-	-	-
PHENANTHRENE	1200	-	-	-	-	-		-	-	-
FLUORANTHENE	1100	-	-	-	-	-		-	-	-
PYRENE	716J	-	-	-	-	-		-	-	-
BENZO(A)ANTHRACENE	260J	-	-	-	-	-		-	-	-

- 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 (TIC). This compound not on CLP Target Compound List (TCL) and is reported only as detected in individual samples; MQL not determined.

1 9 0024



TABLE 4

SUMMARY OF ORGANIC ANALYTICAL RESULTS  
 SOIL SAMPLES  
 CTS OF ASHEVILLE, INC.  
 SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA

PARAMETERS (ug/kg)	Surface Soils						Subsurface Soils				
	Background	On Site						Background	On Site		
	CA-SS-01	CA-SS-02	CA-SS-03	CA-SS-04	CA-SS-05	CA-SS-06	CA-SB-01	CA-SB-02	CA-SB-03	CA-SB-04	
CHRYSENE	440J										
BENZO(B AND/OR K)FLUORANTHENE	280J										
BENZO A PYRENE	180J										
INDENO (1,2,3 CD)PYRENE	160J										
BENZO(GH)PERYLENE	140U										
BENZOPYRENE (NOT A)	400JN										
UNIDENTIFIED COMPOUNDS/NO	5000J-4		2000J/1		800J/1	20000J/10					
PETROLEUM PRODUCT (1)						N					
HYDROXYNAPHTHALENE DIONE (1)	900JN										
CYCLOHEPTANEDIYLBISBENZENE (1)	200JN										
ETHYLMETHYLBENZENE (1)					2000JN						
TRIMETHYLBENZENE (1)					1000JN					A	
METHYLPROPYLBENZENE (1)					1000JN						

- 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 (TIC). This compound not on CLP Target Compound List (TCL) and is reported only as detected in individual samples; MQL not determined.

TABLE 4  
 SUMMARY OF ORGANIC ANALYTICAL RESULTS  
 SOIL SAMPLES  
 CTS OF ASHEVILLE, INC.  
 SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA

PARAMETERS (ug/kg)	Surface Soils						Subsurface Soils			
	Background	On Site					Background	On Site		
	CA-SS-01	CA-SS-02	CA-SS-03	CA-SS-04	CA-SS-05	CA-SS-06	CA-SB-01	CA-SB-02	CA-SB-03	CA-SB-04
ETHYLDIMETHYLBENZENE (1)					1000JN					
TETRAMETHYLBENZENE (1)					1000JN					
DIETHYLBENZENE (1)					400JN					
PHTHALIC ANHYDRIDE (1)					500JN					
METHYLBENZENESULFONAMIDE (1)					400JN					

- 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 (IIC). This compound not on CLP Target Compound List (TCL) and is reported only as detected in individual samples; MQL not determined.

**TABLE 8**  
**SUMMARY OF ORGANIC ANALYTICAL RESULTS**  
**WATER SAMPLES**  
**CTS OF ASHEVILLE, INC.**  
**SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA**

PARAMETERS (ug/kg)	Background	On Site	Off Site
	CA-SW-01	CA-SW-02	CA-PW-01
<b>PURGEABLE COMPOUNDS</b>			
VINYL CHLORIDE	10U	47	.
ACETONE	10U	1600J	.
1,2-DICHLOROETHENE (TOTAL)	5U	330	.
TRICHLOROETHENE	5U	50	.
2,4,6-TRIMETHYLBENZENE (TOLUENE)	4,N		10,N
TRIDECANE (??)	20JN		5JN
DODECANE (??)	9JN		5,N
UNDECANE (??)	5,N		
TETRAMETHYLHEPTADECANE (??)	10JN		

- 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.
- (?) Tentatively identified compound. This compound not on Target Compound List and is reported only as detected in individual samples; MQL not determined.

TABLE 7

**SUMMARY OF INORGANIC ANALYTICAL RESULTS  
WATER SAMPLES  
CTS OF ASHEVILLE, INC.  
SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA**

PARAMETERS (ug/l)	Surface Water Background	Surface Water On Site	Groundwater Off Site	State Potable Groundwater Standard (A)
	CA-SW-01	CA-SW-02	CA-PW-01	
IRON	910	2300	990	300
LEAD	20		9	50
MAGNESIUM	5600	1400	500	*
MANGANESE	100	310		50
POTASSIUM	1600	1000	1900	***
SODIUM	7900			*

- Material analyzed for but not detected above minimum quantitation limit (MQL).
- (A) North Carolina Administrative Code Title 15A, Subchapter 2L, Section .0202, 1989.
- \* No standard established.
- U Material analyzed for but not detected. The number given is the MQL.

TABLE 6

SUMMARY OF ORGANIC ANALYTICAL RESULTS  
 SEDIMENT SAMPLES  
 CTS OF ASHEVILLE, INC.  
 SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA

PARAMETERS (ug/kg)	Background	On Site			
	CA-SD-01	CA-SD-02	CA-SD-03	CA-SD-04	CA-SD-05
<b>PURGEABLE COMPOUNDS</b>					
VINYL CHLORIDE	29U	-	-	84	-
1,1-DICHLOROETHANE	14U	31	-	-	-
1,2-DICHLOROETHENE (TOTAL)	14U	1100	-	29	-
BENZENE	14U	19	-	-	-
ETHYL BENZENE	14U	13	-	-	-
TOTAL XYLENES	14U	40	-	-	-
UNIDENTIFIED COMPOUNDS NO	80J	20J	-	-	-
DIMETHYLMETHYLENEBICYCLOHEPTANE (1)	-	40JN	-	-	-
PHELANDRENE (1)	-	10JN	-	-	-
CARENE (1)	-	30JN	-	-	-
<b>EXTRACTABLE COMPOUNDS</b>					
ACENAPHTHENE	1000	-	-	-	-
DIBENZOFURAN	480J	-	-	-	-
FLUORENE	930	-	-	-	-
PHENANTHRENE	5400	-	-	-	600
ANTHRACENE	900	-	-	-	150J
FLUORANTHENE	5700	-	-	-	840J
PYRENE	4300	-	-	-	550J
BENZO(A)ANTHRACENE	2000	-	-	-	320J
CHRYSENE	2500	-	-	-	410
BENZO(B AND OR K)FLUORANTHENE	1600	-	-	-	250J
BENZO(A)PYRENE	1600	-	-	-	260J
INDENO(1,2,3-CD)PYRENE	1400	-	-	-	-
DIBENZO(A,H)ANTHRACENE	180J	-	-	-	-
BENZO(GH)PERYLENE	1300	-	-	-	150
DIBENZOTHIOPHENE (1)	400JN	-	-	-	-

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

TABLE 6

SUMMARY OF ORGANIC ANALYTICAL RESULTS  
 SEDIMENT SAMPLES  
 CTS OF ASHEVILLE, INC.  
 SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA

PARAMETERS (ug/kg)	Background	On Site			
	CA-SD-01	CA-SD-02	CA-SD-03	CA-SD-04	CA-SD-05
CARBAZOLE <sup>(1)</sup>	600.N				
METHYLANTHRACENE <sup>(1)</sup>	400JN				
METHY-PHENANTHRACENE <sup>(1)</sup>	500.N				
CYCLOPENTAPHENANTHRENE <sup>(1)</sup>	900JN				
ANTHRACENONE <sup>(1)</sup>	1000.N				
BENZOFLORENE <sup>(1)</sup>	300JN				
BENZOFUORANTHENE (NOT B OR C) <sup>(1)</sup>	600.N				
BENZOPYRENE (NOT A) <sup>(1)</sup>	2000JN				
UNIDENTIFIED COMPOUNDS: NO <sup>(1)</sup>	900:1		20 000:7	3000:3	8000:4
TETRA-HYDROHEXA-HYDROXY-INDENED ONE <sup>(1)</sup>			1000JN		
OCTA-HYDROHEX-METHYL-INDENE <sup>(1)</sup>			500JN		
PETROLEUM PRODUCTS <sup>(1)</sup>			N	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 analyzed for but not detected. The number given is the MQL.
- (1) Tentatively identified compound. This compound not on Target Compound List and is reported only as detected in individual samples; MQL not determined.

**TABLE 5**  
**SUMMARY OF INORGANIC ANALYTICAL RESULTS**  
**SEDIMENT SAMPLES**  
**CTS OF ASHEVILLE, INC.**  
**SKYLAND, BUNCOMBE COUNTY, NORTH CAROLINA**

PARAMETERS (mg/kg)	Background	On Site			
	CA-SD-01	CA-SD-02	CA-SD-03	CA-SD-04	CA-SD-05
ALUMINUM	17,000	12,000	13,000	13,000	11,000
ARSENIC	1	-	-	-	-
BAR IUM	20	74	94	5	36
BERYLLIUM	19	-	-	-	-
CADMIUM	10	-	31	-	-
CALCIUM	7500	-	1000	-	3400
CHROMIUM	40	20	82	48	25
COBALT	12	28	-	59	99
COPPER	30	-	930	-	-
IRON	35,000	7000	42,000	21,000	23,000
LEAD	21	3	59	13	30
MAGNESIUM	3300	1200	3900	2000	4600
MANGANESE	690	30	300	160	410
NICKEL	16	95	64	47	13
POTASSIUM	2500	640	3700	1400	3000
SILVER	30	-	400	14	-
VANADIUM	29	25	32	27	30
ZINC	94	29	1200	250	92

- 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.