United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R04-87/024
September 1987

EPA

Superfund Record of Decision:

Sodyeco, NC

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

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EPA/ROD/R04-87/024		

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16. ABSTRACT

The Southern Dyestuff Company (Sodyeco) site, located in Mecklenburg County, North Carolina, consists of approximately 1,300 acres. Approximately 20-30 residents reside within a one-quarter mile radius of the site, while many of the areas 9,137 residents commute daily to the site for employment. The site contains an operating manufacturing facility consisting of production units, a waste water treatment area and materials storage areas. Approximately 1,040 acres are underdeveloped. Sodyeco began operations at the site in 1936. In 1958, American Marietta (which became Martin Marietta in 1961) purchased the site and expanded the company's liquid sulfer dye production to include the manufacture of vat and disperse dyes and specialty products for agrochemical, electronic, explosive, lithographic, pigment, plastic, rubber and general chemical industries. The Sandoz Chemical Company purchased the plant in 1983. Five CERCLA facilities, identified as A, B, C, D and E, were identified as probable sources of the ground water and soil contamination. Area A operated as a landfill between the 1930s and 1973 or 1974. It accepted sulfer residues and dyes; fiber cloths; empty metal and cardboard drums and cartons; non-acidic, non-flammable chemicals; chemical wastes; and construction debris. This area is currently covered with asphalt and buildings. Area B operated as landfill between 1973 and 1978 and received wastes previously disposed in Area A. Area C consisted of three covered trenches that contained laboratory and
(See Attached Sheet)

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision Sodyeco, NC First Remedial Action - Final Contaminated Media: gw, soil Key contaminants: TCEs, PAHs, VOCs		

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	None	

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EPA/ROD/R04-87/024
Sodyeco, NC
First Remedial Action - Final

16. ABSTRACT (continued)

production samples, distillation tars and waste solvents. They have since been excavated, regraded and grassed. Area D contained two waste water settling ponds that have been taken out of service. Area D currently holds a lined fresh water pond and a fuel oil storage tank. Area E, downgradient of the old plant manufacturing area, has no known waste disposal receptacles. The primary contaminants of concern include: TCE, PAHs and other volatile organics.

The selected remedial alternative includes: extraction and onsite treatment at the waste water treatment facility of contaminated ground water with offsite discharge to a stream; onsite treatment of contaminated soil in Area C (Treatability studies will be performed to determine which type of treatment will be used); excavation and offsite incineration of contaminated soil in Area D; and asphalt capping of Area B. The estimated present worth cost of this remedy will range from $2,089,000 to $3,865,000.

ENFORCEMENT
RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

SODYECO SITE
CHARLOTTE, MECKLENBURG COUNTY
NORTH CAROLINA

PREPARED BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV
ATLANTA, GEORGIA

DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Sodyeco
Charlotte, Mecklenburg County, North Carolina

STATEMENT OF PURPOSE

This decision document represents the selected remedial action for this site developed in accordance with CERCLA, as amended by SARA, and to the extent practicable, the National Contingency Plan.

The State of North Carolina has concurred on the selected remedy.

STATEMENT OF BASIS

This decision is based upon documents which make up the site Administrative Record. The attached index identifies items which comprise the Administrative Record.

DESCRIPTION OF THE SELECTED REMEDY

GROUNDWATER

- Extraction of contaminated groundwater
- On-site treatment of extracted groundwater
- Discharge of treated groundwater to off-site stream
- Groundwater remediation will be performed until all contaminated water meets the cleanup goals specified in the attached Summary of Alternative Selection

SOIL

- Asphalt cap of Area B (Truck Staging Area)
- Excavation and off-site incineration of contaminated soil in Area D (Settling Pond Area)
- On-site treatment of contaminated soil in Area C (Trench Area) to remove organic contaminants

IMPLEMENTATION

The Remedial Design and Remedial Action will be conducted under an amendment to the Resource Conservation and Recovery Act (RCRA) Part B Permit Number NCD001810365, issued March 31, 1987. Personnel in EPA's RCRA program will oversee the work to be performed.

DECLARATION

"The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate, and is cost-effective. This remedy satisfies the preference for treatment that reduces toxicity, mobility, or volume as a principle element. Finally, it is determined that this remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable."

SEP 24 1987

Lee A. DeHihns, III
Acting Regional Administrator

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

SODYECO SITE
CHARLOTTE, MECKLENBURG COUNTY, NORTH CAROLINA

PREPARED BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV
ATLANTA, GEORGIA

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.0 Introduction

he Sodyeco Site was proposed for inclusion on the National Priorities List NPL) in December 1982 and ranks 146 out of 703 NPL sites. The Sodyeco Site as been the subject of a Remedial Investigation (RI) and Feasiblity Study (FS) erformed by the responsible party, Sandoz Chemicals Co., under an dministrative Order by Consent, dated February 10, 1986. The RI report, which xamines air, sediment, soil, surface water and groundwater contamination at he site was completed on August 17, 1987. The FS, which develops and examines lternatives for remediation of the site, was issued in draft form to the ublic on August 19, 1987.

his Record of Decision has been prepared to summarize the remedial alternative election process and to present the selected remedial alternative.

.1 Site Location and Description

he Sodyeco Site is located in Mecklenburg County, North Carolina, pproximately 10 miles west of Charlotte (Figure 1). The City of Mount Holly s located across the Catawba River west of the plant. The plant site consists f roughly 1300 acres (Figure 2). It extends over 2000 feet north of State ighway 27, south past Long Creek, over 500 feet east of Belmeade Drive and is ounded on the west by the Catawba River.

f the approximately 1300 acres at the Sodyeco Site, about 20 percent is ccupied by production units and the waste water treatment facility. The ajority of the remaining acreage is undeveloped.

he Sodyeco Site contains an operating manufacturing facility consisting of roduction units, a waste water treatment area, and material storage areas. he facility is partially fenced along open road frontage areas and a security learance is required for entrance.

he area in the vicinity of the Sodyeco plant is gently rolling, with levations ranging from about 570 feet NGVD (National Geometric Vertical Datum f 1929) near the river to 670 feet east of the plant area. The original opography of the plant has changed considerably during its operation as the esult of various grading and landfilling operations in conjunction with the onstruction of new facilities.

s a result of previous studies, five CERCLA areas were identified, whose use lates back to the late 1930's. In addition to the CERCLA areas, a RCRA permit as been issued for the treatment, storage, and disposal of hazardous waste n-site. Waste water treatment and discharge activities are regulated under he NPDES program.

Figure 1
Site Location Map
Sodyeco Site
Mecklenburg County, North Carolina

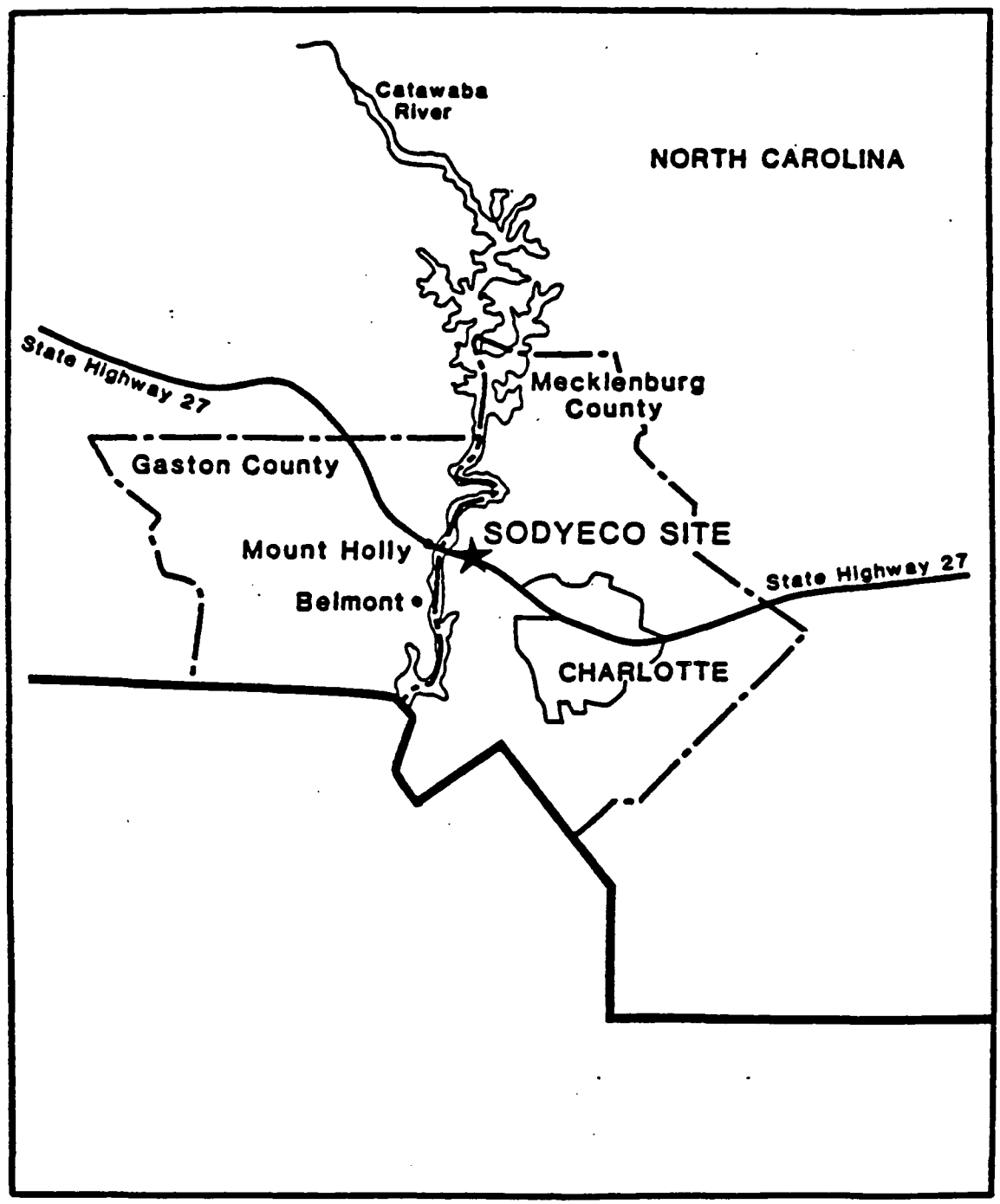
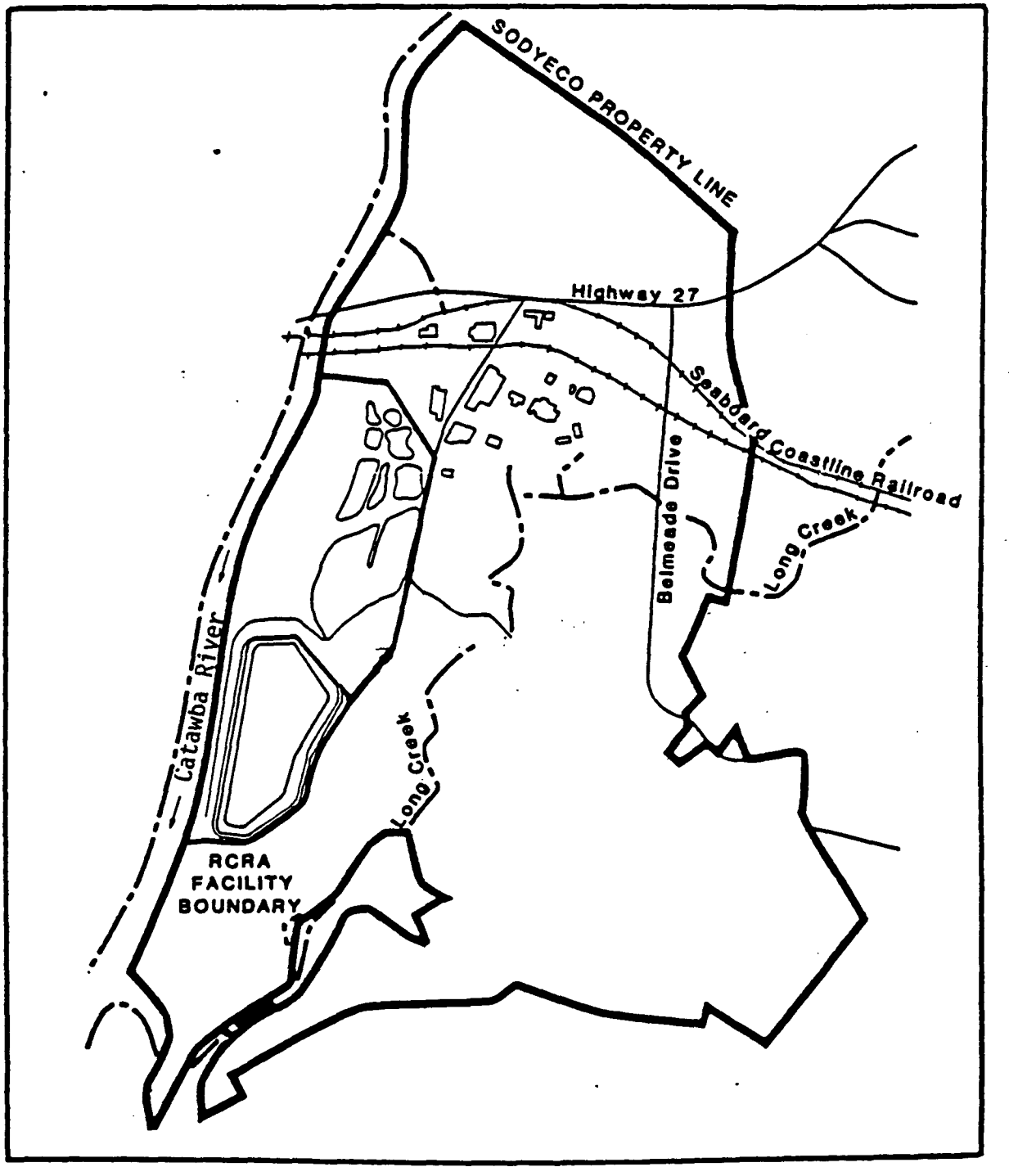


Figure 2

Sodyeco Site Map



The areas surrounding the Sodyeco Site are primarily undeveloped woodland, sparse residential and light industrial areas. To the north of the plant (and NC Highway 27) is an area of primarily undeveloped woodland. A convenience store, located immediately north of Highway 27, is not owned by Sandoz. The area to the east is primarily agricultural with sparse residential and light industrial areas. The area west of the Catawba River, which forms the western site boundary, encompasses the outskirts of the town of Mount Holly and includes a power substation, sewage disposal plant, industrial facilities and some residential areas. Approximately 20-30 residents are estimated to reside within a one-quarter mile radius of the site. Because the Sandoz Chemicals Corporation is one of the largest employers in the area, many residents, including residents of Mount Holly and Belmont, commute daily to the plant. The most recent census (1980) gives a population of 4,530 for the city of Mount Holly and 4,607 for the city of Belmont.

1.2 Site History

The Southern Dyestuff Company (Sodyeco) began operations at the current location in 1936. Initially, the plant produced liquid sulfur dyes from purchased raw materials. American Marietta (which became Martin Marietta in 1961) purchased the Sodyeco site in 1958. In the early 1960's, the company's product lines expanded to include vat dyes and disperse dyes. Since that time, the company has produced specialty chemical products for the agrochemical, electronic, explosive, lithographic, pigment, plastic, rubber and general chemical industries. Sandoz purchased the Sodyeco Plant from Martin Marietta in 1983.

The Sodyeco Site contains five CERCLA facilities, identified as Areas A, B, C, D and E (Figure 3). The following is a description of these CERCLA areas:

Area A - This landfill's use began in the late 1930's. Waste materials disposed of at this facility included sulfur dye clarification residues, off-specification sulfur and disperse dyes, filter cloths, empty metal and cardboard drums and cartons, small amounts of non-acidic, non-flammable discarded chemicals and chemical wastes, and construction debris. The landfill was closed sometime between 1973 and 1974. Most of the area above the facility is now covered with asphalt and buildings.

Area B - This landfill operated between 1973 and 1978 and received wastes that had previously been disposed in Area A. The area is presently covered with gravel and used as a truck staging area.

Area C - This area originally consisted of three covered trenches that contained the remains of laboratory and production samples, distillation tars, and waste solvents. The two northern pits were excavated in March 1981 and the contents were trucked off-site to a landfill in Pinewood, South Carolina. Removal of the remaining pit was conducted in 1983. After excavation activities, Area C was regraded and grassed.

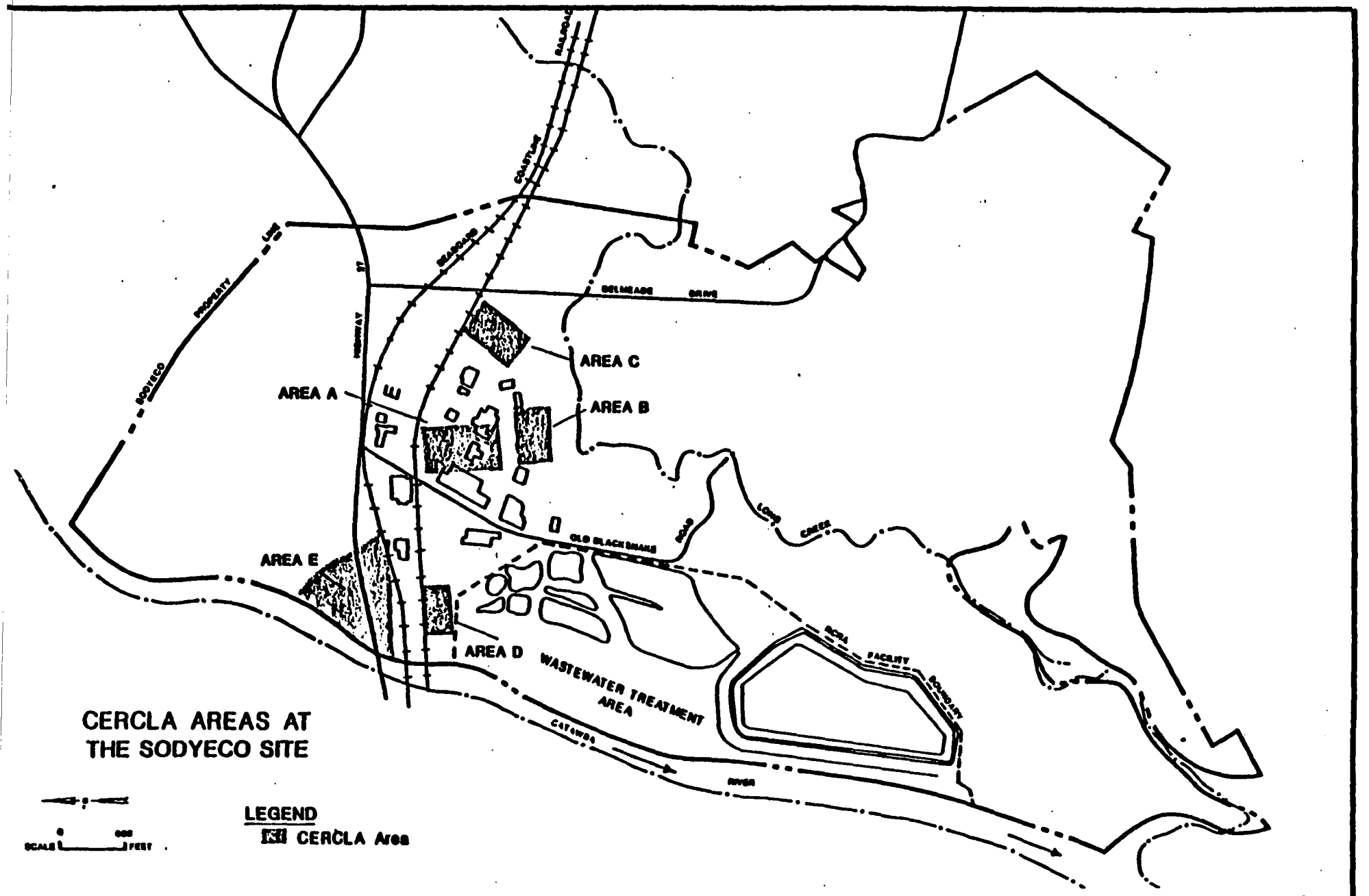

AREA A
AREA B
AREA C
AREA D
AREA E
WASTEWATER TREATMENT AREA
CERCLA AREAS AT
THE SODYECO SITE
LEGEND
CERCLA Area

FIGURE 3

Area D - This area formerly contained two wastewater settling ponds. The ponds were taken from service in 1966; one was cleaned out in 1973 and the other between 1976 and 1977. This area currently holds a lined fresh water pond and a fuel oil storage tank. A French drain is located immediately downgradient of the area to intercept shallow groundwater.

Area E -No wastes are known to have been disposed of in this area which located downgradient of the old plant manufacturing area.

The first indication of potential groundwater contamination at the Sodyeco Site was the discovery of organic solvents in the company's potable water well in September 1980. Contaminated groundwater was also detected in water supply wells adjacent to the plant. Residents of five homes were vacated and the plant water supply was changed from groundwater to surface water (Catawba River).

In June 1982, a hazardous waste site investigation of the Sodyeco Site was conducted by EPA. Results of surface water, groundwater and sediment samples revealed the presence of organic contaminants in the groundwater and small amounts in the surface water.

In February 1983, EPA sampled eleven potable water wells for pH, sulfate and metals. All wells were off-site to the east and north of the plant boundary. All samples met primary and secondary drinking water standards for the criteria evaluated.

The Sodyeco Site was placed on the National Priorities List in December 1982, due to the presence of potable water wells within a three mile radius and the presence of two municipal surface water intakes on the Catawba River. EPA and Sandoz signed a RI/FS Consent Agreement on February 10, 1986. The final RI report was issued August 17, 1987 and the draft FS was released to the public August 19, 1987.

The objectives of the site investigation were to determine:

* The population, environmental and welfare concerns at risk;
* The routes of exposure;
* The amount, concentration, hazardous properties, locations, environmental fate and transport, and the form of the substances present;
* Hydrogeological factors;
* The extent to which the substances have migrated or are expected to migrate from the area of their original location and whether future migration may pose a threat to public health, welfare or the environment;
* The contribution of the contamination to an air, land, water, and/or food chain contamination problem.

The purpose of the feasibility study was to develop and examine remedial alternatives for the site, and to screen these alternatives on the basis of protection of human health and the environment, cost-effectiveness and technical implementability. In accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), alternatives in which treatment would permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances at the Site were preferred over those alternatives not involving such treatment.

2.0 ENFORCEMENT ANALYSIS

The Sodyeco Site was added to the NPL in December 1982 and EPA assumed lead responsibility for the site at that time. The Sodyeco Company has operated on the site since 1936. The current owner, Sandoz, acquired the site in 1983 and agreed to perform the RI/FS. Therefore, no potentially responsible party search was conducted. A notice letter was sent to Sandoz Chemicals on August 30, 1985. Negotiations for the RI/FS Consent Agreement were concluded with the signing of the document by both EPA and Sandoz on February 10, 1986.

The Remedial Design and Remedial Action will be conducted under an amendment to the Resource Conservation and Recovery Act (RCRA) Part B Permit Number NCD001810365, issued March 31, 1987. Personnel in EPA's RCRA program will oversee the work to be performed.

3.0 CURRENT SITE STATUS

3.1 Hydrogeologic Setting

The Sodyeco Site is located in the Piedmont Physiographic Province, a northeast trending zone underlain by igneous and metamorphic rocks. The Piedmont is subdivided into other northeast trending geologic belts. One of these, which contains the Sodyeco Site, is termed the Charlotte Belt. This belt is characterized by residual soils developed from the in-place chemical weathering of rock which was similar to the bedrock currently underlying the site.

Groundwater recharge in this area is derived almost entirely from local precipitation. Generally, the depth to the water table depends on the topography and rock weathering. The water table varies from the ground surface in valleys (streams) to more than 100 feet below the ground surface in sharply rising hills.

A groundwater divide is located approximately 50 feet north of CERCLA Area A and approximately 900 feet north of Area C. In general, groundwater flow is northerly, north of the divide, and south-southwesterly, south of the divide.

Average groundwater flow rates from the CERCLA areas to Long Creek were calculated to be approximately 180 gallons per day (gpd) from Area A, approximately 200 gpd from Area B and approximately 70-140 gpd for Area C. Estimated flow from CERCLA areas D and E to the Catawba River were approximately 3,000 gpd and 10,000 gpd respectively.

The primary hydrologic features influencing the Sodyeco site are the Catawba River (regional drainage feature) and Long Creek (major tributary to the river). Surface drainage from the western side of the site is directly to the river, from the northeastern area to the river via several small streams, and from the eastern and southeastern areas to Long Creek and then to the river. The five CERCLA areas are not within the 100-year flood elevation of Long Creek and the maximum recorded level in the Catawaba River since development of downstream Lake Wylie in 1904.

3.2 Site Contamination

The Sodyeco Site contains five CERCLA areas designated as A, B, C, D and E. Soil, groundwater, surface-water and sediment samples have been collected in and around each area and analyzed. All samples have been analyzed for the following volatile organic indicator parameters that were chosen based upon previous HSL scans at the Sodyeco Site:

* Trichloroethylene
* Tetrachloroethylene
* Chlorobenzene
* Ethylbenzene
* o-Dichlorobenzene
* Toluene
* Xylenes

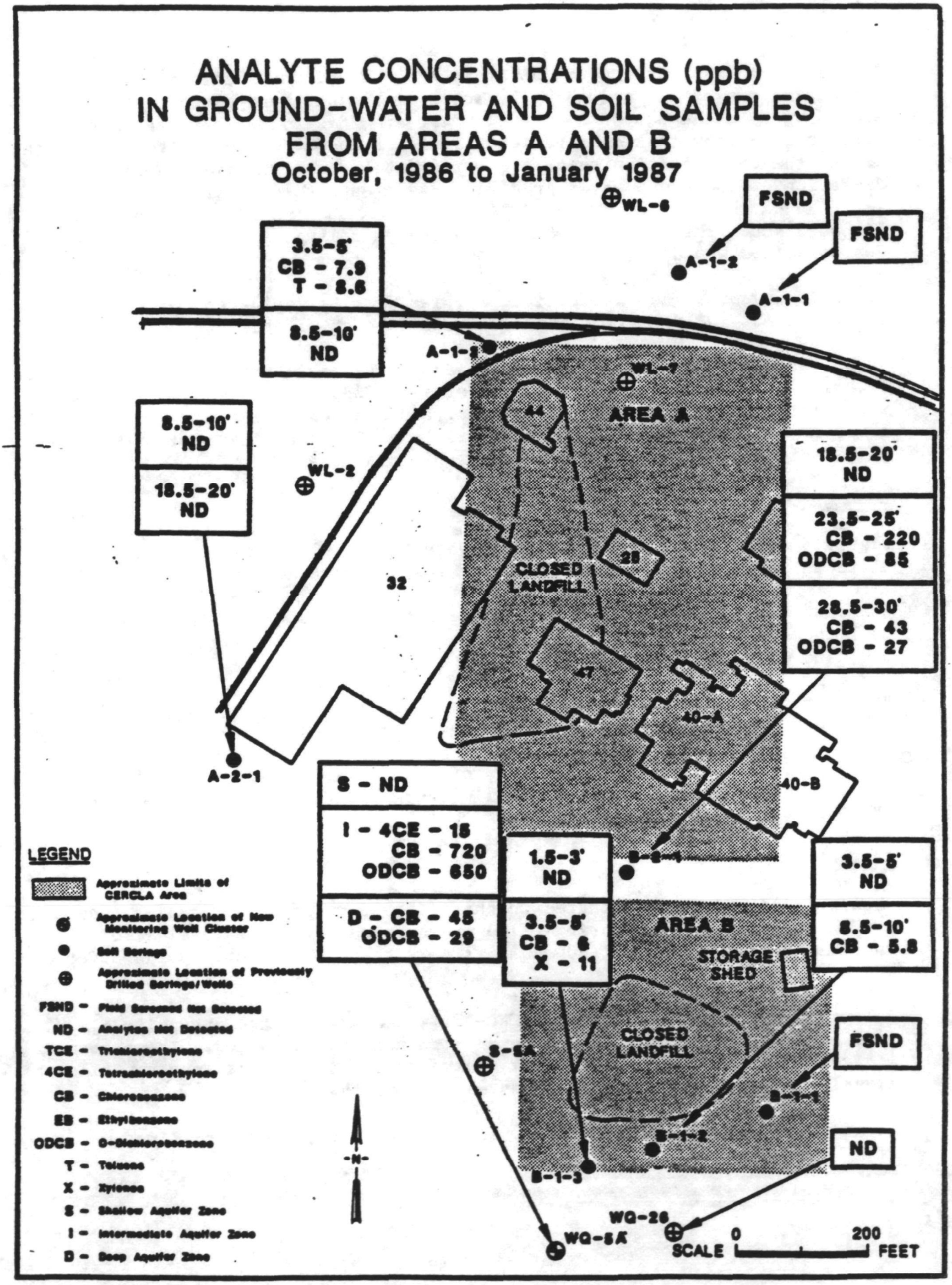
Surface-water and sediment samples were also analyzed for three polynuclear aromatic hydrocarbons:

* Anthracene
* Fluorene
* Phenanthrene

In addition to the above analyses, two surface water samples from the Catawba River and two surface water samples from Long Creek (upstream and downstream in each) were analyzed for the Hazardous Substance List (HSL) parameters. Since acetone was detected in many samples, acetone results are also reported. Acetone is believed to have been a laboratory and decontamination process contaminant.

<u>Areas A & B</u>

Figure 4 shows the soil and groundwater sampling locations in and around Areas A & B includes the analyte concentrations detected.


ANALYTE CONCENTRATIONS (ppb)
IN GROUND-WATER AND SOIL SAMPLES
FROM AREAS A AND B
October, 1986 to January 1987
WL-6
FSND
FSND
A-1-2
A-1-1
3.5-5'
CB - 7.9
T - 8.6
8.5-10'
ND
A-1-3
WL-7
AREA A
44
8.5-10'
ND
18.5-20'
ND
WL-2
18.5-20'
ND
23.5-25'
CB - 220
ODCB - 85
CLOSED
LANDFILL
28
32
28.5-30'
CB - 43
ODCB - 27
47
40-A
40-B
A-2-1
S - ND
I - 4CE - 15
CB - 720
ODCB - 650
D - CB - 45
ODCB - 29
1.5-3'
ND
3.5-5'
CB - 6
X - 11
B-2-1
3.5-5'
ND
8.5-10'
CB - 5.8
AREA B
STORAGE
SHED
CLOSED
LANDFILL
B-2A
FSND
B-1-1
B-1-2
ND
B-1-3
WQ-26
WQ-5A
SCALE
0
200
FEET
LEGEND
Approximate Limits of CERCLA Area
Approximate Location of New Monitoring Well Cluster
Soil Borings
Approximate Location of Previously Drilled Borings/Wells
FSND - Field Screened Not Detected
ND - Analytes Not Detected
TCE - Trichloroethylene
4CE - Tetrachloroethylene
CB - Chlorobenzene
EB - Ethylbenzene
ODCB - O-Dichlorobenzene
T - Toluene
X - Xylenes
S - Shallow Aquifer Zone
I - Intermediate Aquifer Zone
D - Deep Aquifer Zone
-N-

Boring B-2-1 lies between CERCLA Areas A and B and shows chlorobenzene concentrations of 220 and 43 ug/Kg and o-dichlorobenzene concentrations of 85 and 26 ug/Kg at depths of 23.5 to 25 feet and 28.5 to 30 feet, respectively. Since this boring lies downgradient of Area A and at a depth within the water table, the contamination most likely indicates organic migration in the direction of the groundwater gradient from Area A towards Area B.

Figure 5 shows the locations of groundwater sampling wells where no organic contamination was detected.

Volatile organics were detected in samples from well cluster WQ-5A, which is located about 100 feet from the southwestern edge of Area B.

These results indicate that the upper aquifer zone is not contaminated. The intermediate aquifer zone in the vicinity of CERCLA Area B shows contamination with tetrachlorethylene, chlorobenzene, and o-dichlorobenzene, and the deep aquifer zone shows much lower concentrations of two of these three indicator parameters (chlorobenzene and ortho-dichlorobenzene).

Area C

Figure 6 depicts the soils and groundwater sampling locations in Area C and lists all analytes detected with their respective concentrations.

The results from the samples define the maximum boundary of the contaminated soil in Area C. In the past, this area contained three trenches or pits, C-1, C-2, and C-3.

Based on the boring analyses and field observations, there are approximately 5,800 cubic yards of contaminated soil and uncontaminated soil cover in Area C.

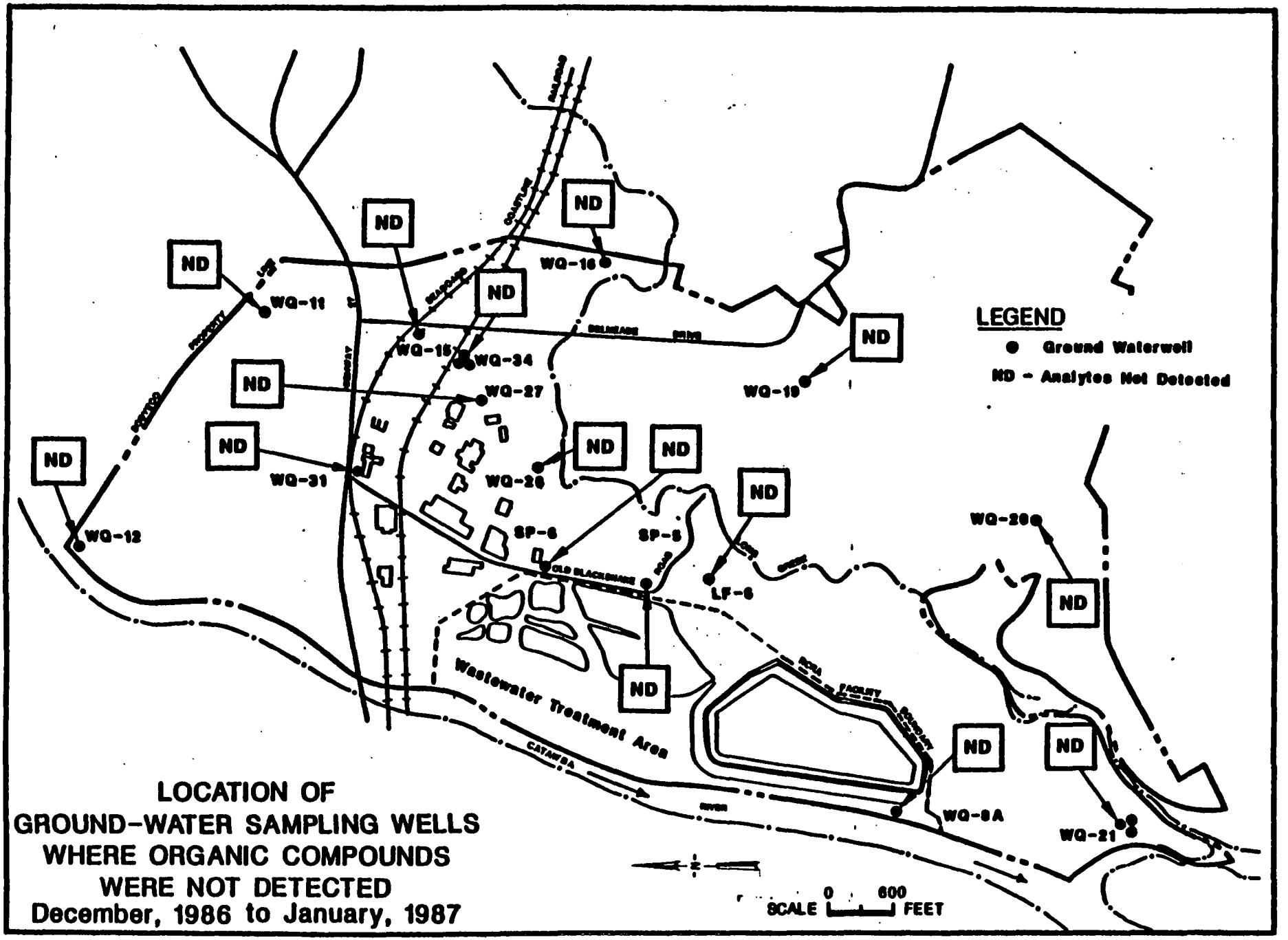
Four wells in the immediate vicinity of Area C were sampled: WQ-27, WQ-28, WQ-29 (well cluster), and WQ-34 (well cluster). Well WQ-6 is considered the shallow well of well cluster WQ-29.

Area D

Analyte concentrations detected in the soil and groundwater samples from Area D are shown in Figure 7. Boring D-1-3 was sampled twice. The volume of contaminated soil is about 40 cubic yards with about 75 cubic yards of cover soil.

All aquifer zones of well cluster WQ-33, which are located approximately 75 feet south of D-2-2, are contaminated with volatile organics. These results indicate that contaminants in Area D have migrated downward into the alluvium, gravel and upper bedrock zone to an 84 foot depth.

Groundwater flowing through Area D discharges into the Catawba River.



LOCATION OF
GROUND-WATER SAMPLING WELLS
WHERE ORGANIC COMPOUNDS
WERE NOT DETECTED
December, 1986 to January, 1987

FIGURE 5

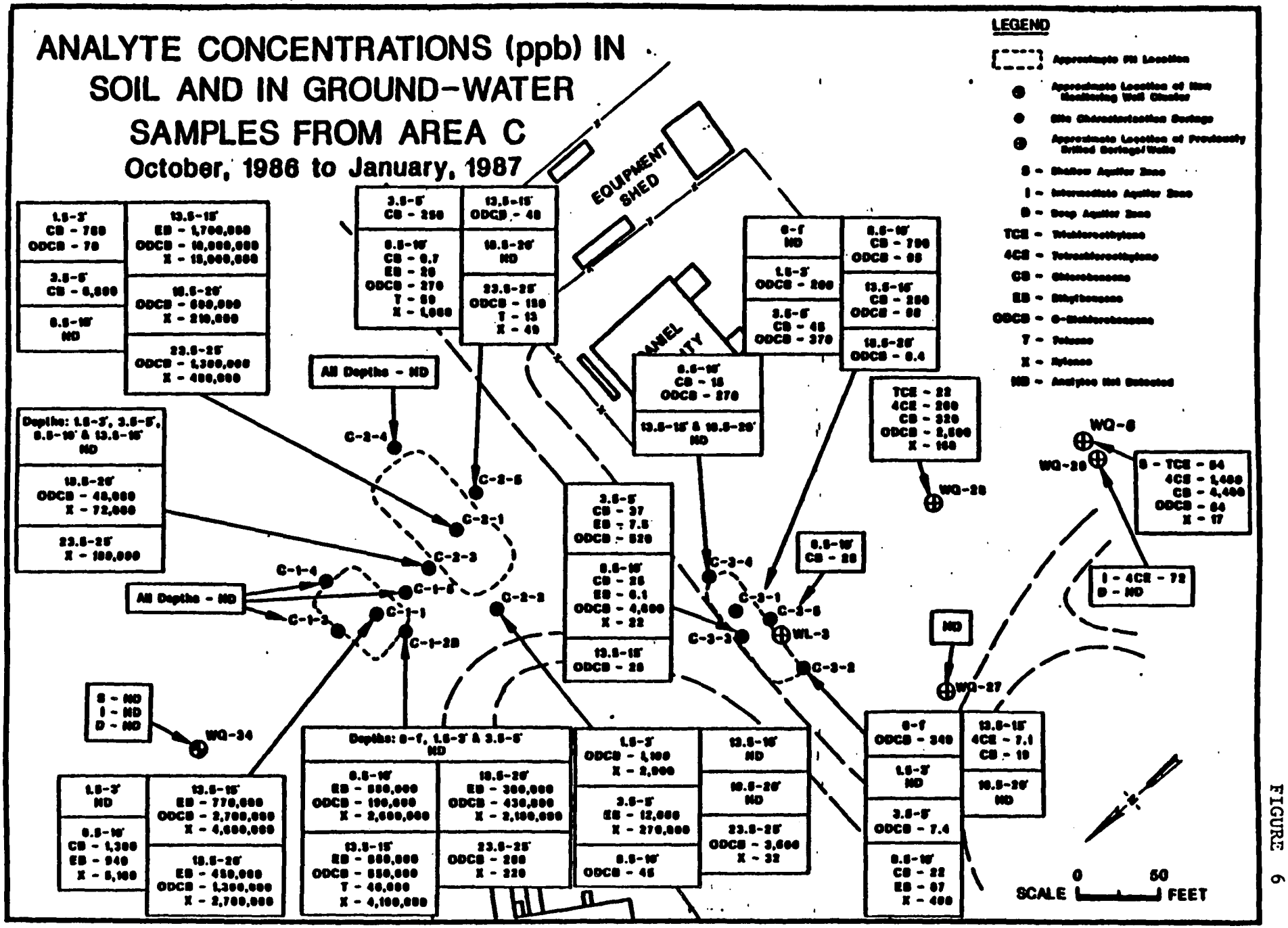
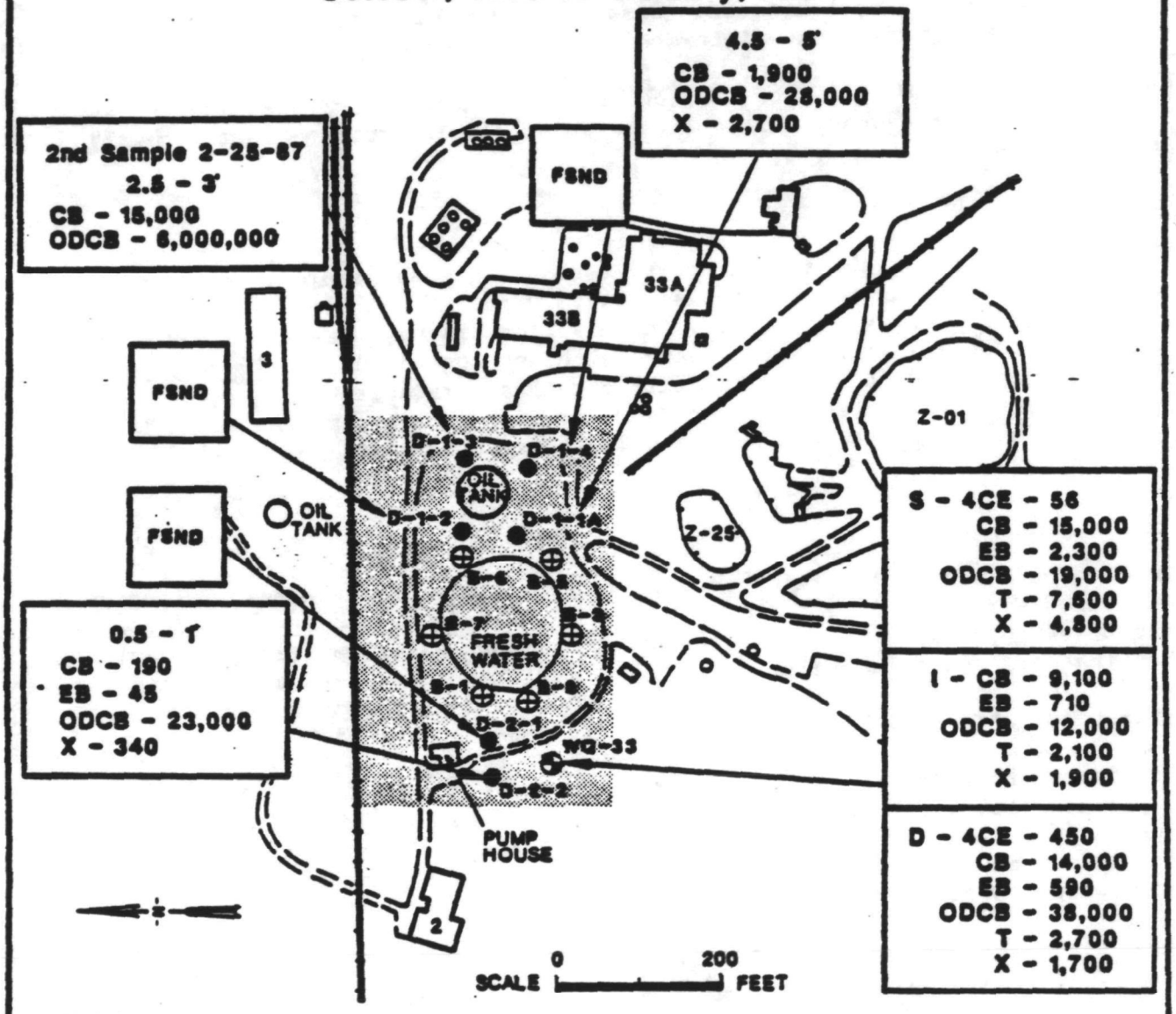

ANALYTE CONCENTRATIONS (ppb) IN SOIL AND IN GROUND-WATER SAMPLES FROM AREA C
October, 1986 to January, 1987
LEGEND
EQUIPMENT SHED
All Depths - ND
C-2-4
C-2-5
C-2-1
C-2-3
C-1-4
C-1-5
C-1-3
C-1-1
C-1-2B
C-2-2
C-3-4
C-3-1
C-3-5
C-3-3
C-3-2
WL-3
WQ-6
WQ-28
WQ-27
WQ-34
ND
SCALE 0 50 FEET

FIGURE 6

FIGURE 7

ANALYTE CONCENTRATIONS (ppb) IN GROUND-WATER AND SOIL SAMPLES FROM AREA D

October, 1986 to January, 1987



LEGEND

- Approximate Limits of CERCLA Area
- Approximate Location of New Monitoring Well Cluster
- Site Characterization Borings
- Approximate Location of Previously Drilled Borings/Wells
- 4CE - Tetrachloroethylene
- CB - Chlorobenzene
- EB - Ethylbenzene
- ODCB - O-Dichlorobenzene
- T - Toluene
- X - Xylenes
- FSND - Field Screened Not Detected
- S - Shallow Aquifer Zone
- I - Intermediate Aquifer Zone
- D - Deep Aquifer Zone

Area E

All borings sampled in Area E were field screened as clean (See Figure 8). These results indicate that the unsaturated zone and the shallow, saturated zone sampled were uncontaminated. Samples from Well K and Well Cluster WQ-32 contained volatile organics (intermediate and deep zones).

Groundwater flow to this area is from the old manufacturing area located southeast of Area E where chlorobenzene and o-dichlorobenzene were formerly stored.

Boundary

Fourteen wells along the site property boundaries were sampled. These wells were positioned to be in the most sensitive areas of concern, namely preferential flow directions (i.e., channelized drainage features) and/or in line with potential groundwater users (although upgradient). Figure 5 shows the well locations. Since no volatile organics were detected in any of these boundary wells, no contaminated groundwater migration beyond the north, south, and east boundaries has been observed or is expected given the site hydrogeology.

Surface Water

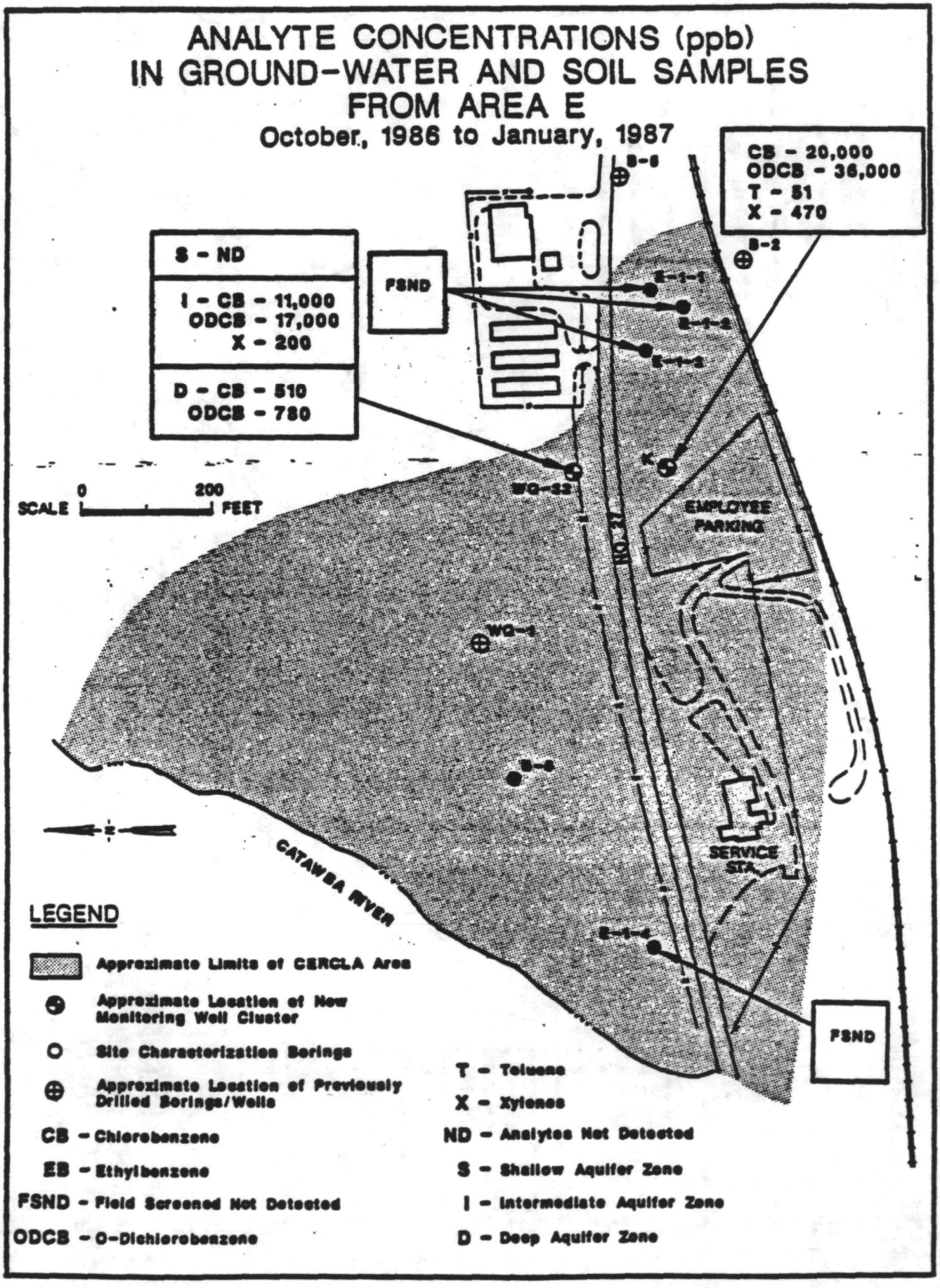
The Catawba River is the major surface water feature at the Site. Tributary B and Long Creek empty into the Catawba River and Tributaries A and C flow into Long Creek. The analytical results of the surface water samples and sample locations are shown in Figure 9. Two samples from Long Creek and two samples from the Catawba River were analyzed for the Hazardous Substance List parameters. No volatile indicator parameters were detected.

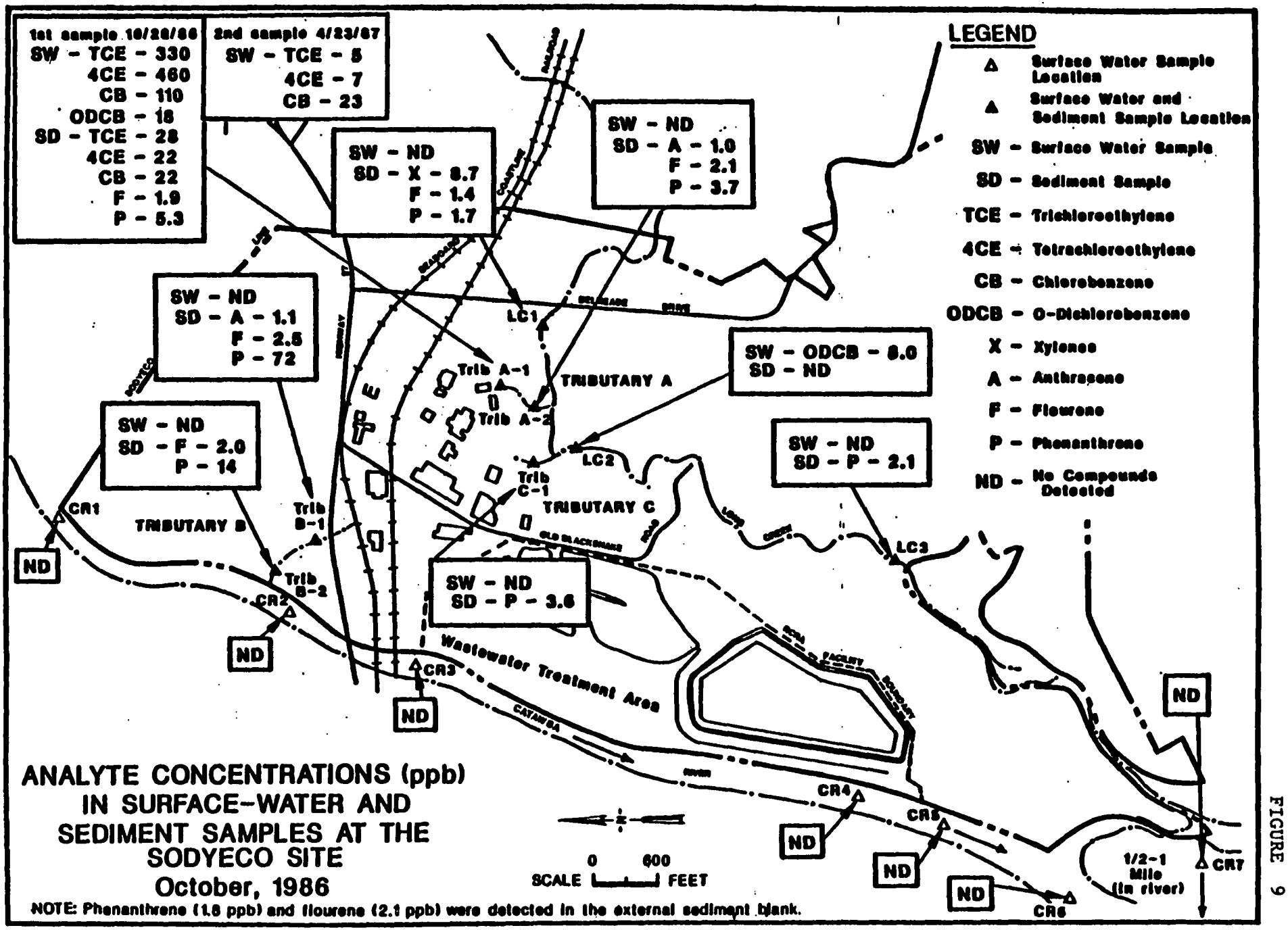
Groundwater from Area E and Tributary B discharge to the Catawba River. Samples collected in the Catawba River upstream from Area E and along the river adjacent to Area E showed no signs of organic contamination. Volatilization and dilution likely reduced the organics in the discharged groundwater to undetectable levels.

There are three surface water features around Area B: Tributary A on the east, Tributary C on the west, and Long Creek to the south.

Tributary A, as seen in Figure 9, flows south of Area C and into Long Creek. Two surface water and two sediment samples were collected in Tributary A.

During the first sampling period, Tributary A, at sampling point TRIB A-1, was stagnant and was mainly composed of groundwater recharge. The flow rate was much greater for the second sampling because a storm prior to sampling increased surface water runoff to the tributary. Groundwater recharge from Area C is the suspected source of the organic compounds detected in TRIB A-1. The difference in concentration between the first and second samples is probably the result of dilution with surface water runoff during the second sampling period. The downstream surface water sample TRIB A-2 was not contaminated. Organics detected upstream were likely to volatilize before reaching the downstream sampling point.


ANALYTE CONCENTRATIONS (ppb)
IN GROUND-WATER AND SOIL SAMPLES
FROM AREA E
October, 1986 to January, 1987
S - ND
I - CB - 11,000
ODCB - 17,000
X - 200
D - CB - 510
ODCB - 780
FSND
CB - 20,000
ODCB - 36,000
T - 51
X - 470
B-1
B-2
E-1-1
E-1-2
E-1-3
K
WC-22
WC-1
B-4
SCALE 0 200 FEET
EMPLOYEE PARKING
SERVICE STA.
CATAWBA RIVER
E-1-4
FSND
LEGEND
Approximate Limits of CERCLA Area
Approximate Location of New Monitoring Well Cluster
Site Characterization Borings
Approximate Location of Previously Drilled Borings/Wells
CB - Chlorobenzene
EB - Ethylbenzene
FSND - Field Screened Not Detected
ODCB - O-Dichlorobenzene
T - Toluene
X - Xylenes
ND - Analytes Not Detected
S - Shallow Aquifer Zone
I - Intermediate Aquifer Zone
D - Deep Aquifer Zone



ANALYTE CONCENTRATIONS (ppb) IN SURFACE-WATER AND SEDIMENT SAMPLES AT THE SODYECO SITE
October, 1986

NOTE: Phenanthrene (1.8 ppb) and flourene (2.1 ppb) were detected in the external sediment blank.

FIGURE 9

Two sediment and surface water samples were collected from Tributary B which flows through Area E. Analysis reveals that neither the upstream surface water sample (TRIB B-1) or the downstream sample (TRIB B-2) is contaminated with volatile organics. Both sediment samples contained relatively low concentrations of anthracene and fluorene.

Seven surface water samples from the Catawba River were collected and analyzed for the indicator parameters; samples upstream and downstream from the Sodyeco Site were also analyzed for the HSL parameters. Figure 9 shows the location of each sampling point. Volatile organics were not detected in any of these samples.

Air Quality

Air quality monitoring was conducted as part of this investigation. Based on measurements taken during sampling activities and worst case predicted emissions, no air quality problems are known or expected to exist. Since Area D contained the highest concentration of volatile organics in soils, additional air monitoring and flux analyses were conducted in this area to determine a mass emission rate. Using a dispersion model in conjunction with site specific wind rose data, worst case downgradient concentrations were estimated. All concentrations were well below the threshold limit value (TLV), which establishes acceptable 8-hour exposure concentrations for health based standards.

3.3 Receptors

Groundwater in the Sodyeco Site aquifer is classified as Class IIA, a current source of drinking water, using the USEPA Groundwater Classifications Guidelines of December, 1986. Although the site aquifer is not currently used for drinking water purposes, potential (future) use was incorporated in the baseline risk assessment. Consideration of potential groundwater use is consistent with 40 CFR 300.68(e)(2)(v).

Groundwater has been noted to be contaminated on-site. Groundwater on-site moves west to the Catawba River and south-southeast to Long Creek, discharging to these surface water features. Groundwater contamination was noted principally in the area south of Highway 27 and in Area E. No drinking water wells currently exist between these areas and groundwater discharge points, thus, pathway completion via domestic well usage is currently incomplete.

Fugitive dust generations (FDG) is considered an unlikely event. Areas A and B are capped by gravel and/or concrete; Areas C and E are well vegetated. Area D is in a low lying, grass covered area.

Contaminated soils will continue to leach to surrounding soils.

Surface runoff from surface soils may contaminate additional soils, although concentrations would not be expected to be high. Tracking of soils by on-site workers may occur in Areas C and D.

Volatilization from contaminated soils and sediments in Areas C and D may occur. This may affect on-site workers within the zone of influence. Volatile organic contaminants were found in significant concentrations in Area D soils; lower levels were found in Area C. Emission levels from Area D would be expected to be minimal and would quickly dissipate. Emissions from Area C would be expected to be undetectable.

The Catawba River was found to have several potential exposure pathways associated with it. The Catawba is routinely used for swimming and fishing. There are several industrial river water intakes across the Catawba River from the plant. Sodyeco uses the river as a source of drinking water for the plant and for process water. Water used for drinking is treated by rapid sand filtration, polymeric coagulation and chlorine. The City of Belmont drinking water intake is located approximately 3 miles downstream of the Site. Although there were several exposure points identified, pathway completion via this route is not expected since no surface water contamination was found in the river. The possibility of ingestion of fish or other aquatic life that had bioaccumulated low (non-detectable) levels of site contaminants was considered. However, BCF values are very low for the site related volatile organics. The three polynuclear aromatic hydrocarbons (anthracene, fluorene and phenanthrene) have elevated BCF values. However, a review of the literature and discussions with experts in the field of PAHs indicates that these compounds do not, in general, bioaccumulate in vertebrates such as fish and man.

The final potential exposure pathway presented considers local waterfowl and small mammals that may frequent contaminated areas. These animals may receive exposure via ingestion or dermal contact with soils and sediments. Local residents may then hunt and consume these animals. The probability of pathway completion via this route is very low and difficult to quantify.

4.0 Cleanup Criteria

The extent of contamination was defined in Section 3.0, Current Site Status. This section examines the relevance and appropriateness of water quality criteria under the circumstances of release of contaminants at this Site. Based upon criteria found to be relevant and appropriate, the minimum goals of remedial action at this site have been developed.

4.1 Groundwater Remediation

In determining the degree of groundwater cleanup, Section 121(d) of the Superfund Amendments and Reauthorization Act of 1986 (SARA) requires that the selected remedial actions establish a level or standard of control which complies with all "applicable or relevant and appropriate requirements (ARARs)".

Groundwater in the area is classified as Class II A, a current source of drinking water, using the USEPA Groundwater Classifications Guidelines of December, 1986. A survey was made of existing off-site water supply wells

within a one-half mile radius of the Sodyeco CERCLA facilities on the east side of the Catawba River. (The Catawba River acts as a groundwater divide.) A convenience store, located north of the plant, receives water from the Sodyeco water supply system. A gas station (owned by Sandoz) has a well that provides water for a minnow tank. The potable water used by the gas station is provided by the Sodyeco plant. An upholstery shop, owned by Sandoz, has a well that is used only for sanitary facilities.

There are seven wells supplying water to twelve buildings within a one-half mile radius of the Site (all upgradient) (Figure 10). One well is a community well which supplies water to seven houses; one residence has two wells; and the other wells serve single residences. The nearest domestic wells to the CERCLA sites are about 1300 feet northeast (near Highway 27) and about 3000 feet southeast (along Belmeade Road), both hydrologically upgradient from the CERCLA sites.

The value to society of Class IIA groundwater resources supports restoration of this contaminated groundwater to levels protective of human health and the environment. Based upon groundwater classification, remediation of the groundwater to reduce contaminants to levels protective of human health and the environment would be necessary. Groundwater cleanup goals given in Table 1 meet these requirements.

Future exposure to contaminated groundwater was estimated based on the possibility of a well being placed on the site and producing water containing the maximum levels of contaminants which were detected in monitoring wells during the remedial investigation. Lifetime cancer risks were calculated under these assumptions for the indicator chemicals identified in the Public Health Evaluation (PHE). EPA's draft "Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites" (October 1986) specifies that groundwater remediation should achieve a level of protection in the 10^{-4} to 10^{-7} excess cancer risk range, with 10^{-6} being the nominal acceptable lifetime value. Larger values present an unacceptable risk from exposure. Because Section 121 of SARA requires consideration of potential as well as current groundwater use, the levels of contaminants in the groundwater must be reduced to acceptable levels.

The conclusion of the above discussion is that a no-action alternative for groundwater would be out of compliance with Section 121 of SARA, which requires cleanup of contaminated groundwater to levels which are protective of human health and the environment. Classification of the groundwater and the potential future use of the groundwater indicates that present contaminant levels in the groundwater are not acceptable.

Indicator chemicals were used to establish cleanup goals for groundwater. Indicator chemicals were selected based on the results of previous sampling activities and the current RI results. All indicator chemicals analyzed for in the RI were utilized in the Public Health Evaluation.

Groundwater is not used by human receptors downgradient of the Site. Groundwater from the site discharges to Long Creek or the Catawba River, and there are no intermediate users.

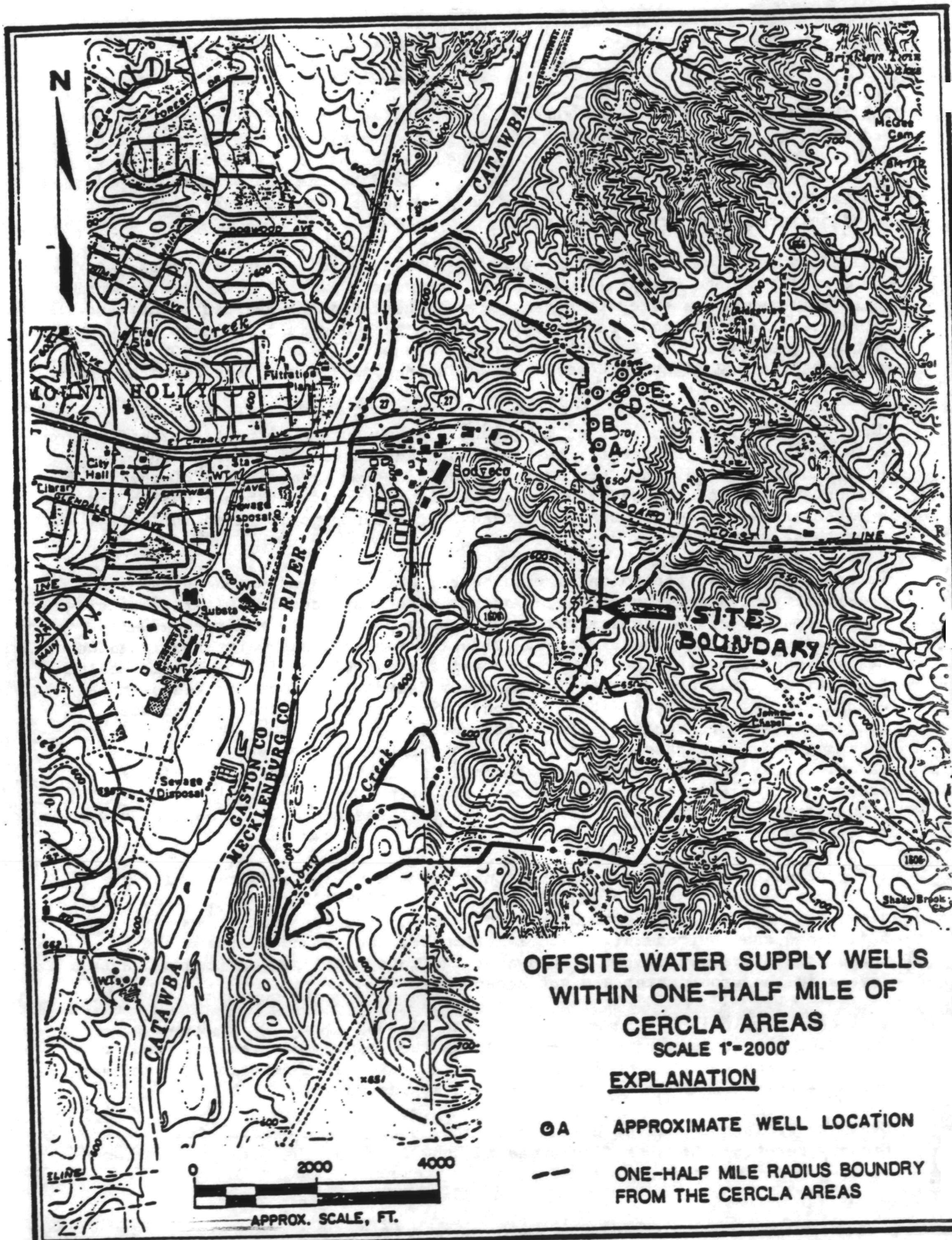

N
CATAWBA
RIVER
MOUNT HOLLY
Creek
Filtration Plant
City Hall
Library
Sewage Disposal
Substa
Sodyeco
GASTON CO
MECKLENBURG CO
SITE BOUNDARY
James Chapel
Creek
CATAWBA
OFFSITE WATER SUPPLY WELLS WITHIN ONE-HALF MILE OF CERCLA AREAS
SCALE 1"=2000'
EXPLANATION
A APPROXIMATE WELL LOCATION
ONE-HALF MILE RADIUS BOUNDRY FROM THE CERCLA AREAS
0
2000
4000
APPROX. SCALE, FT.

TABLE 1

GROUNDWATER CLEANUP GOALS

COMPOUND	CLEANUP GOAL ug/l	
Trichloroethylene	2.7	(2)
Tetrachloroethylene	0.8	(2)
Chlorobenzene	60	(1)
Ethylbenzene	680	(1)
1,2-dichlorobenzene	400	(5)(3)
Toluene	2,000	(1)
Xylene	440	(1)
Anthracene	2.8 ng/l	(4)
Fluorene	2.8 ng/l	(4)
Phenanthrene	2.8 ng/l	(4)

(1) Proposed Maximum Contaminant Level Goals, 50 Federal Register 46936 (November 13, 1985).

(2) The concentration value given for potential carcinogens corresponds to a cancer risk level of 10-6 .

(3) Includes all isomers.

(4) As total polynuclear aromatic hydrocarbons, no criteria set for these compounds alone.

(5) USEPA, "Superfund Public Health Evaluation Manual," Ofice of Emergency and Remedial Response, Washington, D.C., 1986. USEPA Ambient Water Quality Criteria for Aquatic Organisms and Drinking Water.

Levels presented as groundwater cleaup goals are based on the following criteria: drinking water Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs), Federal Ambient Water Quality Criteria, National Ambient Air Quality Standards (NAAQs), and State environmental standards. Indicator chemicals, maximum concentrations detected in groundwater at the Sodyeco Site, and the cleaup goals for these chemicals are presented in Table 1.

4.2 Soil Remediation

The Public Health Assessment in the RI Report determined that risks to human health as a result of exposure to on-site contaminants via inhalation, ingestion, and dermal contact are low under present use conditions at the Site. For potential future use scenarios, the risk is higher. Therefore, remediation or institutional controls will be undertaken to assure that an increased risk to human health is not posed in the future.

Contaminants remaining in the soil following groundwater remediation may, over time, leach into the groundwater. Therefore, the soils and the leachate from the contaminated soils will be sampled and analyzed for the indicator compounds and the soils will be treated until the leachate meets the ARARs.

4.3 Surface Water Remediation

The contaminant levels in the surface water (Tributaries A, B and Long Creek) are expected to decline, as groundwater and soil remediation continues. Thus, it was concluded that remediation of surface water is not necessary. No surface water contamination was detected in the Catawba River.

5.0 Alternatives Evaluation

The purpose of remedial action at the Sodyeco Site is to mitigate and minimize contamination in the soils and groundwater, and to reduce potential risks to human health and the environment. The following cleanup objectives were determined based on regulatory requirements and levels of contamination found at the Site:

* To protect the human health and the environment from exposure to contaminated on-site soils through inhalation or direct contact.

* To restore contaminated groundwater to levels protective of human health and the environment.

An initial screening of possible technologies was performed to identify those which best meet the criteria of Section 300.68 of the National Contingency Plan (NCP) (Tables 2 & 3).

TABLE 2

PRELIMINARY SCREENING OF TREATMENT AND DISPOSAL TECHNOLOGIES

Technology	Description	Comments	Possibly Applicable	Not Applicable
SOILS				
Excavation	Physical removal of contaminated materials for treatment or disposal.	Should be considered for landfilled materials in Area B and contaminated soils in Areas C and D.	X	
Landfill	Disposal of excavated materials in an approved hazardous waste facility. Materials may be drummed or disposed of in bulk.	Since the total concentration of F-listed solvents is >1% in some locations, landfilling is prohibited at a RCRA facility. Land ban limits scheduled for July 8, 1987 apply to halogenated organic compounds (HOC) in total concentrations greater than or equal to 1000 mg/kg. However, a two-year nationwide variance will delay the compliance date until July, 1989.		X
Waste Piles	Surface storage of excavated materials.	Requires monitoring and maintenance. Generally considered to be an interim as opposed to long-term solution.		X
Incineration	Thermal contaminant destruction by combustion/oxidation at very high temperatures.	A proven technology for destruction of most organics. A possible treatment technique for excavated materials/ contaminated soils. Disposal of remaining ash must be considered.	X	
In-Situ Flushing	Percolation of water through contaminated soils to solubilize adsorbed compounds and reduce residual concentrations.	Provides an alternative to excavation. May shorten the time required for ground-water pumping of the aquifer by reducing the extent of source contamination. Recovery would be achieved through a well system.	X	
Solvent Flushing	Percolation of solvent through contaminated soils which can achieve two purposes: waste recovery for surface treatment or solubilization of adsorbed compounds to enhance in-situ treatment. Recovery of solvent is accomplished through a well point system.	Given ground-water elevations and depths of contaminated soils on site, the flushing solvent could further contaminate ground water.		X

TABLE 2

PRELIMINARY SCREENING OF TREATMENT AND DISPOSAL TECHNOLOGIES
(Continued)

Technology	Description	Comments	Possibly Applicable	Not Applicable
SOILS (continued)				
In-Situ Steam Stripping	An innovative technology where bladed drilling equipment and steam are used to drive volatiles from contaminated soils to the surface. Vapors are collected, treated, and reinjected for closed-loop operation.	Steam will volatilize contaminants faster than air. Equipment provides soil mixing for more homogeneous treatment. Maximum removal efficiencies have not been demonstrated.	X	
GROUND WATER				
Permeable Treatment Beds	A trench, installed downgradient of a plume, is filled with a treatment media (e.g., activated carbon) to decontaminate ground water as it flows through.	Requirements are a shallow aquifer and underlying impermeable bed. The shallow aquifer condition is not met. Generally considered to be temporary due to plugging potential.		X
Activated Carbon Adsorption	Ground water removed by pumping is passed through a column where organic contaminants absorb to the carbon due to physical/chemical forces.	An applicable method for removing organic compounds from water.	X	
Resin Adsorption	Similar to activated carbon except resin is used as the adsorbent.	A complex treatment scheme would result since different resins would be required to remove the different organic compounds. Not cost competitive with carbon adsorption.		X
Air Stripping	Removes volatile organics from an aqueous stream. If necessary, dissolved gases transferred to the air stream can be treated by activated carbon or thermal oxidation.	A demonstrated technology for removing volatile organic contaminants from water.	X	
Steam Stripping	Similar to air stripping except steam is used as the stripping gas.	A demonstrated technology for removing volatile organic contaminants from water at rates faster than air stripping. May be economically competitive with air stripping when a source of inexpensive steam is available.	X	

TABLE 2

PRELIMINARY SCREENING OF TREATMENT AND DISPOSAL TECHNOLOGIES
(Continued)

Technology	Description	Comments	Possibly Applicable	Not Applicable
Biological Treatment	Biological degradation technique where bacteria utilize supplied oxygen to oxidize organics to CO_2.	Biological treatment (aerated lagoons) are part of the existing RCRA wastewater facility on site.	X	
Chemical Oxidation	Contaminant destruction by chemical reaction. Various oxidizing agents exist for organic compounds.	Chemical oxidation (i.e. ozonation) is not economically competitive with activated carbon for treating low-level organic wastes.		X
UV Oxidation	Ultraviolet light is used as an oxidizing agent. A primary treatment process for organics.	Generally only economical for small quantities of water.		X
Reverse Osmosis	Concentrates inorganic salts and some organics by forcing the solvent through a semi-permeable membrance which acts as a filter.	Primary uses have been as a pretreatment step in the removal of inorganics (ion-exchange) or in recovery of reusable impurities.		X
Liquid/Liquid (Solvent) Extraction	Process where the contaminant is removed from one liquid medium into another easily extractable liquid medium that has a higher absorption capacity for the contaminant. Extracted components are disposed of or reused.	Primarily used for phenolic extractions Most economical when material recovery is possible to offset process costs. Final polishing is usually needed. It is not economically competitive with biological oxidation or adsorption for large quantities of dilute waste. Steam stripping is more economical for low-moderate concentrations of volatile solutes.		X
Deep Well Injection	Injection of contaminated wastewater into a very deep substrata which is not hydraulically connected to other aquifer zones.	Under Section 3004(f) of RCRA, EPA consideration of underground HOC injection is not expected until results of an agency study (due August, 1988) evaluating protectiveness are issued.		X
Off-Site Treatment	Discharge to the Charlotte-Mecklenburg Utility Department (CMUD) Publicly Owned Treatment Works (POTW) wastewater collection and treatment system.	An application has been submitted. Requirements for significant industrial users are being examined to determine if withdrawn ground-water would be accepted.	X	

TABLE 2
PRELIMINARY SCREENING OF TREATMENT AND DISPOSAL TECHNOLOGIES
(Continued)

Technology	Description	Comments	Possibly Applicable	Not Applicable
SOILS (continued)				
Soil Washing	Place excavated, screened soils and wash water in a flotation machine with a mechanical impeller for mixing.	Withdrawn leachate would require treatment.	X	
Biodegradation	In-situ treatment using micro-organisms to biodegrade the organic contaminants.	Given the contaminant types, concentrations, depths, and soil permeabilities, degradation in soils has a low probability of success. Toxicity problems could result from some of the degradation by-products.		X
Soil Aeration	Mechanical addition of air to aid microbial decomposition. Frequently used in conjunction with in-situ treatment methods and land disposal technologies.	Typically used in conjunction with biological degradation.		X
Composting	Mixing excavated soils with nutrients to achieve aerobic degradation at an elevated temperature.	An experimental technology for the hazardous soils on-site. May be performed with an induced draft under controlled conditions.	X	
In-Situ Air Stripping	Mechanical injection of clean air into contaminated soils to volatile organics. Air is withdrawn and vented to the atmosphere or to an emission control system (e.g. activated carbon adsorption) depending on volatile concentrations.	Most effective for loose, sandy soils well above the ground-water table. The degree of fines, clay content, and rock formations on-site are unfavorable conditions which are expected to severely limit contaminant removal. Ultimate effectiveness has not been established even under ideal soil conditions.		X
Thermal Processing	An innovative technology where excavated soils are placed in a heat exchanger (thermal processor) and heated to volatilize organics. Vapors are treated in an afterburner or otherwise treated as necessary.	An alternative to in-situ air stripping where soils are tightly packed, have high clay content, and/or rock formations are present.	X	

TABLE 3

PRELIMINARY SCREENING OF CONTAINMENT AND MIGRATION CONTROL TECHNOLOGIES

Technology	Description	Comments	Possibly Applicable	Not Applicable
SOILS				
Capping	An impermeable barrier is placed over the soil surface to minimize the amount of water percolation through contaminated materials/ soils.	May be applicable to the landfill in Area B and contaminated soils in Areas C and D.	X	
Solidification/ Encapsulation	Contaminated materials/soils are incorporated in a solid matrix to reduce contaminant mobility and leachate generation Can also be used in conjunction with landfilling.	Most economical for small waste quantities. The technology is developmental for organic contaminated soils.		X
Fixation	Process to mix chemical wastes with inert material (e.g., lime fly ash) to reduce waste solubility.	Primarily applicable to acid, inorganic, and scrubber sludge wastes.		X
GROUND WATER				
Ground-Water Recovery	Pumping from a well point system and/or trenches to withdraw contaminated ground water.	A demonstrated technique for ground-water removal. Aquifer characteristics must be determined for design.	X	
Subsurface Collection Drains	A trench is excavated, backfilled with highly permeable material, and usually lined to prevent plugging.	Requires continuous monitoring. May be used in conjunction with ground-water pumping.	X	
Impermeable Barriers	Underground barriers used to physically divert ground-water flow away from an area or to contain a contaminant plume.	The barrier must be tied into a relatively shallow impermeable base layer. Site conditions are not well suited for this option.		X
Leachate Collection	Method used to intercept leachate before it contaminates ground water. Consists of a series of drains which intercept leachate and channel it to a sump, wetwell, or surface discharge point.	Generally associated with designed impoundments or landfills and used in association with the leachate controls.		X

Following the initial screening of technologies, potential remedial action alternatives were identified and analyzed (Table 4).

These alternatives were further screened and those which best satisfied the cleanup objectives, while also being cost effective and technically feasible, were developed further (Table 5).

5.1 Alternatives

Alternative 1: No Action

This alternative will eventually reduce the volume of soil contamination through natural flushing. Contaminant mobility and toxicity are not reduced in the absence of treatment. Given the contaminant concentrations at the Site, the time required to significantly reduce contaminant levels is unrealistic. No action does not provide permanent source control.

Alternative 2: Natural Soil Flushing Areas B, C, D
Groundwater Recovery and Treatment Areas A - E

This alternative does not employ a soil technology and, therefore, the exposure pathways and associated risk are the same as for the baseline no-action alternative. In the absence of source control measures, the time required to pump and treat the groundwater is unrealistic.

This alternative and the others that will be described below, requires the collection of the groundwater through a series of recovery wells to intercept the contaminant plume in each area before it reaches Long Creek or the Catawba River.

The biological degradation and aeration of the groundwater in Sodyeco's existing facility was chosen as the best groundwater alternative. It will be easy to implement since all that is required is the connection of the CERCLA groundwater collection system to the existing sewerage system. Organic compounds in the groundwater will be biodegraded by the microorganisms present in the aeration lagoon; a portion of the organics will be volatilized as a result of aeration. This treatment system is more than 98 percent efficient based on the removal of o-dichlorobenzene. Of the organic contaminants, o-dichlorobenzene is the most difficult to remove. Removal efficiencies near 99 percent are expected for the other compounds. The treated groundwater will then be discharged to the Catawba River under the NPDES permit for the facility. The CERCLA influent and the total effluent will be sampled periodically to monitor the effectiveness of the treatment.

Alternative 6: Cap Area B
Excavate Areas C and D
Incinerate Excavated Materials On-Site
Groundwater Recovery and Treatment Areas A - E

Approximately 6,000 cubic yards of soil will be excavated for incineration. Incineration is a proven method for destruction of organic contaminants. This method provides the same basic level of protection as other treatment technologies considered, however, the cost is prohibitive.

TABLE 4

PRELIMINARY SCREENING OF GENERAL ALTERNATIVES
BASED ON EFFECTIVENESS, IMPLEMENTABILITY, AND COST CRITERIA

Alternative No.	Description	Comments	Retain for Detailed Assessment
1	No Action. Natural soil flushing Areas B, C, D Ground-water monitoring Areas A-E	Public health not predicted to be at risk. Provides baseline comparison for other alternatives.	Yes
2	Natural soil flushing Areas B, C, D Ground-water recovery and treatment Areas A-E	Partial containment with treatment option. Contaminants in the unsaturated zone migrate naturally to the ground water and are withdrawn and treated.	Yes
3	Capping of Areas B, C, D Ground-water recovery and treatment Areas A-E	Combined containment and treatment option. Capping in Areas C and D is not effective for long-term source control.	No
4	Excavate Areas B, C, D Incinerate excavated materials off site. Ground-water recovery and treatment Areas A-E	Costs for excavating and off-site incineration are approximately $48 million. Findings of the baseline public health risk assessment do not justify this level of expenditure over other treatment alternatives ($0.8-5.8 million).	No
5	Excavate Areas B, C, D Incinerate excavated materials on-site Ground-water recovery and treatment Areas A-E	Costs for excavating and on-site incineration are approximately $31 million. Findings of the baseline public risk assessment do not justify this level of expenditure over other treatment alternatives ($0.8-5.8 million).	No
6	Cap Area B Excavate Areas C and D Incinerate excavated materials on-site Ground-water recovery and treatment Areas A-E	Adequate to protect public health and the environment. Employs a permanent treatment technology for contaminant destruction.	Yes

TABLE 4 (Continued)
PRELIMINARY SCREENING OF GENERAL ALTERNATIVES
BASED ON EFFECTIVENESS, IMPLEMENTABILITY, AND COST CRITERIA

Alternative No.	Description	Comments	Retain for Detailed Assessment
7	Same as Alternative 6 substituting off-site incineration for on-site incineration	Is not cost competitive with on-site incineration for the waste quantities of concern. Requires transport of contaminated materials for a significant distance. Offers no advantages over on-site incineration.	No
8	Same as Alternative 6 substituting thermal stripping* of excavated soils for on-site incineration	Innovative/developmental treatment technology with high success probability for organic soil contamination. Adequate to protect public health and the environment. Potentially more cost-effective than on-site incineration.	Yes
9	Cap Area B Treatment of Area C Soil by: 9A In-situ steam stripping,* 9B Thermal Processing 9C In-situ flushing*, or 9D Washing* Excavate Area D and incinerate off-site Ground-water recovery and treatment Areas A-E	Innovative/developmental treatment technology with potential for the soils with organic contaminants. Potentially more cost-effective than on-site incineration. Topography in Area D precludes in-situ stripping. Contaminant concentrations in Area D would make treatment by the remaining technologies more difficult.	Yes
10	Cap Area B Natural flush Area C Excavate Area D and incinerate off-site Ground-water recovery and treatment Areas A-E	Combined containment and treatment option. The time to pump and treat ground water recovered from Area C will be longer in the absence of soil treatment.	Yes

* An innovative/developmental technology

TABLE 5

SUMMARY OF SCREENING CRITERIA FOR COMPARING ALTERNATIVES

	Technical Feasibility, Reliability	Reduces M/T/V	Cost
Alternative 1			
No Action Natural soil flushing Long-term GW monitoring Areas A-E	Monitoring is routine	Minor reductions in contaminant volume will require an extended time period.	$ 170,000
Alternative 2			
Natural soil flushing Areas B,C,D GW recovery & treatment Areas A-E	No engineered soil technology employed. GW pump & treat is a demonstrated technology.	Minor reductions in volume through flushing. Significant reduction in mobility and toxicity through GW pump and treat.	$1,016,000
Alternative 6			
Cap B Excavate Areas C & D Incinerate excavated materials onsite GW recovery & treatment Areas A-E	All technologies are demonstrated.	Provides permanent & significant reductions in M/T/V.	$6,765,000
Alternative 8			
Cap B Excavate Areas C & D Onsite thermal processing of excavated materials GW recovery & treatment Areas A-E	Includes an innovative/ developmental treatment technology. Reliability not proven.	Provides permanent & significant reductions in M/T/V	$3,776,000
Alternative 9			
Cap B Treatment of Area C soils 9A: In-situ Steam Stripping 9B: Onsite Thermal Processing (C&D) 9C: In-Situ Flushing 9D: Soil Washing Excavate D and incinerate offsite GW recovery & treatment Areas A-E	Includes an innovative/ developmental treatment technology. Reliabilty not proven.	Provides permanent and significant reductions in M/T/V.	9A: $3,792,000 9B: $3,776,000 9C: $2,089,000 9D: $3,865,000
Alternative 10			
Cap B Natural soil flushing Area C Excavate Area D and incinerate offsite GW recovery and treatment Areas A-E	All technologies are demonstrated.	Provides permanent & significant reductions in M/T/V. More extended period to pump and treat GW in Area C.	$1,568,000

Area B in this and the other remaining alternatives will be a cap consisting of 3 inches of asphalt, 2 inches of binder-bituminous concrete and a 9 inch gravel base.

Alternative 8: Cap Area B
Excavation and Treatment of Areas C and D Soils
Groundwater Recovery and Treatment Areas A - E

This alternative recommends the excavation and treatment of contaminated soils in Areas C & D by thermal processing. The treated soils would then be backfilled and the area would be regraded.

Alternative 9: Cap Area B
Treatment of Area C Soils
Excavate Area D and Incinerate Off-Site
Groundwater Recovery and Treatment Areas A - E

The excavation and off-site incineration from Area D (approximately 150 cubic yards) will effectively eliminate the area that contains the highest level of contamination. The area will be backfilled with clean, low permeability soil and regraded. Off-site incineration is cost effective given the small volume of material from Area D.

Four different innovative technologies will be subjected to treatability studies to determine the most effective treatment technology, i.e., the technology that is most effective in removing the contaminants within a reasonable time frame. These are:

1) Flushing - In situ percolation of water through contaminated soils to solubilize adsorbed compounds and reduce residual concentrations. Water would be introduced through a header system and recovered through a series of wells.

2) Soil Washing - Place excavated, screened soils and wash water in a flotation machine with a mechanical impeller for mixing. Treat withdrawn leachate in the existing wastewater treatment facility with recovered groundwater.

3) Thermal Processing - Place excavated soils in a heat exchanger (thermal processor) to volatilize organics. Vapors are treated in an after burner or treated otherwise as necessary.

4) In-situ Steam Stripping - In-Situ steam injection through bladed drilling equipment to volatilize organics. Vapors are collected, treated, and reinjected for closed-loop operation.

Alternative 10: Cap Area B
Natural Flushing Area C
Excavate Area D and Incinerate Off-Site
Groundwater Recovery and Treatment Areas A-E

This alternative proposes no action for the contaminated soils in Area C. Therefore, the exposure pathways and associated risk would not be reduced. Since the source of groundwater contamination would still be present, a longer period to pump and treat the groundwater in Area C would be required.

6.0 Recommended Alternatives

6.1 Description of Recommended Remedy

The recommended alternatives for remediation of groundwater and soil contamination at the Sodyeco Site include extraction, treatment and discharge of groundwater; excavation and off-site incineration; capping; and on-site treatment of contaminated soil. (Alternative 9)

Treatability studies will be performed for the contaminated soils in Area C to determine the treatment system which will be used. The systems to be evaluated are: 1) Flushing; 2) Soil Washing; 3) Thermal Processing and 4) In-Situ Steam Stripping. The contaminated soils in Area D will be excavated and incinerated off-site. Area B will be capped with asphalt.

Groundwater will be extracted through recovery wells, and transported through the plant's sewer system to the on-site wastewater treatment facility.

These recommended alternatives meet the requirements of the National Oil and Hazardous Substances Contingency Plan (NCP), 40 CFR 300.68(j), and the Superfund Amendments and Reauthorization Act of 1986 (SARA). This recommended remedy permanently and significantly reduces the volume of hazardous substances in the groundwater, and reduces the volume and/or mobility of contaminants in the soil.

6.2 Operation and Maintenance

When the remedy is completed, long-term operation and maintenance (O&M) will be required on the asphalt cap. Long-term groundwater monitoring will be required to assure the effectiveness and permanence of the other soil and groundwater remedies.

6.3. Cost of Recommended Alternatives

Capital costs for groundwater remediation is $335,000 with system operating and maintenance cost at $80,000 per year, which includes sampling and analysis. The total present worth cost of the groundwater remediation is $1,016,000.

Capping of Area B is estimated at $378,000 including O & M for 20 years. Excavation and off-site incineration of contaminated soils in Area D is estimated at $173,000. The treatment of Area C soils, including the treatability studies will range from $634,000 to $2,505,000 depending on which technology is used. These costs include engineering, overhead, profit, contingency and administration fees.

The total present worth cost of this remedy, including both soil and groundwater remediation, will range from $2,089,000 to $3,865,000.

6.4 Schedule

The planned schedule for remedial activities at the Sodyeco Site will be governed by RCRA permitting requirements, but tentatively is as follows:

September 1987 - Approve Record of Decision
December 1987 - Begin Remedial Design/Treatability Studies
March 1988 - Install Recovery Wells
August 1988 - Complete Treatability Studies
November 1988 - Complete Remedial Design and Begin Mobilization

6.5 Future Actions

Following completion of remedial activities, long-term groundwater monitoring will be required to assure the effectiveness of the groundwater cleanup. Maintenance of the asphalt caps on Areas A & B will continue.

6.6 Consistency with Other Environmental Laws

Remedial actions performed under CERCLA must comply with all applicable Federal and State regulations. All alternatives considered for the Sodyeco Site were evaluated on the basis of the degree to which they complied with these regulations. The recommended alternatives were found to meet or exceed all applicable environmental laws, as discussed below:

* Resource Conservation and Recovery Act

  The recommended remedy will be incorporated into Sodyeco's Resource Conservation and Recovery Act (RCRA) Part B permit. The incineration will be conducted off-site at a permitted facility.

* Clean Water Act

  Trace amounts of contamination were detected in surface water. The soil and groundwater remediation will result in an end to the water contamination.

* Floodplain Management Executive Order 11988

  The CERCLA areas do not lie within a floodplain and thus are not subject to the requirements of E. O. 11988.

* Department of Transportation

  Transport of hazardous substances is regulated by the Department of Transportation (DOT). Material transported to the incineration facility will follow DOT regulations governing its shipment.

* Occupational Safety and Health Administration

  A health and safety plan will be developed during remedial design and will be followed during field activities to assure that regulations of the Occupational Safety and Health Administration (OSHA) are followed.

* Safe Drinking Water Act

  Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act were found to be relevant and appropriate to remedial action at the Sodyeco Site. The cleanup goals for groundwater were established in Section 4.

* National Pollutant Discharge Elimination System

  Discharge of treated groundwater is part of the recommended remedial alternative. This discharge will meet effluent limit requirements of the National Pollutant Discharge Elimination System (NPDES). Aquatic life chronic toxicity values, which are used in the NPDES permitting system, were used in determining the groundwater cleanup goals in Section 4.

* Endangered Species Act

  The recommended remedial alternative is protective of species listed as endangered or threatened under the Endangered Species Act. Requirements of the Interagency Section 7 Consultation Process, 50 CFR, Part 402, will be met. The Department of the Interior, Fish and Wildlife Service, will be consulted during remedial design to assure that any endangered or threatened species, if identified, are not adversely impacted by implementation of this remedy.

* Ambient Air Quality Standards

  The soil and groundwater treatment systems will be designed and monitored to assure that air emissions meet all State and Federal standards.

* State Drinking Water Standards

  Maximum contaminant levels established by the State of North Carolina regulations are adopted from those of the Federal Safe Drinking Water Act, and will be met.

7.0 Community Relations

Fact sheets were transmitted to interested parties, residents near the Site, media and state, local and federal officials before the RI work began at the Site in August 1986.

Two information repositories were established, one in Mt. Holly near the Site and one in the city of Charlotte.

A public meeting was held on August 19, 1987, at the Ida Rankin Elementary School in Mt. Holly to discuss the results of the Remedial Investigation and the alternatives from the Feasibility Study. EPA discussed the preferred remedial alternative. Two comments (one oral at the meeting, and one in writing during the comment period) were received on an ozonation treatment process. No other comments in regard to any of the alternatives were received during the three-week public comment period which ended September 9, 1987.

The public did show a desire for remediation of the Site. No opposition from the public is expected if the recommended remedial alternative is implemented.

A Responsiveness Summary has been prepared to summarize community concerns and EPA's community relations activities.

SODYECO SITE, CHARLOTTE, NORTH CAROLINA

RESPONSIVENESS SUMMARY

This community relations responsiveness summary is divided into the following sections:

SECTION I. Overview. This section discusses EPA's preferred alternative for remedial action and likely public reaction to this alternative.

SECTION II. Background on Community Involvement and Concerns. This section provides a brief history of community interest and concerns raised during remedial planning activities at the Sodyeco Site.

SECTION III. Summary of Major Comments Received during the Public Comment Period and the EPA Responses to the Comments. Both the comment and EPA's response are provided.

SECTION IV. Remaining Concerns. This section describes remaining community concerns that EPA should be aware of in conducting the remedial design and remedial action at the Sodyeco Site.

In addition to the above sections, Attachment A, included as part of this responsiveness summary, identifies the community relations activities conducted by EPA during remedial response activities at the Sodyeco Site.

1. OVERVIEW

At the time of the public meeting and the beginning of the public comment period, EPA presented its preferred alternative to the public. This alternative addresses both the soil and groundwater contamination problems at the site. The preferred alternative specified in the Record of Decision (ROD) includes: treatment of contaminated groundwater, treatment of contaminated soil, off-site incineration of highly contaminated soil, and on-site asphalt cap of an abandoned landfill.

The community, in general, favors remedial action though few expressed a preference for a particular process.

2. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

The Sodyeco Site is located in a predominantly rural area of Mecklenburg County and community interest has been low. According to local officials, community interest in the Sodyeco Site began in the 1960s when area residents became concerned about the effects of buring solvent wastes on air quality. When Sodyeco terminated the practice of open burning in the late 1960s, community interest decreased significantly.

The Mecklenburg Health Department received one call from a resident concerned about his well water. In addition, the North Carolina Human Resources Department received a call from a resident concerned about geese that were swimming in one of the Sodyeco settling ponds. He later received information that satisfied his concerns.

The Clean Water Fund of North Carolina had also expressed an interest in keeping the local residents informed by providing them with additional information.

3. SUMMARY OF PUBLIC COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD AND AGENCY RESPONSES.

Comments raised during the Sodyeco public meeting and public comment period are summarized briefly below. The comment period was held from August 19 to September 9, 1987 to receive comments from the public on the draft feasibility study.

1. Two separate companies suggested an ozonation process to treat the organic dye wastes at the Sodyeco Site.

EPA Response: EPA followed up by requesting that the PRP's contractor, Engineering Science, follow up this suggestion by obtaining information on the process, and by visiting a local operation using the process. The conclusion was that the process was not applicable at this time for the compounds identified at the Sodyeco Site. The primary waste being treated by this process to date has been creosote from wood treating operations.

2. One area resident expressed concern about the treated water being discharged into the Catawba River.

EPA Response: The resident, a former Sodyeco employee, was directed to the information respository for additional information and was assured that the water being discharged would comply with the plant's current NPDES permit.

3. One resident expressed concern at the public about the plant contamination migrating toward his private well.

EPA Response: A respresentative from EPA's Water Division explained to the resident that the contaminated groundwater was flowing away from his well, not towards it.

4. One resident during the public meeting expressed concern about some 1961 data that showed that the city of Belmont's water supply (off the Catawba River) had an elevated level of phenol.

EPA Response: Belmont's current water intake on the Catawba River is over three miles downstream from the plant site. Samples of the Catawba River water near the plant did not show any traces of phenol.

4. REMAINING PUBLIC CONCERNS

No additional public concerns were left unresolved.

ATTACHMENT A

COMMUNITY RELATIONS ACTIVITIES CONDUCTED
AT THE SODYECO SITE

Community relations activites conducted at the Sodyeco Site to date include the following:

° EPA conducted community interviews with local officials and interested residents (May 1986)

° EPA prepared community relations plan (August 1986)

° EPA prepared and distributed fact sheet on Superfund and background of site (August 1986)

° Two information repositories were established; one at the Mt. Holly Public Library and one at the Charlotte Public Library (August 1986)

° Press release issued announcing public meeting and public comment period (August 1987)

° Feasibility study released for public review and comment (August 1987)

° EPA held a public hearing at the Ida Rankin Elementary School in Mt. Holly to describe the RI and FS results and to respond to citizens' questions. Approximately 60 people attended including citizens, Sodyeco employees, elected officials, and media from area television stations and newspapers. (August 19, 1987) A transcript of this meeting is available.

° The comment period lasted three weeks, from August 19 to September 9, 1987. Comments received by EPA were addressed.

° The Administrative Record for this remedial selection is located in Atlanta and the Mt. Holly Public Library.

CHARLOTTE OBSERVER - August 12, 1987

Cleanup At Plant To Be Discussed At Hearing

By JACK HORAN
Staff Writer

Seven years ago, toxic chemicals were detected in the groundwater under the Sodyeco Co. textile dye plant in western Mecklenburg County.

Those chemicals would be removed by a combination of excavation and pumping under a cleanup proposed to the U.S. Environmental Protection Agency (EPA).

The cleanup could begin within a year and could cost Sodyeco's owner at least $1.3 million, according to Giezelle Bennett, the EPA's project manager for the site.

The contamination and cleanup proposals will be discussed at an EPA-sponsored public meeting next Wednesday at Ida Rankin Elementary School in Mount Holly. The meeting will be at 7:30 p.m.

The EPA has the power to decide how the Sodyeco contamination will be eliminated because the site was declared a high-priority, federal superfund site in 1982.

The contamination came from chemicals that were buried in landfills on the site. Three landfills were identified and removed. The chemicals — toxins such as chlorobenzene and trichloroethane — seeped into the soil and the groundwater. No contamination has been found off the 1,000-acre site.

Bennett said the groundwater is moving either toward the Catawba River, which borders the plant, or toward Long Creek, which flows into the Catawba. "All the people (nearby residents) on well water are up gradient," she said, meaning the chemicals would not flow to their wells.

Sodyeco's owner, Sandoz Chemicals Corp., bought the plant in 1983. Under an agreement with EPA, Sandoz hired an engineering firm to determine the extent of the contamination.

A Sandoz official, Mike Smith, said the firm recommended pumping the contaminated water out of the ground through 13 recovery wells. The water would be purified in the plant's wastewater treatment plant, then discharged into the river.

Smith said the firm also proposed removing the soil from under one contaminated area and cooking out the chemicals in an incinerator. The recommendations also call for letting rainwater flush the contaminants out of the soil beneath a second area, so they can be pumped out, and sealing off two other contaminated areas.

Smith, director of environmental affairs, said those actions would cost $1.3 million.

EPA's Bennett said the agency's Atlanta office agreed with Sandoz's plans to pump the groundwater and dig up one contaminated area and seal off two others. But she said the agency wants Sandoz to either treat in place or dig up the soil from the second area. That would likely increase the cost of the cleanup.

END Total

U.S. Environmental Protection Agency
Sodyeco Superfund Site

PUBLIC INFORMATION MEETING ANNOUNCEMENT

WEDNESDAY, AUGUST 19, 1987

at 7:30 p.m.

in the

IDA RANKIN ELEMENTARY SCHOOL

301 West Central Avenue
Mt. Holly, North Carolina

The purpose of the meeting is to inform the public of the sampling investigation and the recommeded cleanup action at the Sodyeco site, and to initiate the 21-day public comment period. EPA staff will address questions and concerns that the community might have regarding EPA's involvement at the site.

A question and answer period will follow a brief presentation by EPA.

The Ch is the Observer
August 18, 1987

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U.S. Environmental Protection Agency Sodyeco Superfund Site

PUBLIC INFORMATION MEETING

WEDNESDAY, AUGUST 19, 1987 at 7:30 p.m.
IDA RANKIN ELEMENTARY SCHOOL

The U.S. Environmental Protection Agency will conduct a public meeting to discuss the sampling investigation and recommended cleanup at the Sodyeco Superfund Site, located approximately 10 miles Northwest of Charlotte, N.C. The meeting will be held August 19, 1987, 7:30 p.m. at Rankin Elementary School in Mt. Holly. Oral and written comments on the recommended cleanup are welcome and the meeting will mark the beginning of the 21-day public comment period.

The Sodyeco Site is a one thousand acre property which has been used since 1936 for the manufacture of dyes and specialty chemicals. Suspected groundwater contamination led EPA to add the site to its National Priorities List in 1984. In 1986 EPA began a Remedial Investigation and Feasibility Study (RI/FS) to determine the nature and extent of the contamination. The Remedial Investigation was completed recently and cleanup alternatives are currently being outlined. Following the public comment period, any comments submitted will be considered and a final cleanup will be formulated.

Pertinent documentation on these activities, such as the Remedial Investigation Report and the Draft Feasibility Study Report, may be viewed at the Mt. Holly and Charlotte Public Libraries until the end of the comment period. Written comments should be sent to:

Ms. Giezelle Bennett
Enforcement Project Manager
U.S. Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

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Hearing In Charlotte

By JACK HORAN
Staff Writer

Rules for low-level radioactive waste disposal in North Carolina will be the subject of a Charlotte public hearing tonight at 7.

The most far-reaching measure would outlaw the method of disposal used in South Carolina and other states, burying waste in drums in landfill trenches.

Under rules proposed by the N.C. Radiation Protection Commission, which will hold the hearing, disposed waste drums must be surrounded by "engineered barriers."

Such barriers could be concrete vaults or containers sturdy enough to keep out groundwater.

The rules were drafted in 1986. However, the N.C. legislature on July 17 banned landfill disposal under a bill introduced by Sen. Lura Tally, D-Cumberland, superseding the rule.

The law also would restrict the location for a disposal site. It couldn't be anywhere the seasonal high water table comes within 7 feet of the waste. That would rule out about 16% of the state.

One way or another, North Carolina must develop a disposal site for low-level waste by 1992.

The eight-state Southeast Compact Commission in 1986 designated the state to take the region's waste for 20 years beginning in 1992. Should North Carolina pull out of the compact and go it alone, it would have to dispose of its own radioactive waste permanently.

The regulations would govern the licensing, operating, monitoring and decommissioning of the disposal site, whether it handles waste from eight states or only from North Carolina.

Other rules would:

- Bar a site in drinking water supply watersheds, flood plains and wetland areas and within 1,000 feet of drinking water wells.
- Require an examination of the company that is to operate the site, including its training, experience, finances and ability to provide long-term care to protect public health and the environment.
- Set up a fund to provide for long-term maintenance of the site.
- Discourage people from inadvertently digging in the site after it has been closed.

The hearing, one of five around the state, will be at the Mecklenburg County Department of Environmental Health auditorium, 1200 Blythe Blvd., near Charlotte Memorial Hospital.

Written comments should be sent to Dayne Brown, chief of the Radiation Protection Section, 701 Barbour Dr., Raleigh, N.C. 27603-2008.

The Observer 8/22/88

EPA Presents Proposals For Mount Holly Cleanup

By KEN SOO
Gastonia Bureau

MOUNT HOLLY — A proposal to remove toxic chemicals from the Sodyeco Co. textile dye plant site drew little comment Wednesday except from a Charlotte man who claimed his disposal company could do a better job.

At a public hearing, U.S. Environmental Protection Agency (EPA) officials recommended that Sodyeco's owners spend at least $1.4 million to treat contaminated soil and pump contaminated groundwater from the site. Toxic dye wastes were found seven years ago in groundwater at the site on the Catawba River in western Mecklenburg County.

Wednesday's hearing at Ida Rankin Elementary in Mount Holly marked the opening of a three-week public comment period on the EPA recommendation.

About 60 people attended the hearing, but few commented.

Sherman Mayne of Radiation Disposal Systems Inc. of Charlotte said the EPA should have picked treatment processes like those his company offers.

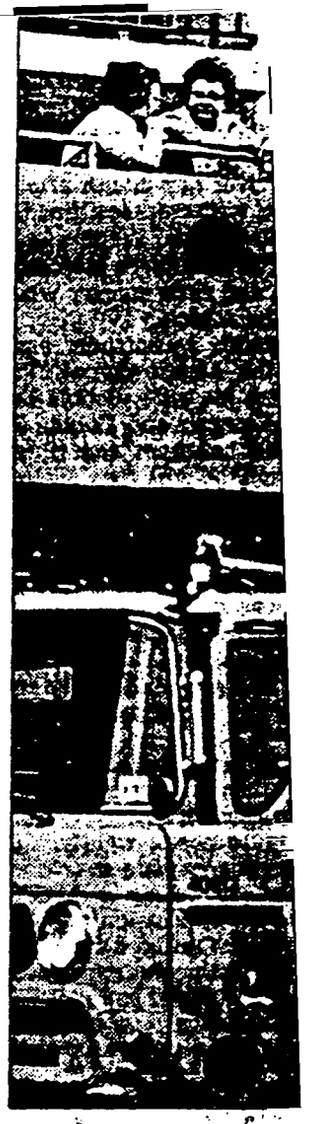
Mayne, using a blackboard to illustrate his argument, warned chemicals found at Sodyeco can cause cancer.

Mayne's remarks about the chemicals' danger drew quick rebuttal from EPA officials and from representatives of Sandoz Chemicals Corp., which bought Sodyeco in 1983.

Cody Jackson of the EPA said the levels of toxic chemicals in groundwater at Sodyeco are too low to be harmful. Another EPA official assured the audience that no contamination has been found off the plant site or in the Catawba River.

The EPA has proposed Sandoz pump contaminated water from the ground through 13 recovery wells. The contaminated water would be treated and discharged into the Catawba River.

Anyone with suggestions can contact the EPA in writing by Sept. 9. Address comments to Michael Henderson or Giezelle Bennett, U.S. EPA, Region IV, 345 Courtland St., Atlanta, Ga. 30365.



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P.O. Box 2091 • Raleigh, North Carolina 27602-2091

James G. Martin, Governor
David T. Flaherty, Secretary

Ronald H. Levine, M.D., M.P.H.
State Health Director

September 14, 1987

Ms. Giezelle S. Bennett
Compliance Project Officer
US EPA ERRB/ICS
345 Courtland Street, NE
Atlanta, Georgia 30365

Re: Record of Decision
Sodyeco EPA Site
Charlotte, North Carolina

Dear Ms. Bennett:

Per your request of September 8, 1987, we have reviewed the Record of Decision for the Sodyeco NPL Site in Charlotte, North Carolina.

This office concurs with the chosen remedy for the Sodyeco Site.

Sincerely,

Jerry Rhodes
Assistant Branch Head
Solid and Hazardous Waste Management Branch
Environmental Health Section

cc: June Swallow
Lee Crosby

JR/JS/mb/7256-3

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Division of Ecological Services
P.O. Box 25039
Raleigh, North Carolina 27611-5039

September 16, 1987

Ms. Giezelle S. Bennett
U.S. Environmental Protection Agency
345 Courtland Street
Atlanta, Georgia 30365

Dear Ms. Bennett:

The U.S. Fish and Wildlife Service has reviewed the draft Record of Decision for the Sodyeco Site in Charlotte, North Carolina, dated September 4, 1987. The Service concurs with the recommended remedy, Alternative 9, for remediation of groundwater and soil contamination.

Sincerely yours,

David H. Rackley

David H. Rackley
Acting Field Supervisor

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

Date: SEP 15 1987

Subject: Record of Decision (ROD) for the Sodyeco Site, Charlotte, North Carolina

From: James S. Kutzman, Chief
Ground-Water Protection Branch

To: Jack Stonebraker, Chief
Superfund Branch

We concur with the recommended alternatives for remediation of ground-water and soil contamination at the Sodyeco Site presented in this ROD.

Document Number: First - SOD-001-0001
Last - SOD-001-0003
Attachments: NONE
Parent: NONE
Date: 08/30/85

Title: (LETTER RE: SODYECO INC NPL SITE CHARLOTTE, NC NOTIFYING ADDRESSEE OF POTENTIAL LIABILITY AND ENCOURAGING HIM TO PARTICIPATE IN VOLUNTARY CLEAN-UP.)

Type: CORRESPONDENCE
Author: DEVINE, THOMAS W: US ENVIRONMENTAL PROTECTION AGENCY
Recipient: ECCLES, EJ: SANDOZ CHEMICALS CORP

Document Number: First - SOD-001-0004
Last - SOD-001-0004
Attachments: NONE
Parent: NONE
Date: 02/05/85

Title: (LETTER RE: MARTIN-MARIETTA, SODYECO DIVISION SITE CHARLOTTE, NORTH CAROLINA AND THE SUPERFICIAL IMPLEMENTATION GROUP REVIEW.)

Type: CORRESPONDENCE
Author: PIETROSEWICZ, CHUCK: DEPT OF HEALTH & HUMAN SERVICES
Recipient: BENNETT, GIEZELLE S

Document Number: First - SOD-001-0005
Last - SOD-001-0011
Attachments: NONE
Parent: NONE
Date: 01/18/84

Title: (LETTER RE: MARTIN-MARIETTA, SODYECO DIVISION SITE CHARLOTTE, NORTH CAROLINA, COMMENTS ON DATA OF SUBJECT SITE.)

Type: CORRESPONDENCE
Author: JONES, GEORGI A: DEPT OF HEALTH & HUMAN SERVICES
Recipient: PIETROSEWICZ, CHUCK: EPA

Document Number: First - SOD-001-0012
Last - SOD-001-0012
Attachments: NONE
Parent: NONE
Date: 11/01/85

Title: (LETTER RE: SANDOZ (SODYECO) SITE CHARLOTTE, NC OFFER OF EPA TO CONDUCT REMEDIAL INVESTIGATION AND FEASIBILITY STUDY.)

Type: CORRESPONDENCE
Author: DEVINE, THOMAS W: WASTE MANAGEMENT DIVISION
Recipient: RANKIN, WILTON: SANDOZ CHEMICALS CORP

Document Number: First - SOD-001-0013 Attachments: PR 1 ATTACHMENT Date: 10/03/85
Last - SOD-001-0015 Parent: NONE

Title: (LETTER RE: SANDOZ SITE CHARLOTTE NC, OFFER BY COMPANY TO CONDUCT THE RI/FS FOR THE ABOVE-DESCRIBED SITE.)

Type: CORRESPONDENCE
Author: RANKIN, WILTON: SANDOZ CHEMICALS CORP
Recipient: BENNETT, GIEZELLE: US ENVIRONMENTAL PROTECTION AGENCY

Document Number: First - SOD-001-0016 Attachments: NONE Date: 00/00/00
Last - SOD-001-0016 Parent: SOD-001-0013

Title: (CERTIFIED MAIL RECEIPT.)

Type: CORRESPONDENCE
Author: NONE
Recipient: RANKIN, WILTON

Document Number: First - SOD-001-0017 Attachments: NONE Date: 04/08/82
Last - SOD-001-0021 Parent: NONE

Title: POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

Type: PLAN
Author: SMOAK, JT: EPA
Recipient: NONE

Document Number: First - SOD-001-0022 Attachments: NONE Date: 02/10/83
Last - SOD-001-0022 Parent: NONE

Title: TRANSMITTAL OF MARTIN MARIETTA CO - SODYECO DIVISION, HAZARDOUS WASTE SITE INVESTIGATION REPORT

Type: CORRESPONDENCE
Author: LAIR, MD
Recipient: SMITH, AL

Document Number: First - SOD-001-0023 Attachments: NONE Date: 11/00/82
Last - SOD-001-0092 Parent: NONE

Title: HAZARDOUS WASTE SITE INVESTIGATION MARTIN MARIETTA COMPANY SODYECO DIVISION CHARLOTTE, NORTH CAROLINA

Type: PLAN
Author: NONE
Recipient: NONE

Document Number: First - SOD-001-0093 Attachments: NONE Date: 00/00/00
Last - SOD-001-0113 Parent: NONE

Title: (REPORT REGARDING MARTIN MARIETTA - SODYECO DIVISION CHARLOTTE, NORTH CAROLINA)

Type: PLAN
Author: NONE
Recipient: NONE

Document Number: First - SOD-001-0114 Attachments: PR 2 ATTACHMENTS Date: 06/26/87
Last - SOD-001-0114 Parent: NONE

Title: (LETTER RE: SODYECO RI/FS DRAFT RI REPORT)

Type: CORRESPONDENCE
Author: BENNETT, GIEZELLE S: US ENVIRONMENTAL PROTECTION AGENCY
Recipient: ARCHER, BILL: SANDOZ CHEMICALS CORP

Document Number: First - SOD-001-0115 Attachments: NONE Date: 00/00/00
Last - SOD-001-0128 Parent: SOD-001-0114

Title: (COMMENTS RE: DRAFT RI REPORT)

Type: OTHER
Author: NONE
Recipient: NONE

Document Number: First - SOD-001-0129 Attachments: NONE Date: 06/26/87
Last - SOD-001-0129 Parent: SOD-001-0114

Title: REVIEW OF SODYECO DRAFT RI REPORT

Type: CORRESPONDENCE
Author: MANN, JOHN H
Recipient: BENNETT, GIEZELLE: EPA

Document Number: First - SOD-001-0131 Attachments: NONE Date: 05/00/87
Last - SOD-001-0386 Parent: NONE

Title: REMEDIAL INVESTIGATION SODYECO SITE MT HOLLY, NORTH CAROLINA (VOLUME II APPENDICES C THROUGH I)

Type: PLAN
Author: ENGINEERING SCIENCE
Recipient: US ENVIRONMENTAL PROTECTION AGENCY

Document Number: First - SOD-001-0387 Attachments: NONE Date: 05/00/87
Last - SOD-001-0582 Parent: NONE

Title: REMEDIAL INVESTIGATION SODYECO SITE MT HOLLY, NORTH CAROLINA (VOLUME I RI REPORT AND APPENDICES A & B)

Type: PLAN
Author: ENGINEERING SCIENCE
Recipient: US ENVIRONMENTAL PROTECTION AGENCY

Document Number: First - SOD-001-0583 Attachments: NONE Date: 07/00/87
Last - SOD-001-0778 Parent: NONE

Title: FEASIBILITY STUDY SODYECO SITE MT HOLLY, NORTH CAROLINA

Type: PLAN
Author: ENGINEERING SCIENCE
Recipient: US ENVIRONMENTAL PROTECTION AGENCY

Document Number: First - SOD-001-0780 Attachments: NONE Date: 02/10/86
Last - SOD-001-0780 Parent: NONE

Title: (LETTER CONCERNING ADMINISTRATIVE ORDER BY CONSENT FOR SANDOZ (SODYECO) SITE.)

Type: CORRESPONDENCE
Author: RAVAN, JACK E: US ENVIRONMENTAL PROTECTION AGENCY
Recipient: RANKIN, WILTON: SANDOZ CHEMICALS CORP

Document Number: First - SOD-001-0781 Attachments: NONE Date: 00/00/00
Last - SOD-001-0794 Parent: NONE

Title: (ADMINISTRATIVE ORDER ON CONSENT RE: SODYECO SITE CHARLOTTE, NC.)

Type: LEGAL DOCUMENT
Author: NONE
Recipient: NONE

Document Number: First - SOD-001-0795 Attachments: NONE Date: 03/24/87
Last - SOD-001-0795 Parent: NONE

Title: (LETTER CONCERNING PAYMENT OF MONEY INTO EPA SUPERFUND BY SODYECO SITE.)

Type: CORRESPONDENCE
Author: ARCHER, WILLIAM M: SANDOZ CHEMICALS CORP
Recipient: BENNETT, GIEZELLE S: US EPA

Document Number: First - SOD-001-0796 Attachments: NONE Date: 03/24/87
Last - SOD-001-0796 Parent: NONE

Title: (LETTER ACCOMPANYING CHECK FOR EPA OVERSIGHT COST ASSOCIATED WITH SODYECO SITE.)

Type: CORRESPONDENCE
Author: ARCHER, WILLIAM M: SANDOZ CHEMICALS CORP
Recipient: US ENVIRONMENTAL PROTECTION AGENCY

Document Number: First - SOD-001-0797 Attachments: PR 4 ATTACHMENTS Date: 02/25/87
Last - SOD-001-0797 Parent: NONE

Title: (LETTER CONCERNING REVISED ACCOUNTING OF THE RESPONSE AND OVERSIGHT COST WITH RESPECT TO SODYECO SITE.)

Type: CORRESPONDENCE
Author: TOBIN, PATRICK M: WASTE MANAGEMENT DIVISION
Recipient: ARCHER, BILL: SANDOZ CHEMICALS CORP

Document Number: First - SOD-001-0798 Attachments: NONE Date: 02/10/86
Last - SOD-001-0798 Parent: SOD-001-0797

Title: BREAKDOWN OF COSTS INCURRED BY THE FEDERAL GOVERNMENT SODYECO, NC 860210-860930

Type: FINANCIAL / TECHNICAL DAT
Author: NONE
Recipient: NONE

Document Number: First - SOD-001-0799 Attachments: NONE Date: 02/26/87
Last - SOD-001-0799 Parent: SOD-001-0797

Title: (REGISTERED MAIL RECEIPT OF 870226 TO BILL ARCHER.)

Type: CORRESPONDENCE
Author: ILLEGIBLE
Recipient: ARCHER, BILL: SANDOZ CHEMICALS CORP

Document Number: First - SOD-001-0800 Attachments: NONE Date: 00/00/00
Last - SOD-001-0800 Parent: SOD-001-0797

Title: (RECEIPT FOR CERTIFIED MAIL TO BILL ARCHER.)

Type: CORRESPONDENCE
Author: NONE
Recipient: ARCHER, BILL

Document Number: First - SOD-001-0801 Attachments: NONE Date: 02/25/00
Last - SOD-001-0801 Parent: SOD-001-0797

Title: (RECORD OF EXPRESS MAIL, NEXT DAY RECEIPT.)

Type: CORRESPONDENCE
Author: NONE
Recipient: NONE

Document Number: First - SOD-001-0803 Attachments: NONE Date: 08/00/86
Last - SOD-001-0833 Parent: NONE

Title: FINAL COMMUNITY RELATIONS PLAN FOR THE SODYECO SITE CHARLOTTE, NORTH CAROLINA 860800

Type: PLAN
Author: EBASCO SERVICES INC
Recipient: US EPA

Document Number: First - SOD-001-0834 Attachments: NONE Date: 08/21/86
Last - SOD-001-0834 Parent: NONE

Title: (LETTER RE: INFORMATION REPOSITORY SODEYCO NPL SITE CHARLOTTE, NORTH CAROLINA)

Type: CORRESPONDENCE
Author: BENNETT, GIEZELLE S: VINSON & ELKINS
Recipient: GUTHRIE, DOROTHY: MT HOLLY PUBLIC LIBRARY

Document Number: First - SOD-001-0835 Attachments: NONE Date: 08/21/86
Last - SOD-001-0835 Parent: NONE

Title: (LETTER RE: INFORMATION REPOSITORY SODYECO NPL SITE CHARLOTTE, NORTH CAROLINA)

Type: CORRESPONDENCE
Author: BENNETT, GIEZELLE S: VINSON & ELKINS
Recipient: CANNON, ROBERT: CHARLOTTE PUBLIC LIBRARY

Document Number: First - SOD-001-0836 Attachments: NONE Date: 08/26/86
Last - SOD-001-0836 Parent: NONE

Title: (ARTICLE ENTITLED 'EPA TO TEST SOIL, WATER AT SODYECO PLANT')

Type: CORRESPONDENCE
Author: HORAN, JACK: CHARLOTTE OBSERVER
Recipient: NONE

Document Number: First - SOD-001-0837 Attachments: PR 2 ATTACHMENTS Date: 08/00/86
Last - SOD-001-0838 Parent: NONE

Title: REMEDIAL INVESTIGATION/FEASIBILITY STUDY FACT SHEET SODYECO SITE MECKLENBURG COUNTY, NORTH CAROLINA

Type: PLAN
Author: EPA
Recipient: NONE

Document Number: First - SOD-001-0839 Attachments: NONE Date: 00/00/00
Last - SOD-001-0839 Parent: SOD-001-0837

Title: (INFORMATION REPOSITORIES AND MAILING LIST ADDITIONS FORM)

Type: OTHER
Author: EPA
Recipient: NONE

Document Number: First - SOD-001-0840 Attachments: NONE Date: 00/00/00
Last - SOD-001-0840 Parent: SOD-001-0837

Title: SUPERFUND PROCESS EXHIBIT A

Type: LEGAL DOCUMENT
Author: EPA
Recipient: NONE

Document Number: First - SOD-001-0841 Attachments: NONE Date: 09/09/86
Last - SOD-001-0841 Parent: NONE

Title: (LETTER RE: SODYECO REMEDIAL INVESTIGATION / FEASIBILITY STUDY, CHARLOTTE NC)

Type: CORRESPONDENCE
Author: BENNETT, GIEZELLE S: VINSON & ELKINS
Recipient: BULLARD, EW: BULLARD INSURANCE & REALTY CO

Document Number: First - SOD-001-0842 Attachments: NONE Date: 09/03/86
Last - SOD-001-0843 Parent: NONE

Title: (LETTER CONCERNING REPRINTING OF 860000 RI/FS FACT SHEET ON THE SODEYCO SUPERFUND SITE.)

Type: CORRESPONDENCE
Author: HENDERSON, RM: SUPERFUND COMMUNITY
Recipient: STJOHN, DIANE: EPLAY ASSOCIATES INC

Document Number: First - SOD-001-0844 Attachments: NONE Date: 08/26/86
Last - SOD-001-0844 Parent: NONE

Title: (LETTER RE: WATER TEST OF CATAWBA RIVER FROM WHICH BELLMONT, NC GETS ITS DRINKING WATER)

Type: CORRESPONDENCE
Author: BULLARD, EW: BULLARD INSURANCE
Recipient: BENNETT, GIEZELLE M: US ENVIRONMENTAL PROTECTION AGENCY

Document Number: First - SOD-001-0845 Attachments: NONE Date: 08/19/86
Last - SOD-001-0845 Parent: NONE

Title: (LETTER CONCERNING SANDOZ CHEMICALS CORP AND THE REMEDIAL INVESTIGATION FEASIBILITY STUDY.
)

Type: CORRESPONDENCE
Author: DEHIHNS, LEE A
Recipient: OSMAR, JOHN J

Document Number: First - SOD-001-0847 Attachments: NONE Date: 07/28/00
Last - SOD-001-0847 Parent: NONE

Title: (SANDOZ CHEMICAL CORP MAIL CONTROL SCHEDULE)

Type: CORRESPONDENCE
Author: OSMAR, JOHN J
Recipient: TOBIN

Document Number: First - SOD-001-0848 Attachments: PR 2 ATTACHMENTS Date: 07/26/86
Last - SOD-001-0848 Parent: NONE

Title: (LETTER VOICING OPINION ABOUT SANDOZ FUNDING STUDY AND CONDUCTING THE RI/FS.)

Type: CORRESPONDENCE
Author: OSMAR, JOHN J
Recipient: RAVAN, JACK E: US ENVIRONMENTAL PROTECTION AGENCY

Document Number: First - SOD-001-0849 Attachments: NONE Date: 08/21/86
Last - SOD-001-0849 Parent: SOD-001-0848

Title: (CERTFIED MAIL RECEIPT FOR 860821 TO JOHN OSMAR)

Type: CORRESPONDENCE
Author: ILLEGIBLE
Recipient: OSMAR, JOHN

Document Number: First - SOD-001-0850 Attachments: NONE Date: 00/00/00
Last - SOD-001-0850 Parent: SOD-001-0848

Title: (RECEIPT FOR CERTIFIED MAIL FOR JOHN OSMAR)

Type: CORRESPONDENCE
Author: NONE
Recipient: OSMAR, JOHN J

Document Number: First - SOD-001-0851 Attachments: NONE Date: 07/09/86
Last - SOD-001-0851 Parent: NONE

Title: (LETTER RE: SODYECO / SANDOZ SITE CHARLOTTE, NORTH CAROLINA, GENERAL EXPLANATION OF SITE CLEAN-UP.)

Type: CORRESPONDENCE
Author: RAVAN, JACK E
Recipient: OSMAR, JOHN J

Document Number: First - SOD-001-0852 Attachments: NONE Date: 06/17/86
Last - SOD-001-0852 Parent: NONE

Title: (MAIL CONTROL SCHEDULE RE: INFO REQ CLEAN-UP SODEYCO SITE.)

Type: CORRESPONDENCE
Author: OSMAR, JOHN J
Recipient: TOBIN

Document Number: First - SOD-001-0853 Attachments: NONE Date: 06/17/86
Last - SOD-001-0853 Parent: NONE

Title: (INQUIRY INTO SITUATION OF SODYECO / SANDOZ SITE.)

Type: CORRESPONDENCE
Author: OSMAR, JJ
Recipient: THOMAS, LEE M: ENVIRONMENTAL PROTECTION AGENCY

Document Number: First - SOD-001-0854 Attachments: NONE Date: 04/15/87
Last - SOD-001-0854 Parent: NONE

Title: (REGARDING FREEDOM OF INFO ACT REQUEST FOR RODS ON SANDOZ CHEM CORP.)

Type: CORRESPONDENCE
Author: STONEBRAKER, RICHARD D
Recipient: LOW, MATTHEW A: TLI SYSTEMS