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Program	SERB (SERB)
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State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

DEHNR

April 26, 1995

Ms. Cynthia Gurley
NC CERCLA Project Officer
US EPA Region IV Waste Division
345 Courtland Street, NE
Atlanta, GA 30365

RE: Site Inspection Prioritization
Monarch Furniture/Thaden Metals NCD 990 883 001
Jamestown, Guilford Co., NC

Dear Ms. Gurley:

This report contains the findings of the Site Inspection Prioritization (SIP) of the Monarch Furniture/Thaden Metals site located at 300 Scientific Street in Jamestown, North Carolina. The site occupies a 26,400 square foot building on a 5.2 acre parcel of land. The site is bordered by undeveloped land to the north and east, Thomasville Furniture Company to the south, and by Scientific Street to the west. Sludge drying beds and a concrete lined lagoon are located on the eastern portion of the property.

The site was initially established as a fabricator and electroplater of metal furniture parts. Processes were later expanded to include spray booths and drying ovens for furniture paint applications. The site was in operation from 1968 to 1982.

Prior to 1981, Thaden Metals used an unlined lagoon at the west end of the site to allow heavy metals from the electroplating process to settle out prior to being discharged. Sludges from the lagoon were also deposited onto vacant fields primarily at the southeastern area of the site behind the Monarch/Thaden facility. In 1983, the unlined lagoon was closed and sludge from the lagoon was placed in newly constructed sludge drying beds and a concrete lined lagoon located on the eastern edge of the property. Monitoring wells were installed around the old unlined lagoon area and the new lined lagoon. The groundwater was sampled from the monitoring wells and sediment samples were collected from the old lagoon bottom. Groundwater results indicated elevated levels of copper, zinc, cyanide, nickel, and chromium, and sediment samples showed significant amounts of heavy metals including arsenic, barium, lead, mercury, selenium, copper, nickel, and zinc.

In January 1995, surface water and sediment samples were collected from the Deep River at locations of 250 feet upgradient and 75 feet downgradient from the probable point of entry (PPE) of the intermittent stream that drains the sludge field located at the southeastern edge of the site. The surface water and sediment samples were analyzed for volatiles, semi-volatiles, and metals, but no observed release was detected in the surface water pathway.

Although there are elevated levels of metals in the groundwater and soil from the sludge field areas, there are no adjacent drinking water wells, and no sludge or contaminated soil on residential properties. The closest drinking water well is located 3000 feet southeast of the site. There are an estimated 20 workers on-site. Jamestown receives its municipal water from High Point and Greensboro. The closest surface water intake on the Deep River is located 2 miles downstream at the Oakdale Cotton Mill. This intake serves 175 persons.

The closest wetland is located 1 mile downstream of the site, and the closest sensitive environment is located 6 miles downstream on the Deep River.

Based on the information reviewed about the site and the surface water laboratory analyses, we recommend the site be assigned a no further remedial action status.

Sincerely,

Keith Snavely

Keith Snavely
Hydrogeologist
NC Superfund Section

SITE INSPECTION PRIORITIZATION

Monarch Furniture/Thaden Metals, Inc.
NCD 990 883 001
Jamestown, Guilford County, North Carolina
Reference No. 03142

April 1995

Superfund Section
Division of Solid Waste Management
North Carolina Department of Environment, Health
and Natural Resources

Prepared by:

Keith Snavely
Hydrogeologist

Reviewed by:

Grover Nicholson
Branch Head
Federal Contracts

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1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendment Reauthorization Act of 1986 (SARA), the North Carolina Superfund Section conducted a Site Inspection Prioritization (SIP) for the Monarch Furniture/Thaden Metals site (NCD 991 278 755) located at 300 Scientific Street in Jamestown, Guilford County, North Carolina. The purpose of the SIP was to update information regarding potentially affected populations, sensitive environments, and surface water pathways not documented in the Phase I Screening Site Investigation. The scope of the SIP included a review of available file information, an on-site reconnaissance and sampling of the surface water pathway, a 4-mile target distance survey of sensitive environments and wetlands, and a thorough evaluation of the 15-mile surface water pathway.

2.0 SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERIZATION

2.1 Location

The Monarch Furniture site (thereafter referred to as the Thaden Metals, Inc. site) is located at 300 Scientific Street in Jamestown, Guilford County, North Carolina (Reference 43, Figure 1, and Photograph 1, 2, and 3). The coordinates of the site from the center of the building location on the USGS map of High Point East quadrangle are north latitude 35° 59' 19" and west longitude 79° 57' 1.5" (Reference 30, Figure 1).

The mean annual precipitation, mean lake evaporation, the net annual precipitation, and 2-year 24-hour rainfall are summarized in the **Climate and Meteorology** section and are accurate.

2.2 Site Description

The Thaden Metals site as described in the **SITE LAYOUT, SITE USE AND WASTE DISPOSAL HISTORY,** and **EXECUTIVE SUMMARY** of the Phase I Screening Site Investigation is accurate. The Thaden metals site is currently owned by Mr. John Meyers, President of Greensboro Metal Parts, Inc. (Reference 1, 2 and 31, Figure 2). The old Monarch Furniture/Thaden Metals building is used by Greensboro Metals Parts for metal wire and wire framing fabrication. According to Mr. Meyers, Greensboro Metal Parts uses a non-hazardous dust in the metal fabrication process (Reference 31).

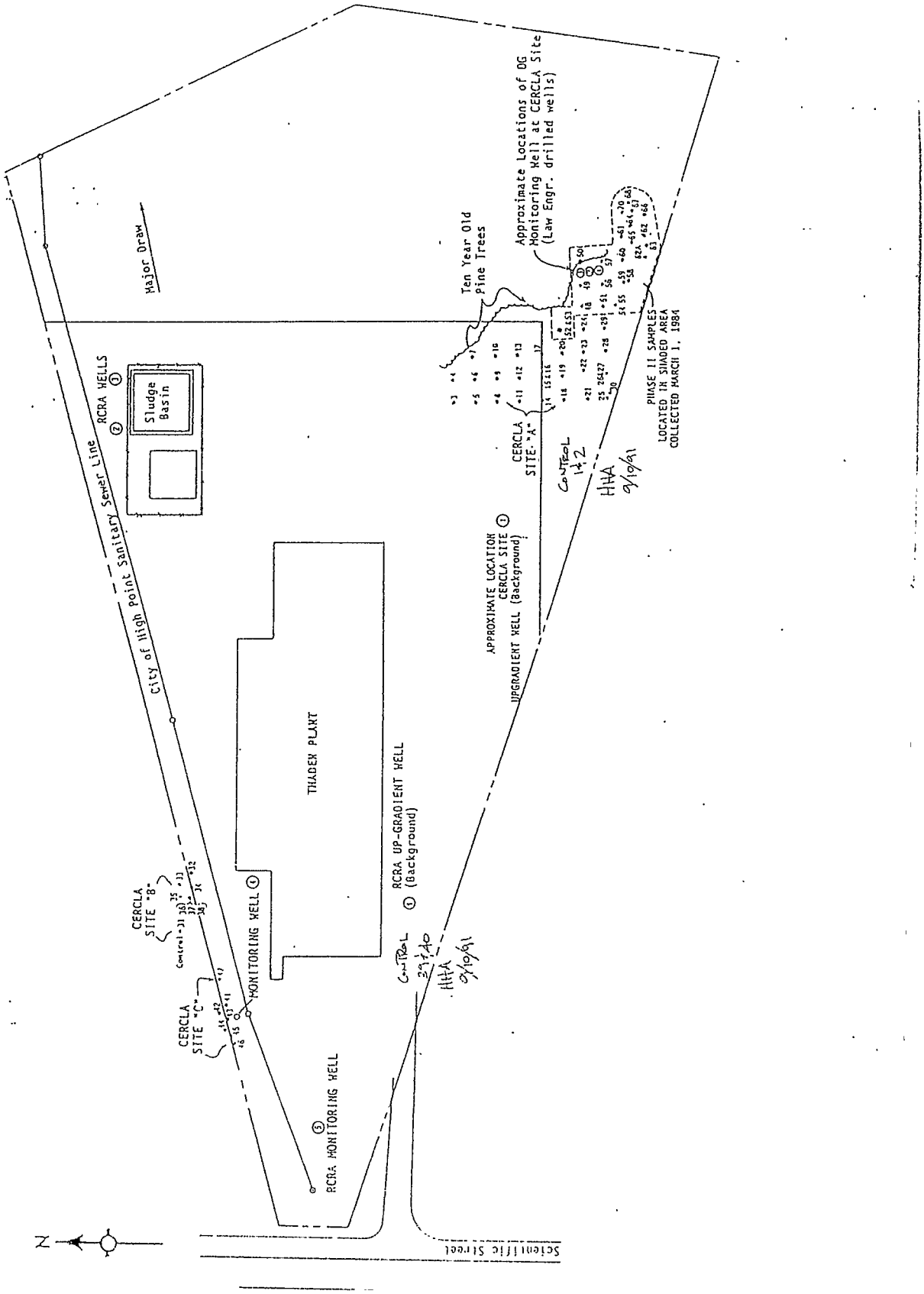

Fig. No: 2	Title: SITE MAP SLUDGE DISPOSAL AREA AND WELLS 1-5		
North Carolina Division of Solid Waste Management	Scale: NOT TO SCALE	Date: 4-12-95	Drawn By: RKS
Superfund Section	Site Name: MONARCH FURNITURE/THADEN METALS		NCD 990 883 001

According to the Phase I Screening Site Investigation by GreenHorne and O'Mara in 1991, five monitoring wells exist at the Thaden Metals site (Reference 1, Figure 2). Three of the monitoring wells are located south (Well 1), west (Well 5), and north (Well 4) of the plant and two (Wells 2 and 3) are located north of the concrete lined lagoons (Reference 1, Figure 2). An on-site reconnaissance and sampling trip by the NC Superfund Section in January 1995 noted two, four-inch PVC wells encased in two, two-foot concrete pipes (Wells 5 and 4) located at the west end and north edge of the entrance road to the site (Reference 31, Figure 2). In addition, 2 two-inch PVC monitoring wells (Wells 2 and 3) with metal stick-up well protectors are located at the north end of the concrete lagoons (Reference 31, Figure 2, Photograph 4- Well 2 shown). The upgradient monitoring well (Well 1) noted in the Screening Site Investigation was not found by the NC Superfund Section during the site reconnaissance and site sampling trip In January 1995.

Well 5 contained a four-inch PVC cap which was sealed (Photograph 5). Adjacent to the well was another 2-foot concrete pipe with storm drainage lines directing runoff from the site to a ditch located along Scientific Street (Reference 31, Photograph 6). Superfund personnel also noted well 4, a four-inch PVC well encased in concrete at the north side of the entrance road to the site. Well 4 did not contain a locking well cap (Reference 31, Photograph 7).

A reconnaissance of the concrete drying pits noted three 55-gallon drums within one of the shallow concrete drying pit areas (Reference 31, Photograph 8). The drums were not inspected from inside the fenced area, however a visual observation from outside the fence noted no staining of the concrete near the drums. The deepest concrete lined lagoon located on the northeast corner of the site contained a liquid, that appeared to be rainwater (Reference 31, Photograph 9).

According to the Phase I Screening Site Investigation three areas on the site property, areas A, B, and C, were used for sludge disposal (Figure 2). Although areas A and B contained elevated levels of metals in the groundwater, only Area C is drained by an intermittent stream and investigated for the SIP. The southeastern corner of the site (Area C) contains a former sludge field that has been overgrown with short pine trees and tall grass and located adjacent to the fence enclosing the Thomasville Furniture Plant (Figure 2, Photographs 10 and 11). This field is drained by an intermittent stream that flows approximately 1000 feet east into the Deep River (Reference 31).

Runoff from the west end of the site flows into an intermittent stream located along Scientific Street (Photograph 12, Figure 1). This stream also receives runoff from residential properties located west of Scientific Street (Photograph 13). Paper trash and old automobile tires were noted in the stream near the entrance to the site. This intermittent stream flows approximately 300 feet north into a perennial stream that flows east for approximately 2000 feet to the Deep River (Figure 1).

The nearest residential house is located approximately 200 feet west of the site along Scientific Street (Reference 31). The nearest school is located approximately 1.7 miles southeast of the site (Reference 10).

2.3 Operational History and Waste Characteristics

The operational history is summarized in five sections within the Phase I Screening Site Investigation. They are the **Executive Summary, Ownership History, Site Use and Waste Disposal History, Permit and Regulatory History** and **Remedial Actions to Date.** These sections are complete and accurate.

The Waste characteristics are summarized in the **Remedial Actions to Date** section of the Phase I Screening Site Investigation and the **Site History** section of the Husted and Associates Phase I and II Environmental Site Assessment. These sections are complete and accurate. The Phase I Screening Site Investigation approximates the amount of sludge deposited at the southeast corner of the site from an old unlined lagoon to be approximately 3000 pounds (Reference 1).

The latest groundwater analyses from wells A, B, C, and well 2 collected by Husted and Associates in July 1990 contained cyanide, barium, zinc , nickel and 1,4 - Dichlorobenzene above background concentrations (Reference 1, Figure 3, Appendix A). These wells are listed as 2-inch monitor wells from the Husted and Associates Phase I and II report and wells A, B, C may not correspond to wells 5 and 4 from the GreenHorne and O'Mara Screening Site Investigation (Reference 43, Figure 3).

3.0 GROUNDWATER PATHWAY

3.1 Hydrogeologic Setting

The hydrogeologic setting of Thaden Metals is discussed in the **Geology** and **Groundwater** sections of the Phase I Screening Site Investigation report. These sections are accurate.

3.2 Groundwater Targets

Most residents within the 4-mile target distance limit of Thaden Metals are supplied water from the municipal water supply of Jamestown. Jamestown purchases its water from the City of High Point and Greensboro (Reference 34, Figure 1).

The city of High Point obtains its water from two surface water impoundments, Oak Hollow Lake and High Point Lake. The surface water intakes of these water bodies are located on the southern most sections of both lakes at the head waters of the Deep River (Figure 1). Both of these lakes are located upstream of the site (Figure 1). The estimated number of residents supplied water from High Point municipal supply are 30,000 residents (Reference 36).

The water supply from the City of Greensboro is summarized in the **Water Supply** section of the Phase I Screening Site Investigation and is accurate except that the Greensboro system serves approximately 175,000 residents (Reference 37, Figure 1).

THADEN METALS
300 SCIENTIFIC STREET
JAMESTOWN, N.C.
GUILFORD COUNTY

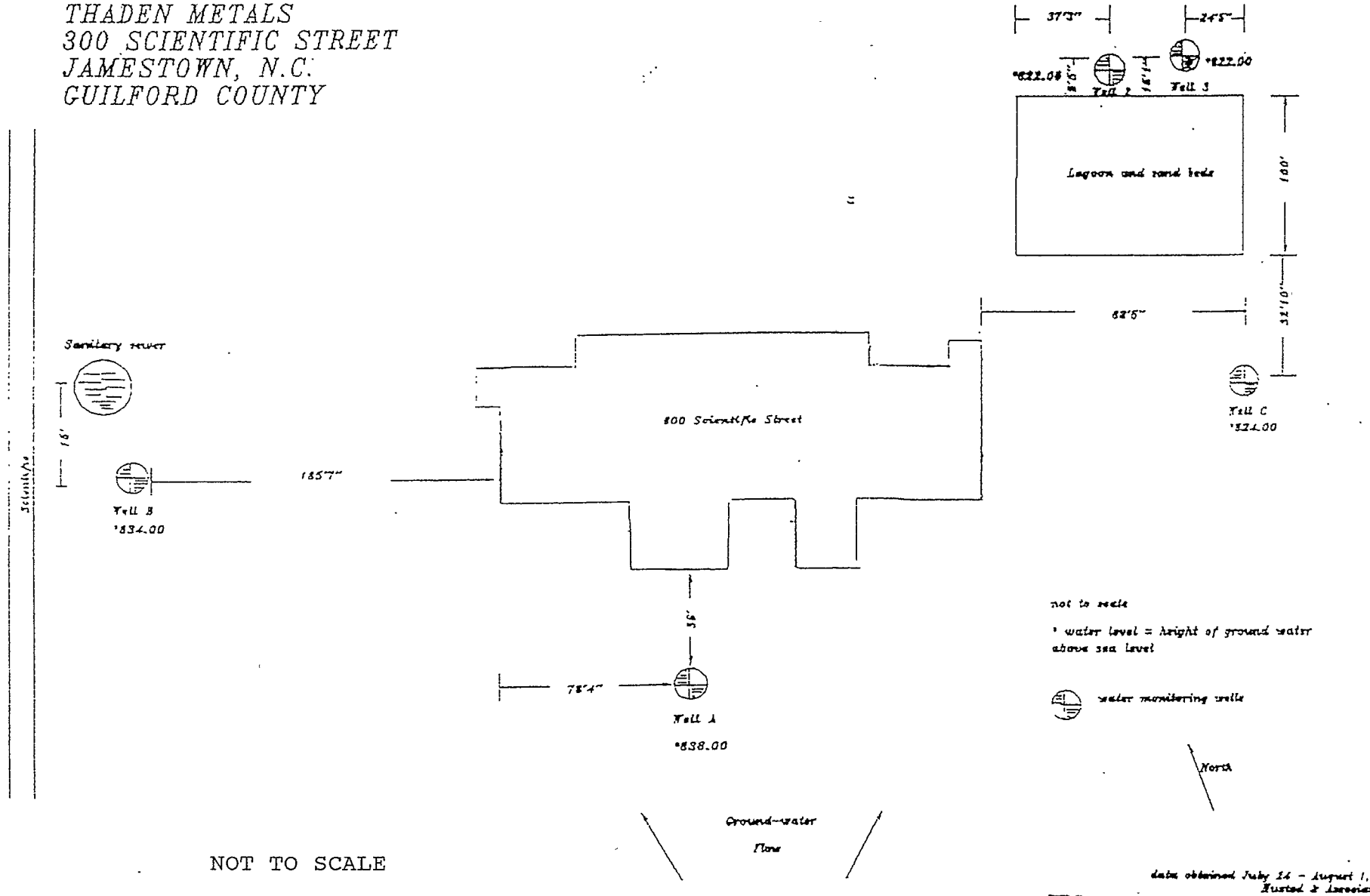

Fig. No: 3	Title: SITE MAP MONITORING WELLS B, C, A, 2 AND 3		
North Carolina Division of Solid Waste Management Superfund Section	Scale: As Shown	Date: 4-12-95	Drawn By: RKS
	Site Name: MONARCH FURNITURE/THADEN METALS		990 883 001

Residents located primarily southeast of the Jamestown city limits and out of the High Point and Greensboro water supply systems receive their water from groundwater supply wells (Figure 1). The populations within a 4-mile radius of the site that rely on domestic wells was estimated by counting the houses within each distance ring and multiplying the house count by the number of persons-per-household (2.44 persons) for Guilford County (Reference 33). Table 1 shows the population served by groundwater wells in the 4-mile radius (Reference 38).

Table 1. Population Served by Groundwater within 4-mile Radius

Radius per distance ring from site	Population per distance ring	Cumulative Population
0.0 - 0.25 miles	* ---------	---------
0.25 - 0.50 miles	* ---------	---------
0.50 - 1.00 miles	92	92
1.00 - 2.00 miles	759	851
2.00 - 3.00 miles	927	1778
3.00 - 4.00 miles	* 1188	2966

* Distance rings 0.0 to 0.50 miles are served municipal water from Jamestown and High Point. The distance ring of 3 to 4 miles includes the population served by two community water wells.

There are no wellhead protection areas in Guilford County (Reference 35). The nearest well is estimated at 3000 feet southeast of the site from the High Point East USGS quad Map of 1982 (Reference 10, Figure 1).

In addition to the population served by private water wells, there are also 2 community water wells located within the 4-mile target distance limit of the site. These serve the Hickory Run Mobile Home Park and Tri-City Junior Academy. These wells are located approximately 3.5 miles northeast and southwest of the site, and serve 285 and 130 persons, respectively (Figure 1, Reference 32).

3.3 Sample Locations and Analytical Results

No samples were collected from the groundwater monitoring wells (1, 2, 3, 4 and 5) during the site sampling for the SIP report in January 31, 1995. Previous groundwater laboratory results in 1981 from the area of the old lagoon indicate copper at 15.7 ppm, zinc at 5.3 ppm, cyanide at 17 ppm, nickel at 1.2 ppm, and chromium at 0.75 ppm (Reference 5). In 1990, Husted and Associates sampled monitoring wells A, B, C and Well 2. The analytical results of the groundwater samples indicate cyanide, barium, zinc, nickel, and 1,4 Dichlorobenzene significantly above background concentrations (Reference 1, Appendix A).

3.4 Groundwater Conclusions

Groundwater at the site contains concentrations of copper, zinc, cyanide, nickel, chromium, barium, and 1,4 Dichlorobenzene above background levels. The closest groundwater well is located 3000 feet southeast of the site.

Residents within 0.50 miles of the site obtain there water from the Jamestown and High Point municipal water supplies. In addition, residents within the 4-mile radius of the site are supplied water by the Jamestown, High Point, and Greensboro water supply systems. Approximately 3000 residents are supplied groundwater by domestic wells.

4.0 SURFACE WATER PATHWAY

4.1 Hydrologic Setting

The topography of the site is summarized in the **Topography** section of the Phase I Screening Site Investigation. This section is accurate. The site is not located in a flood zone (Reference 45). Drainage from the site is towards the Deep River. An intermittent stream (#1 intermittent stream) located at the southeastern edge of the site flows approximately 1000 feet east to the Deep River (Reference 31, Figure 1). Drainage from the front of the site flows into an intermittent stream (#2 intermittent stream) located parallel to Scientific Street (Reference 31, Figure 1). This stream flows north approximately 300 feet to a perennial stream which travels east for 2000 feet into the Deep River (Reference 31).

The probable point of entry (PPE) of runoff from the site to the surface water pathway of the Deep River is located 1000 feet south of the site at the intersection of the Deep River and intermittent stream #1 (Figure 1). This PPE is located approximately 80 feet north of the Southern Railroad overpass at the Deep River (Figure 1, Reference 31).

The 15-mile surface water pathway (SWP) extends from the PPE along the Deep River to the end of the 15-mile target distance limit located approximately 4 miles north of the City of Randleman (Figure 4). Flow rates were calculated from the Deep River at the Jamestown gauging station to the gauging station at the U.S. 220 overpass near Randleman. The flow in the Deep River varied from 66.7 cfs at Jamestown to 168 cfs near Randleman (Reference 39).

4.2 Surface Water Targets

There is one surface water intake located along the 15-mile surface water pathway that supplies drinking water to the Oakdale Cotton Mill (Reference 32, Figure 1). The North Carolina Public Water Supply data base indicates that this surface water intake supplies 175 persons at the mill (Reference 32, 50).

The Deep River is fished within the 15-mile surface water pathway from Jamestown to Randleman and contains sunfish and largemouth bass (Reference 40).

The closest wetland from the PPE is located approximately one mile southeast along the Deep River. The total frontage of this wetland is 0.50 miles (Reference 41). The total wetland frontage along the 15-mile surface water pathway is 1.75 miles (Reference 41). Two rare plants, Nestronia and the American Barberry were noted within the 15-mile SWP at distances of 6 and 6.5 miles downstream (Reference 42). The Deep River is classified as a WS-III river, which means that the river has no categorical restrictions on water shed development or discharges, and are suitable for all Class C uses (Reference 11).

4.3 Sample Locations and Analytical Results

Two surface water samples and two sediment samples were collected from the Deep River during the site reconnaissance and site sampling trip on January 31, 1995. These samples were collected at distances of 250 feet upstream of the PPE and 75 feet downstream of the PPE (Reference 31, Figure 3, Photographs 14 and 15). The upgradient (MFC-02-SW and MFC-02-SD) and down gradient (MFC-01-SW and MFC-01-SD) samples were analyzed for volatiles, semi-volatiles, and metals (Photographs 14 and 15). The laboratory analyses indicate no observed releases of contaminants to the surface water or sediment within the Deep River (Appendix A).

No samples were collected from the PPE formed from the perennial stream since the intermittent stream (#2 intermittent stream) contained trash and old tires and was also feed runoff from properties other than Monarch Furniture/Thaden Metals (Reference 31, Figure 1).

4.4 Surface Water Conclusions

The laboratory analytical results of surface water and sediment from the Deep River indicate no observed releases to surface water of volatiles, semi-volatiles and metals (Appendix A).

5.0 Soil Exposure and Air Pathways

5.1 Physical Conditions

The physical conditions of the site are noted in the **Executive Summary, Site Layout, Topography, Soils and Land Use** Sections of the report. These sections are accurate except that the drum storage at the west end of the site has been replaced with a wooden storage shed approximately 30 feet long X 30 feet wide (Reference 31).

5.2 Soil Exposure and Air Targets

Soil testing and a risk assessment was conducted in the area of the sludge field in 1984. The assessment determined that the sludge did not pose a significant threat to the environment or human health, and the removal of soil in the field was not warranted. Those persons that are potentially affected by soil exposure are residents that would enter the site area at the location of the old sludge field. A site reconnaissance noted this field is overgrown with short pines and tall grass.

No observed releases to the air pathway are suspected from the site.

5.3 Soil Exposure and Air Pathway Conclusions

The sludge field is present in the southeast area of the site, however vegetation has covered the field. No air releases are suspected at the site.

6.0 Summary and Conclusions

Monarch Furniture/Thaden Metals site was investigated by the NC Superfund Section to identify the site's potential affects to groundwater, surface water, soil, and air.

Although there has been a release of metals to the groundwater, the area surrounding the site is supplied drinking water by the municipal water supply of Jamestown. The closest water well is located approximately 3000 feet southeast of the site.

Surface water and sediment samples were collected from the Deep River at approximately 1000 feet from the site and analyzed for volatiles, semi-volatiles, and metals. The laboratory analyses of these samples indicate no observed releases to surface water or sediment downstream of the PPE of the site.

Although there is an observed release of metals in the soil at the sludge field noted in the Phase I Screening Site Investigation, a risk assessment was conducted in the summer of 1984 that determined the sludge did not pose a threat to the environment or human health and that the removal of soil from the field was not warranted. The site reconnaissance in January 1995 noted the sludge field is overgrown with vegetation.

The closest residential property is located west of the site across Scientific Street. No observed release to the air pathway was noted during the site reconnaissance.

Based on the information gathered we recommend a NFRAP for the site.

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MONARCH FURNITURE/THADEN METALS
NCD 990 883 001

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APPENDIX A
LABORATORY ANALYSES

HUSTED AND ASSOCIATES PHASE I AND PHASE II ANALYSES
AND
SITE PRIORITIZATION REPORT
SURFACE WATER ANALYSES

TABLE 3

GROUNDWATER SAMPLING RESULTS (ppb) - 1990

MONARCH FURNITURE (THADEN METALS)

	Well A - Background (South Property Line- upgradient of Plant)	Well B Downgradient of Old, Unlined Lagoon	Well C (Downgradient of Cement-Lined Lagoon	Well 2 (North Side of Cement-Lined Lagoon)
Cyanide	<5			16
Barium	20	480	410	
Zinc	103	454		
Nickel	<40	100		
1,4 - Dichlorobenzene	<1	4.3		

Source: Husted & Associates, Phase I and II Environmental Site Assessment of Monarch/Thaden MEtals Facility. High Point, North Carolina, 1990.

NC-DEHNR
Division of Solid Waste Management
☑ Superfund Section
☐ Hazardous Waste Section
☐ Solid Waste Section

Organics Lab: ____
Inorganics Lab: ✓

RECEIVED
MAR 1 0 1995
SUPERFUND SECTION

CHAIN OF CUSTODY RECORD

Project Name: Monarch Furniture / Thaden Metals
Site ID # (NCD#) 990-883-001
Location: James Town, NC
Address: 301 Scientific Road

Sampled by: Keith Snavely
Sampler ID ____
Telephone: (919) 733-2801
Date Sampled: 1/31/95
Time Sampled: 1330 - 13:50

Sample Types: ~~Soil~~ Sediment ✓ Water ✓ Waste ____ Other ____

Remarks: Sediment and surface water sample from Monarch Furniture / Thaden Metals from Deep River - 2 surface water, 2 sediment

* note # 017479 not in these samples

Field Sample Numbers: 017476, 017477, 017478, 017480

Relinquished by: Richard Keith Snavely (Signature) Date: 2/1/95 Time: 1512

Received by: [signature] (Signature) Date: 1 Feb 95 Time: 1512

Relinquished by: ____ (Signature) Date: ____ Time: ____

Received by: ____ (Signature) Date: ____ Time: ____

Relinquished by: ____ (Signature) Date: ____ Time: ____

Received by: ____ (Signature) Date: ____ Time: ____

Results Reported: [signature] (Signature) Date: 7 Mar 95 Time: ____

(\COCR.FRM)

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

RECEIVED
FEB 17 1995
SUPERFUND SECTION

Site Number NCD 990-893-001 Field Sample Number 017476

Name of Site Monarch Furniture/Haden Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 1336

Agency: ____ Hazardous Waste ____ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
____ Ground water (1)	____ Solid (5)	MFC-01-SW-surface wate
✓ Surface water (2)	____ Liquid (6)	Downstream - Deep River
____ Soil (3)	____ Sludge (7)	75 feet south of PPE
____ Other (4)	____ Other (8)	10-15 Ft north of railroad

Organic Chemistry

Parameter	Results(mg/l)
____ P&T:GC/MS	
____ Acid:B/N Ext.	
____ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
____ Gross Alpha	
____ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results(mg/l)
✓ Arsenic	<0.01
✓ Barium	0.05
✓ Cadmium	<0.002
____ Chloride	
✓ Chromium	<0.01
✓ Copper	<0.05
____ Fluoride	
____ Iron	
✓ Lead	<0.005
____ Manganese	
✓ Mercury	<0.0005
____ Nitrate	
✓ Selenium	<0.005
✓ Silver	<0.05
____ Sulfates	
✓ Zinc	<0.05
____ pH	
____ Conductivity	
____ TDS	
____ TOC	
✓ Nickel	<0.05

TCLP Compounds

Inorganic Compounds	Results(mg/l)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chromium	
____ Lead	
____ Mercury	
____ Selenium	
____ Silver	

Organic Compounds	Results(mg/l)
____ benzene	
____ carbon tetrachloride	
____ chlordane	
____ chlorobenzene	
____ chloroform	
____ o-cresol	
____ m-cresol	
____ p-cresol	
____ cresol	
____ 1,4-dichlorobenzene	
____ 1,2-dichloroethane	
____ 1,1-dichloroethylene	
____ 2,4-dinitrotoluene	
____ heptachlor	
____ hexachlorobenzene	
____ hexachlorobutadiene	
____ hexachloroethane	
____ methyl ethyl ketone	
____ nitrobenzene	
____ pentachlorophenol	
____ pyridine	
____ tetrachloroethylene	
____ trichloroethylene	
____ 2,4,5-trichlorophenol	
____ 2,4,6-trichlorophenol	
____ vinyl chloride	
____ endrin	
____ lindane	
____ methoxychlor	
____ toxaphene	
____ 2,4-D	
____ 2,4,5-TP (Silvex)	

Date Received _____ Reported by _____

Date Extracted _____ Date Reported 14 Feb 95

Date Analyzed _____ Lab Number 001401 FEB 195

PD89E

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 990-893-001 Field Sample Number 017477

Name of Site Monarch Furniture / Haden Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 1335

Agency: ____ Hazardous Waste ____ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
____ Ground water (1)	____ Solid (5)	MFC-01-SD, sediment
____ Surface water (2)	____ Liquid (6)	Downstream - Deep River
____ Soil (3)	____ Sludge (7)	Located 25 feet South of PPE
✓ Other (4) sediment	____ Other (8)	10-15 feet north of Rail Road

Organic Chemistry

Parameter	Results (mg/l)
____ P&T:GC/MS	
____ Acid:B/N Ext.	
____ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
____ Gross Alpha	
____ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results [redacted] (mg/kg)
✓ Arsenic	<2
✓ Barium	29
✓ Cadmium	<9.8
____ Chloride	
✓ Chromium	9.8
✓ Copper	<9.8
____ Fluoride	
____ Iron	
✓ Lead	<20
____ Manganese	
✓ Mercury	<0.1
____ Nitrate	
✓ Selenium	<1
✓ Silver	<9.8
____ Sulfates	
✓ Zinc	16
____ pH	
____ Conductivity	
____ TDS	
____ TOC	
✓ Nickel	<9.8

TCLP Compounds

Inorganic Compounds	Results (mg/l)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chromium	
____ Lead	
____ Mercury	
____ Selenium	
____ Silver	

Organic Compounds	Results (mg/l)
____ benzene	
____ carbon tetrachloride	
____ chlordane	
____ chlorobenzene	
____ chloroform	
____ o-cresol	
____ m-cresol	
____ p-cresol	
____ cresol	
____ 1,4-dichlorobenzene	
____ 1,2-dichloroethane	
____ 1,1-dichloroethylene	
____ 2,4-dinitrotoluene	
____ heptachlor	
____ hexachlorobenzene	
____ hexachlorobutadiene	
____ hexachloroethane	
____ methyl ethyl ketone	
____ nitrobenzene	
____ pentachlorophenol	
____ pyridine	
____ tetrachloroethylene	
____ trichloroethylene	
____ 2,4,5-trichlorophenol	
____ 2,4,6-trichlorophenol	
____ vinyl chloride	
____ endrin	
____ lindane	
____ methoxychlor	
____ toxaphene	
____ 2,4-D	
____ 2,4,5-TP (Silvex)	

Date Received _____ Reported by _____

Date Extracted _____ Date Reported _____

Date Analyzed _____ Lab Number 001403 FEB 195

D891

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 990-893-001 Field Sample Number 017478

Name of Site Monarch Furniture / Haden Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 13:50

Agency: ____ Hazardous Waste ____ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
____ Ground water (1)	____ Solid (5)	MFC-02-SW-surface
✓ Surface water (2)	____ Liquid (6)	Upstream-Deep River Water
____ Soil (3)	____ Sludge (7)	approx-200-250 feet North
____ Other (4)	____ Other (8)	of PPE in Deep River

Organic Chemistry

Parameter	Results(mg/l)
____ P&T:GC/MS	
____ Acid:B/N Ext.	
____ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
____ Gross Alpha	
____ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results(mg/l)
✓ Arsenic	<0.01
✓ Barium	0.05
✓ Cadmium	<0.003
____ Chloride	
✓ Chromium	<0.01
✓ Copper	<0.05
____ Fluoride	
____ Iron	
✓ Lead	<0.005
____ Manganese	
✓ Mercury	<0.0005
____ Nitrate	
✓ Selenium	<0.005
✓ Silver	<0.05
____ Sulfates	
✓ Zinc	<0.05
____ pH	
____ Conductivity	
____ TDS	
____ TOC	
✓ Nickel	<0.05

Date Received _____ Reported by _____

Date Extracted _____ Date Reported _____

Date Analyzed _____ Lab Number 001402 FEB 195

ID891:

TCLP Compounds

Inorganic Compounds	Results(mg/l)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chromium	
____ Lead	
____ Mercury	
____ Selenium	
____ Silver	

Organic Compounds	Results(mg/l)
____ benzene	
____ carbon tetrachloride	
____ chlordane	
____ chlorobenzene	
____ chloroform	
____ o-cresol	
____ m-cresol	
____ p-cresol	
____ cresol	
____ 1,4-dichlorobenzene	
____ 1,2-dichloroethane	
____ 1,1-dichloroethylene	
____ 2,4-dinitrotoluene	
____ heptachlor	
____ hexachlorobenzene	
____ hexachlorobutadiene	
____ hexachloroethane	
____ methyl ethyl ketone	
____ nitrobenzene	
____ pentachlorophenol	
____ pyridine	
____ tetrachloroethylene	
____ trichloroethylene	
____ 2,4,5-trichlorophenol	
____ 2,4,6-trichlorophenol	
____ vinyl chloride	
____ endrin	
____ lindane	
____ methoxychlor	
____ toxaphene	
____ 2,4-D	
____ 2,4,5-TP (Silvex)	

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 990-893-001 Field Sample Number 017480

Name of Site Monarch Furniture / Haden Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 13:55

Agency: ___ Hazardous Waste ___ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
___ Ground water (1)	___ Solid (5)	MFC-02-SD-sediment
___ Surface water (2)	___ Liquid (6)	Upstream - Deep River
___ Soil (3)	___ Sludge (7)	approx 200-250 feet north
✓ Other (4) sediment	___ Other (8)	of PPF in Deep River

Organic Chemistry

Parameter	Results (mg/l)
___ P&T:GC/MS	
___ Acid:B/N Ext.	
___ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
___ Gross Alpha	
___ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results (mg/kg)
✓ Arsenic	<2
✓ Barium	66
✓ Cadmium	<9.8
___ Chloride	
✓ Chromium	16
✓ Copper	23
___ Fluoride	
___ Iron	
✓ Lead	<20
___ Manganese	
✓ Mercury	<0.09
___ Nitrate	
✓ Selenium	<1
✓ Silver	<9.8
___ Sulfates	
✓ Zinc	25
___ pH	
___ Conductivity	
___ TDS	
___ TOC	
✓ Nickel	12

TCLP Compounds

Inorganic Compounds	Results (mg/l)
___ Arsenic	
___ Barium	
___ Cadmium	
___ Chromium	
___ Lead	
___ Mercury	
___ Selenium	
___ Silver	

Organic Compounds	Results (mg/l)
___ benzene	
___ carbon tetrachloride	
___ chlordane	
___ chlorobenzene	
___ chloroform	
___ o-cresol	
___ m-cresol	
___ p-cresol	
___ cresol	
___ 1,4-dichlorobenzene	
___ 1,2-dichloroethane	
___ 1,1-dichloroethylene	
___ 2,4-dinitrotoluene	
___ heptachlor	
___ hexachlorobenzene	
___ hexachlorobutadiene	
___ hexachloroethane	
___ methyl ethyl ketone	
___ nitrobenzene	
___ pentachlorophenol	
___ pyridine	
___ tetrachloroethylene	
___ trichloroethylene	
___ 2,4,5-trichlorophenol	
___ 2,4,6-trichlorophenol	
___ vinyl chloride	
___ endrin	
___ lindane	
___ methoxychlor	
___ toxaphene	
___ 2,4-D	
___ 2,4,5-TP (Silvex)	

Date Received _____ Reported by _____

Date Extracted _____ Date Reported _____

Date Analyzed _____ Lab Number 001404 FEB 195

0893

NC-DEHNR
Division of Solid Waste Management
☑ Superfund Section
☐ Hazardous Waste Section
☐ Solid Waste Section

Organics Lab: ✓
Inorganics Lab: _____

CHAIN OF CUSTODY RECORD

Project Name: Monarch Furniture / Thaden Metals
Site ID # (NCD#) 990-883-001
Location: James Town, NC
Address: 301 Scientific Road

Sampled by: Keith Snavely
Sampler ID
Telephone: (919) 733-2801
Date Sampled: 1/31/95
Time Sampled: 1330 - 13:53

Sample Types: ~~Soil~~ sediment ✓ Water ✓ Waste _____ Other _____

Remarks: 5 sediment and surface water sample from Monarch Furniture and Thaden Metals from Deep River
4 surface water, 4 soil, 1 Blank

Field Sample Numbers: 019511, 019512, 019513, 019514, 019515, 019516, 019517, 019518, 019519

Relinquished by: Richard Keith Snavely (Signature) Date: 2/1/95 Time: 1520
~~Vicki S. Painter~~

Received by: Vicki S. Painter (Signature) Date: 2/1/95 Time: 15:20

Relinquished by: _____ (Signature) Date: _____ Time: _____

Received by: _____ (Signature) Date: _____ Time: _____

Relinquished by: _____ (Signature) Date: _____ Time: _____

Received by: _____ (Signature) Date: _____ Time: _____

Results Reported: Jan L. Neel (Signature) Date: 2-20-95 Time: _____
950465 - 950473

(A:\COCR.FRM)

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 990-883-001 Field Sample Number 019511

Name of Site Maynard Furniture/Hadon Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 1330

Agency: ____ Hazardous Waste ____ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
____ Ground water (1)	____ Solid (5)	MFC-01 SW-Surface Water
✓ Surface water (2)	____ Liquid (6)	Downstream - Deep River
____ Soil (3)	____ Sludge (7)	75 feet south of PPF
____ Other (4)	____ Other (8)	10-15 ft North of railroad

Organic Chemistry

Parameter	Results (mg/l)
✓ P&T:GC/MS	
____ Acid:B/N Ext.	
____ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
____ Gross Alpha	
____ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results (mg/l) (mg/kg)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chloride	
____ Chromium	
____ Copper	
____ Fluoride	
____ Iron	
____ Lead	
____ Manganese	
____ Mercury	
____ Nitrate	
____ Selenium	
____ Silver	
____ Sulfates	
____ Zinc	
____ pH	
____ Conductivity	
____ TDS	
____ TOC	

TCLP Compounds

Inorganic Compounds	Results (mg/l)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chromium	
____ Lead	
____ Mercury	
____ Selenium	
____ Silver	

RECEIVED FEB 24 1995 HAZARDOUS WASTE

Organic Compounds	Results (mg/l)
____ benzene	
____ carbon tetrachloride	
____ chlordane	
____ chlorobenzene	
____ chloroform	
____ o-cresol	
____ m-cresol	
____ p-cresol	
____ cresol	
____ 1,4-dichlorobenzene	
____ 1,2-dichloroethane	
____ 1,1-dichloroethylene	
____ 2,4-dinitrotoluene	
____ heptachlor	
____ hexachlorobenzene	
____ hexachlorobutadiene	
____ hexachloroethane	
____ methyl ethyl ketone	
____ nitrobenzene	
____ pentachlorophenol	
____ pyridine	
____ tetrachloroethylene	
____ trichloroethylene	
____ 2,4,5-trichlorophenol	
____ 2,4,6-trichlorophenol	
____ vinyl chloride	
____ endrin	
____ lindane	
____ methoxychlor	
____ toxaphene	
____ 2,4-D	
____ 2,4,5-TP (Silvex)	

RECEIVED FEB 27 1995 SUPERFUND SECTION

Date Received 2-1-95 VB JM Reported by John L. Nace

Date Extracted _____ Date Reported 2-20-95

Date Analyzed 2-16-95 MW Lab Number 950465

CPD89E

#950465-950473

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 990-883-001 Field Sample Number 019512

Name of Site Monarch Furniture / Haden Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 1330

Agency: ____ Hazardous Waste ____ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
____ Ground water (1)	____ Solid (5)	MFC-01 SW - surface wate
✓ Surface water (2)	____ Liquid (6)	Downstream - Deep River
____ Soil (3)	____ Sludge (7)	75 feet south of PPE
____ Other (4)	____ Other (8)	10-15 ft north of railroad

Organic Chemistry

Parameter	Results (mg/l)
____ P&T:GC/MS	
✓ Acid:B/N Ext.	
____ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
____ Gross Alpha	
____ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results (mg/l) (mg/kg)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chloride	
____ Chromium	
____ Copper	
____ Fluoride	
____ Iron	
____ Lead	
____ Manganese	
____ Mercury	
____ Nitrate	
____ Selenium	
____ Silver	
____ Sulfates	
____ Zinc	
____ pH	
____ Conductivity	
____ TDS	
____ TOC	

TCLP Compounds

Inorganic Compounds	Results (mg/l)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chromium	
____ Lead	
____ Mercury	
____ Selenium	
____ Silver	

Organic Compounds	Results (mg/l)
____ benzene	
____ carbon tetrachloride	
____ chlordane	
____ chlorobenzene	
____ chloroform	
____ o-cresol	
____ m-cresol	
____ p-cresol	
____ cresol	
____ 1,4-dichlorobenzene	
____ 1,2-dichloroethane	
____ 1,1-dichloroethylene	
____ 2,4-dinitrotoluene	
____ heptachlor	
____ hexachlorobenzene	
____ hexachlorobutadiene	
____ hexachloroethane	
____ methyl ethyl ketone	
____ nitrobenzene	
____ pentachlorophenol	
____ pyridine	
____ tetrachloroethylene	
____ trichloroethylene	
____ 2,4,5-trichlorophenol	
____ 2,4,6-trichlorophenol	
____ vinyl chloride	
____ endrin	
____ lindane	
____ methoxychlor	
____ toxaphene	
____ 2,4-D	
____ 2,4,5-TP (Silvex)	

Date Received 2-1-95 VP JM Reported by _____

Date Extracted 2-2-95 SA, AB Date Reported _____

Date Analyzed 2-7-95 BJO Lab Number 950466

CPD89E

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 990-883-001 Field Sample Number 019513

Name of Site Monarch Furniture/Haden Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 1335

Agency: ____ Hazardous Waste ____ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
____ Ground water (1)	____ Solid (5)	MFC-01-SD sediment
____ Surface water (2)	____ Liquid (6)	Downstream - Deep River
____ Soil (3)	____ Sludge (7)	located 75 feet south of PPE
✓ Other (4) Sediment	____ Other (8)	10-15 feet north of Railroad

Organic Chemistry

Parameter	Results (mg/l)
✓ P&T:GC/MS	
____ Acid:B/N Ext.	
____ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
____ Gross Alpha	
____ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results (mg/l) (mg/kg)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chloride	
____ Chromium	
____ Copper	
____ Fluoride	
____ Iron	
____ Lead	
____ Manganese	
____ Mercury	
____ Nitrate	
____ Selenium	
____ Silver	
____ Sulfates	
____ Zinc	
____ pH	
____ Conductivity	
____ TDS	
____ TOC	

TCLP Compounds

Inorganic Compounds	Results (mg/l)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chromium	
____ Lead	
____ Mercury	
____ Selenium	
____ Silver	

Organic Compounds	Results (mg/l)
____ benzene	
____ carbon tetrachloride	
____ chlordane	
____ chlorobenzene	
____ chloroform	
____ o-cresol	
____ m-cresol	
____ p-cresol	
____ cresol	
____ 1,4-dichlorobenzene	
____ 1,2-dichloroethane	
____ 1,1-dichloroethylene	
____ 2,4-dinitrotoluene	
____ heptachlor	
____ hexachlorobenzene	
____ hexachlorobutadiene	
____ hexachloroethane	
____ methyl ethyl ketone	
____ nitrobenzene	
____ pentachlorophenol	
____ pyridine	
____ tetrachloroethylene	
____ trichloroethylene	
____ 2,4,5-trichlorophenol	
____ 2,4,6-trichlorophenol	
____ vinyl chloride	
____ endrin	
____ lindane	
____ methoxychlor	
____ toxaphene	
____ 2,4-D	
____ 2,4,5-TP (Silvex)	

Date Received 2-1-95 VBJM Reported by _____

Date Extracted _____ Date Reported _____

Date Analyzed 2-15-95 nw Lab Number 950467

CPD89B

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 990-893-001 Field Sample Number 019514

Name of Site Monarch Furniture/Haden Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 1335

Agency: ____ Hazardous Waste ____ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
____ Ground water (1)	____ Solid (5)	MFC-01-SD, sediment
____ Surface water (2)	____ Liquid (6)	Downstream - Deep River
____ Soil (3)	____ Sludge (7)	located 75 feet south of PPE
✓ Other (4) sediment	____ Other (8)	10-15 feet north of Railroad

Organic Chemistry

Parameter	Results (mg/l)
____ P&T:GC/MS	
✓ Acid:B/N Ext.	
____ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
____ Gross Alpha	
____ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results (mg/l) (mg/kg)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chloride	
____ Chromium	
____ Copper	
____ Fluoride	
____ Iron	
____ Lead	
____ Manganese	
____ Mercury	
____ Nitrate	
____ Selenium	
____ Silver	
____ Sulfates	
____ Zinc	
____ pH	
____ Conductivity	
____ TDS	
____ TOC	

TCLP Compounds

Inorganic Compounds	Results (mg/l)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chromium	
____ Lead	
____ Mercury	
____ Selenium	
____ Silver	

Organic Compounds	Results (mg/l)
____ benzene	
____ carbon tetrachloride	
____ chlordane	
____ chlorobenzene	
____ chloroform	
____ o-cresol	
____ m-cresol	
____ p-cresol	
____ cresol	
____ 1,4-dichlorobenzene	
____ 1,2-dichloroethane	
____ 1,1-dichloroethylene	
____ 2,4-dinitrotoluene	
____ heptachlor	
____ hexachlorobenzene	
____ hexachlorobutadiene	
____ hexachloroethane	
____ methyl ethyl ketone	
____ nitrobenzene	
____ pentachlorophenol	
____ pyridine	
____ tetrachloroethylene	
____ trichloroethylene	
____ 2,4,5-trichlorophenol	
____ 2,4,6-trichlorophenol	
____ vinyl chloride	
____ endrin	
____ lindane	
____ methoxychlor	
____ toxaphene	
____ 2,4-D	
____ 2,4,5-TP (Silvex)	

Date Received 2-1-95 VP, JM Reported by _____

Date Extracted 2-6-95 SA Date Reported _____

Date Analyzed 2-7-95 BD Lab Number 950468

CPD891

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 980-893-001 Field Sample Number 019515

Name of Site Monarch Furniture/Haden Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 13:50

Agency: ___ Hazardous Waste ___ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
___ Ground water (1)	___ Solid (5)	MFC-02-08 SW-surface water
✓ Surface water (2)	___ Liquid (6)	upstream - Deep River
___ Soil (3)	___ Sludge (7)	approx. 200-250 ft north
___ Other (4)	___ Other (8)	of PPE in Deep River

Organic Chemistry

Parameter	Results (mg/l)
✓ P&T:GC/MS	
___ Acid:B/N Ext.	
___ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
___ Gross Alpha	
___ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results (mg/l) (mg/kg)
___ Arsenic	
___ Barium	
___ Cadmium	
___ Chloride	
___ Chromium	
___ Copper	
___ Fluoride	
___ Iron	
___ Lead	
___ Manganese	
___ Mercury	
___ Nitrate	
___ Selenium	
___ Silver	
___ Sulfates	
___ Zinc	
___ pH	
___ Conductivity	
___ TDS	
___ TOC	

TCLP Compounds

Inorganic Compounds	Results (mg/l)
___ Arsenic	
___ Barium	
___ Cadmium	
___ Chromium	
___ Lead	
___ Mercury	
___ Selenium	
___ Silver	

Organic Compounds	Results (mg/l)
___ benzene	
___ carbon tetrachloride	
___ chlordane	
___ chlorobenzene	
___ chloroform	
___ o-cresol	
___ m-cresol	
___ p-cresol	
___ cresol	
___ 1,4-dichlorobenzene	
___ 1,2-dichloroethane	
___ 1,1-dichloroethylene	
___ 2,4-dinitrotoluene	
___ heptachlor	
___ hexachlorobenzene	
___ hexachlorobutadiene	
___ hexachloroethane	
___ methyl ethyl ketone	
___ nitrobenzene	
___ pentachlorophenol	
___ pyridine	
___ tetrachloroethylene	
___ trichloroethylene	
___ 2,4,5-trichlorophenol	
___ 2,4,6-trichlorophenol	
___ vinyl chloride	
___ endrin	
___ lindane	
___ methoxychlor	
___ toxaphene	
___ 2,4-D	
___ 2,4,5-TP (Silvex)	

Date Received 2-1-95 VP JM Reported by _____

Date Extracted _____ Date Reported _____

Date Analyzed 2-16-95 mw Lab Number 950469

CPD89B

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 970-893-001 Field Sample Number 019516

Name of Site Monarch Furniture / Haden Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 13:30

Agency: ____ Hazardous Waste ____ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
____ Ground water (1)	____ Solid (5)	MFC-02-SW surface wate
✓ Surface water (2)	____ Liquid (6)	upstream - Deep River
____ Soil (3)	____ Sludge (7)	approx - 200-250 feet North
____ Other (4)	____ Other (8)	of PPE in Deep River

Organic Chemistry

Parameter	Results(mg/l)
____ P&T:GC/MS	
✓ Acid:B/N Ext.	
____ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
____ Gross Alpha	
____ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results(mg/l) (mg/kg)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chloride	
____ Chromium	
____ Copper	
____ Fluoride	
____ Iron	
____ Lead	
____ Manganese	
____ Mercury	
____ Nitrate	
____ Selenium	
____ Silver	
____ Sulfates	
____ Zinc	
____ pH	
____ Conductivity	
____ TDS	
____ TOC	

TCLP Compounds

Inorganic Compounds	Results(mg/l)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chromium	
____ Lead	
____ Mercury	
____ Selenium	
____ Silver	

Organic Compounds	Results(mg/l)
____ benzene	
____ carbon tetrachloride	
____ chlordane	
____ chlorobenzene	
____ chloroform	
____ o-cresol	
____ m-cresol	
____ p-cresol	
____ cresol	
____ 1,4-dichlorobenzene	
____ 1,2-dichloroethane	
____ 1,1-dichloroethylene	
____ 2,4-dinitrotoluene	
____ heptachlor	
____ hexachlorobenzene	
____ hexachlorobutadiene	
____ hexachloroethane	
____ methyl ethyl ketone	
____ nitrobenzene	
____ pentachlorophenol	
____ pyridine	
____ tetrachloroethylene	
____ trichloroethylene	
____ 2,4,5-trichlorophenol	
____ 2,4,6-trichlorophenol	
____ vinyl chloride	
____ endrin	
____ lindane	
____ methoxychlor	
____ toxaphene	
____ 2,4-D	
____ 2,4,5-TP (Silvex)	

Date Received 2-1-95 VP, JM Reported by _____

Date Extracted 2-2-95 SA, AB Date Reported _____

Date Analyzed 2-7-95 BD Lab Number 950470

CPD89E

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 990-883-001 Field Sample Number 019517

Name of Site Monarch Furniture / Holton Metals Site Location Jamestown, NC

Collected By Keith Sawyer ID# _____ Date Collected 1/31/95 Time 13:55

Agency: ____ Hazardous Waste ____ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
____ Ground water (1)	____ Solid (5)	MFC-02, SD-sediment
____ Surface water (2)	____ Liquid (6)	upstream - Deep River
____ Soil (3)	____ Sludge (7)	approx. 200-250 feet north
✓ Other (4) sediment	____ Other (8)	of PPF in Deep River

Organic Chemistry

Parameter	Results (mg/l)
✓ P&T:GC/MS	
____ Acid:B/N Ext.	
____ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
____ Gross Alpha	
____ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results (mg/l) (mg/kg)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chloride	
____ Chromium	
____ Copper	
____ Fluoride	
____ Iron	
____ Lead	
____ Manganese	
____ Mercury	
____ Nitrate	
____ Selenium	
____ Silver	
____ Sulfates	
____ Zinc	
____ pH	
____ Conductivity	
____ TDS	
____ TOC	

TCLP Compounds

Inorganic Compounds	Results (mg/l)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chromium	
____ Lead	
____ Mercury	
____ Selenium	
____ Silver	

Organic Compounds	Results (mg/l)
____ benzene	
____ carbon tetrachloride	
____ chlordane	
____ chlorobenzene	
____ chloroform	
____ o-cresol	
____ m-cresol	
____ p-cresol	
____ cresol	
____ 1,4-dichlorobenzene	
____ 1,2-dichloroethane	
____ 1,1-dichloroethylene	
____ 2,4-dinitrotoluene	
____ heptachlor	
____ hexachlorobenzene	
____ hexachlorobutadiene	
____ hexachloroethane	
____ methyl ethyl ketone	
____ nitrobenzene	
____ pentachlorophenol	
____ pyridine	
____ tetrachloroethylene	
____ trichloroethylene	
____ 2,4,5-trichlorophenol	
____ 2,4,6-trichlorophenol	
____ vinyl chloride	
____ endrin	
____ lindane	
____ methoxychlor	
____ toxaphene	
____ 2,4-D	
____ 2,4,5-TP (Silvex)	

Date Received 2-1-95 VP, JM Reported by _____

Date Extracted _____ Date Reported _____

Date Analyzed 2-15-95 MW Lab Number 950471

CPD89E

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 990-883-001 Field Sample Number 019518

Name of Site Monarch Furniture / Haden Metals Site Location Jamestown, NC

Collected By Keith Snavely ID# _____ Date Collected 1/31/95 Time 13:55

Agency: ____ Hazardous Waste ____ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
____ Ground water (1)	____ Solid (5)	MFC-02-SD-sediment
____ Surface water (2)	____ Liquid (6)	Upstream - Deep River
____ Soil (3)	____ Sludge (7)	Approx. 200-250 feet North
✓ Other (4) sediment	____ Other (8)	of PPE - in Deep River

Organic Chemistry

Parameter	Results (mg/l)
____ P&T:GC/MS	
✓ Acid:B/N Ext.	
____ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
____ Gross Alpha	
____ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results (mg/l) (mg/kg)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chloride	
____ Chromium	
____ Copper	
____ Fluoride	
____ Iron	
____ Lead	
____ Manganese	
____ Mercury	
____ Nitrate	
____ Selenium	
____ Silver	
____ Sulfates	
____ Zinc	
____ pH	
____ Conductivity	
____ TDS	
____ TOC	

TCLP Compounds

Inorganic Compounds	Results (mg/l)
____ Arsenic	
____ Barium	
____ Cadmium	
____ Chromium	
____ Lead	
____ Mercury	
____ Selenium	
____ Silver	

Organic Compounds	Results (mg/l)
____ benzene	
____ carbon tetrachloride	
____ chlordane	
____ chlorobenzene	
____ chloroform	
____ o-cresol	
____ m-cresol	
____ p-cresol	
____ cresol	
____ 1,4-dichlorobenzene	
____ 1,2-dichloroethane	
____ 1,1-dichloroethylene	
____ 2,4-dinitrotoluene	
____ heptachlor	
____ hexachlorobenzene	
____ hexachlorobutadiene	
____ hexachloroethane	
____ methyl ethyl ketone	
____ nitrobenzene	
____ pentachlorophenol	
____ pyridine	
____ tetrachloroethylene	
____ trichloroethylene	
____ 2,4,5-trichlorophenol	
____ 2,4,6-trichlorophenol	
____ vinyl chloride	
____ endrin	
____ lindane	
____ methoxychlor	
____ toxaphene	
____ 2,4-D	
____ 2,4,5-TP (Silvex)	

Date Received 2-1-95 VP JM Reported by _____

Date Extracted 2-6-95 SA Date Reported _____

Date Analyzed 2-7-95 BQ Lab Number 950472

CPD89E

N.C. Department of Environment, Health, & Natural Resources
Solid Waste Management Division

SAMPLE ANALYSIS REQUEST

State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington Street
Raleigh, North Carolina 27611

Site Number NCD 970-893-001 Field Sample Number 01959

Name of Site Monarch Furniture/Haden Metals Site Location Jamestown, NC

Collected By Keith Shaw ID# _____ Date Collected 1/31/95 Time 12:45

Agency: ___ Hazardous Waste ___ Solid Waste ✓ Superfund

Sample Type

Environmental	Concentrate	Comments
___ Ground water (1)	___ Solid (5)	MFC-03-00
✓ Surface water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
✓ Other (4)	___ Other (8)	

Organic Chemistry

Parameter	Results (mg/l)
✓ P&T:GC/MS	
___ Acid:B/N Ext.	
___ MTBE	

Radiochemistry

Parameter	Results (PCi/l)
___ Gross Alpha	
___ Gross Beta	

Microbiology

Parameter	Results (Col/100ml)

Inorganic Chemistry

Parameter	Results (mg/l) (mg/kg)
___ Arsenic	
___ Barium	
___ Cadmium	
___ Chloride	
___ Chromium	
___ Copper	
___ Fluoride	
___ Iron	
___ Lead	
___ Manganese	
___ Mercury	
___ Nitrate	
___ Selenium	
___ Silver	
___ Sulfates	
___ Zinc	
___ pH	
___ Conductivity	
___ TDS	
___ TOC	

TCLP Compounds

Inorganic Compounds	Results (mg/l)
___ Arsenic	
___ Barium	
___ Cadmium	
___ Chromium	
___ Lead	
___ Mercury	
___ Selenium	
___ Silver	

Organic Compounds	Results (mg/l)
___ benzene	
___ carbon tetrachloride	
___ chlordane	
___ chlorobenzene	
___ chloroform	
___ o-cresol	
___ m-cresol	
___ p-cresol	
___ cresol	
___ 1,4-dichlorobenzene	
___ 1,2-dichloroethane	
___ 1,1-dichloroethylene	
___ 2,4-dinitrotoluene	
___ heptachlor	
___ hexachlorobenzene	
___ hexachlorobutadiene	
___ hexachloroethane	
___ methyl ethyl ketone	
___ nitrobenzene	
___ pentachlorophenol	
___ pyridine	
___ tetrachloroethylene	
___ trichloroethylene	
___ 2,4,5-trichlorophenol	
___ 2,4,6-trichlorophenol	
___ vinyl chloride	
___ endrin	
___ lindane	
___ methoxychlor	
___ toxaphene	
___ 2,4-D	
___ 2,4,5-TP (Silvex)	

Date Received 2-1-95 VAJM Reported by _____

Date Extracted _____ Date Reported _____

Date Analyzed 2-17-95 MW Lab Number 950473

CPD89E

STATE LABORATORY OF PUBLIC HEALTH

P.O. BOX 28047 - 306 N. WILMINGTON, ST., RALEIGH, N.C. 27611

ORGANIC CHEMICAL ANALYSIS

BASE/NEUTRAL AND ACID EXTRACTABLES COMPOUND	LAB NO	950466	950468	950470	950472		
	FIELD #	19512	19514	19516	19518		
	TYPE	(2)	(4)	(2)	(4)	( )	( )
	UNITS	µg/l ~~µg/kg~~	~~µg/l~~ µg/kg	µg/l ~~µg/kg~~	~~µg/l~~ µg/kg	µg/l µg/kg	µg/l µg/kg
Nitrosodimethylamine	10/330	U	U	U	U		
bis(2-chloroethyl)ether							
2-chlorophenol							
phenol							
1,3-dichlorobenzene							
1,4-dichlorobenzene							
1,2-dichlorobenzene							
bis(2-chloroisopropyl)ether							
Hexachloroethane							
N-nitroso-di-n-propylamine							
Nitrobenzene							
Isophorone							
2-nitrophenol							
2,4-dimethylphenol							
bis(2-chloroethoxy)methane							
2,4-dichlorophenol							
1,2,4-trichlorobenzene							
Naphthalene							
Hexachlorobutadiene							
4-chloro-m-cresol							
Hexachlorocyclopentadiene							
2,4,6-trichlorophenol							
2-chloronaphthalene							
Acenaphthylene							
Dimethyl phthalate							
2,6-dinitrotoluene							
Acenaphthene	↓						
2,4-dinitrophenol	50/1650						
2,4-dinitrotoluene	10/330						
4-nitrophenol	50/1650						
Fluorene	10/330						
4-chlorophenylphenylether	↓						
Diethyl phthalate	↓						
4,6-dinitro-o-cresol	50/1650						
Diphenylamine	10/330						
Azobenzene	↓						
4-bromophenylphenylether	↓						
Hexachlorobenzene	↓						
Pentachlorophenol	50/1650						
Phenanthrene	10/330						
Anthracene	↓						
Dibutyl phthalate	↓	✓	✓	✓	✓		
Fluoranthene	↓						

MDL
H_2O/SOIL

B – Estimated value.
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 Detection Limit. MDL
A – Not analyzed.
1/ – Tentative identification.
2/ – On NRDC List of Priority Pollutants.

STATE LABORATORY OF PUBLIC HEALTH

P.O. BOX 28047 - 306 N. WILMINGTON, ST., RALEIGH, N.C. 27611

ORGANIC CHEMICAL ANALYSIS

BASE/NEUTRAL AND ACID EXTRACTABLES	LAB NO	9.50466	950468	950470	9.50472		
	FIELD #	19512	19514	19516	19518		
COMPOUND	TYPE	(2)	(4)	(2)	(4)	( )	( )
	UNITS	µg/l ~~µg/kg~~	~~µg/l~~ µg/kg	µg/l ~~µg/kg~~	~~µg/l~~ µg/kg	µg/l µg/kg	µg/l µg/kg
pyrene	10/330	U	U	U	U		
benzidine	50/1650						
butyl benzyl phthalate	10/330						
benz(a)anthracene	↓						
chrysene							
3,3-dichlorobenzidine	50/1650						
bis(2-ethylhexyl)phthalate	10/330						
di-n-octyl phthalate	10/330						
benzo(b)fluoranthene	50/1650						
benzo(k)fluoranthene	↓						
benzo(a)pyrene							
indeno(1,2,3-cd)pyrene							
dibenzo(a,h)anthracene							
benzo(g,h,i)perylene	↓	↓	↓	↓	↓		
aniline	50/1650	U	U	U	U		
benzoic acid	↓						
benzyl alcohol							
4-chloroaniline	↓						
dibenzofuran	10/330						
2-methylnaphthalene	↓						
2-methylphenol							
4-methylphenol	↓						
2-nitroaniline	50/1650						
3-nitroaniline	↓						
4-nitroaniline							
2,4,5-trichlorophenol	↓	↓	↓	↓	↓		

MDL

H2O/501L

J - Estimated value.
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 Detection Limit. MDL
NA - Not analyzed.
1/ - Tentative identification.
2/ - On NRDC List of Priority Pollutants.

STATE LABORATORY OF PUBLIC HEALTH
PO BOX 28047 - 306 N. WILMINGTON ST., RALEIGH, NC 27611

ORGANIC CHEMICAL ANALYSIS

PURGEABLE COMPOUNDS	LAB NO	9504465	9504467	9504469	9504471	9504473	
	FIELD NO	19511	19513	19515	19517	19519	
COMPOUND	TYPE	(2)	(4)	(2)	(4)	(2)	( )
	UNITS	(µg/l) µg/kg	µg/l (µg/kg)	(µg/l) µg/kg	µg/l (µg/kg)	(µg/l) µg/kg	µg/l µg/kg
CHLOROMETHANE	20 ppb	U	U	U	U	U	
VINYL CHLORIDE	10						
BROMOMETHANE	20						
CHLOROETHANE	10						
TRICHLOROFLUOROMETHANE	10						
ACETONE	50						
1,1-DICHLOROETHENE	5						
IODOMETHANE	10						
METHYLENE CHLORIDE	5						
CARBON DISULFIDE	↓						
TRANS-1,2-DICHLOROETHENE	↓						
ACRYLONITRILE	20						
1,1-DICHLOROETHANE	5						
2-BUTANONE	50						
CIS-1,2-DICHLOROETHENE	5						
CHLOROFORM	↓						
1,1,1-TRICHLOROETHANE	↓						
CARBON TETRACHLORIDE	10						
BENZENE	5						
1,2-DICHLOROETHANE	↓						
TRICHLOROETHENE							
1,2-DICHLOROPROPANE	↓						
BROMODICHLOROMETHANE	10	↓	↓	↓	↓	↓	
	↑ MDL ↑						

B - BACKGROUND PRESENT IN LAB BLANKS.
J - Estimated value
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 Detection Limit.
NA - Not analyzed.
1/ - Tentative identification.
2/ - On NRDC List of Priority Pollutants.
H - COMPOUND REUABLY DETECTABLE ONLY AT HIGH CONCENTRATIONS.
C - POSSIBLE LAB CONTAMINATION.

(2)

STATE LABORATORY OF PUBLIC HEALTH
PO BOX 28047 - 306 N. WILMINGTON ST., RALEIGH, NC 27611

ORGANIC CHEMICAL ANALYSIS

PURGEABLE COMPOUNDS	LAB NO	9504465	9504467	9504469	9504471	9504473	
	FIELD NO	19511	19513	19515	19517	19519	
COMPOUND	TYPE	(2)	(4)	(2)	(4)	(2)	( )
	UNITS	(µg/l) µg/kg	µg/l (µg/kg)	(µg/l) µg/kg	µg/l (µg/kg)	(µg/l) µg/kg	µg/l µg/kg
DIBROMOMETHANE	5ppb	U	U	U	U	U	
4-METHYL-2-PENTANONE	50						
CIS-1,3-DICHLOROPROPENE	5						
TOLUENE	↓						
TRANS-1,3-DICHLOROPROPENE	↓						
1,1,2,2-TETRACHLOROETHANE	10						
1,1,2-TRICHLOROETHANE	5						
2-HEXANONE	50						
TETRACHLOROETHENE	5						
DIBROMOCHLOROMETHANE	10						
ETHYLENE DIBROMIDE	5						
CHLOROBENZENE	5						
1,1,1,2-TETRACHLOROETHANE	10						
ETHYL BENZENE	5						
XYLENES	10						
STYRENE	5						
BROMOFORM	10						
H TRANS-1,4-DICHLORO-2-BUTENE	80						
1,2,3-TRICHLOROPROPANE	20						
1,4-DICHLOROBENZENE	10						
1,2-DICHLOROBENZENE	↓						
1,2-DIBROMO-3-CHLOROPROPANE	20						
VINYL ACETATE	200	↓	↓	↓	↓	↓	
	↑MDL↑						

B - BACKGROUND PRESENT IN LAB BLANKS.
J - Estimated value
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 Detection Limit.
MA - Not analyzed.
1/ - Tentative identification.
2/ - On NRDC List of Priority Pollutants.
H - COMPOUND RELIABLY DETECTABLE ONLY AT HIGH CONCENTRATIONS.
C - POSSIBLE LAB CONTAMINATION.

DEHNR 3068-O (10/93)

PURGCOMLOR


FEB 1995
Received
Solid Waste
Section

NOTE REFERENCES 1-29 ARE INCLUDED IN THE PHASE I SCREENING SITE INVESTIGATION JULY 1991

REFERENCES 30 - 50 ARE INCLUDED IN THE SIP REPORT

LATITUDE AND LONGITUDE CALCULATION WORKSHEET #2
LI USING ENGINEER'S SCALE (1/60)

SITE NAME: Monarch Furniture / Thaden Metals CERCLIS #: NCD 990 883 001

AKA: _____ SSID: _____

ADDRESS: 300 Scientific Street

CITY: Jamestown STATE: NC ZIP CODE: _____

SITE REFERENCE POINT: Center of Plant

USGS QUAD MAP NAME: High Point East TOWNSHIP: ____ N/S RANGE: ____ E/W

SCALE: 1:24,000 MAP DATE: 1982 SECTION: ____ 1/4 ____ 1/4 ____ 1/4

MAP DATUM: (1927) 1983 (CIRCLE ONE) MERIDIAN: _____

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 7.5' MAP (attach photocopy):

LONGITUDE: 79 ° 52 ' 30 " LATITUDE: 35 ° 52 ' 30 "

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 2.5' GRID CELL:

LONGITUDE: 79 ° 55 ' 0 " LATITUDE: 35 ° 57 ' 30 "

CALCULATIONS: LATITUDE (7.5' QUADRANGLE MAP)

A) NUMBER OF RULER GRADUATIONS FROM LATITUDE GRID LINE TO SITE REF POINT: 330

B) MULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:

A x 0.3304 = 109 . 0 "

C) EXPRESS IN MINUTES AND SECONDS (1'= 60"): 1 ' 49 . 0 "

D) ADD TO STARTING LATITUDE: 35 ° 57 ' 30 . 0 " + 1 ' 49 . 0 = 35°59'19"

SITE LATITUDE: 35 ° 59 ' 19 . 0 "

CALCULATIONS: LONGITUDE (7.5' QUADRANGLE MAP)

A) NUMBER OF RULER GRADUATIONS FROM RIGHT LONGITUDE LINE TO SITE REF POINT: 368

B) MULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:

A x 0.3304 = 121 . 5 "

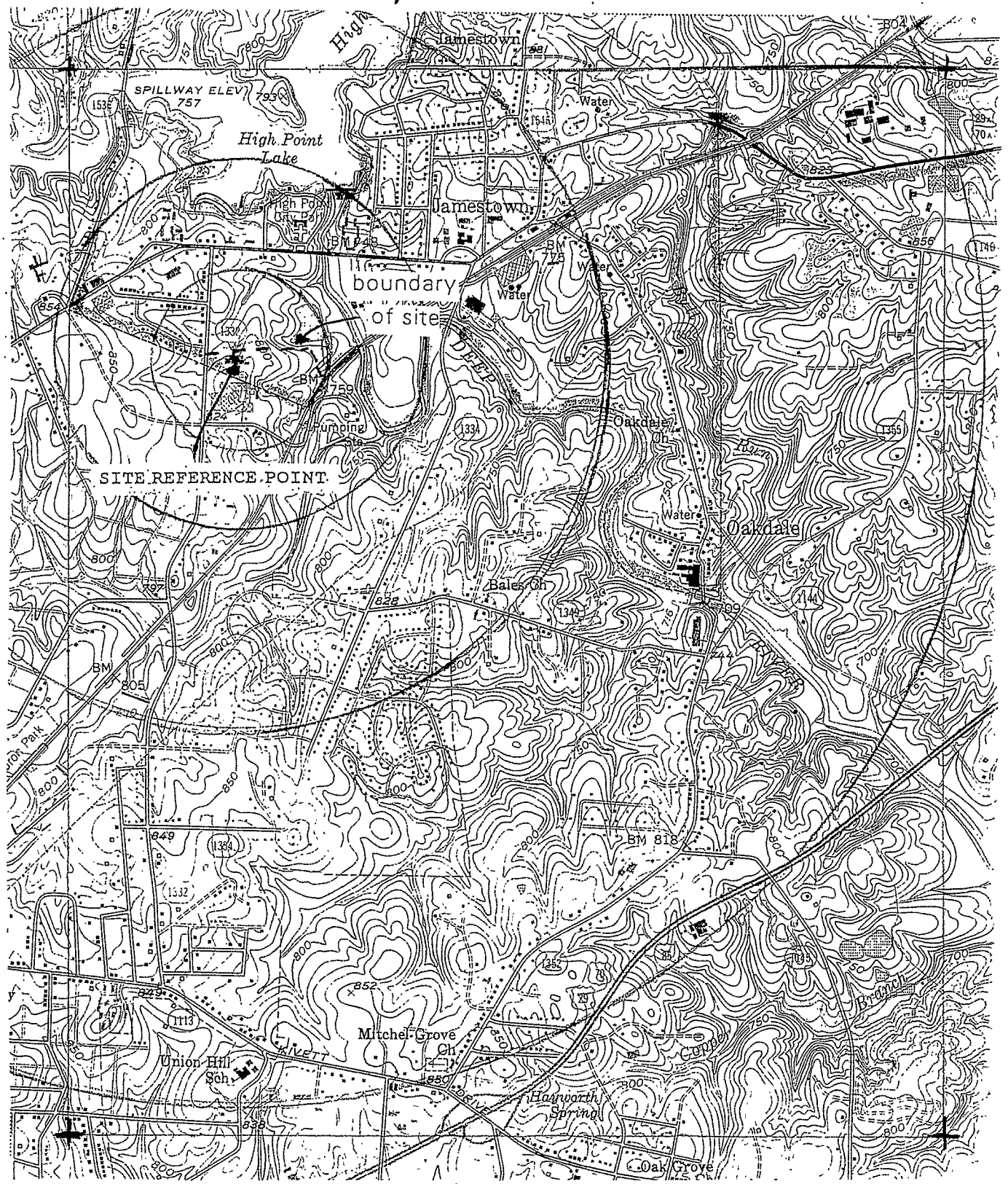
C) EXPRESS IN MINUTES AND SECONDS (1'= 60"): 2 ' 01 . 5 "

D) ADD TO STARTING LONGITUDE: 79 ° 55 ' 0 . 0 " + 2 ' 01 . 5 = 79°57'01.5"

SITE LONGITUDE: 79 ° 57 ' 01 . 5 "

INVESTIGATOR: Keith Sweeney DATE: 3-21-95

SITE NAME: Monarch Furniture / Thaden Metals NUMBER: NCD# 990-883-001



TOPOGRAPHIC MAP QUADRANGLE NAME: High Point East, NC SCALE: 1:24,000

COORDINATES OF LOWER RIGHT-HAND CORNER OF 2.5-MINUTE GRID:

LATITUDE: 35 ° 57 ' 30 " LONGITUDE: 79 ° 55 ' 0 "

MEMO

DATE: February 3, 1995

TO: File

FROM: Keith Snavely KFS
Hydrogeologist
NC Superfund

RE: SIP sampling reconnaissance
Monarch Furniture/ Thaden Metals
NCD 990 883 001

On January 31, 1995, David Lilley and I of the North Carolina Superfund Section conducted sampling for a Site Inspection Prioritization from the referenced site. We arrived at the site by 10:00 am and met with Mr. John Meyers the president of Greensboro Metals Parts, Inc. He briefly reviewed some of the recent file information Greensboro Metal Parts had received from the North Carolina Superfund Section, and supplied David and I with a topographic map of the site and an original site layout of the facility. The site consists of a 26,400 square foot building, a wooden shed located on the eastern side of the site that was the former location of drum storage, fenced-in concrete sludge drying beds on the northwestern edge of the site, and groundwater monitoring wells located along the perimeter of the site.

The building is presently used for metal fabrication of metal wire and metal wire frames. Greensboro Metal Parts utilizes a non-hazardous dust in the metal fabrication process.

During a brief site reconnaissance, Dave and I noted two 2-foot concrete stick-up well casings located in the grass area outside of the site's gate and adjacent to Scientific Street. One contained a 4-inch monitoring well (monitoring well #5) with a PVC cap and the other contained storm drainage lines directing runoff from the site to a ditch located along Scientific Street.

We walked from the east side of the property to the northeast corner of the site. Monitoring well 4 was noted on the north side of the entrance road to the site. This well is also a 4-inch PVC well enclosed in a 2-foot concrete casing. It did not contain a locking well cap. We continued the reconnaissance of the site to the northeastern corner of the property and noted monitoring well #2 and #3 located north of the fenced-in concrete sludge drying bed area. These wells are stick-up wells protected by 4-inch steel casings. Three 55-gallon drums were noted within a shallow drying

bed within the concrete sludge drying pit area. The drums are enclosed in the fenced area and the contents of the drums are unknown. The deep concrete sludge pond located on the northeast corner of the site was the only pond that contained a liquid. The liquid appeared to be rainwater.

The eastern edge of the site property is bordered by a sewer main that trends north to south and a pond, approximately 4 acres in size, located between the sewer main and the Deep River.

Dave and I continued along the eastern edge of the property to an intermittent stream that drains a former sludge field that is overgrown with short pine trees and tall grass. This stream flows approximately 1000 feet to Deep River and intersects the Deep River approximately 80 feet upstream of the Southern Railroad. This intersection was noted as the probable point of entry from the site to Deep River. Two surface water and two sediment samples were collected from the Deep River at distances of approximately 75 feet downstream of the PPE and 200 to 250 feet upstream of the PPE. One surface water sample and one sediment sample was collected from both the upstream and downstream locations. The surface water and sediment samples will be analyzed for volatiles, semi-volatiles, and metals. The primary contaminants of the site soils and in the groundwater are metals.

Dave and I sampled the surface water and sediment from the west side of the Deep River near the PPE of the intermittent stream between 1:30 and 2:00 pm. After sampling and returning to the van, I acidified the metals sample and arranged the trip blanks and the samples in coolers with dry ice. We broke for lunch at about 2:30 pm and I purchased additional ice for the samples. When we returned to the site, we examined the flow direction and the contents of the drainage ditches that parallel Scientific Street on the west side of the site.

We noted the drainage ditch that flows along the front entrance to the site and near the adjacent property of Thomasville Furniture is intermittent and fed by runoff from ditches that originate on the west side of Scientific Street. The ditches on the west side of Scientific Street collect runoff from residential areas located approximately 200 feet from the site and drain east underneath Scientific Street. The drainage ditch on the east side of Scientific Street contains old tires and paper trash. The stream fed by these intermittent drainage ditches and the area of Deep River near the PPE of this stream and the Deep River was not sampled.

After photographs of the site were completed, we left the site by 4:45 PM.

Reference 32

PMMGRID STATE N.C. PUBLIC WATER SUPPLY SYSTEM 03/16/95
ACTIVE SYSTEMS
GRID LATITUDE: 355546 / 360247, LONGITUDE: 0795245 / 0800116

PWS ID	SYSTEM NAME	TYPE	POPULATION	RES.PERSON WORK PHONE	SOURCE NAME	SOURCE TYPE	SOURCE AVAIL.	LATITUDE	LONGITUDE
241020	HIGH POINT, CITY OF	C	71300	9108833410	HIGH POINT LAKE	S	P	355930	795645
	HIGH POINT, CITY OF	C	71300	9108833410	OAK HOLLOW LAKE	S	P	360045	795915
241030	JAMESTOWN, TOWN OF	C	3000	9104541138	HIGH POINT	P	P	355930	795645
241111	HICKORY RUN MHP	C	285		WELL	G	P	360100	795400
	HICKORY RUN MHP	C	285		WELL	G	P	360100	795400
241112	CROWN MHP	C	325	9105479262	WELL	G	P	355730	795300
	CROWN MHP	C	325	9105479262	WELL	G	P	355730	795300
241448	SEDGEFIELD LAKE METHODIST CH	N	35		WELL	G	P	360215	795330
241455	MIDWAY BAPTIST CHURCH	N	180	9104542819	WELL	G	P	360150	795515
241456	JAMESTOWN PRESBYTERIAN CHURCH	N	155	9104543710	WELL	G	P	360145	795530
241481	SOUTHERN LIBE CLUB	N	40	9102994274	WELL	G	P	360215	795545
	SOUTHERN LIBE CLUB	N	40	9102994274	WELL	G	P	360215	795545
	SOUTHERN LIBE CLUB	N	40	9102994274	WELL	G	P	360215	795545
241492	CEDARWOOD SWIMMING POOL	N	240	9104541414	WELL	G	P	360115	795600
241493	SEDGEFILED SWIM & RACKET CLUB	N	200	9102926800	WELL	G	P	355930	795330
241495	SUMNER HILLS GOLF CLUB	N	80	9104311953	WELL	G	P	355645	795315
	SUMNER HILLS GOLF CLUB	N	80	9104311953	WELL	G	P	355645	795315
241505	TWIN OAKS GOLF COURSE	N	75	9108555278	WELL	G	P	360215	795445
241519	VICKERY CHAPEL METH CH	N	40		WELL	G	P	355745	795400
241581	ALCOHOLICS' HOME INC	N	32	9108821026	WELL	G	P	355650	795500
241609	TRI CITY JUNIOR ACADEMY	P	130	9106680108	WELL	G	P	355714	800001
241624	CAMP UWHARRIE	N	175	9108522559	WELL	G	P	360215	795506
241625	CHURCH OF GOD OF PROPHECY CAMP	N	200	9104544118	WELL	G	P	360135	800040
241628	ELKS CLUB # 1155	N	700	9108671313	WELL	G	P	360135	800040
241632	JAMESTOWN PARK GRILL	N	25	9104544319	WELL	G	P	360150	795620
241636	WOMANS CLUB OF HIGH POINT	N	25	9108694470	WELL	G	P	360155	800056
241659	OAKDALE COTTON MILL	P	25	9108827357	DEEP RIVER	S	P	355845	795545

Reference 32

Economics and Statistics Administration
BUREAU OF THE CENSUS

CENSUS '90

1990 Census of Population and Housing

Summary Population and Housing Characteristics

North Carolina

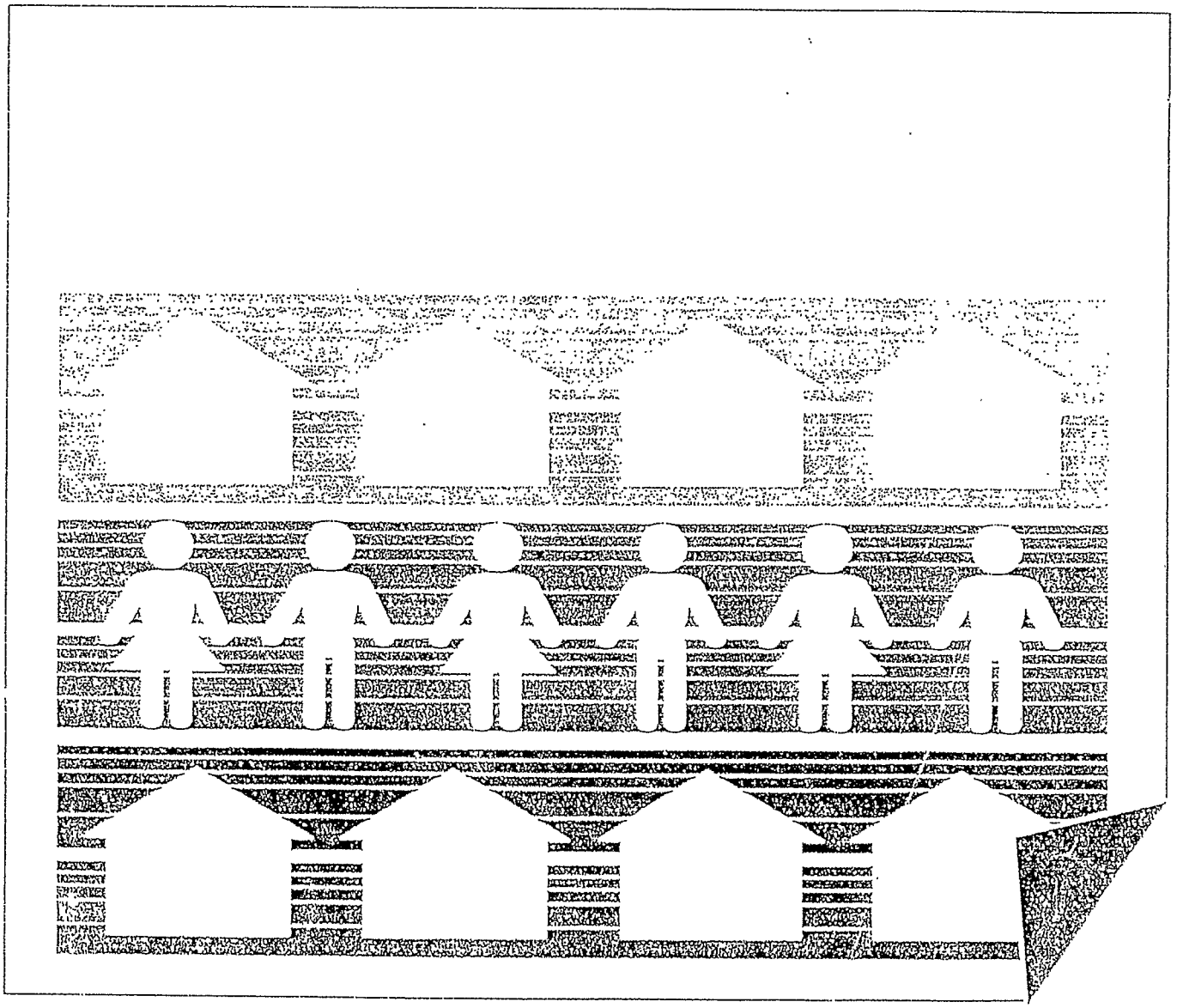


Table 5. Household, Family, and Group Quarters Characteristics: 1990—Con.

[For definitions of terms and meanings of symbols, see text]

State County County Subdivision Place	Persons in households	All households	Family households			Nonfamily households				Persons per—		Persons in group quarters		
							Householder living alone							
								65 years and over						
			Total	Married-couple family	Female householder, no husband present	Total	Total	Total	Female	Household	Family	Total	Institutionalized persons	Other persons in group quarters
Granville County	35 191	13 134	9 883	7 501	1 857	3 251	2 889	1 236	978	2.68	3.13	3 154	3 079	75
Brassfield township	4 348	1 557	1 228	1 017	152	329	263	79	63	2.79	3.16	5	–	5
Dutchville township	7 618	3 020	2 183	1 662	414	837	729	228	187	2.52	3.00	2 411	2 411	–
Butner CDP	3 152	1 216	887	642	199	329	294	73	62	2.59	3.07	1 527	1 527	–
Creedmoor city	1 504	634	427	306	102	207	184	77	67	2.37	2.95	–	–	–
Fishing Creek township	7 339	2 719	2 017	1 338	551	702	644	311	253	2.70	3.19	163	146	17
Oxford city (pt.)	3 419	1 346	918	502	358	428	402	216	175	2.54	3.15	152	146	6
Oak Hill township	1 524	537	424	333	72	113	104	55	38	2.84	3.23	36	–	36
Oxford township	6 077	2 347	1 726	1 295	351	621	575	317	255	2.59	3.09	496	496	–
Oxford city (pt.)	3 975	1 588	1 122	803	272	466	433	251	208	2.50	3.05	367	367	–
Salem township	1 180	416	325	260	43	91	77	38	28	2.84	3.23	1	–	1
Sassafras Fork township	2 184	792	605	470	105	187	169	81	59	2.76	3.22	2	–	2
Stovall town	409	155	122	91	26	33	32	22	18	2.64	3.04	–	–	–
Tally Ho township	3 236	1 153	922	772	101	231	198	76	58	2.81	3.16	10	–	10
Stem town	249	103	69	56	8	34	31	19	15	2.42	3.01	–	–	–
Walnut Grove township	1 685	593	453	354	68	140	130	51	37	2.84	3.32	30	26	4
Greene County	14 665	5 395	4 066	3 003	875	1 329	1 189	574	481	2.72	3.18	719	704	15
Bull Head township	913	324	244	184	50	80	68	30	23	2.82	3.31	–	–	–
Carrs township	665	236	193	151	34	43	40	19	16	2.82	3.15	–	–	–
Hookerton township	3 272	1 201	914	678	203	287	255	107	88	2.72	3.17	82	82	–
Hookerton town	422	173	121	84	33	52	50	28	23	2.44	3.03	–	–	–
Snow Hill town (pt.)	39	14	14	11	3	–	–	–	–	2.79	2.79	–	–	–
Jason township	1 203	435	326	237	66	109	97	40	37	2.77	3.22	–	–	–
Olds township	1 593	545	433	320	96	112	101	47	37	2.92	3.35	613	613	–
Ormonds township	1 835	650	494	360	100	156	138	57	50	2.82	3.27	–	–	–
Shine township	1 012	407	301	231	54	106	95	49	42	2.49	2.94	6	6	–
Snow Hill township	2 382	934	666	475	164	268	240	145	125	2.55	3.06	18	3	15
Snow Hill town (pt.)	1 321	545	373	246	110	172	159	98	85	2.42	2.98	18	3	15
Speights Bridge township	1 790	663	495	367	108	168	155	80	63	2.70	3.17	–	–	–
Walstonburg town	188	84	54	43	9	30	28	18	15	2.24	2.85	–	–	–
Guilford County	335 348	137 706	92 891	71 195	17 570	44 815	36 578	12 180	9 951	2.44	2.97	12 072	3 084	8 988
Bruce township	6 880	2 621	2 037	1 796	170	584	500	137	108	2.62	3.01	5	5	–
Stokesdale town (pt.)	394	148	118	105	10	30	28	12	10	2.66	3.03	–	–	–
Summerfield CDP (pt.)	2 051	747	608	511	74	139	123	52	45	2.75	3.06	–	–	–
Center Grove township	4 028	1 525	1 175	1 065	71	350	277	60	45	2.64	3.04	7	–	7
Greensboro city (pt.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Summerfield CDP (pt.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Clay township	6 017	2 199	1 841	1 674	124	358	313	134	104	2.74	3.02	–	–	–
Forest Oaks CDP (pt.)	1 810	617	567	540	24	50	46	12	11	2.93	3.08	–	–	–
Deep River township	6 088	2 221	1 843	1 652	132	378	332	141	118	2.74	3.05	102	102	–
Greensboro city (pt.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
High Point city (pt.)	1 517	533	457	426	27	76	63	19	14	2.85	3.12	–	–	–
Kernersville town (pt.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fentress township	9 695	3 714	2 991	2 645	257	723	633	247	192	2.61	2.94	53	49	4
Forest Oaks CDP (pt.)	1 244	471	409	380	21	62	53	18	16	2.64	2.86	–	–	–
Greensboro city (pt.)	6	3	1	1	–	2	1	–	–	2.00	3.00	–	–	–
Pleasant Garden CDP (pt.)	2 168	833	646	517	97	187	158	49	39	2.60	2.97	43	43	–
Friendship township	8 220	3 310	2 424	2 162	185	886	691	107	83	2.48	2.91	807	–	807
Greensboro city (pt.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
High Point city (pt.)	67	24	23	21	2	1	1	–	–	2.79	2.87	–	–	–
Gilmer township	49 827	20 490	12 848	7 607	4 361	7 642	6 251	2 141	1 646	2.43	3.06	3 733	327	3 406
Greensboro city (pt.)	49 827	20 490	12 848	7 607	4 361	7 642	6 251	2 141	1 646	2.43	3.06	3 733	327	3 406
Greene township	2 420	921	709	625	65	212	185	80	58	2.63	3.07	–	–	–
High Point township	65 881	26 880	18 391	12 970	4 527	8 489	7 336	3 144	2 626	2.45	2.99	1 855	921	934
High Point city (pt.)	65 276	26 649	18 206	12 805	4 511	8 443	7 295	3 134	2 619	2.45	2.99	1 855	921	934
Jamestown town (pt.)	35	15	13	12	–	2	2	1	–	2.33	2.46	–	–	–
Jamestown township	10 560	4 064	3 228	2 791	321	836	706	272	216	2.60	2.93	1	–	1
Archdale city (pt.)	234	82	72	66	5	10	8	3	3	2.85	3.07	–	–	–
Greensboro city (pt.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
High Point city (pt.)	266	119	72	58	9	47	37	13	8	2.24	2.83	1	–	1
Jamestown town (pt.)	2 565	980	734	625	83	246	193	65	46	2.62	3.03	–	–	–
Jefferson township	8 449	3 245	2 563	2 172	279	682	603	208	165	2.60	2.96	267	251	16
McLeansville CDP	1 154	450	349	301	34	101	92	31	22	2.56	2.97	–	–	–
Madison township	3 746	1 291	1 092	908	133	199	173	85	68	2.90	3.17	12	–	12
Monroe township	7 967	3 030	2 364	1 947	312	666	554	188	149	2.63	2.97	88	66	22
Morehead township	125 067	54 412	33 258	25 993	5 943	21 154	16 584	4 661	3 911	2.30	2.91	4 888	1 245	3 643
Greensboro city (pt.)	125 067	54 412	33 258	25 993	5 943	21 154	16 584	4 661	3 911	2.30	2.91	4 888	1 245	3 643
Oak Ridge township	4 508	1 640	1 341	1 186	106	299	262	126	110	2.75	3.09	208	82	126
Stokesdale town (pt.)	1 658	618	488	419	49	130	119	73	69	2.68	3.07	82	82	–
Rock Creek township	5 492	2 100	1 610	1 299	244	490	431	181	147	2.62	3.03	–	–	–
Gibsonville town (pt.)	1 961	759	542	404	112	217	188	96	87	2.58	3.11	–	–	–
Sumner township	8 483	3 302	2 562	2 162	294	740	630	204	155	2.57	2.94	20	10	10
Greensboro city (pt.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pleasant Garden CDP (pt.)	17	6	6	4	2	–	–	–	–	2.83	2.83	–	–	–
Washington township	2 021	741	614	541	46	127	117	64	50	2.73	3.04	26	26	–
Halifax County	54 122	20 335	14 874	10 092	4 018	5 461	5 005	2 398	1 897	2.66	3.18	1 394	1 356	38
Brinkleyville township	4 992	1 604	1 294	859	343	310	287	128	94	3.11	3.54	–	–	–
Butterwood township	615	226	180	113	58	46	44	19	15	2.72	3.08	–	–	–
Conoconnara township	788	290	211	142	62	79	74	46	29	2.72	3.29	–	–	–
Enfield township	6 555	2 284	1 709	948	660	575	534	271	215	2.87	3.39	190	190	–
Enfield town	2 892	1 054	740	366	334	314	296	176	152	2.74	3.36	190	190	–
Faucett township	1 814	680	516	398	96	164	147	76	57	2.67	3.10	–	–	–
Halifax township	1 308	576	430	303	109	146	137	62	43	2.62	3.11	919	919	–
Halifax town	275	119	84	70	12	35	33	21	17	2.31	2.83	52	52	–
Littleton township	3 755	1 463	1 087	788	261	376	341	182	154	2.57	3.04	–	–	–
Littleton town	691	320	208	140	65	112	104	69	63	2.16	2.72	–	–	–
Palmyra township	1 382	496	370	236	105	126	121	64	47	2.79	3.34	–	–	–
Hobgood town	435	173	123	78	35	50	48	33	23	2.51	3.08	–	–	–
Roanoke Rapids township	22 009	8 709	6 255	4 598	1 365	2 454	2 236	999	820	2.53	3.03	173	135	38
Roanoke Rapids city (pt.)	15 342	6 207	4 357	3 253	912	1 850	1 706	800	672	2.47	3.01	173	135	38
South Rosemary CDP	1 955	781	551	366	151	230	200	83	59	2.50	2.97	–	–	–
Roseneath township	787	280	207	153	41	73	63	31	22	2.81	3.37	–	–	–
Scotland Neck township	4 442	1 664	1 170	663	456	494	461	260	203	2.67	3.30	72	72	–
Scotland Neck town	2 503	982	678	416	233	304	286	169	145	2.55	3.18	72	72	–
Weldon township	5 475	2 063	1 445	891	462	618	560	260	208	2.65	3.26	40	40	–
Roanoke Rapids city (pt.)	207	114	49	15	32	65	61	35	33	1.82	2.78	–	–	–
South Weldon CDP	1 640	542	417	216	172	125	111	56	47	3.03	3.53	–	–	–
Weldon town	1 392	574	369	247	104	205	191	100	79	2.43	3.14	–	–	–

MEMO

DATE: April 3, 1995

TO: File

FROM: Keith Snavely RKS
Hydrogeologist
NC Superfund

RE: Water Supply for Jamestown
Monarch Furniture/Thaden Metals
NCD 990 883 001 Jamestown, Guilford, NC

On March 21, 1995, I spoke to the Town Manager of Jamestown, Mr. John Frezell. According to Mr. Frezell, Jamestown no longer gets its water from the intake located along the Deep River but purchases its water from the City of High Point and the City of Greensboro. The City of High Point gets its water from Oak Hollow Lake and High Point Lake. High Point sells water to Jamestown and Archadale.

Greensboro water system obtains its water from Reedy Fork Creek, Lake Brandt, Lake Townsend, and Lake Higgins are located north of the City of Greensboro. These water supplies are located outside the study area of the subject site.

MEMO

DATE: April 4, 1995

TO: File

FROM: Keith Snavely RK
Hydrogeologist
NC Superfund

RE: Wellhead Protection Areas
Monarch Furniture/Thaden Metals
NCD 990 883 001 Jamestown, Guilford Co., NC

I spoke to Mr. Randy Prillaman from the Wellhead Protection Program with the Division of Environmental Management on March 21, 1995. According to Mr. Prillaman there are no wellhead protection areas in Guilford County.

MEMO

DATE: April 3, 1995

TO: File

FROM: Keith Snavely KKS
Hydrogeologist
NC Superfund

RE: Water supply from City of High Point
Monarch Furniture/Thaden Metals
NCD 990 883 001 Jamestown, Guilford Co., NC

I spoke to Mr. Hubie Streetman of the Water Department of the city of High Point on March 21, 1995. According to Mr. Streetman, High Point obtains its water supply from Oak Hollow Lake and High Point Lake. The surface water intakes to these lakes are located at the head waters of the Deep River. Both of these lakes are located upstream of the site. High Point also sells their water to Jamestown and Archdale.

The High Point water supply systems has approximately 30,000 connections and the water supply area is located west, south, and north of Jamestown, and east along Kivett Drive. Refer to Figure 1, for the area supplied by High Point water supply.

MEMO

DATE: April 3, 1995

TO: File

FROM: Keith Snavely RKS
Hydrogeologist
NC Superfund

RE: Water Supply from the City of Greensboro
Monarch Furniture/ Thaden Metals
NCD 990 883 001 Jamestown, Guilford County, NC

I spoke to the City of Greensboro on March 21 and 22, 1995 about the extent of their water supply near the City of Jamestown. The Greensboro water supply system supplies approximately 175,000 customers, and obtains its water supply from Reedy Fork Creek. Two dams on this creek and one dam on the smaller Bush Creek create three lakes for water supply. These are Lake Brandt, Lake Townsend and Lake Higgins. These lakes are located north of the study area but some of the water lines do extend into the 4-mile radius of the site.

A review if the Union Camp Corp (NCD 003216959) file noted water supplies for Greensboro extends southeast of Jamestown. A conversation with City of Greensboro personnel noted the water supply lines to extend to Willie Davis Road just south of I-85 and south along Groometown Road. Refer to the USGS map of the site, Figure 1 of the SIP.

MEMO

DATE: April 4, 1995

TO: File

FROM: Keith Snavely RKS
Hydrogeologist
NC Superfund

RE: Groundwater Population in 4-mile Radius
Monarch Furniture/Thaden Metals
NCD 990 883 001 Jamestown, Guilford Co., NC

Groundwater population within a 4-mile radius of the site was determined by counting houses within each distance ring (0 - 0.25 miles, 0.25 - 0.50 miles, 0.5 - 1 mile, 1 - 2 miles, 2 - 3 miles, and 3 to 4 miles) from four North Carolina USGS 7.5 Quad Maps of High Point East, High Point West, Kernersville, and Guilford, and multiplying this count by the person-per-household average of 2.44 persons for Guilford County.

The majority of the persons within the 4-mile radius are supplied water from the water systems of Jamestown, High Point, and Greensboro. Those residents that use domestic water wells for their water supply are located southeast of the site outside of the Jamestown city limits (See Figure 1 of the SIP report for the extent of the water supplies of Jamestown, High Point, and Greensboro).

The table below notes the groundwater population of house count per distance ring, the total population of persons per distance ring, and the cumulative population.

Groundwater Population

Houses	Total Population	Cumulative Pop.
0-0.25	* ------	------
0.25 - 0.50	* ------	------
0.50 - 1.00	92.0	92.0
1.00 - 2.00	759	851
2.00 - 3.00	927	1778
3.00 - 4.00	1188	2966

* Populations within the 0 - 0.25 and 0.25 - 0.50 distance ring are located in areas supplied water by Jamestown and High Point and not on domestic wells.

MEMO

DATE: April 4, 1995

TO: File

FROM: Keith Snavely KJS
Hydrogeologist
NC Superfund

RE: Flow Calculations along 15-mile surface water pathway
Monarch Furniture/ Thaden Metals
NCD 990 883 001 Jamestown, Guilford Co., NC

Flow calculations were determined along the site's 15-mile surface water pathway at 5 gauging stations along the Deep River. The 15-mile surface water pathway extends south of the PPE along the Deep River to the end of the 15-mile extent about 2 miles north of the City of Randleman. Three quad maps were reviewed for the 15-mile surface water pathway. These are High Point East, Pleasant Garden, and Randleman. A topographic map measuring wheel was used to determine the length of the 15-mile surface water pathway with a scale of 1"= 2000'.

The references used to determine flow along the Deep River are the US Geological Survey Open-File Report 83-211 - Drainage Areas of Selected Sites on Streams in North Carolina; and Water Resources Investigations Report 88-4094 - Map of Mean Annual Runoff for the Northeastern, Southeastern, and Mid-Atlantic United States, Water Years 1951-80. The mean annual runoff of the site area and the drainage area from the stream gauging stations are placed into a formula used to determine the flow of the stream at various gauging station locations.

The formula is:

runoff X drainage area/13.58 = flow

The runoff in the site area is 14 inches/year.

The flow calculations at each gauging station are as follows:

1) Deep River at Jamestown:

   14 in/yr X 64.7 sq. miles /13.58 = 66.7 cubic feet/sec (cfs)

2) Deep River at Dam at Oakdale:

   14 in/yr X 66.6 sq. miles/13.58 = 68.6 cfs

3) Deep River at Kivett Dr. Ext. Near Jamestown:

   14 in/yr X 77.7 sq. miles/13.58 = 80.1 cfs

4) Deep River at NC 62 near Groomtown: 118.0 sq miles

   14 in/yr X 118 sq. miles/13.58 = 121.6 cfs

5) Deep River at U.S. 220 near Randleman:

   14 in/yr X 168 sq. miles/13.58 = 173.2 cfs

MAP OF MEAN ANNUAL RUNOFF FOR THE NORTHEASTERN, SOUTHEASTERN, AND MID-ATLANTIC UNITED STATES, WATER YEARS 1951–80

By
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Barry P. Rochelle, Northrop Services, Inc.;
and M. Robbins Church, U.S. Environmental Protection Agency

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 88–4094

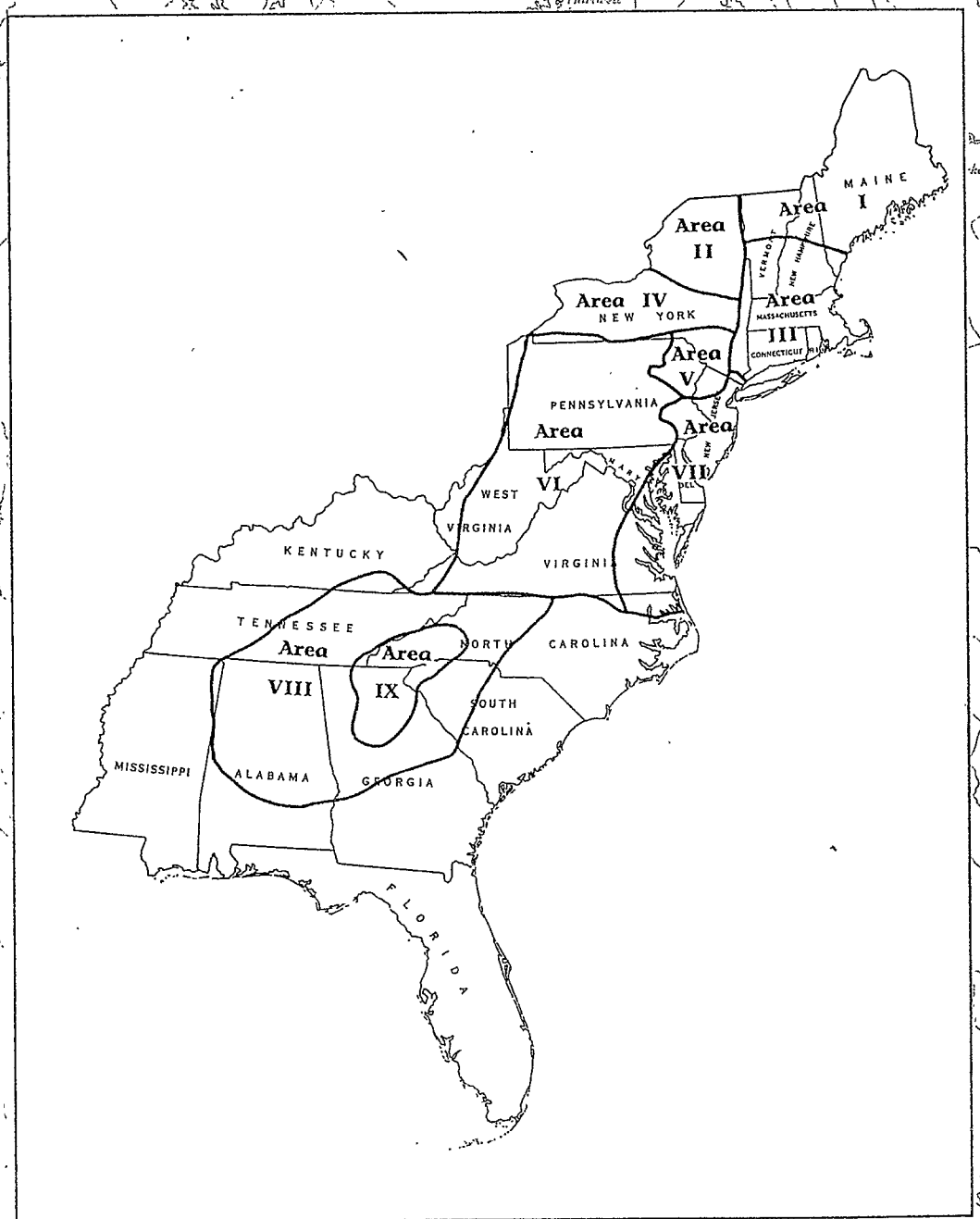
Prepared in cooperation with the
U.S. ENVIRONMENTAL PROTECTION AGENCY

Madison, Wisconsin
1990

U.S. Geological Survey

Water-Resources Investigations Report 88–4094

MAP OF MEAN ANNUAL RUNOFF FOR THE NORTHEASTERN, SOUTHEASTERN, AND MID-ATLANTIC UNITED STATES, WATER YEARS 1951-80



Prepared in cooperation with the
U.S. Environmental Protection Agency

sions that the methods that used the area-weighted average of the drainage area or the centroid of the drainage area produced somewhat better correlations—that is, the interecept was closer to zero, the standard errors were small, and the correlation coefficients were larger. These methods have slightly greater power to predict actual runoff

Additional statistical investigation found no significant differences in reliability of the runoff estimates among the areas. No significant differences existed in the errors for stations with drainage areas of differing size.

USE OF MEAN ANNUAL RUNOFF MAP

Mean annual runoff for a site can be estimated from the runoff map by several methods. The simplest method of estimating the runoff is to locate the site on the runoff map and to identify the runoff contour nearest the site. This method, however, is less accurate than other methods. The most accurate method is to draw the drainage basin on the runoff map, and use the runoff contours to divide the basin into bands of differing runoff. The area of each of the bands within the drainage basin is then determined. The areas of the separate bands are then used to compute a weighted average runoff for the basin. For example, if 50 percent of the basin is in an area of 18 in/yr (inches per year) of runoff, 30 percent in an area of 20 in/yr of runoff and 20 percent in an area of 22 in/yr of runoff the mean annual runoff would be calculated as follows:

$$0.5 \times 18 + 0.3 \times 20 + 0.2 \times 22 = 19.4$$

Runoff estimated from the map is in inches per year, averaged over the entire drainage basin. Multiply this value by the drainage area, in square miles, and divide by 13.58 to convert to mean annual discharge, in cubic feet per second. In the above example, assume the drainage area of the site is 100 mi^2. The mean annual discharge, in cubic feet per second, would be:

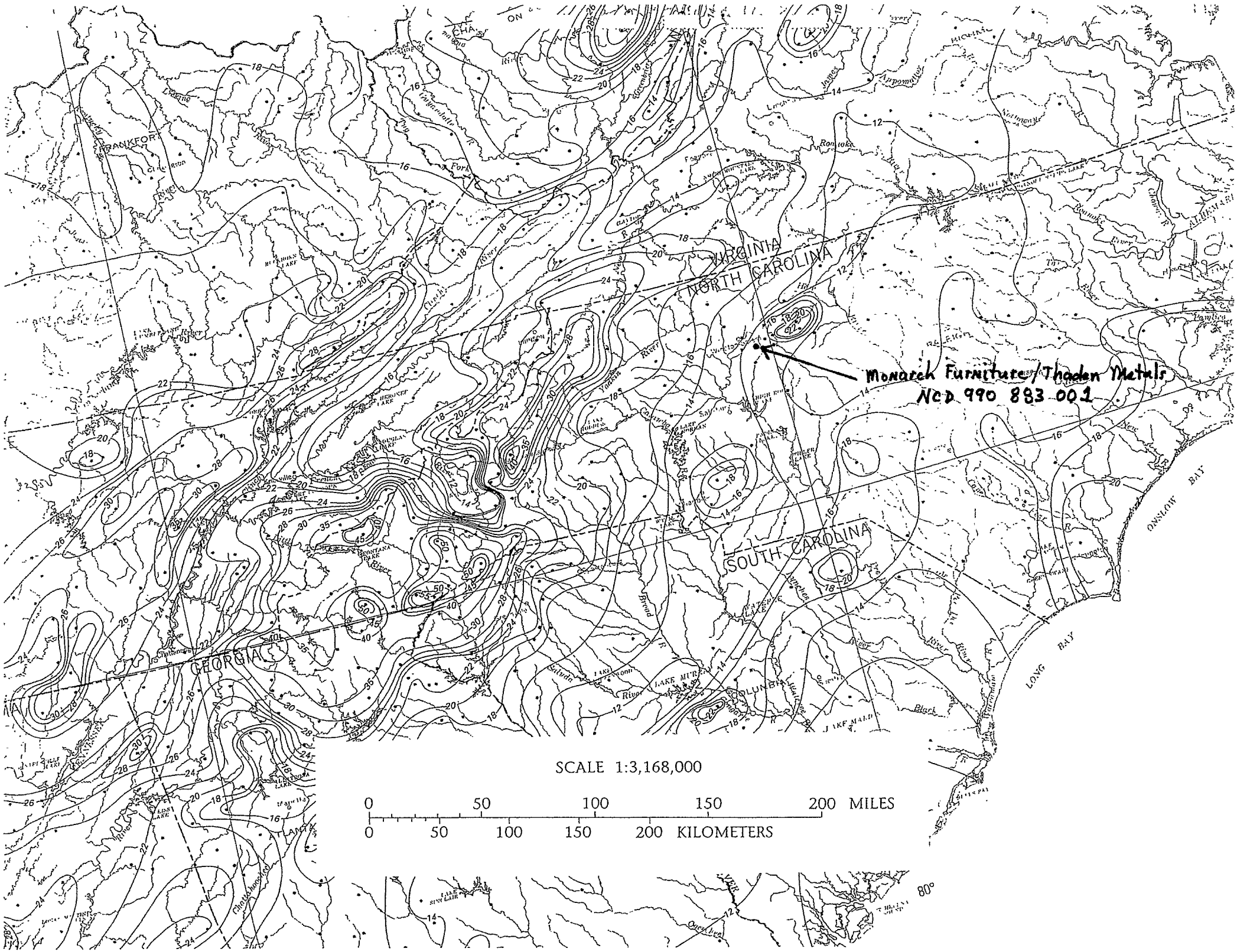
$$19.4 \times 100/13.58 = 143$$

The runoff map was prepared to allow estimation of mean annual runoff at sites where no streamflow data are available. The map represents mean annual runoff for areas with natural land cover. Caution should be used in applying the map to estimate runoff for areas that are not natural land areas. The runoff map should not be used for areas, such as large urban areas, where the land cover has been altered in ways that would change the amount of runoff. The runoff map is not applicable for lakes or bays, for coastal wetlands affected by tides, for streams controlled by reservoirs large enough to influence the total annual streamflow, or for streams with substantial diversions.

Local features could cause the runoff at a particular site to differ substantially from the runoff indicated by the runoff map. The geology of the drainage basin might cause substantial amounts of water to enter or leave the basin as ground water. This could substantially increase or decrease the runoff. For example, a stream with a small drainage area that includes a large spring probably would have higher average streamflow than indicated by the runoff map.

Table 5.—Descriptive statistics of errors in estimated runoff at 93 test stations

Method	Mean absolute value	Mean	Standard error of mean	Standard deviation
		Error, in inches		
Area-weighted	2.0	-0.35	0.30	2.9
Centroid	2.2	-.71	.33	3.1
GIS	2.7	-1.74	.37	3.6
Nearest-inch	2.8	-1.77	.38	3.7
Nearest contour	2.8	-1.79	.39	3.8
		Percent error		
Area-weighted	9.0	-0.54	1.3	12.9
Centroid	9.8	-.71	1.4	13.5
GIS	12.0	-6.42	1.6	15.9
Nearest-inch	12.1	-6.20	1.6	15.6
Nearest-contour	12.2	-6.26	1.6	15.8


VIRGINIA
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
Monarch Furniture/Thaden Metals
NCD 990 883 001
SCALE 1:3,168,000
0 50 100 150 200 MILES
0 50 100 150 200 KILOMETERS
80°

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DRAINAGE AREAS OF SELECTED SITES ON STREAMS IN NORTH CAROLINA

By Robert L. Meikle

Open-File Report 83-211

Prepared in cooperation with the
NORTH CAROLINA DEPARTMENT OF NATURAL
RESOURCES AND COMMUNITY DEVELOPMENT

Raleigh, North Carolina
1983

STATION NUMBER	STATION NAME	DRAINAGE AREA (SQ MI)	SITE TYPE	LAT	LONG	QUAD NAME	COUNTY CODE
0209744300	NANCY B AT MTH NR GENLEE	1.55	20	355000	785513	GREEN LEVEL	037
0209745200	INDIAN C AT MTH NR GREEN LEVEL	1.66	20	354901	785645	GREEN LEVEL	037
0209746350	MORGAN C NR DOBSONS X RDS	2.12	11	355744	790806	WHITE CROSS	135
0209746375	MORGAN C TRIB AT MTH NR DOBSONS X RDS	2.29	20	355655	790758	WHITE CROSS	135
0209746400	MORGAN C NR WHITE CROSS	8.35	02	355525	790656	CHAPEL HILL	135
0209746501	MORGAN C AT UNIVERSITY LAKE, NR CARRBORO	10.0	20	355421	790601	CHAPEL HILL	135
0209747600	PHILS C AT SR 1104 NR CALVANDER	1.11	11	355547	790901	WHITE CROSS	135
0209747648	PHILS C TRIB AT MTH NR WHITE CROSS	1.79	20	355456	790903	WHITE CROSS	135
0209747698	PHILS C AT SR 1945 NR CALVANDER	4.95	11	355443	790802	WHITE CROSS	135
0209748001	PHILS C NR CARRBORO	7.10	20	355354	790640	CHAPEL HILL	135
0209748401	PHILS C AT MTH NR CARRBORO	11.2	20	355359	790623	CHAPEL HILL	135
0209748801	PRICE C AT MTH NR CARRBORO	3.93	20	355249	790544	CHAPEL HILL	135
0209749201	PRITCHARDS MILL C AT MTH NR CARRBORO	2.58	20	355341	790547	CHAPEL HILL	135
0209750000	MORGAN C AT CHAPEL HILL	30.0	01	355351	790528	CHAPEL HILL	135
0209750600	MORGAN C AT CARRBORO	32.7	20	355354	790425	CHAPEL HILL	135
0209750860	WILSON C AT US 501 NR CHAPEL HILL	1.69	20	355245	790342	CHAPEL HILL	135
0209750881	WILSON C AT MTH NR CHAPEL HILL	3.44	20	355331	790334	CHAPEL HILL	135
0209750900	MORGAN C AT US 15-501 NR CHAPEL HILL	37.1	11	355330	790333	CHAPEL HILL	135
0209751301	MORGAN C NR CHAPEL HILL	38.9	20	355355	790138	CHAPEL HILL	135
0209751725	MORGAN C AT COUNTY LINE NR CHAPEL HILL	41.9	20	355325	790042	CHAPEL HILL	135
0209751970	MORGAN C TRIB AT MTH NR GENLEE	0.36	20	355210	785951	GREEN LEVEL	063
0209752600	CUB C AT US 15-501 NR FARRINGTON	0.32	11	355015	790525	FARRINGTON	037
0209752619	BIG B AT MTH NR FARRINGTON	0.57	20	355135	790223	FARRINGTON	037
0209752659	CUB C NR FARRINGTON	5.52	20	355118	790154	FARRINGTON	037
0209770940	BUSH C HEADWATERS NR FARRINGTON	3.25	20	354814	790348	FARRINGTON	037
0209770950	HERNDON C AT MTH NR FARRINGTON	1.80	20	354902	790310	FARRINGTON	037
0209770955	OVERCUP C AT MTH NR FARRINGTON	0.46	20	355008	790150	FARRINGTON	037
0209771200	FOLKNER B AT MTH NR GREEN LEVEL	0.65	20	354722	785905	GREEN LEVEL	037
0209781209	PARKERS C AT MTH NR FARRINGTON	1.70	20	354517	790313	FARRINGTON	037
0209782500	JACK B AT MTH NR GREEN LEVEL	1.10	20	354634	785324	GREEN LEVEL	183
0209782509	BACHELOR B AT MTH NR GREEN LEVEL	2.61	20	354633	785408	GREEN LEVEL	183
0209782559	CLARK B AT MTH NR GREEN LEVEL	1.17	20	354610	785453	GREEN LEVEL	183
0209782609	WHITE OAK C AT MTH NR GREEN LEVEL	11.9	20	354533	785514	GREEN LEVEL	183
0209782693	ROCKY FORD B AT MTH NR GREEN LEVEL	2.78	20	354612	785709	GREEN LEVEL	037
0209803100	BEAVER C NR APEX	3.41	20	354414	785305	NEW HILL	183
0209806252	BEAVER C TRIB AT MTH NR FRIENDSHIP	1.72	20	354354	785322	NEW HILL	183
0209809300	BEAVER C AT APEX	5.65	02	354348	785344	NEW HILL	183
0209809384	BEAVER C TRIB AT MTH AT FRIENDSHIP	2.42	20	354314	785433	NEW HILL	183
0209809416	BEAVER C AT MTH NR FRIENDSHIP	9.90	20	354312	785518	NEW HILL	183
0209809526	REEDY B AT NSRR NR FRIENDSHIP	3.64	20	354351	785551	NEW HILL	183
0209813350	L BEAVER C AT MTH AT NEW HILL	2.83	20	354117	785657	NEW HILL	183
0209819700	HAW R AT B EVERETT JORDAN DAM NR MONCURE	1689.	11	353916	790406	NEW HOPE DAM	037
0209819800	HAW R BL. B EVERETT JORDAN DAM NR MONCURE	1689.	01	353911	790403	NEW HOPE DAM	037
0209820000	HAW R NR HAYWOOD	1689.	01	353901	790359	NEW HOPE DAM	037
0209820600	HAW R NR MONCURE	1691.	11	353756	790335	NEW HOPE DAM	037
0209820659	HAW R TRIB AT US 1 NR HAYWOOD	1.78	20	353801	790317	NEW HOPE DAM	037
0209820779	HAW R TRIB AT MTH AT HAYWOOD	2.48	20	353658	790322	MONCURE	037
0209820800	HAW R AT MONCURE	1694.	01	353658	790327	MONCURE	037
0209821000	HAW R AB SHADDOX C NR HAYWOOD	1695.	11	353600	790304	MONCURE	037
0209821609	SHADDOX C NR MERRY OAKS	2.80	20	353900	790220	NEW HOPE DAM	037
0209821709	SHADDOX C AT US 1 NR MERRY OAKS	4.64	20	353812	790223	NEW HOPE DAM	037
0209821800	SHADDOX C AT MONCURE	7.29	11	353655	790224	MONCURE	037
0209821890	SHADDOX C TRIB AT MTH NR HAYWOOD	6.08	20	353636	790221	MONCURE	037
0209824900	SHADDOX C NR MONCURE	14.3	11	353546	790239	MONCURE	037

DEEP RIVER

0209832100	W F DEEP R NR COLFAX	3.28	20	360452	800215	KERNERSVILLE	081
0209833100	W F DEEP R TRIB AT MTH NR COLFAX	5.95	20	360407	800118	KERNERSVILLE	081
0209834300	W F DEEP R NR FRIENDSHIP	11.5	02	360324	800119	KERNERSVILLE	081
0209834400	W F DEEP R TRIB NR HORNEYTOWN	3.35	20	360315	800129	KERNERSVILLE	081
0209838400	W F DEEP R NR SANDY RIDGE	21.0	20	360220	800003	KERNERSVILLE	081
0209840600	W F DEEP R TRIB 2 NR DEEP R	0.53	02	360219	795933	GUILFORD	081
0209843600	HIATT B NR HIGH POINT	3.11	20	360043	800043	KERNERSVILLE	081
0209850000	W F DEEP R NR HIGH POINT	32.5	01	360015	795842	GUILFORD	081
0209850300	W F DEEP R NR FLORENCE	33.2	20	360002	795825	GUILFORD	081
0209850310	W F DEEP R TRIB NR DEEP RIVER	1.31	20	360003	795820	GUILFORD	081
0209850350	BOULDING B AT SR 1523 NR HIGH POINT	3.39	20	355944	795833	HIGH POINT EAST	081
0209883290	E F DEEP R TRIB NR FRIENDSHIP	1.20	20	360525	795807	GUILFORD	081
0209883300	E F DEEP R NR FRIENDSHIP	3.88	20	360451	795727	GUILFORD	081
0209883400	E F DEEP R AT SR 1556 NR FRIENDSHIP	6.28	20	360356	795521	GUILFORD	081
0209883500	E F DEEP R TRIB AT MTH NR FRIENDSHIP	2.92	20	360327	795720	GUILFORD	081
0209883600	E F DEEP R TRIB AT MTH NR DEEP RIVER	2.03	20	360257	795725	GUILFORD	081
0209900000	E F DEEP R NR HIGH POINT	14.8	01	360215	795646	GUILFORD	081
0209900700	LONG B NR DEEP RIVER	2.20	11	360228	795616	GUILFORD	081
0209900713	E F DEEP R AT MTH NR FLORENCE	18.6	20	360138	795618	GUILFORD	081
0209914300	DEEP R TRIB AT MTH AT JAMESTOWN	2.48	20	355908	795635	HIGH POINT EAST	081
0209914400	DEEP R AT JAMESTOWN	64.7	11	355924	795623	HIGH POINT EAST	081
0209919200	DEEP R AT DAM AT OAKDALE	66.6	02	355848	795543	HIGH POINT EAST	081
0209923402	BULL RUN NR HILLTOP	1.31	20	360147	795403	GUILFORD	081
0209923455	BULL RUN AT SR 1549 NR SEDGEFIELD	4.45	20	360147	795446	GUILFORD	081
0209924000	BULL RUN AT OAKDALE	7.75	02	355848	795537	HIGH POINT EAST	081
0209939900	DEEP R AT KIVETT DR EXT NR JAMESTOWN	77.7	02	355732	795425	HIGH POINT EAST	081
0209945102	RICHLAND C AT N SPRINGFIELD AVE AT HIGH POINT	5.63	20	355635	795845	HIGH POINT EAST	081
0209946100	RICHLAND C NR SPRINGFIELD	8.41	20	355650	795716	HIGH POINT EAST	081
0209948000	RICHLAND C NR ARCHDALE	12.5	02	355628	795556	HIGH POINT EAST	081
0209948400	RICHLAND C NR GROOMTOWN	16.2	11	355626	795408	HIGH POINT EAST	081

STATION NUMBER	STATION NAME	DRAINAGE AREA (SQ MI)	SITE TYPE	LAT	LONG	QUAD NAME	COUNTY CODE
0209948955	DEEP R NR JAMESTOWN	96.3	11	355616	795326	HIGH POINT EAST	081
0209948971	HICKORY C AT SR 1116 AT GROOMETOWN	2.54	20	355931	795058	PLEASANT GARDEN	081
0209948985	HICKORY C AT SR 1113 NR GROOMTOWN	4.89	20	355809	795152	PLEASANT GARDEN	081
0209948991	HICKORY C TRIB AT MTH NR GROOMTOWN	1.91	20	355749	795154	PLEASANT GARDEN	081
0209949000	HICKORY C NR HIGH POINT	9.60	02	355703	795208	PLEASANT GARDEN	081
0209949200	REDDICKS C NR JAMESTOWN	4.90	11	355910	795336	HIGH POINT EAST	081
0209949300	REDDICKS C AT SR 1129 NR GROOMTOWN	8.68	11	355711	795309	HIGH POINT EAST	081
0209949500	HICKORY C NR GROOMTOWN	20.1	02	355602	795212	PLEASANT GARDEN	081
0209949520	DEEP R AT NC 62 NR GROOMTOWN	118.	20	355508	795148	PLEASANT GARDEN	081
0209949550	DEEP R TRIB AT SR 1139 NR FREEMAN MILL	1.79	20	355510	795238	HIGH POINT EAST	081
0209949600	DEEP R TRIB NR RANDLEMAN	2.77	02	355517	795121	PLEASANT GAROEN	081
0209950000	DEEP R NR RANDLEMAN	125.	01	355406	795105	PLEASANT GARDEN	151
0209950251	DEEP R TRIB HEADWATERS NR GROOMTOWN	2.54	20	355449	794928	PLEASANT GARDEN	081
0209950501	DEEP R TRIB AT MTH NR LEVEL CROSS	4.94	20	355332	795032	PLEASANT GARDEN	151
0209950751	DEEP R AT LEVEL CROSS	133.	20	355309	795034	PLEASANT GARDEN	151
0209951001	DEEP R TRIB AT MTH AT LEVEL CROSS	1.87	20	355301	795003	PLEASANT GARDEN	151
0209951155	DEEP R AT SR 1939 NR RANDLEMAN	139.	20	355056	794942	RANDLEMAN	151
0209977300	MUDDY C NR TRINITY	4.50	11	355336	795621	HIGH POINT EAST	151
0209981500	MUDDY C AT SR 1916 AT ARCHDALE	8.48	11	355353	795538	HIGH POINT EAST	151
0209987000	MUDDY C AT SR 1922 NR GLENOLA	14.4	20	355301	795343	HIGH POINT EAST	151
0210000000	MUDDY C NR ARCHDALE	16.5	01	355235	795243	HIGH POINT EAST	151
0210002810	BOB B AT MTH NR RANDLEMAN	3.12	20	355115	795039	RANDLEMAN	151
0210005600	MUDDY C NR RANDLEMAN	26.3	02	355055	795000	RANDLEMAN	151
0210005610	DEEP R TRIB AT MTH NR RANDLEMAN	1.81	20	355043	794905	RANDLEMAN	151
0210005615	DEEP R AT US 220 NR RANDLEMAN	168.	20	355037	794922	RANDLEMAN	151
0210005680	DEEP R TRIB NR N RANDLEMAN	3.38	20	355020	794904	RANDLEMAN	151
0210008330	DEEP R AT PROP DAM AT RANDLEMAN	170.	20	355004	794849	RANDLEMAN	151
0210008391	DEEP R TRIB AT MTH AT RANDLEMAN	1.03	20	354957	794822	RANDLEMAN	151
0210010400	DEEP R AT RANDLEMAN	177.	02	354924	794810	RANDLEMAN	151
0210017121	POLECAT C HEADWATERS NR GROOMTOWN	1.94	20	355809	794817	PLEASANT GARDEN	081
0210017151	POLECAT C TRIB AT MTH NR GROOMTOWN	3.09	20	355723	794834	PLEASANT GARDEN	081
0210017155	POLECAT C AT SR 3428 NR PLEASANT GARDEN	7.34	11	355712	794843	PLEASANT GARDEN	081
0210017171	POLECAT C TRIB AT SR 3428 NR PLEASANT GARDEN	1.88	20	355708	794704	PLEASANT GARDEN	081
0210017191	POLECAT C TRIB AT MTH NR PLEASANT GARDEN	5.10	20	355528	794748	PLEASANT GARDEN	081
0210017200	POLECAT C NR PLEASANT GARDEN	15.6	02	355510	794747	PLEASANT GARDEN	081
0210017351	POLECAT C AT SR 2101 NR LEVEL CROSS	18.8	20	355345	794702	PLEASANT GARDEN	151
0210017501	POLECAT C TRIB AT NC 62 NR PLEASANT GARDEN	2.72	20	355452	794529	PLEASANT GARDEN	081
0210017651	POLECAT C TRIB AT SR 2103 NR LEVEL CROSS	4.68	20	355424	794539	PLEASANT GARDEN	151
0210017951	POLECAT C TRIB AT MTH NR LEVEL CROSS	7.85	20	355310	794621	PLEASANT GARDEN	151
0210018000	POLECAT C NR CLIMAX	29.1	02	355315	794613	PLEASANT GARDEN	151
0210018100	POLECAT C NR LEVEL CROSS	31.9	02	355137	794609	RANDLEMAN	151
0210019001	L POLECAT C AT SR 2108 NR REDCROSS	1.45	20	355337	794313	CLIMAX	151
0210019051	L POLECAT C TRIB NO 1 NR REDCROSS	2.73	20	355319	794326	CLIMAX	151
0210019101	L POLECAT C TRIB NO 2 NR REDCROSS	1.64	20	355312	794306	CLIMAX	151
0210019151	L POLECAT C AT SR 2113 NR REDCROSS	7.19	20	355230	794445	CLIMAX	151
0210019201	L POLECAT C TRIB AT SR 2111 NR LINEBERRY	1.74	20	355146	794327	GRAYS CHAPPEL	151
0210019300	L POLECAT C NR RANDLEMAN	11.6	02	355218	794517	RANDLEMAN	151
0210019710	L POLECAT C AT MTH NR SALEM	14.0	20	355103	794604	RANDLEMAN	151
0210019720	POLECAT C AT SALEM	47.2	20	355027	794623	RANDLEMAN	151
0210020300	POLECAT C AT RANDLEMAN	52.3	20	354925	794637	RANDLEMAN	151
0210020915	POLECAT C AT MTH AT WORTHDALF	56.3	20	354813	794640	RANDLEMAN	151
0210021900	DEEP R AT WORTHVILLE	236.	20	354809	794637	RANDLEMAN	151
0210022560	DEEP R TRIB AT MTH AT WORTHVILLE	2.11	20	354723	794623	RANDLEMAN	151
0210024300	HASKETTS C AT N ASHEBORO	2.79	20	354452	794845	ASHEBORO	151
0210025700	PENWOOD B AT ASHEBORO	1.29	20	354308	794757	ASHEBORO	151
0210026200	PENWOOD B NR ASHEBORO	2.92	03	354412	794709	ASHEBORO	151
0210028200	PENWOOD B AB MTH NR ASHEBORO	4.98	20	354532	794735	RANDLEMAN	151
0210030900	HASKFTTS C AT MTH AT CENTRAL FALLS	12.0	20	354604	794631	RANDLEMAN	151
0210031900	DEEP R AT CENTRAL FALLS	254.	20	354545	794620	RANDLEMAN	151
0210033150	DEEP R TRIB NR CENTRAL FALLS	0.91	20	354536	794515	RANDLEMAN	151
0210033700	GABRIELS C NR ASHEBORO	3.29	20	354420	794502	ASHEBORO	151
0210033800	GABRIELS C TRIB NR ASHEBORO	0.95	02	354322	794640	ASHEBORO	151
0210033955	GABRIELS C TRIB AT SR 2215 NR ASHEBORO	2.34	20	354420	794548	ASHEBORO	151
0210034400	DEEP R AT CEDAR FALLS	266.	20	354504	794356	GRAYS CHAPPEL	151
0210035401	BUSH C AT SR 2261 AT GRAYS CHAPEL	2.37	20	354855	794211	GRAYS CHAPPEL	151
0210035451	BUSH C AT SR 2142 NR MILLBORO	4.46	20	354723	794231	GRAYS CHAPPEL	151
0210035501	BUSH C TRIB AT SR 2261 AT MILLBORO	2.30	20	354718	794321	GRAYS CHAPPEL	151
0210035551	BUSH C TRIB AT SR 2141 NR MILLBORO	5.00	20	354701	794328	GRAYS CHAPPEL	151
0210035601	BUSH C AT SR 2143 NR CEDAR FALLS	11.2	20	354618	794319	GRAYS CHAPPEL	151
0210035700	BUSH C NR CEDAR FALLS	13.2	02	354510	794319	GRAYS CHAPPEL	151
0210036900	DEEP R AT FRANKLINVILLE	277.	20	354433	794207	RAMSEUR	151
0210036910	DEEP R TRIB AT MTH AT FRANKLINVILLE	1.30	20	354436	794151	RAMSEUR	151
0210036950	DEEP R TRIB BL SEO AT FRANKLINVILLE	1.94	20	354410	794106	RAMSEUR	151
0210038200	DEEP R AT US 64 NR RAMSEUR	282.	20	354357	794024	RAMSEUR	151
0210039301	SANDY C HEADWATERS AT SR 2403 NR REDCROSS	2.38	20	355341	794023	CLIMAX	151
0210039325	SANDY C TRIB NO 1 NR REDCROSS	1.54	20	355303	793925	CLIMAX	151
0210039351	SANDY C TRIB HEADWATERS NR LINEBERRY	1.56	20	355204	794051	GRAYS CHAPPEL	151
0210039375	SANDY C TRIB NO 2 NR REDCROSS	2.90	20	355238	793853	CLIMAX	151
0210039400	SANDY C NR MELANCTON	8.21	20	355235	793841	CLIMAX	151
0210039425	SANDY C AT US 421 NR LINEBERRY	9.31	20	355204	793742	GRAYS CHAPPEL	151
0210040660	DODSONS LAKE HEADWATERS NR REDCROSS	1.90	20	355304	793817	CLIMAX	151
0210040700	SANDY C TRIB NR LIBERTY	3.11	02	355227	793747	GRAYS CHAPPEL	151
0210040750	SANDY C TRIB AT SR 2407 NR LIBERTY	1.54	20	355219	793715	LIBERTY	151
0210041900	SANDY C TRIB #3 AT LIBERTY	0.94	02	355227	793533	LIBERTY	151
0210043200	SANDY C TRIB #2 NR MELANCTON	5.43	02	355153	793659	LIBERTY	151

STATION NUMBER	STATION NAME	DRAINAGE AREA (SQ MI)	SITE TYPE	LAT	LONG	QUAD NAME	COUNTY CODE
0210045700	SANDY C NR LIBERTY	23.1	20	355043	793751	GRAYS CHAPPEL	151
0210045801	BOOOOM C AT SR 2438 NR LIBERTY	2.19	20	355001	793701	LIBERTY	151
0210045851	BOOOOM C AT MTH AT MELANCHTON	4.44	20	354954	793818	GRAYS CHAPPEL	151
0210045900	SANDY C TRIB AT SR 2261 AT MELANCHTON	3.29	20	355026	793917	GRAYS CHAPPEL	151
0210045951	SANDY C TRIB AT MTH NR MECLANCHTON	4.90	20	354929	793904	GRAYS CHAPPEL	151
0210046001	SANDY C NR MECLANCHTON	35.2	20	354903	793900	GRAYS CHAPPEL	151
0210046075	SANDY C TRIB AT GRAYS CHAPEL	2.68	20	354927	794104	GRAYS CHAPPEL	151
0210046151	SANDY C TRIB AT MTH NR GRAYS CHAPEL	5.49	20	354802	794008	GRAYS CHAPPEL	151
0210046201	SANDY C AT SR 2453 NR GRAYS CHAPEL	43.5	20	354751	794005	GRAYS CHAPPEL	151
0210046300	SANDY C NR WHITES CHAPEL	45.1	02	354707	793957	GRAYS CHAPPEL	151
0210046331	MT PLEASANT C AT SR 2458 NR STALEY	3.33	20	354759	793654	LIBERTY	151
0210046361	MT PLEASANT C TRIB AT MTH AT WHITES CHAPEL	1.90	20	354733	793824	GRAYS CHAPPEL	151
0210046400	MT PLEASANT C AT WHITES CHAPEL	8.07	02	354716	793900	GRAYS CHAPPEL	151
0210046900	SANDY C NR RAMSEUR	55.2	02	354630	793952	GRAYS CHAPPEL	151
0210046951	SANDY C TRIB AT MTH AT FRANKLINVILLE	1.89	20	354552	794023	GRAYS CHAPPEL	151
0210047230	SANDY C AT MTH NR RAMSEUR	60.0	20	354356	794019	RAMSEUR	151
0210047250	DEEP R TRIB AT MTH AT RAMSFUR	4.70	20	354356	793943	RAMSEUR	151
0210048101	DEEP R TRIB AT SR 2456 NR RAMSFUR	1.94	20	354615	793832	GRAYS CHAPPEL	151
0210050000	DEEP R AT RAMSEUR	349.	01	354334	793920	RAMSEUR	151
0210051800	DEEP R AT CRVN FARM BL RAMSEUR	351.	20	354240	793913	RAMSEUR	151
0210052250	REED C AT DAM NR RAMSEUR	2.91	20	354504	793648	LIBERTY	151
0210052290	REED C TRIB AT MTH NR BROWNS X RDS	1.60	20	354448	793649	COLERIDGE	151
0210052300	REED C AT SR 2626 NR RAMSEUR	5.33	20	354446	793712	COLERIDGE	151
0210053600	REED C NR RAMSEUR	9.65	02	354321	793824	RAMSEUR	151
0210053650	REED C AT MTH NR RAMSEUR	10.1	20	354228	793848	RAMSEUR	151
0210054100	MILL C NR ASHEBORO	1.98	02	354223	794352	RAMSEUR	151
0210054150	MILL C NR FRANKLINVILLE	4.17	20	354202	794210	RAMSEUR	151
0210054175	MILL C TRIB AT MTH NR FRANKLINVILLE	1.19	20	354203	794211	RAMSEUR	151
0210054250	MILL C AT SR 2614 NR RAMSEUR	8.43	20	354221	794106	RAMSEUR	151
0210054400	MILL C TRIB AT MTH NR RAMSEUR	2.93	20	354141	794001	RAMSEUR	151
0210054500	SANDY RUN AT MTH NR RAMSEUR	2.84	20	354106	793828	RAMSEUR	151
0210055405	MILL C AT MTH NR RAMSEUR	17.2	20	354104	793806	RAMSEUR	151
0210057100	MILLSTONE C HEADWATERS AT PARKS X RDS	3.70	20	354248	793619	COLERIDGE	151
0210057190	MILLSTONE C AT SR 2642 AT PARKS X RDS	7.37	20	354221	793710	COLERIDGE	151
0210057250	MILLSTONE C AT MTH NR RAMSEUR	10.1	20	354040	793742	RAMSEUR	151
0210059900	DEEP R NR PARKS X RDS	398.	02	354020	793739	RAMSEUR	151
0210061660	BROAD MOUTH B AT MTH NR COLERIDGE	2.19	20	353951	793723	COLERIDGE	151
0210061675	DEEP R TRIB AT MTH NR COLERIDGE	2.30	20	353901	793732	RAMSEUR	151
0210061690	BACK B AT MTH AT COLERIDGE	3.22	20	353852	793717	COLERIDGE	151
0210061700	DEEP R AT COLERIDGE	401.	20	353820	793703	COLERIDGE	151
0210063300	N PRONG AT SR 2839 NR ULAH	3.07	20	353837	794808	ASHEBORO	151
0210063505	RICHLAND C HEADWATERS NR SEAGROVE	10.6	20	353902	794640	ASHEBORO	151
0210063515	VESTAL C HEADWATERS AT SR 2803 NR ASHEBORO	2.35	20	354018	794753	ASHEBORO	151
0210063590	VESTAL C AT SR 2824 NR SEAGROVE	6.56	20	353933	794638	ASHEBORO	151
0210063655	RICHLAND C AT SR 2830 NR SEAGROVE	19.1	20	353911	794555	ASHEBORO	151
0210063670	RICHLAND C TRIB AT SR2830 NR ASHEBORO	0.80	20	353940	794506	ASHEBORO	151
0210063677	RICHLAND C NR PILOT MOUNTAIN	23.2	20	353836	794426	RAMSEUR	151
0210063800	PANTHER C NR MICHFIELD	3.35	02	353748	794403	RAMSEUR	151
0210063850	PANTHER C AT MTH NR MICHFIELD	3.85	20	353812	794326	RAMSEUR	151
0210063875	SQUIRREL C NR ASHEBORO	2.22	20	354100	794510	ASHEBORO	151
0210063890	SQUIRREL C AT SR 2660 NR RAMSEUR	6.14	20	353932	794326	RAMSEUR	151
0210063950	SQUIRREL C AT MTH NR RAMSEUR	7.65	20	353820	794302	RAMSEUR	151
0210064000	RICHLAND C NR ASHEBORO	36.8	02	353822	794250	RAMSEUR	151
0210064050	RICHLAND C TRIB AT MTH NR FRANKLINVILLE	2.49	20	353827	794221	RAMSEUR	151
0210064100	RICHLAND C TRIB AT MTH NR RAMSEUR	1.66	20	353748	794124	RAMSEUR	151
0210065075	RICHLAND C AT SR 2900 NR ERECT	44.5	20	353644	794021	ERECT	151
0210066310	BACHELOR C AT SR 2849 NR YOW MILL	5.04	20	353607	794339	ERECT	151
0210066350	BACHELOR C AT SR 2904 NR ERECT	8.63	20	353611	794131	ERECT	151
0210066400	BACHELOR C NR COLERIDGE	10.5	11	353539	794027	ERECT	151
0210067050	RICHLAND C AT SR 1003 NR ERECT	58.0	20	353618	793847	ERECT	151
0210067070	RICHLAND C TRIB AT MTH NR ERECT	4.52	20	353636	793834	ERECT	151
0210067300	BRUSH C HEADWATERS NR STALEY	3.16	20	354701	793408	LIBERTY	151
0210067320	BRUSH C AT SR 2474 NR STALEY	4.41	20	354607	793329	LIBERTY	151
0210067341	BRUSH C TRIB AT MTH NR STALEY	2.14	20	354514	793320	LIBERTY	151
0210067379	REEDY F AT MTH NR STALEY	0.65	20	354500	793316	LIBERTY	151
0210067400	RICHLAND C NR COLERIDGE	65.2	02	353630	793710	BENNETT	151
0210068001	DEEP R BL RICHLAND C NR CHEEKS	471.	20	353632	793628	BENNETT	151
0210068400	BRUSH C TRIB AT MTH NR BROWNS X RDS	2.11	20	354414	793259	COLERIDGE	151
0210068500	BRUSH C TRIB AT MTH NR SILER CITY	1.63	20	354347	793242	COLERIDGE	037
0210069330	BRUSH C AT SR 1101 NR SILER CITY	16.7	20	354348	793231	COLERIDGE	037
0210069400	BRUSH C NR SILER CITY	19.1	02	354232	793227	COLERIDGE	037
0210070125	BLOOD RUN C AT US 421 AT SILER CITY	0.13	11	354505	792851	CRUTCHFIELD CROSSROA	037
0210070165	BLOOD RUN C NR SILER CITY	1.14	11	354430	792910	SILER CITY	037
0210070175	BLOOD RUN C AT SR 1107 NR SILER CITY	3.32	20	354328	792955	SILER CITY	037
0210070185	BLOOD RUN C TRIB AT MTH NR SILER CITY	1.15	20	354228	793146	COLERIDGE	037
0210070200	BLOOD RUN C NR SILER CITY	7.59	02	354215	793214	COLERIDGE	037
0210070210	BLOOD RUN C AT MTH NR PARKS X RDS	7.99	20	354148	793253	COLERIDGE	151
0210070240	BRUSH C TRIB AT MTH NR PARKS X RDS	2.63	20	354134	793336	COLERIDGE	151
0210070250	BRUSH C TRIB AT MTH NR COLERIDGE	1.77	20	354059	793307	COLERIDGE	151
0210070260	BRUSH C AT SR 2636 NR COLERIDGE	35.0	20	354024	793328	COLERIDGE	151
0210070280	BRUSH C NR PARKS X RDS	37.6	20	353935	793334	COLERIDGE	151
0210070300	BRUSH C AT COLERIDGE	38.8	02	353829	793436	COLERIDGE	151
0210070340	L BRUSH C AT SR 1130 NR SILER CITY	3.90	20	354026	793050	COLERIDGE	037
0210070350	L BRUSH C AT SR 1100 NR SILER CITY	7.15	20	353853	793124	COLERIDGE	037
0210070365	L BRUSH C TRIB HEADWATERS NR SILER CITY	1.96	20	353830	793102	COLERIDGE	037

STATION NUMBER	STATION NAME	DRAINAGE AREA (SQ MI)	SITE TYPE	LAT	LONG	QUAD NAME	COUNTY CODE
0210070390	L BRUSH C TRIB AT MTH NR SILER CITY	4.92	20	353812	793201	COLERIDGE	037
0210070400	L BRUSH C NR COLERIDGE	17.1	02	353750	793326	COLERIDGE	151
0210070600	L BRUSH C TRIB NR COLERIDGE	1.20	02	353804	793334	COLERIDGE	151
0210070850	BRUSH C TRIB AT MTH AT CHEEKS	3.03	20	353617	793418	BENNETT	151
0210071000	BRUSH C NR COLERIDGE	67.4	02	353605	793500	BENNETT	151
0210071050	BRUSH C AT MTH NR CHEEKS	69.6	20	353531	793624	BENNETT	151
0210071080	DEEP R TRIB AT MTH NR BENNETT	4.48	20	353415	793619	BENNETT	151
0210071090	DEEP R BL TRIB NR BENNETT	547.	20	353414	793614	BENNETT	151
0210071101	FLAT C AT PRIVATE ROAD NR BENNETT	2.56	20	353522	793053	BENNETT	037
0210071125	FLAT C AT SR 1151 NR BENNETT	6.97	20	353507	793246	BENNETT	037
0210071150	FLAT C AT NC 22 AT BENNETT	9.88	20	353410	793324	ERECT	151
0210071175	FLAT C AT SR 2886 NR BENNETT	13.8	20	353301	793501	BENNETT	151
0210071200	DEEP R NR ERECT	565.	20	353239	793514	BENNETT	151
0210071205	DEEP R AB FORK C NR BENNETT	570.	20	353105	793557	BENNETT	151
0210071360	FORK C TRIB AT MTH NR YOW MILL	3.75	20	353412	794439	ERECT	151
0210071370	FORK C AT SR 1002 AT YOW MILL	7.96	20	353307	794327	ERECT	151
0210071380	LAMBERT C AT MTH AT YOW MILL	2.83	20	353243	794313	ERECT	151
0210071390	FORK C AT SR 2862 NR YOW MILL	13.3	20	353238	794211	ERECT	151
0210071392	FORK C NR YOW MILL	14.0	20	353239	794111	ERECT	151
0210071394	LITTLE C AT MTH NR ERECT	2.74	20	353342	794143	ERECT	151
0210071396	RICHARDSON C NR YOW MILL	4.34	20	353343	794143	ERECT	151
0210071400	RICHARDSON C NR ERECT	7.02	11	353343	794118	ERECT	151
0210071560	FORK C TRIB AT SR 2870 NR ERECT	2.26	20	353213	794002	ERECT	151
0210071840	MEADOW B AT SR 2864 NR YOW MILL	2.66	20	353152	794221	ERECT	151
0210071850	MEADOW B AT MTH NR YOW MILL	5.01	20	353155	794006	ERECT	151
0210071860	REEDY C AT SR 1418 NR JUGTOWN	4.39	20	353036	794019	ERECT	125
0210071900	REEDY C NR COLERIDGE	7.29	11	353137	793839	ERECT	151
0210073000	FORK C NR COLERIDGE	38.5	02	353138	793831	ERECT	151
0210073010	FORK C TRIB AT MTH NR COLERIDGE	2.08	20	353137	793811	ERECT	151
0210073040	FORK C TRIB HEADWATER NR ERECT	1.81	20	353336	793819	ERECT	151
0210073170	FORK C TRIB AT MTH NR ERECT	4.03	20	353144	793712	BENNETT	151
0210073300	FORK C AT MTH NR BENNETT	48.2	20	353103	793559	BENNETT	151
0210074700	DEEP R AT SR 1461 NR BENNETT	621.	20	353002	793453	BENNETT	125
0210074900	GRASSY C AT SR 1003 NR ROBBINS	4.04	20	352913	793729	ROBBINS	125
0210074939	GRASSY C AT SR 1456 NR ROBBINS	7.88	20	352914	793556	ROBBINS	125
0210074979	GRASSY C AT MTH NR ROBBINS	10.6	20	352920	793447	ROBBINS	125
0210078700	BEAR C AT WHYNOT	0.53	11	353133	794544	SEAGROVE	151
0210080219	WEST B AT SR 1412 NR DOVER	3.98	20	352918	794452	SPIES	125
0210080259	BEAR C AT SR 1410 NR DOVER	4.32	20	352923	794344	SPIES	125
0210080289	BEAR C AT SR 1409 NR DOVER	12.3	20	352849	794300	SPIES	125
0210080329	WILLIAMS C AT SR 1404 AT DOVER	4.74	20	352632	794443	SPIES	125
0210080359	WILLIAMS C AT SR 1403 NR DOVER	8.25	20	352730	794330	SPIES	125
0210080389	WILLIAMS C AT MTH NR DOVER	9.92	20	352800	794208	SPIES	125
0210080400	BEAR C NR JUGTOWN	25.2	11	352741	794145	SPIES	125
0210080600	BEAR C NR DOVER	28.7	11	352712	794024	SPIES	125
0210081769	WOLF C AT SR 1403 AT DOVER	7.96	20	352556	794243	SPIES	125
0210081800	WOLF C NR SPIES	11.3	11	352637	794049	SPIES	125
0210081859	WOLF C AT MTH NR SPIES	12.6	20	352710	793952	SPIES	125
0210082400	BEAR C NR SPIES	44.6	11	352658	793847	SPIES	125
0210082439	BEAR C TRIB AT MTH NR SPIES	2.20	20	352645	793806	SPIES	125
0210084300	CABIN C AT SR 1509 NR CANDOR	1.56	02	351842	794423	CANDOR	123
0210084650	CABIN C AT SR 1505 NR BISCOE	5.83	20	352042	794431	CANDOR	123
0210084675	CABIN C AT NC 24 27 NR BISCOE	9.78	20	352139	794355	CANDOR	123
0210084690	CABIN C AT SR 1400 NR SPIES	11.9	20	352250	794310	SPIES	125
0210085910	COTTON C AT MTH NR SPIES	10.8	20	352330	794257	SPIES	125
0210086150	RITA B AT MTH NR SPIES	1.74	20	352330	794407	SPIES	125
0210087200	CABIN C NR DOVER	24.2	11	352347	794211	SPIES	125
0210088100	MILL C TRIB AT SR 1143 NR SAMARCAND	2.40	20	351939	794106	CANDOR	125
0210088144	MILL C AT SR 1143 NR SAMARCAND	1.37	20	351940	794036	CANDOR	125
0210088146	MILL C TRIB AT SR 1280 NR CANDOR	1.38	20	351900	794252	CANDOR	125
0210088158	MILL C TRIB AT MTH NR SAMARCAND	3.99	20	352041	794121	CANDOR	125
0210090100	MILL C AT NC 27 NR ROBBINS	10.1	20	352142	794135	CANDOR	125
0210090105	MILL C TRIB AT MTH NR ROBBINS	1.54	20	352154	794149	CANDOR	125
0210090115	MILL C NR WEST PHILADELPHIA	2.04	20	352239	794136	SPIES	125
0210091100	MILL C NR SPIES	15.7	11	352317	794039	SPIES	125
0210091159	MILL C AT MTH NR SPIES	17.4	20	352407	793740	SPIES	125
0210091169	CABIN C AT SR 1275 NR SPIES	46.9	20	352407	793938	SPIES	125
0210091174	WET C HEADWATERS NR EAGLE SPRINGS	2.93	20	351839	793833	CANDOR	125
0210091177	WET C TRIB AT MTH NR EAGLE SPRINGS	1.10	20	351908	793817	CANDOR	125
0210091182	WET C AT SR 1270 NR EAGLE SPRINGS	8.34	20	352050	793830	CANDOR	125
0210091186	SINGS C AT SR 1270 NR ROBBINS	1.48	20	352100	794010	CANDOR	125
0210091192	SINGS C AT MTH NR ROBBINS	4.43	20	352222	793854	CANDOR	125
0210092100	WET C NR ROBBINS	15.9	11	352325	793928	SPIES	125
0210092159	WET C AT MTH NR SPIES	16.8	20	352454	793804	SPIES	125
0210092892	HORSE C AT MTH NR WEST PHILADELPHIA	3.57	20	352349	793734	SPIES	125
0210092900	DRY C NR W PHILADELPHIA	9.65	11	352350	793734	SPIES	125
0210092969	DRY C AT MTH NR SPIES	10.9	20	352505	793739	SPIES	125
0210095800	CABIN C AT SR 1002 NR ROBBINS	79.9	20	352540	793643	ROBBINS	125
0210096500	BEAR C NR GARNERS STORE	132.	11	352557	793555	ROBBINS	123
0210097681	SIMLIN C HEADWATERS NR GARNEPS STORE	1.62	20	352441	793553	ROBBINS	125
0210097700	SIMLIN C TRIB AT SR 1435 AT ROBBINS	1.31	20	352517	793527	ROBBINS	125
0210100000	BEAR C AT ROBBINS	137.	01	352603	793539	ROBBINS	125
0210100090	BUCK B AT SR 1477 AT ROBBINS	0.97	20	352608	793447	ROBBINS	125
0210100100	BEAR C AT NC 705 AT ROBBINS	139.	20	352626	793520	ROBBINS	125
0210100500	BEAR C BL SEO NR ROBBINS	141.	20	352708	793453	ROBBINS	125

STATION NUMBER	STATION NAME	DRAINAGE AREA (SQ MI)	SITE TYPE	LAT	LONG	QUAD NAME	COUNTY CODE
02101009 00	BEAR C AT LEAMAN	144.	20	352815	793403	ROBBINS	135
02101009 09	BEAR C AT MTH NR ROBBINS	145.	20	352845	793316	ROBBINS	125
02101014 40	CEDAR C ST SR 1164 NR BENNETT	2.45	20	353232	793309	BENNETT	037
02101016 00	DEEP R TRIB 3 NR HIGH FALLS	6.26	02	353016	793221	BENNETT	125
02101016 89	CEDAR C AT MTH NR HIGH FALLS	8.47	20	352939	793226	ROBBINS	125
02101025 30	DEEP R AT NC 22 AT HIGH FALLS	792.	20	352840	793112	ROBBINS	125
02101030 00	FALLS C NR BENNETT	3.43	02	353320	792956	BENNETT	037
02101032 00	FALLS C AT NC 42 NR BENNETT	8.60	20	353143	793049	BENNETT	037
02101042 19	FALLS C AT MTH AT HIGH FALLS	14.5	20	352840	793043	ROBBINS	125
02101043 09	BUFFALO C AT NC 24 AT GARNERS STORE	5.90	20	352413	793402	ROBBINS	125
02101044 29	BUFFALO C AT SR 1477 NR ROBBINS	8.44	20	352532	793238	ROBBINS	125
02101044 35	MEADOW C AT NC 24 NR GARNERS STORE	1.20	20	352354	793239	ROBBINS	125
02101044 59	MEADOW C AT MTH NR ROBBINS	4.35	20	352533	793231	ROBBINS	125
02101044 79	BUFFALO C AT SR 1484 NR ROBBINS	19.4	20	352751	793242	ROBBINS	125
02101044 89	GOLD MINE B AT MTH AT MCCONNELL	0.52	20	352813	793100	ROBBINS	125
02101045 00	BUFFALO C AT MCCONNELL	21.4	02	352814	793100	ROBBINS	125
02101048 09	BUFFALO C AT MTH NR HIGH FALLS	21.8	20	352838	793020	ROBBINS	125
02101054 00	DEEP R NR HIGH FALLS	829.	11	352829	793007	ROBBINS	125
02101054 09	LICK C AT MTH NR PUTNAM	3.18	20	352748	792942	PUTNAM	125
02101058 09	SCOTCHMAN C AT MTH NR PUTNAM	5.43	20	352800	792913	PUTNAM	125
02101058 20	TYSONS C AT SR 2314 NR HARPERS X RDS	3.05	20	353226	792729	BEAR CREEK	037
02101058 60	TYSONS C AT NC 42 NR HARPERS X RDS	4.47	20	353126	792702	BEAR CREEK	037
02101058 65	TYSONS C TRIB AT MTH NR HARPERS X RDS	2.54	20	353122	792702	BEAR CREEK	037
02101059 00	TYSONS C TRIB AT MTH NR GLENDON	2.90	20	353003	792714	BEAR CREEK	105
02101061 00	TYSONS C NR GLENDON	12.7	02	352954	792705	PUTNAM	125
02101066 00	DEEP R AT GLENDON	859.	20	352920	792515	PUTNAM	125
02101078 00	DEEP R TRIB 5 AT GLENDON	2.23	02	352943	792517	PUTNAM	125
02101079 09	DEEP R AT NORFOLK SRR NR GLENDON	867.	20	352917	792307	PUTNAM	125
02101079 12	LICK C AT MTH NR GLENDON	2.50	20	352822	792332	PUTNAM	125
02101083 19	MCLENDONS C HEADWATER NR ZION GROVE	4.53	20	351732	793537	ZIONGROVE	125
02101083 68	MCLENDONS C TRIB AT MTH NR ZION GROVE	3.48	20	351808	793503	ZIONGROVE	125
02101084 00	MCLENDONS C NR HARRIS	14.5	11	351828	793235	ZIONGROVE	125
02101084 79	SUCK C AT MTH NR ZION GROVE	5.15	20	351950	793158	ZIONGROVE	125
02101084 99	MCLENDONS C AT AB BIG JUNIPER C NR ZION GROVE	23.7	20	352015	793019	ZIONGROVE	125
02101086 60	BIG JUNIPER C AT DAM NR SEVEN LAKES	1.41	20	351703	793329	ZIONGROVE	125
02101086 89	BIG JUNIPER C AT SR 1210 AT HARRIS	4.51	20	351755	793136	ZIONGROVE	125
02101087 00	BIG JUNIPER C NR HARRIS	9.00	11	351917	793029	ZIONGROVE	125
02101088 50	MCLENDONS C AT SR 1261 NR CARTHAGE	38.8	20	352127	792910	CARTHAGE	125
02101088 79	MCLENDONS C TRIB AT MTH NR PLEASANTVILLE	2.53	20	352152	792902	CARTHAGE	125
02101090 00	MCLENDONS C NR CARTHAGE	44.0	02	352223	792730	CARTHAGE	125
02101179 00	KILLETS C AT SR 1240 NR CARTHAGE	2.15	11	352003	792613	CARTHAGE	125
02101180 91	KILLETS C TRIB AT SR 1240 AT CARTHAGE	2.02	20	351951	792628	CARTHAGE	125
02101183 00	KILLETS C AT SR 1261 NR CARTHAGE	8.94	20	352116	792718	CARTHAGE	125
02101183 51	KILLETTS C AT MTH NR CARTHAGE	10.1	20	352218	792650	CARTHAGE	125
02101276 81	RICHLAND C HEADWATERS NR ZION GROVE	2.25	20	352128	793219	ZIONGROVE	125
02101276 95	RICHLAND C TRIB AT MTH NR PUTNAM	1.87	20	352235	792954	PUTNAM	125
02101277 00	RICHLAND C NR CARTHAGE	11.0	02	352259	792908	PUTNAM	125
02101277 99	PARKWOOD B AT MTH NR PUTNAM	3.86	20	352347	792814	PUTNAM	125
02101278 99	RICHLAND C AT UNIMPROVED ROAD NR PUTNAM	18.4	20	352432	792744	PUTNAM	125
02101279 00	TOMS C AT MTH NR PUTNAM	1.40	20	352552	792629	PUTNAM	125
02101283 00	RICHLAND C NR PUTNAM	24.9	02	352558	792558	PUTNAM	125
02101288 19	LITTLE C AT MTH NR PUTNAM	5.21	20	352254	792604	PUTNAM	125
02101288 59	MCLENDONS C AT SR 1642 NR PUTNAM	62.8	20	352357	792550	PUTNAM	125
02101289 19	MCLENDONS C AB TRIB NR PUTNAM	65.8	20	352502	792546	PUTNAM	125
02101289 89	PERSIMMON GLADE B AT MTH NR GLENDON	2.51	20	352652	792529	PUTNAM	125
02101290 00	MCLENDONS C NR PUTNAM	97.3	02	352701	792522	PUTNAM	125
02101308 00	MCLENDONS C NR GLENDON	99.7	02	352737	792407	PUTNAM	125
02101308 95	DEEP R AT SR 1621 NR GLENDON	972.	20	352726	792251	PUTNAM	125
02101356 45	BIG GOVERNORS C AT SR 1660 NR WHITE HILL	3.17	20	352350	791930	WHITE HILL	125
02101357 00	BIG GOVERNORS C TRIB AT SR 1660 NR WHITE HILL	2.85	20	352305	791956	WHITE HILL	125
02101357 50	BIG GOVERNORS C AT SR 1658 NR GLENDON	9.08	20	352510	792025	WHITE HILL	125
02101358 00	MCINTOSH C AT SR 1658 NR WHITE HILL	2.69	20	352433	792127	WHITE HILL	125
02101358 89	MCINTOSH C AT MTH NR WHITE HILL	1.92	20	352527	792153	WHITE HILL	125
02101359 29	CRAWLEY C AT SR 1651 NR PUTNAM	3.20	20	352239	792209	PUTNAM	125
02101360 19	CRAWLEY C BL TRIB NR PUTNAM	8.03	20	352357	792314	PUTNAM	125
02101362 19	CRAWLEY C BL TRIB NR GLENDON	12.4	20	352603	792318	PUTNAM	125
02101363 19	CRAWLEY C AT MTH NR GLENDON	14.0	20	352723	792214	WHITE HILL	125
02101371 00	BIG GOVERNORS C NR GLENDON	31.4	02	352728	792212	WHITE HILL	125
02101372 09	L GOVERNORS C HEADWATERS NR WHITE HILL	2.22	20	352516	791936	WHITE HILL	105
02101387 00	L GOVERNORS C NR CARBONTON	8.21	02	352753	792116	WHITE HILL	125
02101388 00	BIG GOVERNORS C NR HAWBRANCH	40.8	02	352824	792125	WHITE HILL	125
02101401 69	DEEP R TRIB AT MTH AT CARBONTON	2.02	20	353045	792100	GOLDSTON	125
02101401 89	LINE C AT MTH AT CARBONTON	2.19	20	353105	792103	GOLDSTON	037
02101402 00	DEEP R AT DAM AT CARBONTON	1026.	20	353110	792051	GOLDSTON	037
02101403 09	SMITHS C AT NC 42 NR CARBONTON	1.99	20	353049	791915	GOLDSTON	105
02101403 69	SMITHS C AT MTH NR GULF	3.59	20	353156	791840	GOLDSTON	105
02101430 09	INDIAN C AT SR 2303 NR GOLDSTON	3.54	20	353252	792159	GOLDSTON	037
02101430 59	INDIAN C BL TRIB NR GOLDSTON	7.33	20	353342	792047	GOLDSTON	037
02101431 00	INDIAN C TRIB AT MTH NR JOHNSONS CROSSING	3.20	20	353351	792248	BEAR CREEK	037
02101431 49	INDIAN C TRIB AT MTH NR GOLDSTON	4.89	20	353328	792045	GOLDSTON	037
02101431 50	L INDIAN C AT SR 2303 NR JOHNSONS CROSSING	2.60	20	353220	792416	BEAR CREEK	105
02101431 75	L INDIAN C TRIB NR JOHNSONS CROSSING	2.33	20	353226	792341	BEAR CREEK	037
02101432 00	L INDIAN C AT SR 1009 NR JOHNSONS CROSSING	7.26	20	353219	792303	BEAR CREEK	037
02101432 59	L INDIAN C AT MTH NR CARBONTON	10.9	20	353222	792015	GOLDSTON	037
02101433 00	INDIAN C NR CARBONTON	25.4	11	353218	792009	GOLDSTON	037

STATION NUMBER	STATION NAME	DRAINAGE AREA (SQ MI)	SITE TYPE	LAT	LONG	QUAD NAME	COUNTY CODE
0210146300	DEEP R AT SR 1007 AT GULF	1063.	20	353418	791714	GOLDSTON	037
0210146329	INDIAN C AT MTH NR GULF	26.0	20	353238	791928	GOLDSTON	037
0210147850	POCKET C AT SR 1303 NR WHITE HILL	5.23	20	352500	791539	WHITE HILL	105
0210148350	POCKET C AT SR 1305 NR WHITE HILL	10.4	20	352616	791546	WHITE HILL	105
0210148365	POCKET C AT SR 1318 NR CUMNOCK	15.0	20	352732	791552	WHITE HILL	105
0210148375	RACCOON C AT SR 1318 NR COOL SPRINGS	2.68	20	352750	791509	WHITE HILL	053
0210148385	RACCOON C AT MTH NR CUMNOCK	4.08	20	352900	791607	WHITE HILL	105
0210148400	POCKET C NR CUMNOCK	23.2	02	352925	791624	WHITE HILL	105
0210148479	L POCKET C AT SR 1314 NR WHITE HILL	1.14	20	352546	791825	WHITE HILL	105
0210148499	L POCKET C AT SR 1318 NR HAW BRANCH	4.21	20	352732	791830	WHITE HILL	105
0210148693	L POCKET C AT SR 1326 NR HAW BRANCH	5.84	20	352828	791821	WHITE HILL	105
0210148800	L POCKET NR CUMNOCK	9.52	20	353017	791732	GOLDSTON	105
0210148829	L POCKET C AT MTH NR GULF	11.3	20	353119	791641	GOLDSTON	105
0210148889	POCKET C AT MTH NR GULF	37.7	20	353202	791651	GOLDSTON	105
0210149579	PATTERSON C AT MTH NR GULF	7.24	20	353233	791522	GOLDSTON	105
0210149600	DEEP R AT US 421 NR GULF	1112.	20	353244	791512	GOLDSTON	037
0210150000	DEEP R AT CUMNOCK	1112.	01	353331	791436	COLON	037
0210150190	CEDAR C HEADWATERS AT GOLDSTON	2.23	20	353504	791841	GOLDSTON	037
0210150400	CEDAR C AT SR 2142 AT GULF	4.42	11	353400	791705	GOLDSTON	037
0210150459	CEDAR C TRIB HEADWATERS NR GOLDSTON	1.82	20	353609	791730	GOLDSTON	037
0210150509	CEDAR C TRIB AT MTH AT GULF	5.49	20	353401	791628	GOLDSTON	037
0210150600	CEDAR C AT SR 2145 NR GULF	13.0	11	353405	791445	COLON	037
0210150739	ROCKY B AT SR 2153 NR FARMVILLE	2.48	20	353547	791442	COLON	037
0210150769	ROCKY B AT MTH NR FARMVILLE	4.07	20	353459	791431	COLON	037
0210150779	GEORGES C AT SR 2153 NR FARMVILLE	8.67	20	353458	791430	COLON	037
0210151082	PERSIMMON C TRIB AT MTH AT SANFORD	1.58	20	352755	791208	SANFORD	105
0210151095	PERSIMMON C AT MTH AT SANFORD	4.37	20	352832	791151	SANFORD	105
0210151100	SKUNK C AT MTH AT SANFORD	2.68	20	352832	791150	SANFORD	105
0210152400	BIG BUFFALO C AT SR 1100 NR SANFORD	8.64	11	352919	791208	SANFORD	105
0210152494	BIG BUFFALO C TRIB AT MTH AT SANFORD	1.10	20	352917	791210	SANFORD	105
0210152600	BIG BUFFALO C AT US 421 NR SANFORD	10.9	20	353002	791211	COLON	105
0210153900	BIG BUFFALO C NR COLON	12.5	11	353040	791212	COLON	105
0210154200	PURGATORY B AT US 421 NR CUMNOCK	1.27	11	353144	791403	COLON	105
0210155200	BIG BUFFALO C NR CUMNOCK	19.7	20	353230	791347	COLON	105
0210155333	BIG BUFFALO C AT MTH NR FARMVILLE	20.4	20	353307	791336	COLON	105
0210155469	DEEP R TRIB AT MTH AT FARMVILLE	2.56	20	353323	791234	COLON	105
0210156400	DEEP R NR CUMNOCK	1151.	20	353328	791208	COLON	105
0210157100	GEORGES C AT FARMVILLE	11.8	02	353423	791255	COLON	037
0210157125	GEORGES C AT MTH AT FARMVILLE	12.8	20	353401	791203	COLON	037
0210157700	DEEP R NR COALGLEN	1165.	20	353441	791140	COLON	105
0210160400	L BUFFALO C AT SCLRR AT SANFORD	2.75	20	353008	791027	COLON	105
0210161200	L BUFFALO C NR COLON	4.79	02	353154	791027	COLON	105
0210161695	L BUFFALO C AT US 1 NR NORTHVIEW	6.62	20	353317	791122	COLON	105
0210161800	L BUFFALO C AT MTH NR FARMVILLE	8.08	20	353443	791123	COLON	105
0210163100	ROCKY R AT LIBERTY	2.18	02	354930	793424	LIBERTY	151
0210166000	ROCKY R NR LIBERTY	4.52	02	354909	793324	LIBERTY	151
0210166019	ROCKY R TRIB AT MTH NR LIBERTY	1.29	20	354917	793305	LIBERTY	151
0210166029	ROCKY R AT SR 1300 NR CRUTCHFIELD X RDS	7.42	20	354825	793141	LIBERTY	037
0210167212	ROCKY R AB LAKE NR CRUTCHFIELD X RDS	12.2	20	354755	793029	LIBERTY	037
0210167225	ROCKY R TRIB NR CRUTCHFIELD X RDS	1.93	20	354803	792941	CRUTCHFIELD CROSSROA	037
0210168600	N P ROCKY R NR LIBERTY	2.70	11	355151	793234	LIBERTY	151
0210168709	N P ROCKY R TRIB AT MTH NR SNOW CAMP	1.10	20	355127	793141	LIBERTY	001
0210168809	N P ROCKY R AT SR 1301 NR SILER CITY	7.37	20	355029	793148	LIBERTY	037
0210169900	N P ROCKY R NR STALEY	10.1	11	354921	793047	LIBERTY	037
0210171200	N P ROCKY R NR SILER CITY	11.7	11	354852	793013	LIBERTY	037
0210171300	N P ROCKY R NR CRUTCHFIELD X RDS	12.7	20	354829	792929	CRUTCHFIELD CROSSROA	037
0210171409	GREENBRIER C NR PLEASANT HILL	3.64	20	355031	792928	CRUTCHFIELD CROSSROA	037
0210171459	GREENBRIER C AT MTH NR PLEASANT HILL	8.55	20	354832	792849	CRUTCHFIELD CROSSROA	037
0210171555	ROCKY R AT DAM NR CRUTCHFIELD X RDS	37.1	20	354742	792839	CRUTCHFIELD CROSSROA	037
0210171659	LICK C AT SR 1004 CRUTCHFIELD X RDS	1.58	20	354916	792556	CRUTCHFIELD CROSSROA	037
0210171699	LICK C NR CRUTCHFIELD X RDS	4.79	20	354830	792722	CRUTCHFIELD CROSSROA	037
0210171739	JOHNSON C NR CRUTCHFIELD X RDS	2.72	20	354830	792723	CRUTCHFIELD CROSSROA	037
0210171900	MUD C NR SILER CITY	7.99	02	354753	792747	CRUTCHFIELD CROSSROA	037
0210171929	MUD C AT MTH NR SILER CITY	8.58	20	354730	792755	CRUTCHFIELD CROSSROA	037
0210172059	LACYS C NR SILER CITY	3.67	20	354629	792820	CRUTCHFIELD CROSSROA	037
0210172200	ROCKY R AT SILER CITY	54.0	20	354547	792727	CRUTCHFIELD CROSSROA	037
0210172209	ROCKY R TRIB BL WTP NR SILER CITY	0.72	20	354541	792719	CRUTCHFIELD CROSSROA	037
0210172220	ROCKY R AT SR 1004 NR SILER CITY	56.2	20	354542	792638	CRUTCHFIELD CROSSROA	037
0210172250	NICK C TRIB NR CRUTCHFIELD X RDS	1.87	20	354651	792544	CRUTCHFIELD CROSSROA	037
0210172300	NICK C NR SILER CITY	5.01	02	354558	792613	CRUTCHFIELD CROSSROA	037
0210172399	NICK C AT MTH NR SILER CITY	7.27	20	354539	792603	CRUTCHFIELD CROSSROA	037
0210172580	ROCKY R TRIB AT MTH NR SILER CITY	2.28	20	354418	792535	SILER CITY	037
0210172600	ROCKY R AT US 64 NR SILER CITY	69.1	20	354406	792524	SILER CITY	037
0210172650	LOVES C AT SR 1006 NR SILER CITY	1.06	20	354134	792826	SILER CITY	037
0210172810	LOVES C TRIB AT MTH AT SILER CITY	2.05	20	354301	792725	SILER CITY	037
0210173002	LOVES C AT SR 2208 AT SILER CITY	5.32	20	354305	792722	SILER CITY	037
0210173900	LOVES C AB SEO NR SILER CITY	7.51	02	354343	792619	SILER CITY	037
0210175555	LOVES C AT MTH NR SILER CITY	7.99	11	354357	792523	SILER CITY	037
0210176700	VARNELL C AT SR 1003 NR SILK HOPE	2.02	20	354618	792304	CRUTCHFIELD CROSSROA	037
0210176819	VARNELL C TRIB NR SILK HOPE	1.07	20	354529	792232	CRUTCHFIELD CROSSROA	037
0210177219	VARNELL C TRIB AT SR 1500 NR SILK HOPE	1.90	20	354510	792232	CRUTCHFIELD CROSSROA	037
0210177819	VARNELL C TRIB AT MTH NR SILER CITY	1.06	20	354421	792347	SILER CITY	037
0210177900	VARNELL C NR SILER CITY	9.74	02	354404	792408	SILER CITY	037
0210177950	VARNELL C AT MTH NR SILER CITY	10.2	20	354334	792414	SILER CITY	037
0210178027	ROCKY R NR SILER CITY	90.4	20	354313	792351	SILER CITY	037

DEEP RIVER – CONTINUED

STATION NUMBER	STATION NAME	DRAINAGE AREA (SQ MI)	SITE TYPE	LAT	LONG	QUAD NAME	COUNTY CODE
0210179200	ROCKY R NR MT VERNON SPRINGS	34.7	20	354154	792235	SILER CITY	037
0210179250	MEADOW C HEADWATERS NR MT VERNON SPRINGS	2.63	20	354118	792335	SILER CITY	037
0210179275	MEADOW C TRIB AT MTH NR MT VERNON SPRINGS	1.56	20	354117	792336	SILER CITY	037
0210179300	MEADOW C NR BONLEE	5.33	02	354127	792220	SILER CITY NE	037
0210179450	TICK C AT SR 1132 NR BONLEE	1.23	20	353918	792850	SILER CITY	037
0210179501	TICK C AT SR 1136 NR BONLEE	3.29	20	353852	792705	SILER CITY	037
0210179510	TICK C TRIB AT SR 1134 NR BONLEE	3.27	20	353930	792658	SILER CITY	037
0210179520	TICK C AT SRR AT BONLEE	9.68	20	353918	792507	SILER CITY	037
0210179530	EVANS C AT SR 2118 AT MT VERNON SPRINGS	2.58	20	354001	792536	SILER CITY	037
0210179550	WELCH B AT SR 2118 AT MT VERNON SPRINGS	1.05	20	354019	792511	SILER CITY	037
0210180000	TICK C NR MT VERNON SPRINGS	15.5	01	353937	792408	SILER CITY	037
0210180800	TICK C NR BEAR CREEK	17.0	02	353957	792308	SILER CITY	037
0210182000	TICK C NR BONLEE	20.0	02	354024	792159	SILER CITY NE	037
0210183001	TICK C AT MTH NR BONLEE	21.1	20	354100	792030	SILER CITY NE	037
0210183400	ROCKY R NR BONLEE	125.	20	354111	792000	SILER CITY NE	037
0210183479	ROCKY R TRIB AT MTH NR BONLEE	2.37	20	354059	791905	SILER CITY NE	037
0210183569	ROCKY R TRIB AT MTH NR GOLDSTON	2.51	20	354052	791748	SILER CITY NE	037
0210183600	ROCKY R NR GOLDSTON	134.	20	354043	791724	SILER CITY NE	037
0210184459	LANDRUM C AT SR 2167 NR PITTSBORO	4.13	20	354257	791846	SILER CITY NE	037
0210184659	LANDRUM C TRIB AT MTH NR PITTSBORO	6.20	20	354258	791830	SILER CITY NE	037
0210184800	LANDRUM C NR PITTSBORO	14.5	02	354116	791632	SILER CITY NE	037
0210184889	LONG B AT MTH NR PITTSBORO	2.30	20	354054	791606	SILER CITY NE	037
0210184939	LANDRUM C AT MTH NR PITTSBORO	17.6	20	354009	791612	SILER CITY NE	037
0210186101	HOLLAND C AT US 64 NR PITTSBORO	7.90	20	354344	791451	PITTSBORO	037
0210186151	HOLLAND C AT SR 2159 NR PITTSBORO	11.4	20	354227	791438	PITTSBORO	037
0210186200	HOLLAND C NR PITTSBORO	12.7	02	354130	791440	PITTSBORO	037
0210186901	SANDY B HEADWATERS NR BONLEE	2.22	20	352748	792317	SILER CITY	037
0210187651	HOLLAND C AT MTH NR COALGLEN	15.7	20	353934	791517	SILER CITY NE	037
0210187700	ROCKY R NR PITTSBORO	173.	20	353934	791423	PITTSBORO	037
0210187769	ROCKY R TRIB BL SR 1010 AT MTH NR GOLDSTON	3.47	20	353932	791408	PITTSBORO	037
0210187819	ROCKY R TRIB AT MTH NR PITTSBORO	2.48	20	353859	791312	PITTSBORO	037
0210188150	BEAR C AT SR 1006 NR HARPERS X RDS	3.94	20	353623	792811	BEAR CREEK	037
0210188250	BEAR C TRIB AT MTH NR HARPERS X RDS	2.52	20	353531	792635	BEAR CREEK	037
0210188300	BEAR C AT SR 1141 NR JOHNSONS CROSSING	10.6	20	353531	792605	BEAR CREEK	105
0210188350	BEAR C TRIB AT MTH NR JOHNSONS CROSSING	2.29	20	353530	792503	BEAR CREEK	037
0210188370	BEAR C TRIB AT SR 1141 NR JOHNSON CROSSING	1.65	20	353637	792615	BEAR CREEK	037
0210188390	BEAR C TRIB AT MTH AT JOHNSONS CROSSING	6.71	20	353559	792408	BEAR CREEK	037
0210188400	BEAR C NR BONLEE.	21.7	02	353557	792359	BEAR CREEK	037
0210188709	BEAR C AT SR 2333 AT GOLDSTON	32.2	20	353633	792043	GOLDSTON	037
0210188800	L BEAR C AT NC 902 NR GOLDSTON	2.90	20	353812	792116	SILER CITY NE	037
0210188816	L BEAR C AT MTH NR GOLDSTON	5.24	20	353654	792025	GOLDSTON	037
0210188835	BEAR C AT GOLDSTON	39.3	20	353704	791938	GOLDSTON	037
0210189000	BEAR C NR GOLDSTON	42.4	02	353733	791754	SILER CITY NE	037
0210189099	HARTS C AT MTH NR GOLDSTON	3.08	20	353820	791700	SILER CITY NE	037
0210189189	BEAR C AT SR 1010 NR GOLDSTON	48.0	20	353820	791602	SILER CITY NE	037
0210189199	BEAR C AT SR 2155 NR SANFORD	50.3	20	353755	791412	PITTSBORO	037
0210189239	BEAR C AT MTH NR SANFORD	51.5	20	353751	791228	PITTSBORO	037
0210189369	ROCKY R AT SR 1953 AT ASHBURY	234.	20	353725	791200	COLON	037
0210194600	ROCKY R NR COALGLEN	237.	11	353720	791117	COLON	037
0210194769	ROCKY R TRIB AT MTH NR SANFORD	2.30	20	353752	791036	PITTSBORO	037
0210194900	ROCKY R AT MTH NR ASHBURY	243.	20	353702	790903	COLON	037
0210194949	ROCKY B AT SR 1955 NR PITTSBORO	2.07	20	353854	790930	PITTSBORO	037
0210194989	DEEP R TRIB AT MTH NR ASHBURY	5.06	20	353726	790809	COLON	037
0210200000	DEEP R AT MONCURE	1434.	01	353738	790658	NEW HOPE DAM	037
0210201100	DEEP R TRIB AT MTH NR MONCURE	0.90	20	353737	790652	NEW HOPE DAM	037
0210204800	DEEP R AT LOCKVILLE D NR MONCURE	1436.	20	353719	790556	MONCURE	037
0210204925	DEEP R AT MTH NR HAYWOOD	1441.	20	353547	790313	MONCURE	037

UPPER CAPE FEAR RIVER

0210209109	WOMBLES C TRIB AT MTH NR BLACKNEL	3.00	20	353543	790449	MONCURE	105
0210209209	WOMBLES C AT MTH NR HAYWOOD	6.36	20	353458	790307	MONCURE	105
0210209319	L SHADDOX C AT MTH NR HAYWOOD	1.91	20	353428	790254	MONCURE	105
0210209600	CAPE FEAR R NR ROSSER	3161.	11	353406	790244	MONCURE	037
0210214010	LICK C NR SANFORD	3.51	11	352906	790738	SANFORD	105
0210214100	LICK C TRIB AT DAM AT SANFORD	1.28	20	352912	790821	SANFORD	105
0210214125	LICK C AT SR 1508 NR SANFORD	8.14	20	353032	790718	MONCURE	105
0210214165	WALLACE B AT UNIMPROVED ROAD NR SANFORD	2.25	20	353023	790829	COLON	105
0210214195	WALLACE B AT MTH NR BLACKNEL	4.33	20	353056	790712	MONCURE	105
0210214219	L LICK C TRIB AT DAM NR BROADWAY	0.96	20	352912	790537	BROADWAY	105
0210214221	L LICK C TRIB AT MTH NR BLACKNEL	4.38	20	353108	790527	MONCURE	105
0210214225	L LICK C AT MTH NR BLACKNEL.	6.93	20	353152	790526	MONCURE	105
0210214285	STONY C AT MTH NR BLACKNEL	1.23	20	353200	790509	MONCURE	105
0210214315	GUM F AT SR 1415 AT OSGOOD	2.52	20	353332	790906	COLON	105
0210214345	GUM F AT MTH NR BLACKNEL	6.43	20	353357	790757	MONCURE	105
0210214365	COPPER MINE C AT MTH NR BLACKNEL	2.13	20	353357	790710	MONCURE	105
0210214400	HUGES C AT ROSSER	10.8	11	353348	790537	MONCURE	105
0210214480	ROBERTS C AT NSRR NR MONCURE	3.39	20	353237	790658	MONCURE	105
0210214490	HUGES C AT MTH NR BLACKNEL	18.1	20	353335	790344	MONCURE	105
0210215900	LICK C NR ROSSER	45.5	11	353333	790317	MONCURE	105
0210215921	LICK C AT MTH AT BRICKHAVEN	48.4	20	353351	790239	MONCURE	105
0210215943	CAPE FEAR R TRIB AT MTH NR BRICKHAVEN	0.87	20	353250	790159	MONCURE	107
0210215945	GULF C AT MTH AT BRICKHAVEN	6.47	20	353337	790143	MONCURE	037
0210217729	BUSH C AT MTH NR BRICKHAVEN	5.91	20	353226	790052	MONCURE	105
0210217800	CAPE FEAR R AT BUCKHORN DAM NR CORINTH	3228.	20	353222	785927	COKESBURY	037

MEMO

DATE: April 3, 1995

TO: File

FROM: Keith Snavely RKS
Hydrogeologist
NC Superfund

RE: Fishing Information on Deep River
Monarch Furniture/ Thaden Metals
NCD 990 883 001 Jamestown, Guilford County, NC

I spoke to Sherri Bryant , the fish biologist in the High Point-Jamestown area on March 21, 1995, about fishing along the Deep River. According to Ms. Bryant the Deep River contains sunfish and large mouth bass, and fishing is noted along the majority of Deep River.

State Copy

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

C-586-8-0-19

August 3, 1990

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

Date: 8-9-90
Site Disposition: SSI Phase 2
EPA Project Manager: D. Vaughn-Wright

Subject: Screening Site Inspection, Phase I
Union Camp Corporation FIT
Jamestown, Guilford County, North Carolina
EPA ID No. NCD003216959
TDD No. F4-8911-70

Dear Mr. Hanke:

FIT 4 conducted a Phase I Screening Site Inspection at Union Camp Corporation in Jamestown, Guilford County, North Carolina. This assessment included a review of EPA and state file material, completion of a target survey, and an offsite reconnaissance of the facility and surrounding area.

The Union Camp Corporation is located in a small commercial/industrial area of Jamestown. More specifically, the facility is located on Ragsdale Road, less than 100 yards south of Routes 29 and 70. Union Camp Corporation is a single building on approximately 7.9 acres of land and is bordered on the north by Southern Railroad, and on the east by a chemical facility, Chem Central. The south side of the property is heavily wooded down to the Deep River, which is approximately 0.3 miles away. On the west side is Dillon Road, and a convenience store (Ref. 1). The facility has an industrial well on site (Ref. 2).

The Union Camp Corporation has manufactured cardboard boxes at the Jamestown facility since 1946, when the plant was opened by the Highland Container Company. Highland Container merged with Union Camp in 1959 (Ref. 2). In making cardboard containers, the facility has over the years used such raw materials as, inks containing lead and chromium, caustic soda, a water-proofing agent called amerez resin, and formaldehyde, presumably as a preservative. Union Camp stopped using formaldehyde in 1978 (Ref. 2). The utilization of inks with a low lead content began in 1982 (Ref. 3).

Wastes generated from this process resulted from washing the glue and ink off the machinery. The washwater was discharged to the Jamestown city sewer system without pretreatment (Ref. 2). Earlier waste included a potentially hazardous sludge containing ink residues, such as lead (Ref. 3). It is not known where the sludge was disposed.

A small amount of 1,1,1-trichloroethane is used to clean machinery and in removing pads from the printers. All of this is lost by evaporation during use. The rags are reused after offsite laundering (Ref. 2).

Approximately 2 gallons of oil suspected to contain PCBs from an old switch box was disposed of in 1982, as a hazardous waste. The location of disposal is unknown. Number 6 fuel oil also reportedly has been spilled on site and contaminated a nearby stream on at least two occasions in the past. The first fuel oil spill resulted from a broken pipe, and the second spill resulted from a leaking underground storage tank. These fuel oil spills occurred approximately 8 years ago, were reported to state environmental officials at the time, and reportedly have been cleaned up. The plant presently uses natural gas; however, number 6 fuel oil is sometimes used as an alternative (Ref. 2).

The Union Camp Corporation filed a RCRA Part A application for status as a generator and storer of hazardous waste in November 1980 (Ref. 4). In April 1982, the facility requested withdrawal of its Part A application on the grounds of a change in plant processes (Ref. 3). In May 1982, the facility was granted deletion as a generator and storer of waste (Ref. 5). Union Camp was subsequently classified as a small-quantity generator (Ref. 6). Union Camp was deleted as a small-quantity generator in January 1985 and ceased being a RCRA facility at that time (Ref. 6).

Jamestown is located within the Carolina Slate Belt of the Piedmont Physiographic Province (Refs. 7; 8, p. 76). The area is characterized by gently rolling topography with moderately steep slopes along the drainageways (Ref. 9). Jamestown has a temperate climate (Ref. 10, pp. 7, 11). Total annual precipitation averages about 45 inches with a net annual precipitation of 4 inches (Refs. 11, pp. 3, 17; 12).

The geology of Jamestown consists of folded and fractured metamorphic bedrock overlain nearly everywhere by residual material termed saprolite (Refs. 8, p. 77, plate 1; 11, p. 3; 13). The saprolite ranges in thickness from a few feet near rock outcrops to more than 100 feet in interstream areas with an average thickness of 30 feet on most hills and ridges (Refs. 10, p. 38; 11, p. 3). Metamorphic rock types in the area include highly altered granite, gabbro, and diorite (Refs. 7; 8, p. 77, plate 1).

The saprolite and bedrock act as a single hydrologic system, as there is no confining layer present between them. In the saprolite, groundwater occurs within intergranular pore spaces (Ref. 11, p. 4). In the bedrock, groundwater occurs primarily within joints, fractures, and other secondary porosity openings (Ref. 11, p. 4). The frequency, size, and interconnection of both joints and fractures diminishes with depth (Ref. 11, p. 4). There are few open fractures at depths greater than 400 feet (Ref. 10, p. 12).

The saprolite has a hydraulic conductivity of less than 10^{-7} cm/sec and acts as a reservoir which slowly feeds water into the underlying bedrock (Refs. 11, pp. 3, 6; 14). It is also the unit from which most domestic water supplies in the region are obtained (Ref. 8, pp. 23, 77-78). The water is supplied to both dug and bored wells that are completed within the saprolite at, and just below, the water table (Ref. 8, pp. 77-78). The depth to the water table in the facility area is about 15 feet below land surface (Ref. 10, pp. 7, 59).

The surface water pathway from the Union Camp Corporation flows overland in a southerly direction for 0.2 mile until it joins a small stream that enters the Deep River, 0.4 miles south of the facility. One mile farther downstream is the Oakdale treatment facility, which is also the location of the only surface water intake on the 15-mile surface water pathway. This intake serves the city of Jamestown, which maintains connections for 1,000 residences and 150 businesses. The city also purchases water

from the Greensboro and High Point water departments, which have surface water intakes upstream or on different water routes, namely, the Deep River and High Point Lake (Refs. 15, 16, 17). The Deep River is large enough to support recreational fishing (Refs. 1, 15).

Groundwater use in the area is sporadic, with the majority of wells found to the south and southeast of the facility where there is no municipal service. There are approximately 395 residences within a 3-mile radius that rely on private wells for potable supplies; the nearest of these is located on Dillon Road 0.6 mile south of Union Camp. A further 107 potable wells are located between 3 and 4 miles of the study area. The house count was performed using 7.5 minute series topographical maps (Refs. 1, 15).

There are no critical habitats identified in the area of the facility (Ref. 18). Two state-designated threatened species, the Greensboro burrowing crayfish (Cambarus catagius) and the plant Nestronia (Nestronia umbellula), are found in Guilford County (Ref. 19).

Approximately 0.15 mile northeast of Union Camp Corporation is the Jamestown Elementary School, and 0.6 mile to the east is High Point City Park. The nearest residence to the Union Camp facility is located approximately 1,000 feet to the west. The facility's parking lot is easily accessible to the public, although the rest of the actual plant area is either inside the building or in a small, fenced portion behind the facility (Refs. 1, 15). There are approximately 1,011 people living within a 1-mile radius of Union Camp, and 40,421 living within 4 miles (Refs. 15, 20).

Based on the above referenced factors and enclosures, it is recommended that Phase II of this Screening Site Inspection be conducted at Union Camp Corporation on a high-priority basis. If you have any questions or comments please feel free to contact me at NUS Corporation.

Very truly yours,

Bryan J. Williams
Project Manager

Approved:

BJW/tb

Enclosures

cc: Kelly Cain

REFERENCES

1. NUS Corporation Field Logbook No. F4-1926 for Union Camp Corporation, TDD No. F4-8911-70. Documentation of facility reconnaissance, January 5, 1990.

2. Potential Hazardous Waste Site Preliminary Assessment (EPA Form 2070-12) for the Union Camp Corporation (NCD003216959). Filed by Jack Butler, North Carolina Department of Human Resources, December 20, 1985.

3. Richard R. Evans, Plant General Manager, Union Camp, Letter to North Carolina Department of Human Resources, Division of Health Services, April 23, 1982. Subject: Request for RCRA Part A withdrawal.

4. RCRA Part A Application (EPA Forms 3510-1 and 3510-3) for the Union Camp Corporation, Jamestown, Guilford County, North Carolina. Submitted by J. H. Neal, Vice President and General Manager, Union Camp Corporation, November 7, 1980.

5. O. W. Strickland, Solid and Hazardous Waste Branch, letter to Richard Evans, Union Camp Corporation, May 10, 1982. Subject: RCRA status change.

6. O. W. Strickland, Solid and Hazardous Waste Branch, letter to Richard Evans, Union Camp Corporation, January 29, 1985. Subject: RCRA status change.

7. The North Carolina Geological Survey and John M. Parker, III in association with The State Geologic Map Advisory Committee, Geologic Map of North Carolina (1985).

8. M. J. Mundorff, Geology and Ground water in the Greensboro Area, North Carolina, Bulletin Number 55 (Raleigh: USGS, 1948), pp. 23, 76-78, plate 1.

9. U. S. Dept. of Agriculture, Soil Conservation Service, Soil Survey of Guilford County, North Carolina (December 1977), p. 1.

10. Charles C. Daniel III and N. Bonar Sharpless, Ground-Water Supply Potential and Procedures for Well-Site Selection, Upper Fear River Basin (USGS, 1983), pp. 7, 11-12, 38, 59.

11. Edwin O. Floyd and Richard R. Peace, An Appraisal of the Groundwater Resources of the Upper Cape Fear River Basin North Carolina, Groundwater Bulletin Number 20 (USGS and the North Carolina Office of Water and Air Resources, 1974), pp. 3-4, 6, 17.

12. U. S. Dept. of Commerce, Climatic Atlas of the United States (Washington, D. C.: GPO, June 1968) Reprint: 1983, National Oceanic and Atmospheric Administration, p. 63.

13. Charles C. Daniel III, Statistical Analysis Relating Well Yield to Construction Practices and Siting of Wells in the Piedmont and Blue Ridge Provinces of North Carolina, Water Resources Investigations Report 86-4132 (Washington, D. C.: GPO, 1987), pp. 9-10.

14. U. S. Environmental Protection Agency, Uncontrolled Hazardous Waste Site Ranking System: A Users Manual (HW-10), originally published in the July 16, 1982, Federal Register (Washington, D.C.: GPO, 1984), p. 15.

15. U. S. Geological Survey, 7.5 minute series Topographic Quadrangle Maps of North Carolina: High Point West 1969 (Photorevised 1987), High Point East 1950 (PR 1982), Kernersville 1969 (PR 1987), Guilford 1951 (PR 1968), Greensboro 1951 (PR 1968), Pleasant Garden 1970 (PR 1982), scale 1:24,000.

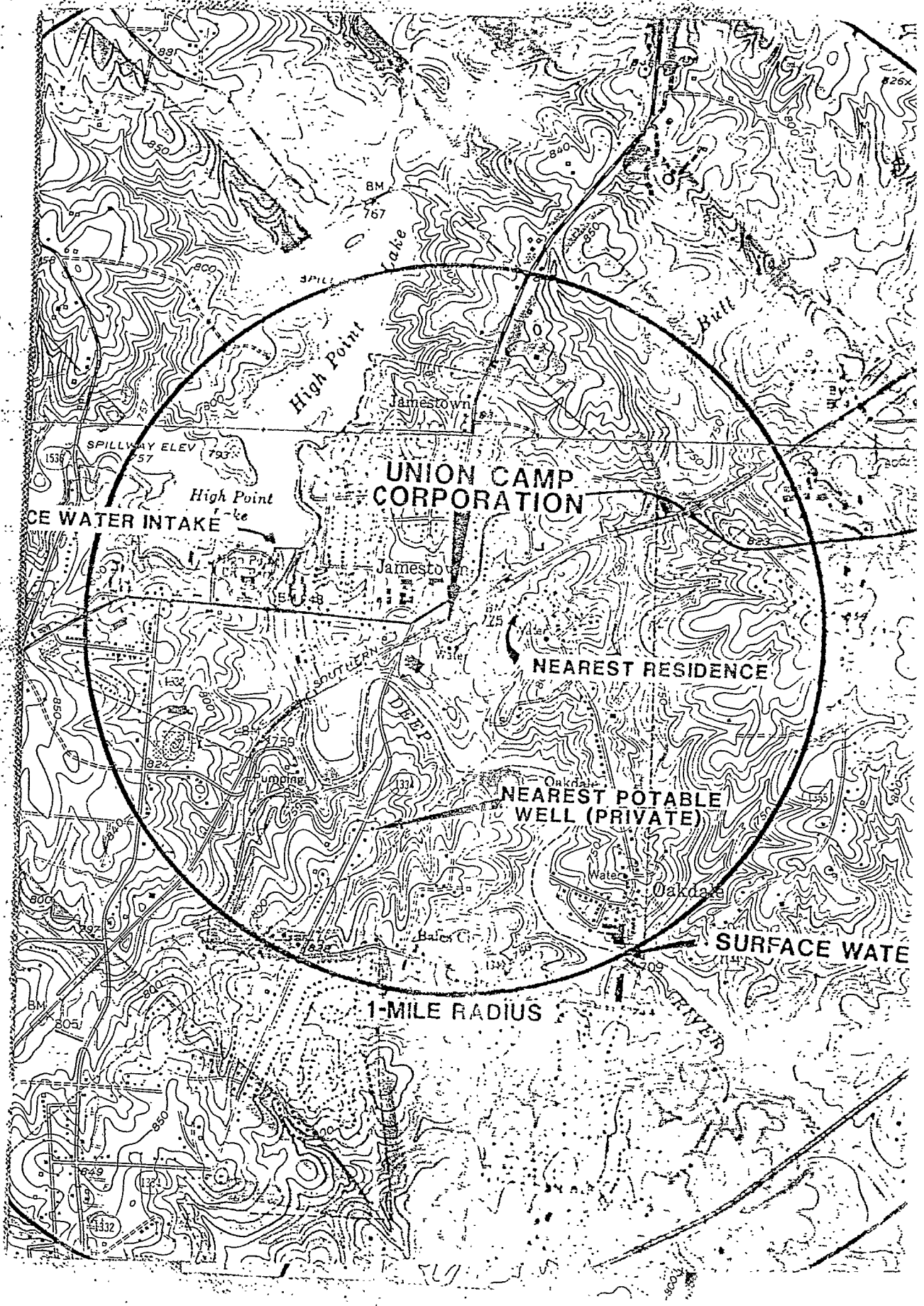
16. NUS Corporation Field Logbook No. F4-1914 for Guardsman Chemicals, Inc., TDD No. F4-8912-06. Documentation of facility reconnaissance, January 4, 1990.

17. John Frezell, Town Manager, Jamestown, North Carolina, telecommunication with Eric Corbin, NUS Corporation, April 24, 1989. Subject: Water Sources of Jamestown, North Carolina.

18. U. S. Fish and Wildlife Service, Endangered and Threatened Species of the Southeastern United States (Atlanta, Georgia, 1988).

19. North Carolina Natural Heritage Program Element List for Guilford County, June 30, 1989, p. 1.

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


UNION CAMP
CORPORATION
CE WATER INTAKE
NEAREST RESIDENCE
NEAREST POTABLE
WELL (PRIVATE)
SURFACE WATE
1-MILE RADIUS
High Point Lake
Jamestown
Oakdale
SPILLWAY ELEV
DEEP
RIVER

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

APR 8 1991

4WD-WPB

Ms. Pat DeRosa, Head
North Carolina Department of Environment,
Health and Natural Resources
Division of Solid Waste Management
P. O. Box 27687
Raleigh, North Carolina 27611

Dear Ms. DeRosa:

FIT

Enclosed for your files is the Screening Site Inspection report prepared by the Region IV Field Investigation Team, NUS Corporation for Seaboard Chemical Corporation (NCD071574164). No further remedial action under Superfund is planned for this site at this time. The site currently is under the regulatory authority of RCRA as a closed TSD. If this status should change, the site would become eligible for further action under CERCLA.

If you have any questions, please contact me at (404) 347-5065.

Sincerely yours,

Deborah A. Vaughn-Wright

Deborah Vaughn-Wright
Project Manager

NUS CORPORATION AND SUBSIDIARIES

REFERENCE # 33

TELECON NOTE

CONTROL NO. F4-8912-06	DATE: January 17, 1990	TIME: 1430

DISTRIBUTION: Guardsman Chemicals

BETWEEN: Gary Rogers, Mgr.	OF: Recreational Info. Bureau for City of High Point	PHONE: (919) 883-3469

AND: Margaret Graves, NUS Corporation Margaret E. Graves

DISCUSSION:

Mr. Rogers was contacted in an effort to determine if recreational swimming, fishings, and/or boating is done in Richland Creek and on the Deep River. He state that fishing and boating were regular activities on the Deep River, but he wasn't sure about swimming. He wasn't very familiar with Richland Creek, but guessed that in the more deeper portions, recreational fishing was done.

State Copy

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

C-586-2-1-17

CERCLA

February 20, 1991

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

Date: 3-7-91
Site Disposition: Deferred to RCRA
EPA Project Manager: D. Vaughn-Wright

Subject: Screening Site Inspection, Phase I
Seaboard Chemical Corporation
Jamestown, Guilford County, North Carolina
EPA ID No. NCD071574164
TDD No. F4-9008-47

Dear Mr. Hanke:

FIT 4 conducted a Phase I Screening Site Inspection at Seaboard Chemical Corporation in Jamestown, Guilford County, North Carolina. This assessment included a review of EPA and state file material, completion of a target survey, and an offsite reconnaissance of the facility and surrounding area.

Seaboard Chemical Corporation is located at 5899 Riverdale Drive in Jamestown, North Carolina (Refs. 1, 2). The facility, which is owned by Seaboard Chemical Company Corporation, is located in a rural portion of South Guilford County, approximately 3.5 miles southwest of Jamestown (Refs. 2, 3, 4). The facility is approximately 10 acres and consists of a large, aluminum siding building and a large, sheltered area under which a trailer is parked. There are also large tanks and process structures present in the rear of the facility (Refs. 3, 5).

Seaboard Chemical Corporation operated at the facility from 1960 to 1989 (Refs. 1, 6). The facility was used as a meat packing plant, sometime prior to 1974. In 1974, the facility was used briefly for the manufacturing of urea-formaldehyde (Ref. 7). The operators of these businesses are unknown. Seaboard apparently began hazardous waste operations in 1975 (Ref. 7). Seaboard Chemical was a solvent recovery and chemical processing plant. The plant site had facilities for distillation, fractionation, polymerization, esterification, and condensation reactions and also pilot plant facilities for thermo-plastic and thermo-setting polymers, chrome steel drum drying, pulverizing, batching, and mixing (Ref. 8).

The still bottoms from the solvent recovery operations were stored in drums at the facility. At one point in 1983, approximately 12,000 drums were stored at the facility. The still bottoms contained such chemicals as phenol, methyl ethyl ketone, xylene, toluene, trichoroethane, octane, methylene chloride, and ethylbenzene. There were two surface impoundments located at the rear of the facility. The impoundments, used for containment and evaporation and retention, contained heavy metals, phenols, trichloroethane, and pthalates (Refs. 7, 9).

During 1988 incoming wastes were stored in drums or tanks prior to chemical processing or recovery. Seaboard Chemical typically shipped its wastes off site for disposal. Wastes were also sent to Giant Cement to be burned a the cement kiln and to various plants of Systech. There were no hazardous wastes burned on site (Refs. 8, 10).

Guilford Laboratories Inc. of Greensboro, North Carolina, conducted analysis on samples taken at the facility from March 25, 1982, through November 18, 1983. Samples were taken from monitoring wells and surface impoundments. Sample results indicated elevated levels of hazardous materials in the evaporation pond, and 1,1,1-trichloroethane in the containment pond (Ref. 11). Also, one of the monitoring wells was found to contain elevated levels of phenols, indicating possible contamination of groundwater in the area (Refs. 1, 11). The North Carolina Department of Human Resources Environmental Science Laboratory conducted a chemical analysis on material contained in the drum storage area of Seaboard Chemical Corporation. The results, reported in October 1983, indicated the presence of several organic compounds (Ref. 12).

Seaboard Chemical Corporation filed a RCRA Part A application for a Hazardous Waste Permit on November 19, 1980. The application indicated treatment and storage of hazardous wastes. At some point Seaboard became a RCRA disposer. In October 1982, the North Carolina Solid and Hazardous Waste Management Branch granted Seaboard Chemical Corporation's request to be deleted as a disposer (Ref. 13). Seaboard Chemical had an NPDES permit and an air emission permit at that time (Ref. 8).

On March 28, 1984, the state of North Carolina requested that Seaboard Chemical submit a Part B application for storage and treatment of wastes in containers, tanks, and surface impoundments (Ref. 14). The Part B application was apparently submitted (date not available). In a letter from September 21, 1989, the North Carolina Division of Solid Waste Management informed Seaboard of its intent to deny the operating portion of the final status permit to manage hazardous waste, since the Part B application was incomplete (Ref. 15). In a letter from November 15, 1989, the state notified Seaboard Chemical of a formal denial of its hazardous waste operating permit and termination of its interim status (Ref. 16). Seaboard stopped receiving waste on July 7, 1989. Seaboard filed for bankruptcy on December 7, 1989. Containers and all flammable solvents have been removed from the facility (Ref. 6).

During Seaboard Chemical's operating history several inspections took place and numerous violations were observed. A memo from May 20, 1981, noted that Seaboard did not have a general waste analysis plan or a closure and post-closure plan (Ref. 17). A memo from June 20, 1983, noted violations concerning aisle space, operation of facility, surface impoundments, containers, and tanks (Ref. 18). On April 21, 1983, Seaboard received a letter informing them of a Consent Agreement drafted by the North Carolina Division of Health Services. The agreement involved the reduction of drums in the drum storage area at Seaboard Chemical. The letter also mentioned eventual remediation of wastewater in a lagoon (Ref. 19).

A letter from May 19, 1983, noted violations related to many aspects of Seaboard's operations (Ref. 20). In a letter from January 6, 1984, Seaboard Chemical received Permit No. 9860 for the construction and operation of a nondischarge type wastewater treatment and recycle facility (Ref. 21). On March 3, 1989, Seaboard was notified that it was granted permit NCD071574164 for transport of hazardous waste through South Carolina (Ref. 22).

The Seaboard Chemical facility is located in southwestern Guilford County, approximately 4 miles east of High Point (Refs. 1), 14. Guilford County lies within the upland section of the Piedmont physiographic province, more specifically, in the Carolina State Belt (Ref. 23, Figure 6). The Piedmont province slopes gradually from the Blue Ridge to the Fall Line, 110 miles east of the facility, and is characterized by gently rolling topography, which is on an uplifted, submaturely to maturely dissected peneplane or igneous and metamorphic rock (Ref. 24, p. 4). Elevations in the facility area range from 650 to 910 feet above mean sea level (Ref. 1, 4). The geographic coordinates of the site are 35°56'44" N latitude and 79°54'37"W longitude (Ref. 1, 4). The mean annual precipitation in the area is 44.0 inches, and mean annual lake evaporation is 40.0 inches, resulting in an net annual precipitation of 4.0 inches (Ref. 25, pp. 43, 63). The 1-year, 24-hour rainfall is 3.0 inches (Ref. 26, p. 93).

The soil underlying the facility is of the Enon-Mecklenburg association (Ref. 28, plate I). Soil here is gently sloping, well-drained, and has a sandy clay loam subsoil; the specific soil type is the Enon fine sandy loam with slopes of 2 to 6 percent (Ref. 27, p. 12-13). Soil depth is approximately 65 inches below land surface (bls) (Ref. 27, p. 13).

The dominant crystalline bedrock in the facility area is the metamorphosed granite rock, later Proterozoic to late Cambrian in age (Ref. 28). The granite is most commonly a light-pink coarse-grained rock consisting chiefly of orthoclase, plagioclase, biotite, hornblende, and quartz. This granite has been greatly sheared with the development of a schistose or gneissic structure (Ref. 24, p. 13).

Saprolite, slope wash deposits, and residual soil are collectively referred to as regolith. The saturated portion of the regolith, and the water within the fractures of the metamorphosed granite are hydrologically interconnected and together comprise the unconfined, regolith/crystalline rock aquifer system (Ref. 29, p. 47). This is the aquifer of concern in the Jamestown, North Carolina, area. Using topographic interpretation, the mean-pool elevation depth to the water table is approximately 94 feet bls (Ref. 1, 4).

Well depths in the Piedmont range from 150 to 300 feet bls with yields ranging from 3 to 25 gallons per minute (Ref. 30, pp. 2-5). Groundwater flow is generally toward streams and rivers. Under the Seaboard Chemical facility, groundwater flow is in the north to northeast direction (Ref. 4). Recharge to the aquifer results from infiltration of rainfall through the unsaturated portion of the regolith to the saturated regolith and fractures in the crystalline rocks. Water-bearing fractures rarely exceed a depth of 300 to 400 feet bls (Ref. 30, p. 5).

The regolith is the layer of lowest hydraulic conductivity between the surface and the aquifer. The hydraulic conductivity of this type of sediment has typically been in the 1.0×10^{-5} to 1.0 to 10^{-5} cm/sec range (Ref. 31, p. 29).

There are four potable water supply systems within the 4-mile radius of Seaboard Chemical Corporation: the Greensboro City Water System, the Jamestown City Water System, the High Point City Water System, and the Avondale City Water System. The city of Greensboro has intakes located on Lake Townsend, Lake Brandt, and Lake Higgins over 4 miles north of the Seaboard facility. The city serves approximately 200,000 customers. The city of Jamestown obtains water from Oakdale Cotton Mills. Oakdale Cotton Mills has an intake on the Deep River, 2.5 miles north of Seaboard. Jamestown serves approximately 1,100 customers. The city of High Point has intakes on City Lake over 16 miles east of Seaboard. They also have an intake on Oak Hollow over 5 miles west of the facility. High Point serves approximately 30,000 customers. High Point has a water line that runs down Riverdale Road and stops in front of the Seaboard Chemical facility. The city of Archdale also serves portions of the 4-mile radius. Archdale has approximately 2,821 customers. They obtain water from Davidson Water Inc. Davidson has an intake on the Yadkin River (Refs. 3, 4). The intakes serving the systems in this area would not be affected by the surface water runoff from the Seaboard facility.

Based on topographical map analysis, an estimated 1,300 homes within the 4-mile radius of Seaboard are not served by a municipal water system and have private wells. It is estimated that approximately 700 of these residences are within the 3-mile radius (Ref. 4). The closest well is located at the Alcoholic Home a.k.a. The House of Prayer. The House of Prayer is approximately 0.25 mile west of the Seaboard facility. The depth of the well is approximately 100 feet and is currently being used by 16 residents (Ref. 3).

Surface water run-off from the facility would flow north for approximately 500 feet and enter an unnamed stream. The steam flows into the Deep River. The distance to the Deep River is approximately 0.25 mile. Run-off would also flow to the southwest for approximately 0.5 mile and enter into Richland Creek. Richland Creek flows east for approximately 0.5 mile and enters the Deep River. The Deep River flows southeast and then east and eventually enters the Cape Fear River. This pathway follows the 15-mile pathway and beyond. There are no known intakes on the Deep River south of the Seaboard Chemical facility (Refs. 3, 4, 32). The Deep River is used for recreational boating, swimming, and fishing. Richland Creek is also used for recreational fishing (Ref. 33).

Area and land use within the 4-mile radius of the Seaboard Chemical facility is primarily rural (Refs. 3, 4). At the time of the offsite reconnaissance, the facility was fenced and was not easily accessible. There was a guard present at the facility (Ref. 3). The population within 1 mile is approximately 350, and within 4 miles it is estimated to be 8,230 (Refs. 4, 34). The nearest residence is located approximately 0.25 mile east of the facility. There were no workers present at the facility (Ref. 3). The nearest school is the Union High School located 2.5 miles northwest of the facility (Ref. 3).

The Greensboro borrowing crayfish (Cambarus catagius), and the plant nestronia (Nestronia umbellua), are both state-designated threatened species within Guilford County. The Cape Fear shiner (Notropis mekistocholas), is a federally designated endangered species which is found in Randolph County, and the heart-leaf plaintain (Plantago cordata) is a state-designated endangered species, which is found in Davidson County (Ref. 35). Although portions of Guilford and Randolph counties fall within a 4-mile radius of the Seaboard Chemical facility, it is not known if these species are located within the radius.

Based on the above-referenced materials, FIT 4 recommends that Phase II of this Screening Site Inspection be conducted at Seaboard Chemical Corporation on a high-priority basis. If you have any questions please contact me at NUS.

Very truly yours,

Walter Riley

Walter Riley
Project Manager

WR/dwf

Enclosures

cc: Deborah Vaughn-Wright

Approved:

Greg Schank

MEMO

DATE: April 4, 1995

TO: File

FROM: Keith Snavely KRS
Hydrogeologist
NC Superfund

RE: Wetland Frontage along 15-mile Surface Water Pathway
Monarch Furniture/Thaden Metals
NCD 990 883 001 Jamestown, Guilford Co., NC

The wetland frontage was determined along the site's 15-mile surface water pathway (SWP) by tracing the wetland frontage along the Deep River with a topographic map measurer using a scale of 1" = 2000'. Three national wetland inventory maps were reviewed to determine the wetland frontage along the Deep River. These inventory maps are High Point East, Pleasant Garden, and Randleman. Two types of wetlands were noted along the Deep River. These are Palustrine Forested Wetland and Scrub-shrub Wetlands.

The total wetland frontage located along the site's 15-mile surface water pathway is approximately 1.75 miles. The frontage was evaluated along the SWP within two flow regimens, one below 100 cfs and one above 100 cfs. The frontage within the first regimen from the site to the intersection of State Road 62 and Deep River equals 0.75 miles of wetland frontage. The second regimen from State Road 62 to the end of 15-mile SWP equals 1.0 miles.

MEMO

DATE: March 21, 1995

TO: File

FROM: Keith Snavely RKS
Hydrogeologist
NC Superfund

RE: Sensitive Environments in Surface Water Pathway and 4-mile Radius of Site
Monarch Furniture/ Thaden Metals
NCD 990 883 001 Jamestown, Guilford Co., NC

I reviewed the sensitive environments along the subject site's 15-mile surface water pathway and the 4-mile radius of the site. Two Rare plants were noted along the surface water pathway of the site. These are the Nestronia and the American Barberry, and were noted at 6 and 6.5 miles from the site.

In addition, 4 priority areas were noted adjacent to the High Point Lake. These are the Piedmont Environmental Center, the East Fork Road Area, Laurel Thicket, and Buckeye Tangle and Nature Trail.

State of North Carolina
Department of Environment, Health, and Natural Resources
Division of Solid Waste Management
P.O. Box 27687 · Raleigh, North Carolina 27611-7687

James G. Martin, Governor
William W. Cobey, Jr., Secretary

William L. Meyer
Director

September 13, 1991

Mr. Craig Benedikt
EPA NC CERCLA Project Officer
EPA Region IV Waste Division
345 Courtland Street, NE
Atlanta, Georgia 30365

Date:_____
Site Disposition:_____
EPA Project Manager:_____

RE: Phase I, Screening Site Investigation
Monarch Furniture Corporation
Jamestown, Guilford County, North Carolina
NCD 990 883 001

Dear Mr. Benedikt:

Enclosed herewith is the Phase I, Screening Site Investigation Report by Greenhorne & O'Mara, Inc. for Monarch Furniture Corporation (NCD 990 883 001). The Phase I portion included a review of available information, a target survey, and an on and off-site reconnaissance of the facility and the surrounding area. Based on the available information for the subject site, the North Carolina Superfund Section is recommending that the site be considered for an Expanded Site Investigation (ESI) now, rather than undergoing any additional sampling of a Phase II, Screening Site Investigation.

The Monarch Furniture site is located at 300 Scientific Street in Jamestown, Guilford County, North Carolina. Monarch Furniture occupies a 26400 square foot building on a 5.2 acre parcel of land. The site is bordered by undeveloped land to the north and east, Thomasville Furniture Company to the south, and by Scientific Street to the west. There is a drum storage area on the western portion of the site, as well as sludge drying beds and a concrete lined lagoon on the eastern portion of the property.

The site was initially established as a fabricator and electroplater of metal furniture parts. Processes were later expanded to include spray booths and drying ovens for furniture paint applications. Electoplating is a process in which an

adherent metallic coating such as copper, zinc, nickel, or chromium is electrodeposited upon an electrode to alter its surface properties. Copper, chrome, nickel, cadmium, brass, zinc and cyanide were used in the electroplating process at the site. The industrial waste and "drag out" rinse waters were discharged directly into the City of Jamestown's sanitary sewer system. Jamestown inturn discharged the wastewater to the City of High Point sanitary sewer system.

In the late 1970's, Jamestown and High Point were mandated to control discharges of heavy metals into the receiving waters of North Carolina. As a result, an unlined lagoon was constructed on the western portion of the property adjacent to Scientific Street. The lagoon was to allow the metals to settle out prior to discharging the wastewater. Between 1976 and 1977, sludges from the lagoon were routinely spread onto vacant fields behind the facility and the adjacent facility (Thomasville Furniture Company).

Figure 4 shows three (3) areas, "A", "B" and "C", where it is believed that these sludges were disposed. Analytical results in Reference 5 indicates significant releases to soils in all three areas of copper, nickel, zinc and chromium. Area "A" showed levels of copper and nickel higher than naturally occurring concentrations for these metals in the Eastern United States. Area "B" showed levels of copper and nickel higher than naturally occurring concentrations for these metals in the Eastern United States. Area "C" showed levels of copper, chromium and nickel higher than naturally occurring concentrations for these metals in the Eastern United States.

In 1979, the unlined lagoon was 80 - 90% filled to capacity with sludges, therefore, Monarch proceded to apply for a permit to construct a new pretreatment facility. In 1980, the permit was granted and in 1981 the sludges were transferred to the new lagoon. In that same year, monitoring wells were installed around the old lagoon. Analytical results from sampling of these wells in Reference 5 indicates releases of copper, zinc, cyanide, nickel and chromium to groundwater. All of these contaminates in what is called North Well # 1, are above either the Federal Maximum Contaminant Level (MCL), the North Carolina Maximum Contaminant Level (NCMCL) and/or the Federal Secondary Maximum Contaminant Level (SMCL). Reference 1 indicates a release of 1,4-dichlorobenzene (4.3 ppb) to groundwater. The MCL for this contaminant is 600 ppb.

In 1985, the unlined lagoon and the newer pretreatment facility were closed under the Resource Conservation & Recovery Act (RCRA). The sludges that were disposited were never removed and groundwater was only monitored.

The site is located in the Carolina Slate Belt of the central Piedmont Physiographic Province. Elevations at the site are approximately 836 feet above mean sea level. Drainage from the site flows generally northeast towards an unnamed tributary of Deep River, approximately 400 feet from the site. This tributary flows

east for approximately 2000 feet, before entering the Deep River. The Deep River is classified as a Class WS-III water.

The nearest residence is located approximately 200 feet west of the site. There are approximately 64,356 people estimated to reside within 4-miles of the site. Approximately, 10,052 people rely on domestic wells for potable drinking water within 4-miles of the site. The nearest well is believed to be approximately 3000 feet southeast of the site. There is a surface water intake for drinking water purposes within 15-miles downstream of the the site. This intake is approximately 2.7 miles downstream of the site and serves approximately 3000 people in the Town of Jamestown. There are no known Federally-listed endangered species habitats within 15-miles downstream of the site. There are no wetlands based hydric soils within 15-miles downstream of the site.

Based on the information gathered during the Phase II, Screening Site Investigation, the North Carolina Superfund Section is recommending that this site be considered for an Expanded Site Investigation (ESI). Potential contamination of the fisheries and waters used by the City of Jamestown are the main areas of concern, in that groundwater and soils contamination are confirmed.

If you have any questions, please contact me at 919-733-2801.

Sincerely,

Harvey H. Allen

Harvey H. Allen, PE
Environmental Engineer

Enclosures

PHASE I

SCREENING SITE INVESTIGATION

FOR THE

MONARCH/THADEN METALS FACILITY

JAMESTOWN, NORTH CAROLINA

Submitted to:

State of North Carolina
Department of Environment, Health, and Natural Resources
Division of Solid Waste Management
Raleigh, North Carolina 27611-7687

Prepared by:

Greenhorne & O'Mara, Inc.
9001 Edmonston Road
Greenbelt, Maryland 20770

June, 1991

EXECUTIVE SUMMARY

The Monarch Furniture site is located at 300 Scientific Street in Jamestown, Guilford County, North Carolina. The site consists of a 26,400 square foot building, a drum storage area, a settling pond, and sand filter beds, which are situated an a 5.2-acre parcel of land. The site is bordered to the north by undeveloped land, to the south by the Thomasville Furniture facility, to the east by undeveloped woodlands, and to the west by homes along Scientific Street.

Thaden Metals, Inc. operated as a fabricator and electroplater of metal furniture from 1968 to 1982. During this time period, Thaden Metals worked in conjunction with the adjacent Monarch Furniture facility (600 Scientific Street). The Monarch Furniture facility manufactured and painted wood furniture parts. The Thaden Metals facility electroplated and finished metal furniture parts. It was also used as a furniture storage facility. Thaden Metals later expanded their operations to include spray booths and drying ovens for furniture paint applications.

The electroplating operations at the site utilized copper, chromium, nickel, cadmium, brass, zinc, and cyanide. The industrial waste and "drag out" rinse waters were discharged directly into the City of Jamestown's sanitary sewer system. The City in turn discharged the wastewater to the City of High Point. In the late 1970's, both the City of Jamestown and High Point were mandated to control discharges of heavy metals into receiving streams. As a result of the new regulations, Thaden Metals experienced difficulty in producing an effluent that met the City's specifications. Thaden constructed an unlined lagoon on the western, or the front, side of the facility to allow heavy metals to settle out prior to being discharged. Meanwhile, the sludges from the lagoon were being spread onto vacant fields behind the Monarch and Thaden facilities.

In 1979 when the unlined lagoon was almost filled, Thaden applied for a permit from the State to construct a new pretreatment facility, including a settling pond and sand filter beds. Sludges from the old unlined lagoon were transferred to the new lagoon in 1981. Samples from monitoring wells installed around the old lagoon showed elevated concentrations of copper, zinc, cyanide, nickel, and chromium. Sediment samples from the drained lagoon showed significant amounts of heavy metals including arsenic,

barium, lead, mercury, selenium, copper, nickel, and zinc. In 1983, the unlined lagoon was officially closed. In 1985, the facility was closed in accordance with the specifications outlined in the approved closure plan.

The sludge that was deposited behind the Thaden and Monarch facilities has never been remove. An extensive soil testing and risk assessment was conducted in the summer of 1984, and it was determined by all participants that the sludge did not pose a significant threat to the environment or human health and that the removal of soil was not warranted. Groundwater samples obtained during a July 1990 Phase II Environmental Site Assessment indicated concentrations of cyanide, barium, zinc, nickel, and 1,4-Dichlorobenzene significantly above background concentrations.

The site is located in the Carolina Slate Belt, of the central Piedmont Physiographic Province, and is characterized by low-grade metavolcanic and meta-epiclastic rocks. In the study area, groundwater is found in the saprolite and the underlying bedrock, which behaves as a single unconfined aquifer. Soils at the site consist of Mecklenburg sandy clay loam.

The topography of the site is generally level with a slight slope northeast towards a tributary of Deep River. The Deep River surface water intake, which serves the Town of Jamestown, is located along the surface water path south of the site.

There are 64,356 people residing within a 4-mile radius of the site. 10,052 people rely on domestic wells for potable water. There are no critical habitats within the study area. Land use within a 4-mile radius of the site is primarily commercial and residential.

Based on the potential health-risk to area residents and onsite workers, G&O recommends that this site move onto the next stag of the pre-remedial process.

MEMO

DATE: April 4, 1995

TO: File

FROM: Keith Snavely RKS
Hydrogeologist
NC Superfund

RE: Drainage Area
Monarch Furniture/ Thaden Metals
NCD 990 883 001 Jamestown, Guilford Co., NC

The drainage area was approximated from the southeast corner of the site where the sludge field is located to the PPE of the intermittent stream and the Deep River. The drainage area was approximated at 700,000 square feet or 16 acres. The site is located in an area that receives an average runoff of 14 inches/year. The quad map that was used to approximate the drainage area is the High Point East Quadrangle with a scale of 1"= 2000'.

Reference 45

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF
JAMESTOWN,
NORTH CAROLINA
GUILFORD COUNTY

ONLY PANEL PRINTED

COMMUNITY-PANEL NUMBER
370114 0001 B

EFFECTIVE DATE:
MARCH 4, 1980

U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

KEY TO MAP

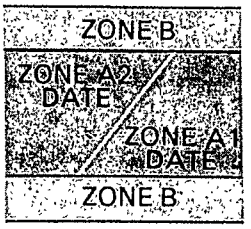
500-Year Flood Boundary

100-Year Flood Boundary

Zone Designations* With Date of Identification e.g., 12/2/74

100-Year Flood Boundary

500-Year Flood Boundary



Base Flood Elevation Line With Elevation In Feet** — 513

Base Flood Elevation in Feet Where Uniform Within Zone** — (EL 987)

Elevation Reference Mark — RM7 ×

River Mile — • M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

INITIAL IDENTIFICATION:
DECEMBER 7, 1973

FLOOD HAZARD BOUNDARY MAP REVISIONS:

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

INITIAL IDENTIFICATION:
DECEMBER 7, 1973

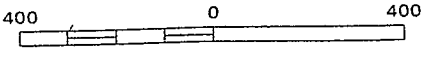
FLOOD HAZARD BOUNDARY MAP REVISIONS:
APRIL 30, 1976

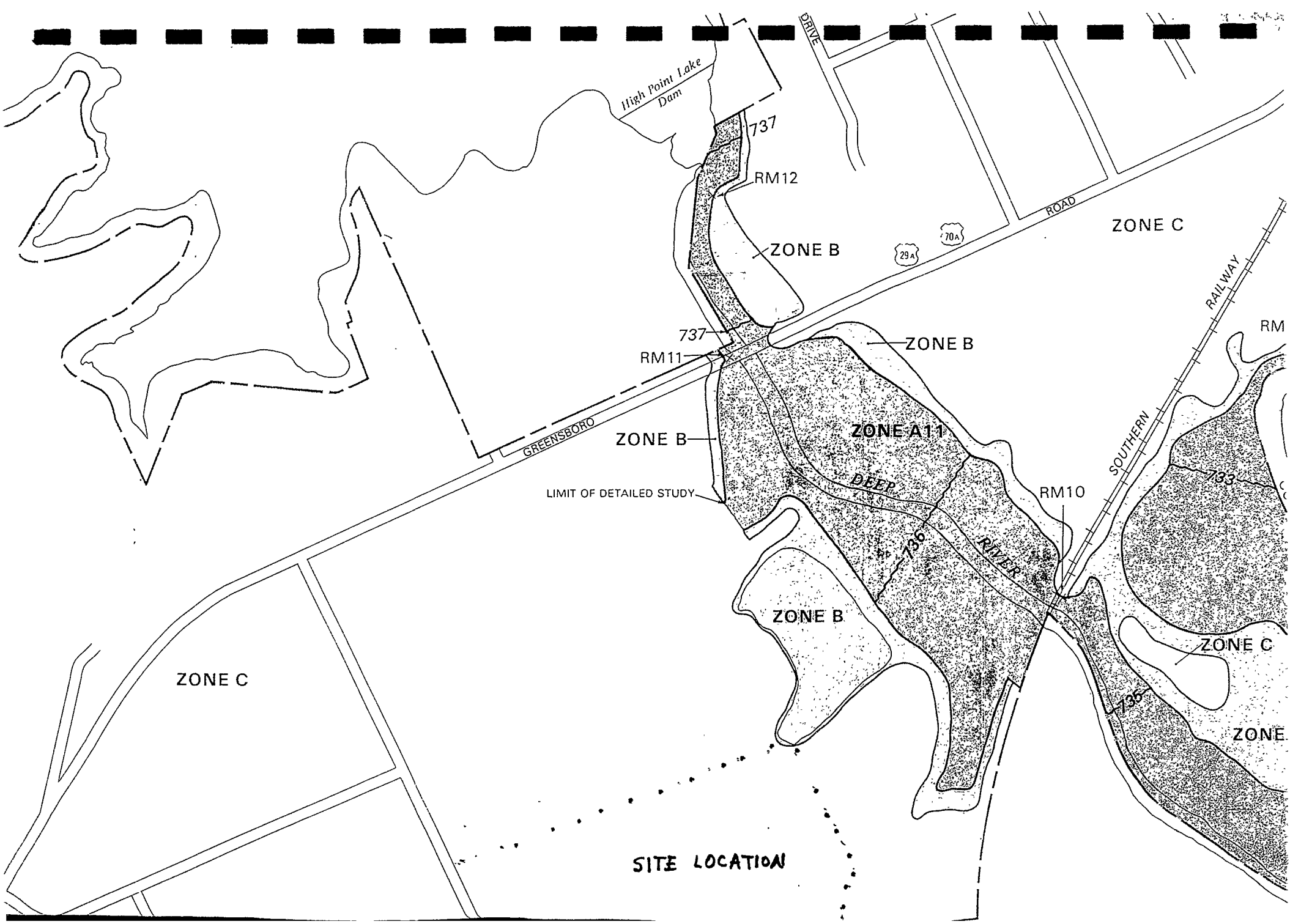
FLOOD INSURANCE RATE MAP EFFECTIVE:
MARCH 4, 1980

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620, or (800) 424-8872.

APPROXIMATE SCALE




High Point Lake
Dam
737
RM12
ZONE B
ZONE C
DRIVE
ROAD
70A
29A
RAILWAY
RM
737
RM11
ZONE B
GREENSBORO
ZONE B
ZONE A11
SOUTHERN
LIMIT OF DETAILED STUDY
DEEP
RM10
733
736
RIVER
ZONE B
ZONE C
ZONE C
735
ZONE
SITE LOCATION

Site Name: Monarch Furn./Thaden Metal
Site Number: NCD 990 883 001

Site Location: Jamestown, N.C.
Gilford County
Latitude: 35 50 24.0
Longitude: 79 50 00.0

Date: March 29, 1995

Calculation Results

Distance from Site Location	Population		Number of Households	
	Per Ring	Cumulative	Per Ring	Cumulative
0 to 1/4 mile	4	4	1	1
>1/4 to 1/2 mile	10	14	2	3
>1/2 to 1 mile	160	174	52	55
>1 to 2 miles	2,007	2,181	829	884
>2 to 3 miles	4,034	6,215	1,619	2,503
>3 to 4 miles	3,752	9,967	1,412	3,915

Note: The populations and number of households within specified target distance rings were calculated for the NC Superfund Section by the NC State Center for Geographic Information and Analysis using the 1990 US Census data. These values were calculated by summing the population and the number of households data for each census block located within each target ring. For census blocks lying only partially within the ring, the per cent area of the block within the ring was multiplied by the population and household densities of the block.

HRS Trainings 1995 - March

Reference 47

United States
Environmental Protection
Agency

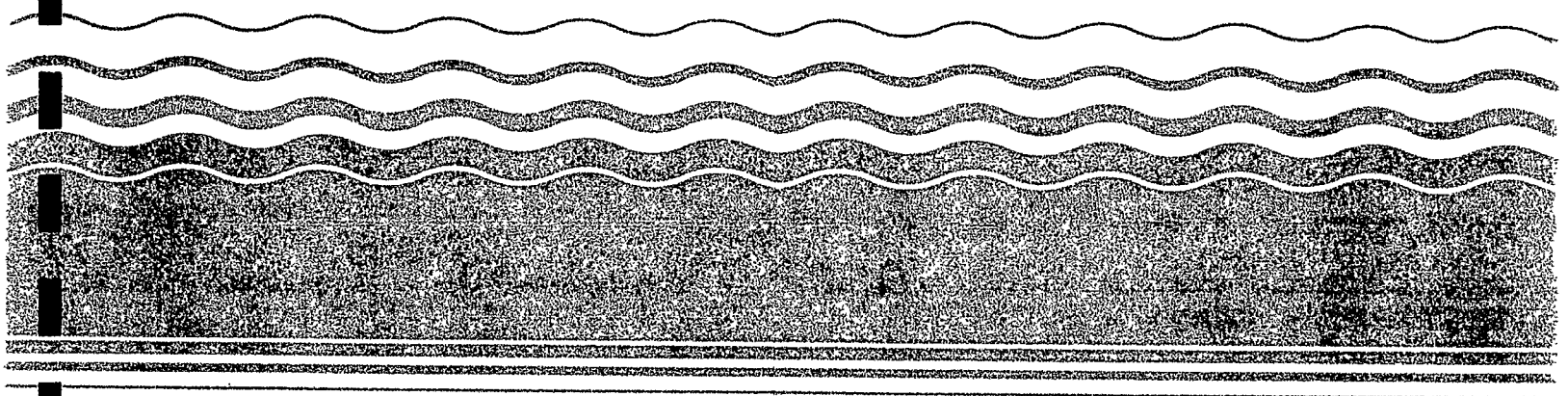
Office of Solid Waste
and Emergency
Response

Publication 9345.1-07
PB92-963377
EPA 540-R-92-026
November 1992

Superfund

EPA

Hazard Ranking System Guidance Manual



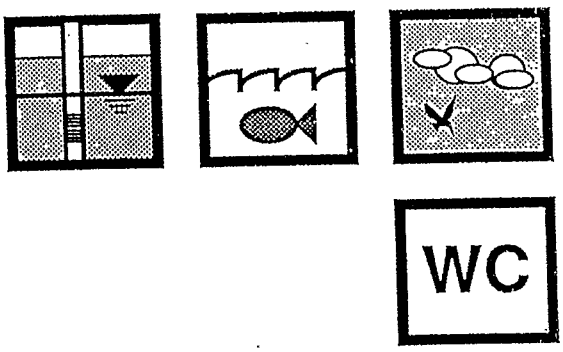
EPA540-R-92-026
OSWER Directive 9345.1-07
November 1992

The Hazard Ranking System Guidance Manual

Interim Final

Hazardous Site Evaluation Division
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
Washington, DC 20460

SECTION 6.3
TIER B — HAZARDOUS WASTESTREAM QUANTITY



This section clarifies the method for evaluating hazardous waste quantity under Tier B of the HRS. Topics include definitions that pertain to Tier B, data requirements for scoring under Tier B, evaluation of RCRA wastes, and extrapolation of data.

Tier B is used when Tier A data are not adequately determined and when wastestream and/or CERCLA pollutant and contaminant data are available. This tier deals with wastes "as deposited", as does Tier A. ***Highlight 6-6*** is a flowchart that provides step-wise instructions for scoring a source with Tier B.

DEFINITIONS

Adequately Determined (for purposes of Tier B only): The total mass of all hazardous waste streams and CERCLA pollutants and contaminants for the source and releases from the source (or for the area of observed contamination) is known or is estimated with reasonable confidence. (For the site hazardous waste quantity to be adequately determined for Tier B, this must apply for all sources.)

CERCLA Pollutant or Contaminant: Section 101(33) of CERCLA states that: "*pollutant or contaminant shall include, but not be limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring; except that the term "pollutant or contaminant" shall not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (A) through (F) of paragraph (14) and shall not include natural gas, liquefied natural gas, or synthetic gas of pipeline quality (or mixtures of natural gas and such synthetic gas).*"

Hazardous Waste Stream: Material containing CERCLA hazardous substances as defined in CERCLA section 101(14), that was deposited, stored, disposed, or placed in, or that otherwise migrated to, a source.

B1. LOCATING DATA

The following records or resources usually provide direct accounts of hazardous wastestreams:

- Manifests
- PRP and state records
- Permits.

- Locate each overland segment and associated PPE on the maps. The overland segment may not be able to be determined solely from a topographic map. Supplement the maps with field observations, if needed, to determine the presence of man-made impediments.

- Locate all other PPEs due to flooding or observed releases by direct observation to surface water.

(3) **For each PPE, draw the in-water segment of the hazardous substance migration path to the TDL.**

(4) **All hazardous substance migration paths with in-water segments that intersect within the TDL are considered to be in the same watershed for scoring purposes.**

- Targets for a watershed are evaluated along all portions of the hazardous substance migration paths comprising the watershed.

- All sources with PPEs in a watershed are assigned to that watershed for scoring purposes. A source can be assigned to more than one watershed.

Highlight 8-16 provides an example of delineating a single watershed. ***Highlight 8-17*** provides an example of evaluating multiple watersheds.

DETERMINING DRAINAGE AREA

Drainage area includes both the area of the sources and the areas upgradient of sources that can contribute runoff to the sources. Drainage area is evaluated under potential to release via overland flow and is evaluated separately for each watershed. It is not necessary to evaluate drainage area if an observed release has been established.

HRS Table 4-3 provides factor values assigned to drainage areas. As shown in that table, drainage area is evaluated within broad ranges, with ranges between 50, 250, and 1,000 acres. The level of precision required for drainage area calculations should be consistent with the need to identify the appropriate range.

Both the area of sources for each watershed and the areas upgradient of these sources can be readily estimated from USGS topographic maps. Observations from the SI may be critical for identifying runoff control or diversion structures (e.g., storm drains) that may not appear on topographic maps.

(1) **Determine the area (or portion of the area) of each source applicable for the watershed being evaluated.** Information may be available from hazardous waste quantity evaluations.

- If source dimensions are known from site visits or other information, use this to determine area.

- If source dimensions are not known, locate each source on a topographic map and approximate dimensions using the map scale.

(2) **Determine the area upgradient of each source.**

- Identify structures or features that prevent the flow of runoff onto, across, and/or off sources at the site; field observations should identify locations of such structures.

- Determine upgradient areas based on a topographic map (or other representations of elevation data).

tides. For contaminated sediments with no identified source, the in-water segment begins at the upstream boundary (for streams and rivers) or center (for water bodies with no direction of flow) of the area of contaminated sediments.

Overland Segment: Portion of the hazardous substance migration path from a source to a surface water body .

Probable Point of Entry (PPE): Point at which the overland segment of a hazardous substance migration path intersects with surface water. A site may have multiple PPEs. The PPE is assigned as the point at which entry of the hazardous substances to surface water is most likely.

Target Distance Limit (TDL) for the Surface Water Migration Pathway: Distance over which the in-water segment of the hazardous substance migration path is evaluated. The TDL extends 15 miles from the PPE in the direction of flow (or radially in lakes, oceans, or coastal tidal waters) or to the most distant sample point establishing an observed release, whichever is greater. In tidally influenced surface water bodies, an upstream TDL is also determined. For some sites (e.g., sites with multiple PPEs), an overall target distance of greater than 15 miles may result.

Watershed: Portion of the watershed downgradient of sources at the site. The watershed includes the surface water bodies between the PPEs and the TDL (i.e., the in-water segment of the hazardous substance migration path). A single watershed includes all in-water segments that intersect within the TDL. A site is in two or more watersheds if two or more hazardous substance migration paths from the sources do not reach a common point within the TDL. In these cases, each distinct watershed is evaluated separately.

DELINEATING WATERSHEDS

The key to evaluating watersheds is to first identify the hazardous substance migration paths (see Section 8.1). Most sites are in a single watershed. However, multiple watersheds may be identified for larger sites. Where multiple watersheds occur, evaluate each watershed separately.

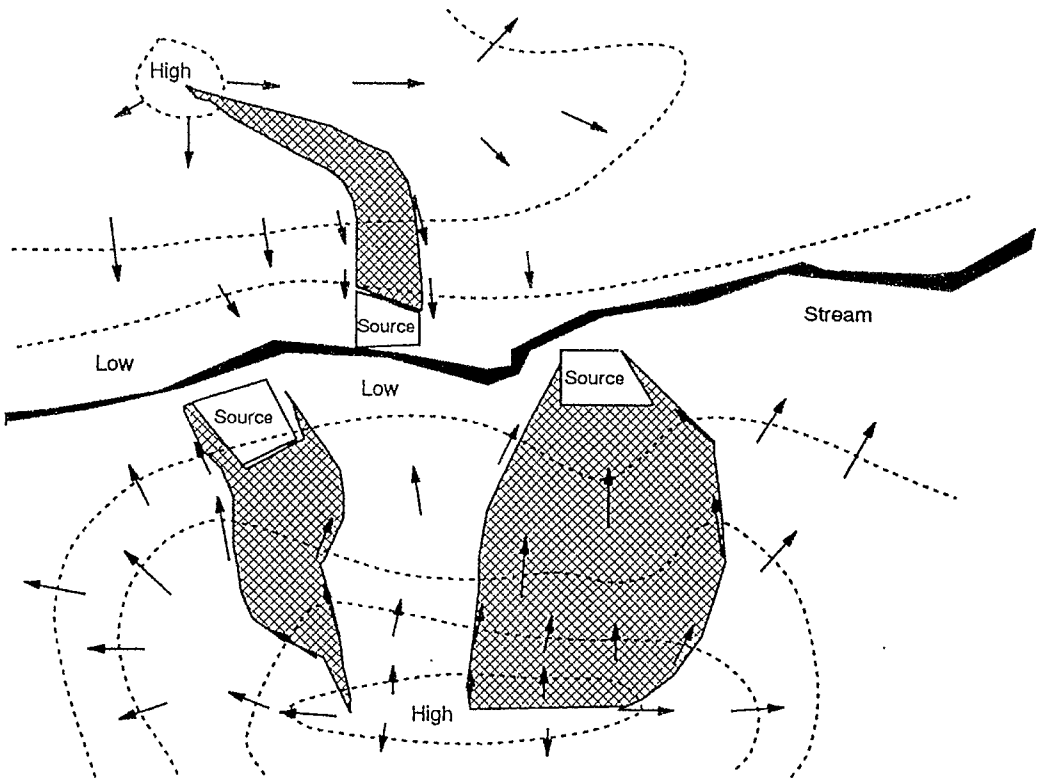
(1) **Compile maps that show the sources being evaluated and all surface water bodies within the TDL.**

- Locate all sources on a map.
- Examine topography and surface water bodies around the site to identify PPEs (if this is not possible, use a straight line distance between sources at the site and surface water bodies to estimate locations of PPEs).
- Compile sufficient maps to evaluate 15 miles radially or downstream of all PPEs, as appropriate. Additional maps may be needed as the hazardous substance migration path is refined to reflect precise locations of PPE's, TDLs within a water body, and tidal influences.

(2) **Identify the overland segment from each source to all surface water bodies within 2 miles of the source.** Identify all other routes of migration to surface water, such as flooding. (Remember, for surface water migration by flooding, sources in a 500-year or less floodplain do not need to be within 2 miles of a surface water body.)

- Each source may have multiple overland segments to a single surface water body or to different surface water bodies, establishing multiple PPEs. These PPEs may or may not differ for sources.

HIGHLIGHT 8-18
DRAINAGE AREA DETERMINATION



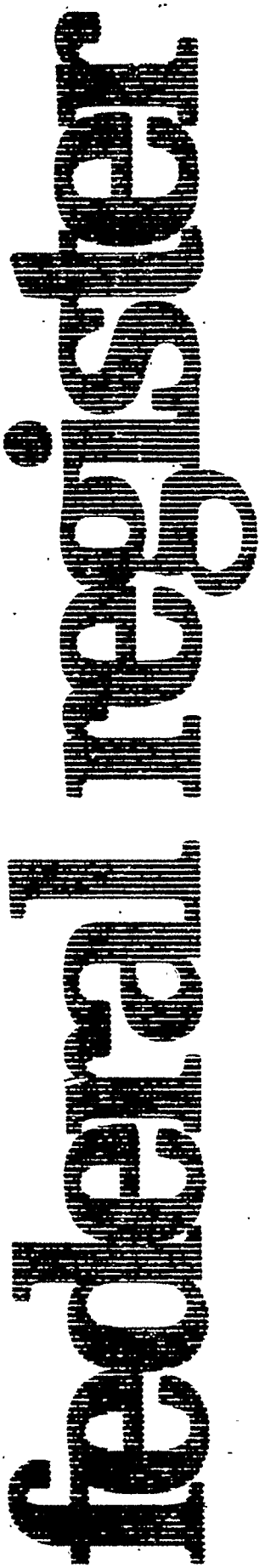
Drainage boundary

Drainage direction

Contour line

- Draw flow lines perpendicular to the nearest upgradient contour line from the edges of each source.
- Extend the flow lines between contour lines in the upgradient direction until a topographic high is encountered (a closed ring on a topographic map).
- Close off the drainage area at the topographic high.
  - For circular topographic highs, use the center of the area enclosed by the highest contour line as the highest point of elevation.
  - For elongated topographic highs, draw a ridge line along the center of the length of the area enclosed by the highest contour line to represent the highest points of elevation.

March 1995
EPA HRS training



Friday
December 14, 1990

Part II

Environmental Protection Agency

40 CFR Part 300
Hazard Ranking System; Final Rule

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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

1994

Ms. Pat DeRosa
North Carolina Department of Environment,
Health and Natural Resources
P.O.Box 27687
Raleigh, North Carolina 27611-7687

Subject: Superfund Chemical Data Matrix (SCDM)

Dear Ms. DeRosa:

Attached is the revised Superfund Chemical Data Matrix (SCDM) These tables, which replace the March 1993 version of SCDM, are to be used when evaluating sites with the Hazard Ranking System (HRS) . Changes from the previous version have been marked with an asterisk in the tables. Also enclosed is a separate list of the values which have been changed.

There is one change of specific importance. In the June 1994 SCDM, a benchmark has been included for lead in drinking water. Since the former MCL of 50 ug/l was rescinded in November 1992, the action level of 15 ug/l, which is the standard used by the drinking water program to monitor water quality at the tap, was included.

Please contact me at 404/347-5069, ext. 6160 or Trish Gowland at 703/603-9017 if you have any questions.

Sincerely

Deborah A. Vaughn-Wright

Deborah A. Vaughn-Wright
Region 4 NPL Coordinator

Enclosure

SUPERFUND CHEMICAL DATA MATRIX

APPENDIX B TABLES

June 1994

MEMO

DATE: April 11, 1994

TO: File

FROM: Keith Snavely RKS
Hydrogeologist
NC Superfund Section

RE: Conversation with Oakdale Cotton Mill
Oakdale water intake - Deep River
Monarch Furniture/Thaden Metals
NCD 990 883 001 Jamestown, Guilford Co., NC

Personnel from the Oakdale Cotton Mill were contacted to determine the amount of persons from the cotton mill that use the water intake from the Deep River. According to personnel, 175 persons use the water for drinking purposes.