United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R04-90/073
September 1990

COPY 1

PB91-921446

EPA

# Superfund Record of Decision:

## National Starch & Chemical, NC

Hazardous Waste Collection
Information Resource Center
US EPA Region 3
Philadelphia, PA 19107

EPA Report Collection
Information Resource Center
US EPA Region 3
Philadelphia, PA 19107

50272-101

| REPORT DOCUMENTATION PAGE | 1. REPORT NO. EPA/ROD/R04-90/073 | 2. | 3. Recipient's Accession No. |
|---|---|---|---|
| 4. Title and Subtitle<br>SUPERFUND RECORD OF DECISION<br>National Starch & Chemical, NC<br>Second Remedial Action | | | 5. Report Date<br>09/28/90<br>6. |
| 7. Author(s) | | | 8. Performing Organization Rept. No. |
| 9. Performing Orgainization Name and Address | | | 10. Project/Task/Work Unit No.<br>11. Contract(C) or Grant(G) No.<br>(C)<br>(G) |
| 12. Sponsoring Organization Name and Address<br>U.S. Environmental Protection Agency<br>401 M Street, S.W.<br>Washington, D.C. 20460 | | | 13. Type of Report & Period Covered<br>800/000<br>14. |

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The 465-acre National Starch and Chemical site is a manufacturing facility for textile finishing and custom speciality chemicals in Rowan County, North Carolina. A portion of the site is heavily wooded, and surrounding land use is mixed industrial and residential. From 1971 to 1978, approximately 350,000 gallons of reaction vessel washwater containing salt brines, sulfuric acid solutions, and solvents were disposed of onsite in unlined trenches. Liquid plant production wastes also were disposed of in the trenches after being held in an unlined pretreatment lagoon. In 1976, sampling by the site operator revealed shallow ground water contamination in the trench area. A State investigation in 1977 supported this finding, and the State requested the site operator to cease onsite liquid waste disposal in the trench area. A 1988 Record of Decision (ROD) addressed Operable Unit 1 (OU1), which called for onsite ground water pumping and treatment, further investigation of soil contamination in the trench area, continued surface water and sediment monitoring and a supplemental remedial investigation (RI). This ROD addresses OU2, and identifies no further action as the remedy for the trench area soil based on the supplemental RI. A subsequent ROD will address OU3, the remediation of onsite contaminated surface water and sediment, which

(See Attached Page)

17. Document Analysis a. Descriptors

Record of Decision - National Starch & Chemical, NC
Second Remedial Action
Contaminated Medium: none
Key Contaminants: none

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

| 18. Availability Statement | 19. Security Class (This Report) | 21. No. of Pages |
|---|---|---|
| | None | 164 |
| | 20. Security Class (This Page) | 22. Price |
| | None | |

(See ANSI-Z39.18) *See Instructions on Reverse* OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

Abstract (Continued)

are unrelated to the trench soil contamination. Results of the supplemental RI indicate that the natural leaching process of percolating rainfall will continue to reduce the soil contamination level. Because the existing ground water treatment system is designed to treat contaminants leaching into the ground water, there are no additional contaminants of concern relating to the trench area soil.

The selected remedial action for OU2 is no further action. Soil will be monitored on a quarterly basis, and institutional controls including deed restrictions will be implemented. The estimated present worth cost for this remedial action is $151,000, which includes a total O&M cost of $150,000 for 30 years.

PERFORMANCE STANDARDS OR GOALS: Not applicable.

# Record of Decision

National Starch & Chemical Corp. Site
Salisbury, North Carolina

U.S. Environmental Protection Agency
Region IV
Atlanta, Georgia

September 1990

## DECLARATION FOR THE RECORD OF DECISION

### Site Name and Location

National Starch and Chemical Corporation
Salisbury, Rowan County, North Carolina

### Statement of Basis and Purpose

This decision document represents the selected remedial action for Operable Unit Number 2 at the National Starch and Chemical Corporation Site developed 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) 42 U. S. C. Section 9601 et. seq., and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300.

This decision is based upon the contents of the Administrative Record for the National Starch Chemical Corporation site.

The State of North Carolina conditionally concurs on the selected remedy.

### Description of the Selected Remedy

This remedy addresses the remediation of residual subsurface soil contamination. The United States Environmental Protection Agency has selected no (further) action for the Second Operable Unit, specifically the soils contained in the "trench area". Monitoring of the trench area soils will be conducted on a quarterly basis to verify that no unacceptable exposures to risks posed by conditions at the site occur in the future.

### Declaration Statement

The selection of a no remedial action alternative is protective of human health and the environment based on the following criteria:

- The Record of Decision for Operable Unit 1, September 30, 1988, presents the remedy selection for the groundwater which mitigates the principal threat posed by the contaminated groundwater at the site. The only route of migration for the "trench area" soils would be into the contaminated aquifer.

- The natural infiltration of precipitation will work with the selected groundwater remedy effectively flushing residual soil contamination into the groundwater capture zone.

- Monitoring of the soils will be conducted on a quarterly basis.

o The risk assessment evaluated all potential exposure pathways relevant to human exposure. No public health threat exists directly from these soils. The remedy for the potential exposure from groundwater has been addressed within the first operable unit Record of Decision.

Since this remedy will result in hazardous substances remaining on-site, a review will be conducted within five years after commencement of remedial action to insure that the remedy continues to provide adequate protection of human health and the environment.

Greer C. Tidwell
Regional Administrator

9/28/90
Date

# SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

NATIONAL STARCH AND CHEMICAL CORPORATION
SALISBURY, NORTH CAROLINA

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

TABLE OF CONTENTS


| | PAGE |
|---|---|
| Site Location and Description | 1 |
| Site History and Enforcement Analysis | 4 |
| Community Relations Activities | 6 |
| Scope and Role of Operable Unit 2 Resource Action | 6 |
| Site Characteristics | 7 |
| Trench Area Soils | 7 |
| Surface Water and Sediments | 10 |
| Summary of Site Risks | 10 |
| Contaminants of Concern | 11 |
| Exposure Assessment | 11 |
| Toxicity Assessment | 13 |
| Risk Characterization | 13 |
| Description of the No Action Alternative | 16 |
| Costing Information | 17 |
| Explanation of Significant Differences | 18 |

## LIST OF FIGURES


| FIGURE | | PAGE |
|---|---|---|
| 1 | Site Vicinity Map | 2 |
| 2 | National Starch Site | 3 |
| 3 | Soil Borings Locations | 5 |

LIST OF TABLES


| TABLE | | PAGE |
|---|---|---|
| 1 | Organic Analysis Results from Boring Samples | 8 |
| 2 | Inorganic Analysis Results from Boring Samples | 9 |
| 3 | Groundwater Contaminants of Concern with Highest Concentrations Detected in Groundwater, Subsurface Soil and TCLP Leachates of SUbsurface Soil | 12 |
| 4 | Site-related Carcinogens of Potential Concern | 14 |
| 5 | Site-related Noncarcinogens of Potential Concern | 15 |

APPENDIX A - RESPONSIVENESS SUMMARY

APPENDIX B - LETTER FROM SUPPORT AGENCY

DECISION SUMMARY FOR THE RECORD OF DECISION
OPERABLE UNIT NUMBER 2
NATIONAL STARCH AND CHEMICAL CORPORATION

## SITE LOCATION AND DESCRIPTION

The National Starch and Chemical Company (NSCC) site is located in Rowan County, North Carolina, approximately five miles south of the City of Salisbury (Figure 1). Salisbury is located about 40 miles northeast of Charlotte, North Carolina.

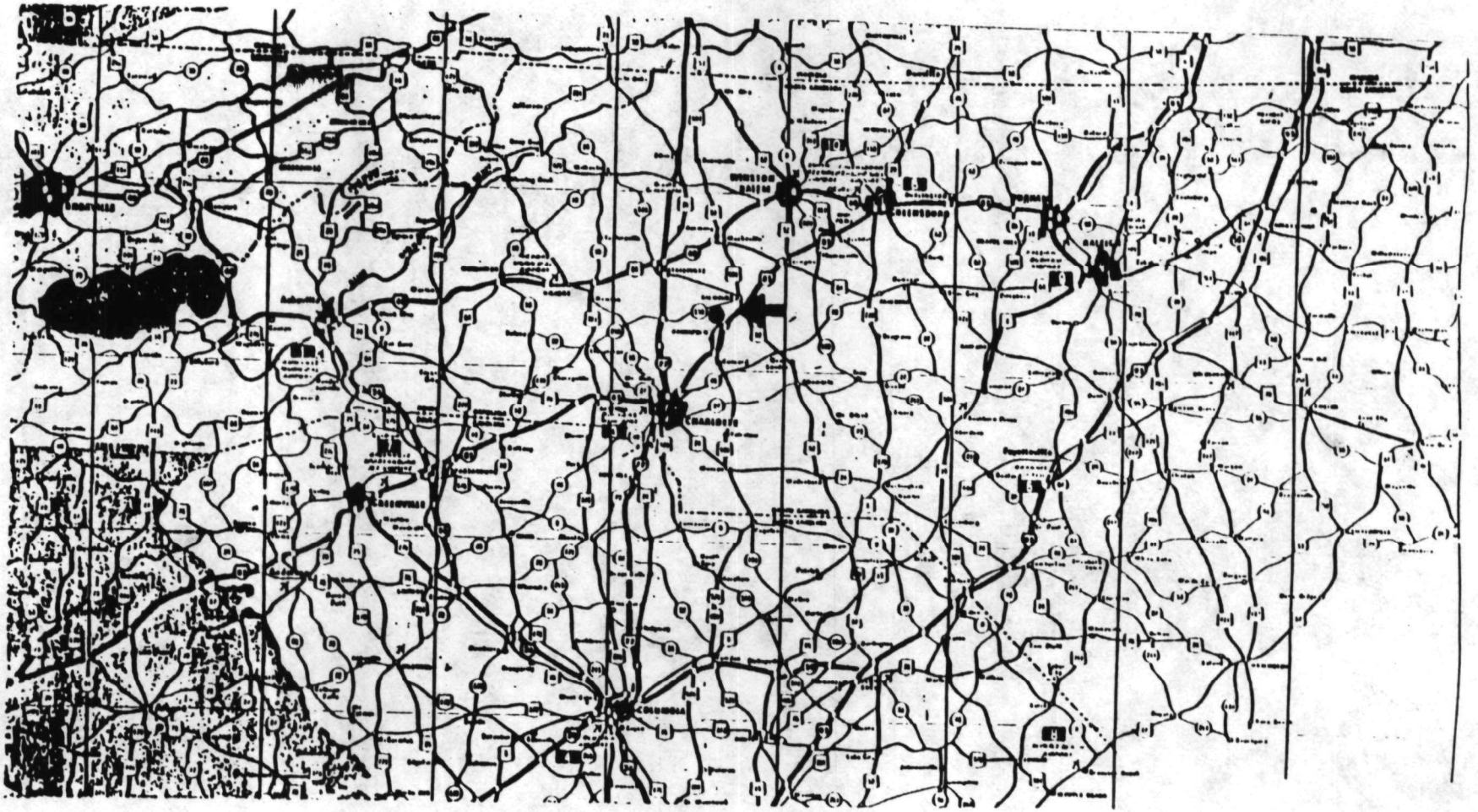
The NSCC site, also referred to as the Cedar Springs Road Plant, is approximately 465 acres in size. The disposal area, known as the trench area, is surrounded by heavily wooded acreage to the north, west, and south. The chemical plant is located in the eastern portion of the site property. Residential areas are located no less than 1500 feet from the trench area in the northwest and southwest directions.

Land use of the area immediately adjacent to the site consists of a mixture of residential and industrial developments (Figure 2). According to 1986 statistics, Rowan County covers 517 square miles in area and has a population of 104,678. The population of the City of Salisbury was 23,931 as of 1986. Groundwater is the source of drinking water supplies for the community; the City of Salisbury supplies residents located to the north, east, and south of the site. Other nearby residents are supplied by small community wells.

Several unnamed tributaries traverse the site and flow into the Grants Creek system. One tributary flows along the front of the plant paralleling Cedar Springs Road and leaves the property to the north. A small intermittent stream forms the southwestern site boundary. A third small stream is indicated on the USGS quadrangle map in the northwest quadrant of the site. Grants Creek forms the western boundary of the property and continues flowing in a northerly direction.

There is no designated North Carolina State Significant Habitat, agricultural land, or historic landmark site potentially or directly affected by the site. There are no endangered species or critical habitats within proximity of the site. There are no identified coastal or fresh-water wetlands within an area of influence of the site.

The geologic framework of Rowan County forms two distinct aquifers. The first is a shallow aquifer created by the saprolite. The second is a bedrock aquifer formed of crystalline rocks. These two aquifers are interconected with clay-rich saprolite. Water yielding properties are variable. Wells drilled within the bedrock aquifer generally have higher yields than those in the saprolite aquifer and average approximately 40 to 50 gallons per minute.



● Cedar Springs Road Plant

Figure 1
Site Vicinity Map

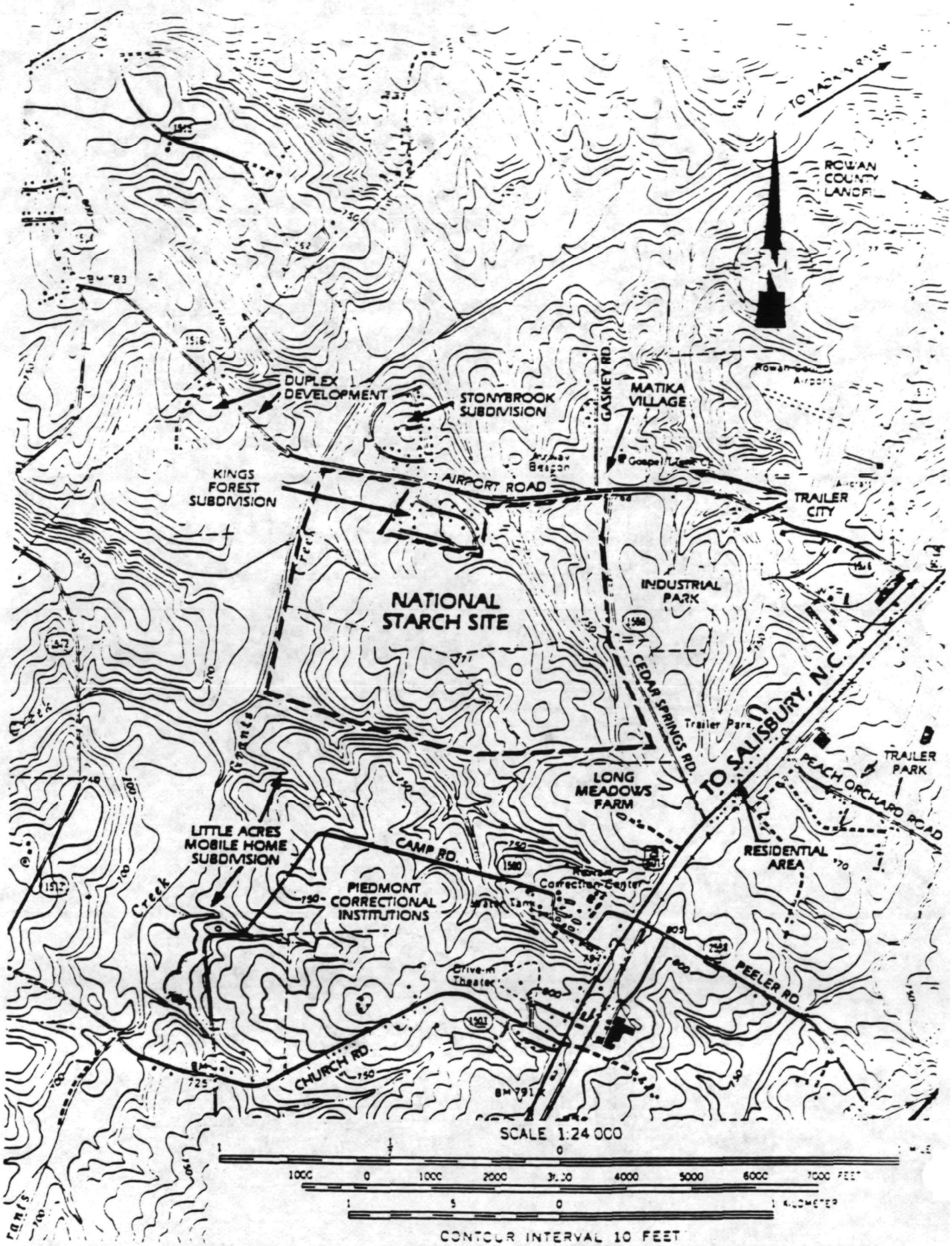



Figure 2
National Starch Site

Site History and Enforcement Analysis

The NSCC site is located on the outskirts of the Salisbury city limits. Edward Proctor of Salisbury founded the Proctor Chemical Company in 1938. In September 1968, Proctor Chemical Company purchased the 465-acre Cedar Springs Road property. Within the next year, Proctor Chemical was acquired by National Starch and operated as a separate subsidiary. Construction of the Cedar Springs Road plant began in 1970. On January 1, 1983, Proctor Chemical Company was dissolved and its operations merged with National Starch. The National Starch facility is primarily a manufacturing plant for textile finishing chemicals and custom specialty chemicals.

From 1971 to 1978, the NSCC conducted on site disposal of approximately 350,000 gallons of reaction vessel wash water into trenches which were reported to be approximately 200 to 300 feet long and 8 feet deep. The wash water consisted predominantly of salt brines, sulfuric acid solutions, and solvents and is classified as D002 waste with corrosive properties and a pH $\leq$ 2. These trenches were constructed within a 5-acre tract of the western section of the site property. The trench area is shown on Figure 3.

Liquid effluent from the plant production area flowed into the easternmost pretreatment holding lagoon, which was unlined, and then was pumped to an active trench in the trench area. Each trench was used until liquid no longer readily percolated into the ground. At that time, the trench was backfilled and seeded, and a new trench was constructed.

In 1976, NSCC installed eight monitoring wells around the site to determine if the trenching operations had impacted groundwater quality. Four of these monitoring wells were installed adjacent to or within the trench area. Sampling results revealed that shallow groundwater immediately within and adjacent to the trench area was contaminated. In June 1977, sampling and analysis conducted by the State of North Carolina verified NSCC's results. The State subsequently requested that NSCC cease on site waste disposal in the trench area.

The NSCC site was proprosed for inclusion on the National Priorties List (NPL) in April 1985 with EPA assuming lead responsibility for the site. Negotiations to allow NSCC to conduct the Remedial Investigation/Feasibility Study (RI/FS) activities were concluded with the signature of an Administrative Order on Consent on December 1, 1986. These activities resulted in the issuance of the first Record of Decision (ROD) during September 1988.

The first ROD addressed groundwater remediation at the site under Operable Unit 1. The ROD specified that soil contamination in the trench area be further investigated to determine whether the area continued to be a major source of groundwater contamination. The first ROD also required that analytical monitoring continue on contaminated surface water and sediments to further delineate the source.

The final Remedial Design for groundwater remediation under Operable Unit 1 has been approved by EPA. Construction began in August 1990 which constitutes the initial Remedial Action (RA).

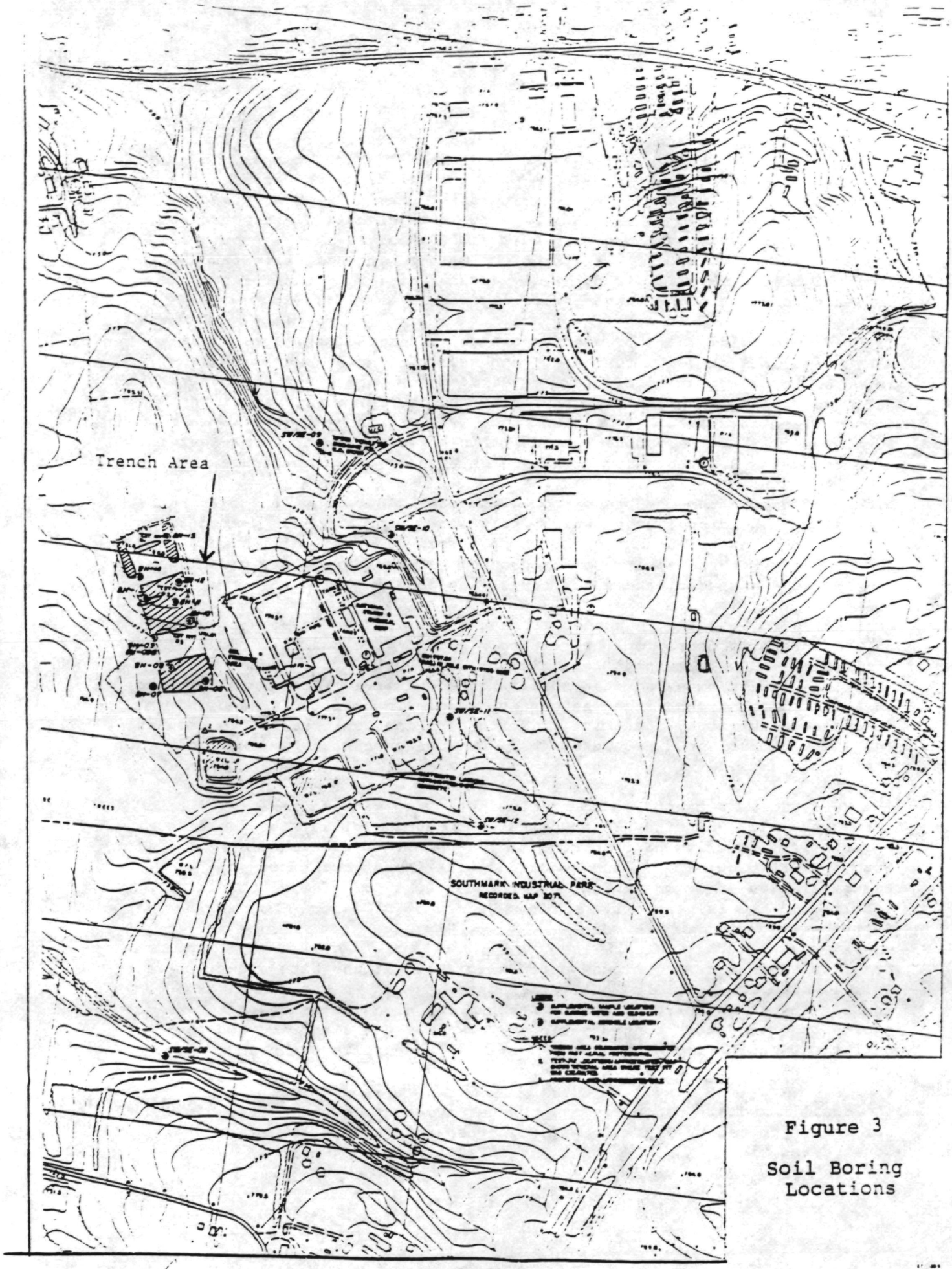



Figure 3

Soil Boring Locations

At EPA's direction, a Supplemental RI/FS was conducted for Operable Unit 2. The trench area was the focal point of the investigation. Subsurface soils were sampled from ten boreholes drilled in the trench area. The boreholes were continuously sampled using split spoons, beginning at the surface and extending to a depth of 30 feet or to the saturated zone, whichever was encountered first. Field screening was conducted in the final selection of the samples submitted for laboratory analysis. In addition, Toxicity Characterisics Leaching Procedure (TCLP) analyses were conducted on severalborehole samples using both a standard and a rainwater solution (collected in the trench) to determine certain site-specific leachability characteristics of the soils.

The Supplemental RI also included additional monitoring of the surface water and sediments in what is known as the northeast tributary. This tributary was sampled in October and November of 1989 and again in July of 1990. Results of this tributary sampling confirmed surface water and sediment contamination. Therefore, the northeast tributary will be addressed under a third operable unit.

This decision document presents the remedial selection for the residual soil contamination in the trench area at the NSCC site.

## COMMUNITY RELATIONS ACTIVITIES

EPA's community relation efforts for the NSCC have been ongoing since 1986. Communication with the community has included the development of several site specific fact sheets as well as four public meetings to date. Specifically for Operable Unit 2, the Supplemental RI/FS and Proposed Plan Fact Sheet were distributed to the public during July 1990. The Second Operable Unit Administrative Record was made available at the Rowan County Library during the Public Comment Period. Public Comment was held from July 30, 1990 to August 29, 1990.

All comments made to the Agency concerning the Proposed Plan and the site in general have been compiled and addressed in the Responsiveness Summary which is attached to this Record of Decision as Appendix A.

## SCOPE AND ROLE OF OPERABLE UNIT 2 RESPONSE ACTION

The scope of this response action is to address any soil contamination in the trench area as a source control Operable Unit. The first Operable Unit action was decided with the issuance of a ROD on September 30, 1988. This ROD required the development of a groundwater interception and extraction system to be installed downgradient of the contaminant plume. Pretreatment for the extracted groundwater includes air stripping, filtration through activated carbon, metals removal, and treatment through the company's existing lagoon system. Discharge will be to the Salisbury Publically Owned Treatment Works (POTW). A contingency for an alternate discharge point was included in the ROD if permit requirements for the POTW cannot be met. Monitoring of the surface waters on the site are also required under the first ROD.

Objectives of Operable Unit 2 are to: ensure that cleanup standards for the site are developed for all appropriate media, (i.e., subsurface soils and

groundwater), implement a cleanup alternative that is protective of human health and the environment, and select a remedy that meets the above criteria in a cost effective manner.

SITE CHARACTERISTICS

The NSCC site was characterized during the initial RI/FS under a comprehensive site-wide investigation. Based on the results of this initial RI, the trench area was determined to be the only significant area from past disposal practices that could be considered a remaining source area to groundwater contamination. The first ROD required that the trench area be further investigated to identify the degree of source contribution. This decision document is limited to the characteristics as observed in the trench area soils and is based on the Supplemental RI. The trench area is not considered the source of contamination to the tributary.

TRENCH AREA SOILS

The Supplemental RI characterized the trench area subsurface soils with the installation of 10 boreholes. Figure 3 provides the borehole locations. Results of the organic analysis are shown on Table 1. Significant levels of 1,2-dichloroethane, 2-butanone, 1,2-dichloropropane, 4-methyl-2-pentanone, toluene, ethylbenzene and xylenes were identified in the trench area subsurface soils. Antimony and arsenic were the inorganic constituents identified at elevated levels; these two contaminants were detected at elevated levels in only one location. Tabulated inorganic data are presented in Table 2.

Based on the data developed from both the initial and supplemental RIs, the subsurface soil contamination has been observed from 5 feet below land surface down to the water table. The top 5 feet is believed to be clean soil which was backfilled into trenches as they were deactivated. Maximum concentrations were observed approximately 18 feet below land surface. There is no current complete route of exposure specifically from these soils, i.e., no dermal exposure potential. Migration pathway is isolated to leaching into the groundwater.

The trench area is known to be the original source of the groundwater contamination based on historical disposal practices. The supplemental RI was designed to measure the effectiveness of the natural soil flushing by percolating rainfall through the soil contaminants as well as determining the actual contaminant concentrations remaining in the trench area subsurface soils. The Supplemental RI was conducted to characterize the remaining contamination in the subsurface soils in the trench area specifically to determine if remediation of the soils was necessary. Results of the Supplemental RI indicate that the natural leaching process has resulted in reducing the levels of the soils contamination. This is based on the magnitude of the contamination currently in the groundwater compared to the residual levels of the contamination left in the soil. In fact, several of the contaminants of concern identified in the first ROD were not detected within the trench area soils during the supplemental RI field work.

The Supplemental RI determined that the most notable contaminant concentrations of trench area soils were approximately 18 feet below the land

Table : NATIONAL STARCH: ORGANIC ANALYSIS RESULTS FROM S BORING SAMPLES COLLECTED NOVEMBER 1989

-- SOIL BORING AND SAMPLE NUMBERS (Concentrations are in ug/kg (ppb))

SAMPLED INTERVAL FROM LAND SURFACE (FT)

| TARGET COMPOUND LIST SUBSTANCES | QUANTITATION LIMITS[a] | BH-06 0-2' | BH-07 10-11' | BH-08 12-14' | BH-09 10-12' | BH-090 12-13' | BH-090-RE 12-13' | BH-10 18-20' | BH-11 18-20' | BH-12 26-28' | BH-13 28-30' | BH-14 2-4' | BH-15 28-30' | BH-11 DUP (BH-16) 20-22' | BH-12 DUP (BH-17) 24-28' | RINSATE KK0037 | RAINWATER D1304 | RAINWATER RW120889 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS** | | | | | | | | | | | | | | | | | | |
| Methylene chloride | | 7 | 13 | 7[cd2] | --[b] | 71 | 54 | -- | -- | 12[f] | 12[f] | 10 | 6[cd1] | -- | 8[f] | -- | 1[cd2] | NA |
| Acetone | | 7[cd5] | 88[f] | -- | -- | 180[f] | 210[f] | -- | -- | 270 | 160 | 31,000[fg] | 12[c] | -- | 100 | 15 | 4[cd3] | NA |
| Carbon Disulfide | | -- | -- | -- | -- | -- | -- | -- | -- | 11 | 7[c] | -- | -- | -- | -- | -- | -- | NA |
| Chloroform | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 38 | -- | NA |
| 1,2-dichloroethane | | -- | -- | -- | -- | 950 | 320 | 100,000 | 41,000 | 4600[g] | 5400[g] | -- | -- | 8200 | 8500[g] | -- | -- | NA |
| 2-butanone | | -- | 3[cd1] | -- | -- | -- | -- | -- | -- | 27 | 15 | -- | -- | -- | 5[c] | -- | -- | NA |
| Bromodichloromethane | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5 | -- | NA |
| 1,2-dichloropropane | | -- | -- | -- | 830 | 630 | 280 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | NA |
| Bromoform | | -- | -- | -- | -- | -- | 33[c] | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | NA |
| 4-methyl-2-pentanone | | -- | -- | -- | -- | 230 | 160 | -- | -- | -- | 130 | -- | -- | -- | -- | -- | -- | NA |
| Toluene | | -- | -- | 1[c] | 2700 | -- | 440 | -- | 17,000 | 7[c] | 27 | -- | 7[c] | 30,000 | -- | -- | 1[c] | NA |
| Ethylbenzene | | -- | -- | -- | 1700 | 1100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | NA |
| Total Xylenes | | -- | -- | 3[c] | 11,000 | 3400[g] | 1700 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | NA |
| **SEMIVOLATILE ORGANICS** | | | | | | | | | | | | | | | | | | |
| 4-methylphenol | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzoic acid | | -- | -- | -- | -- | -- | -- | 70C | 350C | -- | -- | -- | -- | 240C | -- | -- | -- | -- |
| n-Nitrosodiphenylamine[h] | | -- | 100C | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 140C | -- | -- | -- |
| Bis(2-ethylhexyl)phthalate | | 390[cd210] | 280[cd210] | 760[d360] | -- | 470[cd210] | 610 | 760[d360] | 360[cd290] | 610[cd270] | 490[cd270] | 360[cd210] | 430[cd290] | 470[cd290] | 720[cd270] | -- | -- | -- |
| Phenol | | -- | -- | -- | -- | -- | -- | 360[c] | -- | -- | 150[c] | -- | -- | -- | -- | -- | -- | -- |
| Hexachlorobutadiene | | -- | -- | -- | -- | -- | -- | 140[c] | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-methylphenol | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzyl alcohol | | -- | -- | -- | -- | -- | -- | 49[c] | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Bis(2-chloroethyl)ether | | -- | -- | -- | 33,000[g] | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

a Quantitation limits are not reported for soil samples due to their variability Applicable limits are available on the certificates of analysis

b -- indicates organic compounds that were not detected

c Reported concentration is below the quantitation limit

d Compound is also present in the laboratory blank The superscripted number is the lab blank concentration

e Compound exceeded calibration range of instrument but within instrument linear range

f Analyte was found in the blank as well as the sample

g Compound analyzed at a secondary dilution factor

h Detected as diphenylamine

NA Not applicable

RI Reextraction

## Table 2 NATIONAL STARCH: INORGANIC ANALYSIS RESULTS FROM SOIL BORING SAMPLES COLLECTED NOVEMBER 1989

SOIL BORING AND SAMPLE NUMBERS (Concentrations are in mg/kg (ppm))

SAMPLED INTERVAL FROM LAND SURFACE (FT)

| TARGET ANALYTE LIST SUBSTANCES | DETECTION LIMITS[a] | BH-06 0-4' | BH-07 10-12' | BH-08 12-14' | BH-09 10-12' | BH-09D 8-10' | BH-10 14-22' | BH-11 18-20' | BH-12 24-28' | BH-13 28-30' | BH-14 2-4' | BH-15 28-32' | BH-11 DUP (BH-16) 28-22' | BH-12 DUP (BH-17) 24-28' | RINSATE KK0039 | RAINWATER D1384 | RAINWATER [illegible] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | 54.100 | 29.000 | 32.100 | 31.200 | 59.400 | 36.900 | 27.500 | 38.700 | 28.900 | 79.700 | 50.700 | 29.300 | 25.200 | 55[c] | -- | -- |
| Antimony | | --[b] | -- | -- | 28 | 6[c] | 5[c] | -- | -- | 5 | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | | 4.1 | -- | -- | 44 | 1 | -- | -- | -- | -- | 2.1 | -- | -- | -- | -- | -- | -- |
| Barium | | 21.3 | 129 | 70.9 | 65 | 32.2 | 163 | 107 | 103 | 190 | 43.9 | 176 | 147 | 96.1 | 8[c] | -- | 3[c] |
| Beryllium | | 0.5 | 0.5 | 0.8[c] | 0.4[c] | 0.3[c] | 0.6 | 0.7 | 0.2 | 0.5 | 0.2[c] | 1 | 0.6 | 0.3[c] | -- | -- | -- |
| Cadmium | | 0.7 | -- | 3.0 | 2.8 | -- | -- | -- | -- | -- | -- | 2.1 | 2.8 | -- | -- | -- | -- |
| Calcium | | 336[c] | 1960 | 278[c] | 139[c] | 246[c] | 828 | 6030 | 2600 | 2130 | 267[c] | 635 | 2320 | 3278 | 7150 | 485[c] | 183[c] |
| Chromium | | 26 | 22 | 38 | 17 | 27 | 5 | 7 | 7 | 6 | 27 | 6 | 16 | 4 | -- | -- | -- |
| Cobalt | | 13 | 17 | 40 | 9 | 15 | 41 | 17 | 23 | 29 | 14 | 69 | 27 | 20 | -- | -- | -- |
| Copper | | 92 | 40 | 64 | 53 | 66 | 55 | 82 | 76 | 58 | 69 | 150 | 92 | 101 | 28 | -- | 26 |
| Iron | | 93.000 | 27.500 | 64.400 | 60.100 | 75.300 | 46.000 | 40.400 | 40.600 | 32.500 | 96.100 | 58.300 | 62.400 | 29.600 | 190 | 27[c] | 83[c] |
| Lead | | 0.9 | 3.7 | 4.8[c] | 5.4 | 5.1 | -- | -- | 2.3 | 2.8 | 6.1 | 6.7 | 3.4 | 2.9 | -- | -- | 4[c] |
| Magnesium | | 354[c] | 3950 | 1800 | 348 | 392[c] | 2050 | 2540 | 1600 | 1190 | 587 | 3630 | 2570 | 2510 | 1360[c] | 134[c] | -- |
| Manganese | | 275 | 842 | 964 | 219.8 | 483 | 821 | 135 | 412 | 516 | 319 | 626 | 276 | 268 | 5[c] | 29 | 3[c] |
| Mercury | | 0.05 | -- | -- | 0.03 | 0.05 | 0.03 | 0.08 | -- | -- | 0.04 | -- | -- | -- | -- | -- | -- |
| Nickel | | 9 | 10 | 10 | 7 | 13 | 7 | 7 | 5 | 7 | 12 | 23 | 11 | 6 | -- | -- | -- |
| Potassium | | -- | 150 | -- | -- | -- | -- | -- | -- | -- | -- | 876 | 151 | 194[c] | -- | -- | -- |
| Sodium | | 36[c] | 186[c] | 115[c] | 98[c] | 192[c] | 282[c] | 312[c] | 1540 | 664 | 39[c] | 63[c] | 278[c] | 1840 | 10.900 | 1320[c] | -- |
| Vanadium | | 292 | 62 | 183 | 171 | 226 | 132 | 153 | 122 | 129 | 252 | 91 | 207 | 81 | -- | -- | -- |
| Zinc | | 46.2 | 42.2 | 56.8 | 34.4 | 47.4 | 66.9 | 66.2 | 50.2 | 52.2 | 47.5 | 99.2 | 66.8 | 56.6 | 66 | 16[c] | 23 |

[a] Detection limits not reported for soil samples due to their variability. Detection limits are available on the Certificates of Analysis

[b] -- indicates inorganic compounds that were not detected in this sample

[c] Value greater than instrument detection limit, but less than contract required quantitation limit

NA Not applicable

surface and were found in much lower concentrations than expected. It appears that residual soil contamination is effectively leaching into the groundwater; soil concentrations are consequently being reduced. Any remedial actions involving removal or treatment of these subsurface soils will introduce additional risks to the environment or human health, by the excavation or construction concerns inherent to any further action.

To support the potential for natural soil flushing to be considered as a viable remedial option in conjunction with the groundwater extraction system, two vadose zone models were applied to the study data. The first objective was to determine an acceptable concentration of a contaminant in soil; the second objective was to predict the time required to achieve this acceptable concentration. Pre-established groundwater cleanup criteria (Operable Unit 1 ROD, 1988), were considered the upward limit for contaminant concentrations in groundwater. Soil concentrations were then back-calculated using the soil/water equilibrium relationship. Modeling data and information are provided in Appendix B.

The modeling approach was based on conservative assumptions and was also used to predict the leachate concentration over time. The partition coefficients were calculated based on site-specific results of the TCLP analysis. The model predicts that most compounds will leach into the groundwater within 5 years. 1,2-dichloroethane is predicted to take much longer (approximately 22 years). Preliminary estimates show that the groundwater remediation effort may take 20 to 30 years before meeting the cleanup criteria throughout the plume.

Surface Water and Sediments

Surface water/sediment sampling was conducted during both the first and supplemental RIs. The actual source of this contamination has not been determined. It has been concluded that the trench area soils are not the source. This Second Operable Unit presents the selected remedy for the trench area soils.

Continual monitoring of the surface water system, known as the northeast tributary, is required by the first ROD, until a source of contamination can be defined. Further investigation of this system will be continued under a third Operable Unit to ultimately select an appropriate remedy.

Summary of Site Risks

CERCLA directs that the Agency must protect human health and the environment from current and potential exposure to hazardous substances at the site. The risk assessment conducted during the initial RI concluded that the principal risk presented from the NSCC site was the potential for human consumption of contaminated groundwater. Likewise, the principal risk posed from the trench area soils is also the potential for human consumption of contaminated groundwater since the only route of migration of and/or exposure to the contaminated subsurface soils is infiltration to groundwater. The following section summarizes the Agency's finding concerning the risks from exposure to groundwater related to this site and discusses the contaminated soil as a source of exposure.

Contaminants of Concern

Eleven carcinogens and fourteen non-carcinogens have been identified in the groundwater at this site. The toxicity, mobility and persistence characteristics of these substances at the site do not warrant the exclusion of any of these substances from consideration as chemicals of concern at the site. The contaminants of concern for groundwater at this site are listed in Table 3. This table also shows the highest concentrations of these substances in groundwater and in the soil samples collected at the site. Also the TCLP results for the three soil samples collected at the 12 to 18 ft. level are shown. The maximum concentrations from a rainwater and standard leachate are shown. This table also shows the highest concentrations of these substances in groundwater and in the soil samples collected at the site. The maximum concertrations from a rainwater and standard leachate are shown. The results of sampling from the supplemental RI indicate levels of contaminants of concern in the soil of the trench area are of minimal significance relative to the concentrations currently existing in groundwater. Since the groundwater pump and treat system is designed to capture the highly contaminated groundwater as well as lesser contaminated groundwater originating by the leaching of rainfall through the residual soils in the trench area, no excavation of the source is deemed necessary. Therefore, no contaminants of concern were identified for soil.

Exposure Assessment

Groundwater in the area is a current source of drinking water; it is classified as Class IIA based on the Agency's Groundwater Classification Strategy. A 1988 survey of existing off-site water supply wells revealed a total of 1,539 homes within a 3-mile radius of the site. These wells are outside the limits of the city water lines and could potentially use the groundwater for drinking and other domestic purposes. The closest well is located 2,200 feet northeast of the site.

In developing the hypothetical exposure scenarios for groundwater at this site, it was assumed that nearby residents would be exposed to water contaminated at the highest concentrations found on site. This is a reasonable assumption based on the facts that residences are located almost directly along the site boundaries in the direction of apparent groundwater flow, and because the data indicate that the groundwater plume is advancing rapidly. The potential routes of human exposure relative to the groundwater include water used for drinking and other domestic purposes.

Contaminants were identified in soil sample taken to a depth of 30 ft. However, a trench-area sample taken at the 0-2 ft. depth showed low levels of only three organic contaminants, i.e. methylene chloride, acetone and bis(2-ethylhexyl) phthalate. This finding of minimal contamination is consistent with the understanding that trenched areas (8 ft. deep) had been back filled with clean soil. Only the top 1 to 2 feet of surface soil is considered as a direct-exposure soil source. Therefore exposure through soil ingestion, inhalation and dermal contact could be possible to the three organic contaminants. The more extensive contamination of the subsurface soil would be of concern as a source of exposure through groundwater use.

TABLE 3

Groundwater Contaminants of Concern with
Highest Concentrations Detected in Groundwater, Subsurface Soil
and TCLP Leachates of Subsurface Soil (ppb).

| CARCINOGENS | MAXIMUM WATER CONC[a] | MAXIMUM SOIL CONC[b] | MAXIMUM TCLP CONC[b,c] |
|---|---|---|---|
| Arsenic | 310 | 44,000 | |
| Benzene | 8 | ND | |
| Bis(2-chloroethyl)ether | 14,000 | 33,000 | |
| Bromodichloromethane | 7 | ND | |
| chloroform | 49 | ND | 2 |
| 1,2-dichloroethane | 350,000 | 100,00 | 810 |
| 1,1-dichloroethylene | 11 | ND | |
| Methylene chlorode | 8 | 71 | 1 |
| 1,1,2-trichloroethane | 11 | ND | |
| Trichloroethylene | 10 | ND | |
| Vinyl chloride | 90 | ND | |
| **NON-CARCINOGENS** | | | |
| Actone | 89,000 | 31,000 | 150 |
| Barium | 2,290 | 190,000 | 760 |
| Beryllium | 120 | 800 | |
| Cadmium | 114 | 3,000 | |
| Chromium (VI) | 554 | 27,000 | |
| 1,2-dichlorpropane | 29,000 | 100,000 | 19 |
| Ethyl benzene | 1,500 | 1,700 | 33 |
| Manganese | 1,400,000 | 964,000 | 5900 |
| Nickel | 5,190 | 23,000 | 30 |
| 4-nitrophenol | 13,000 | ND | |
| Selenium | 274 | ND | |
| Toluene | 6,000 | 30,000 | 62 |
| Xylenes (mixed) | 3,800 | 11,000 | 95 |
| Zinc | 14,900 | 99,200 | 71 |

[a] - Data from Public Health Evaluation in FS Report, September, 1988.

[b] - Data from supplemental RI report for Second Operable Unit, May 1990. All maximum values occurred in samples taken at 10 feet or below.

[c] - Only samples collected at 12-18 ft. below surface were subjected to TCLP analysis.

## Toxicity Assessment

Cancer potency factors (CPFs) have been developed by EPA's Carcinogenic assessment Group for estimating excess lifetime cancer risks associated with expsoure to potentially carcinogenic chemicals. CPFs, which are expressed in units of (mg/kg/day)-1, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bond estimate of the excess lifetime cancer risk associated with exposure at the intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied. The Agency considers individual excess cancer risk from exposure to contaminants at superfund site to be protective if they fall within a $10^{-4}$ to $10^{-6}$ range, i.e. 1:10,000 to 1:1,000,000. The $10^{-6}$ risk level is the desired level for single carcinogens; the sum of site upperbound cancer risk should not exceed $10^{-4}$.

Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting noncarcinogenic effect. RfDs, which are expressed in units of mg/kg-day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factores have been applied (e.g. to account for the use of animal data to predict effects on humans.) These uncertainty factors help ensure that the RfDs will not underestimate the potential for adverse noncarcinogenic effects to occur.

The CPFs for the 11 carcinogens and the RfDs for the 14 non-carcinogens selected as the groundwater contaminants of concern are shown in Tables 4 and 5.

## Risk Characterization

Excess lifetime cancer risks are determined yb multiplying the intake level with the cancer potency factor. These risks are probabilities that are generally expressed in scientific notation (e.g., $1 \times 10^{-6}$ or 1E-6). An excess lifetme risk of $1 \times 10^{-6}$ indicates that, as a plausible upper bound, an individual has a one in a million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site.

Potential concern for noncarcinogenic effects of a single contaminant in a single medium is expressed as the hazard quotient (HQ) (or the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminant's reference dose). By adding the HQs for all contaminants within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures with a single medium or across media.

TABLE 4
SITE-RELATED CARCINOGENS OF POTENTIAL CONCERN AT THE
NATIONAL STARCH AND CHEMICAL CORPORATION SITE
SALISBURY, NORTH CAROLINA

| COMPOUND | Maximum Observed Concerntration (ug/l) | Estimated Worse Case Intake[a] (mg/kg/day) | CPF[b] $(mg/kg/day)^{-1}$ | Worst Case Excess Cancer Risk[c] | Number Exceeding Detection Limit[d] |
|---|---|---|---|---|---|
| 1,2-dichloroethane | 350,000 | 1.00E+01 | 9.10E+02 | 9.10E-01 | 18 |
| bis(2-chloroethyl)ether | 14,000 | 4.00E-01 | 1.10E+00 | 4.40E-01 | 7 |
| arsenic | 310 | 8.86E-03 | 1.50E+00 | 1.33E-02 | 13 |
| vinyl chloride | 90 | 2.57E-03 | 2.30E+00 | 5.91E-03 | 3 |
| 1,1-dichloroethylene | 11 | 3.14E-04 | 5.80E-01 | 1.82E-04 | 1 |
| chloroform | 49 | 1.40E-03 | 8.10E-02 | 1.13E-4 | 4 |
| 1,1,2-trichloroethane | 11 | 3.14E-04 | 5.73E-02 | 1.80E-05 | 2 |
| bromodichloromethane | 7 | 2.00E-04 | 8.10E-02 | 1.62E-05 | 1 |
| benzene | 8 | 2.29E-04 | 5.20E-02 | 1.19E-05 | 1 |
| trichloroethylene | 10 | 2.86E-04 | 1.10E-02 | 3.14E-06 | 1 |
| methylene chloride | 8 | 2.29E-04 | 7.5E-03 | 1.71E-06 | 2 |

[a]The estimated worst case intake does not represent any real exposure scenario at the site. It is based on a 70 kg person drinking 2 liters of water per day for their entire life from the monitoring well containing the maximum observed concentration of a chemical. This hypothetical exposure scenario is used to rank relative toxicity based on the inherent toxicity and the maximum detected concentration of each chemical. This assumption assists in identifying those carcinogens that have the greatest potential to pose a hazard with frequent exposure over a number of years.

[b]CPF or Cancer Potency Factors were obtained from the Superfund Public Health Evaluation Manual, EPA 1986.

[c]Worst case excess cancer risk is derived from the equation ECR = CPF X Dose = estimated worst case intake.

[d]Indicates the number of smaples out of 38 that exceed the analytical detection limit for that chemical.

TABLE 5
SITE-RELATED NONCARCINOGENS OF POTENTIAL CONCERN AT THE
NATIONAL STARCH AND CHEMICAL CORPORATION SITE
SALISBURY, NORTH CAROLINA

| COMPOUND | MAXIMUM OBSERVED CONCENTRATIONS (ug/l) | ESTIMATED WORST CASE INTAKE[a] (mg/kg/day) | AIC or RfD (mg/kg/day)$^{-1}$ | WORST CASE HAZARD INDEX[b] | SOURCE[c] |
|---|---|---|---|---|---|
| 1,2-dichloropropane | 29,000 | 8.29E-01 | 1.71E-04 | 4845.4 | MCLG |
| manganese | 1,380,000 | 3.94E+01 | 2.20E-01 | 179.2 | HEA |
| 4-nitrophenol | 13,000 | 3.71E-01 | 1.00E-02 | 37.1 | d |
| acetone | 89,000 | 2.54E+00 | 1.00E-01 | 25.4 | RfD |
| nickel | 5190 | 1.48E-01 | 1.00E-02 | 14.8 | HEA |
| cadmium | 114 | 3.26E-03 | 2.90E-04 | 11.2 | HEA |
| xylene (mixed) | 3800 | 1.09E-01 | 1.00E-02 | 10.9 | HEA |
| beryllium | 120 | 3.43E-03 | 5.00E-04 | 6.9 | RfD |
| chromium (as Cr VI) | 554 | 1.58E-02 | 5.00E-03 | 3.2 | HEA |
| selenium | 274 | 7.83E-03 | 3.00E-03 | 2.6 | HEA |
| zinc | 14900 | 4.26E-01 | 2.10E-01 | 2.0 | HEA |
| barium | 2290 | 6.54E-02 | 5.10E-02 | 1.3 | HEA |
| toluene | 6000 | 1.71E-01 | 3.00E-01 | 0.6 | RfD |
| ethyl benzene | 1500 | 4.29E-02 | 1.00E-01 | 0.4 | RfD |

[a]The estimated worst case intake does not represent any real exposure scenario at the site. It is based on a 70 kg person drinking 2 liters of water per day for their entire life from the monitoring well containing the maximum observed concentration of a chemical. This hypothetical exposure scenario is used to rank relative toxicity based on the inherent toxicity and the maximum detected concentration of each chemical. This potential assists in identifying those noncarcinogens that have the greatest potential to pose a hazard with frequent exposure over a number of years.

[b]Hazard Index is derived from the equation: HI = Dose/Reference Dose, where: HI = hazard index,
Dose = estimated worst case intake
Reference dose = acceptable intake for chronic exposure

[c]HEA = Health Effects Assessment document prepared by Environmental Criteria and Assessment Office, EPA 1984
RfD = Reference Dose from SPHEM, EPA 1986
MCLG = Maximum Contaminant Level Goal, (EPA 1986)

[d]Derived by using the RfD for phenol and using an additional safety factor to address the known higher acute to[illegible]ty of 4-nitrophenol.

The carcinogenic upperbound risks and the non-carcinogenic Hazard Index values for the 25 groundwater contaminants of concern are shown in Tables 9 and 10. The risk numbers are based on exposure to the maximum concentrations detected for each chemical during the RI investigation. The potential risk posed by these chemicals from ground water contamination is being addressed in the remedy for operable unit one (OU#1). The risk summary of this ROD for operable unit unit two has included a discussion of the risk from groundwater for two reasons: (1) it was not adequately discussed in the ROD for OU#1 and its inclusion here provides a more accessible record and (2) it provides important background information for the no-action remedy proposed for OU#2, the soil source.

The data indicate that all remaining site contaminants are in the saturated zone or in the deep soil just above the surficial aquifer. Although minimal data were collected to confirm this assumption, all site history information indicate that no contamination exists in the top 2-5 ft. of soil. The three contaminants detected in the top 2 ft. of soil discussed under the Exposure Assessment Section were well below levels of concern. Therefore, the direct soil exposure pathways are not relevant for this site.

Groundwater contamination from deep soil leaching appears to be the only exposure pathway to remaining site contaminants and this pathway is being addressed under OU#1. The groundwater and deep soil data indicate that the primary contaminants (volatile and semivolatile compounds) are moving into the groundwater and that maximum concentrations have likely already reached the surficial aquifer. It is likely that disturbance of the soil source of these contaminants could result in an increase health risk by creating new direct exposure pathways to workers and perhaps to the community. Therefore, a no action remedy is believed to be the course that would create the least risk from the soil source while the remedy identified under OU#1 achieves groundwater protection.

DESCRIPTION OF THE NO ACTION ALTERNATIVE

The no-action alternative would leave contaminated soils in place. This will allow for the naturally occurring leaching or cleaning of the soil in conjunction with groundwater remediation. Leachate from the residual soil contamination would be extracted and treated by the groundwater extraction system. Infiltration to groundwater is the only route of migration and subsequent exposure potential.

A deed restriction would be filed identifying the areas of contamination. The deed restriction will prevent property transfers to uninformed purchasers and will limit furture utilization of the property. These restrictions are easily implemented by processing the restrictions through a local attorney and the Rowan County or City of Salisbury Register of Deeds.

The trench disposal area itself does not present a direct health risk. As previously stated, the risk posed is through the migration from soils into groundwater; subsequent contaminated groundwater consumption poses the principal site threat. Therefore, access restriction to this area is not required. It should be noted that the trench area lies well within the NSCC property.

The primary concern at the NSCC site is groundwater contamination. The only manner in which the soils contamination can manifest itself is through leaching into the groundwater system. The groundwater remedy was presented in the first Operable Unit ROD in 1988. The groundwater plume is to be controlled and treated to prevent releases off the site property; therefore, any potential exposure pathway will be mitigated. By allowing the natural attenuation of the soil, contamination (over time) will be reduced because of biodegradation, leaching, and volatilization of contaminants.

Any residual contaminants in the unsaturated zone will be leached naturally by precipitation infiltration and then captured within the groundwater extraction system for ultimate treatment and disposal. Contaminant transport modeling, as presented in the Supplemental RI, predicted that most compounds will leach into the groundwater within the projected time frame for groundwater remediation, i.e. 20 to 30 years. This leaching process will actually be inhanced by the groundwater extraction system. This alternative, in conjunction with groundwater remediation, provides an effective method to treat soil and groundwater contaminants.

Additional Remedial Alternatives addressing the trench area soils were developed in both the initial and Supplemental FSs. These documents and all relative data are contained within the Administrative Record.

Costing Information

The capital costs associtated with the no action alternative are the attorney fees for processing the deed restrictions. The operation and maintenance costs associated with this alternative are for resampling and evaluating the reduction of contaminants in the soil every five years.

Capital Costs

| | |
|---|---|
| Deed restriction, lawyer fees | $1,000 |
| Subtotal $1,000 | |

Operation and Maintenance Costs

| | |
|---|---|
| Soil sampling every five years (30 years, present worth) | $150,000 |
| Subtotal $150,000 | |

Present Worth

PW = $1,000 + $150,000

PW = $151,000

In summary, the trench area subsurface soil has been adequately addressed to concludes that the contaminants existing in the soil will leach over time into percolating rainfall. The leachate will then become captured by the groundwater extraction system and treated in the on-site pretreatment system.

A conservative modeling approach was used to predict the leachate concentration over time. The partition coefficients were calculated based on site-specific results of leachate (TCLP) analysis. Also, the highest known concentration of each compound was used in the model to account for uncertainties in the data set. Even with this conservative approach, the model predicts that most compounds will leach into the groundwater with 5 years. 1,2-dichloroethane, (DCA), is predicted to take 22 years before a safe level is reached (in groundwater). Preliminary estimates show that the groundwater remediation effort may take 20 to 30 years before meeting the cleanup criteria throughout the plume. Therefore, the remedial alternative of natural soil flushing (or no further action) as described in the original and Supplemental FS is the recommended approach.

In addition, soil samples should be collected for monitoring purposes no less frequently than every 5 years to verify that soil remediation is progressing. At a minimum, analysis will consist of volatile organic compounds.

EXPLANATION OF SIGNIFICANT DIFFERENCES

The selected remedy as presented in this decision document has no differences, significant or otherwise, from the proposed plan.

# APPENDIX A - RESPONSIVENESS SUMMARY

## I. RESPONSIVENESS SUMMARY OVERVIEW

The U.S. Environmental Protection Agency (EPA) held a public comment period from July 30 through August 29, 1990 for interested parties to comment on the Remedial Investigation/Feasibility Study (RI/FS) results and the Proposed Plan for Operable Unit 2 at the National Starch and Chemical Corporation Site (NSCC Site or the site) in Salisbury, North Carolina.

The Proposed Plan, included in Attachment A of this document, provides a summary of the site's background information leading up to the public comment period. Specifically, the Proposed Plan includes the following sections: Introduction, Site Background, Results of the Supplemental Remedial Investigation, Endangerment Assessment, Scope and Objectives of this Remedial Action, Public Comment Period, EPA's Review of Public Comments, Additional Public Information, Development of EPA's Preferred Alternative, Summary of Remedial Alternatives, EPA's Rationale for Soliciting the Preferred Alternative and Glossary of Terms.

EPA held a public meeting at 7:00 pm on July 30, 1990 at the Salisbury Civic Center in Salisbury, North Carolina to outline the RI/FS and describe EPA's proposed remedial alternatives for Operable Unit 2 (i.e., trench area soils) at the NSCC Site. All comments received by EPA during the public comment period will be considered in the final selection of a remedial alternative for the areas of contamination at the NSCC Site.

The Responsiveness Summary, required by the Superfund Law, provides a summary of citizens' comments and concerns identified and received during the public comment period, and EPA's responses to those comments and concerns.

This Responsiveness Summary is organized into the following sections and attachments:

I. RESPONSIVENESS SUMMARY OVERVIEW. This section outlines the purposes of the public comment period and the Responsiveness Summary. It also references the appended background information leading up to the public comment period.

II. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS. This section provides a brief history of community concerns and interest regarding the NSCC Site.

III. SUMMARY OF MAJOR QUESTIONS AND COMMENTS RECEIVED DURING THE PUBLIC MEETING AND EPA'S RESPONSES TO THESE COMMENTS. This section summarizes the oral comments received by EPA at the July 30, 1990 public meeting, and provides EPA's responses to these comments.

IV. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA'S RESPONSES TO THESE COMMENTS. This section contains the one letter received by EPA containing written comments, as well as EPA's written response to that letter.

ATTACHMENT A: Attachment A contains the Proposed Plan which was distributed to the public during the public meeting held on July 30, 1990 and mailed to the information repository and those included on the mailing list.

ATTACHMENT B: Attachment B includes the sign in sheets from the public meeting held on July 30, 1990 at the Salisbury Civic Center, 315 South Boundary Street, Salisbury, North Carolina.

ATTACHMENT C: Attachment C includes names, addresses and phone numbers of the information repository designated for the NSCC Site.

ATTACHMENT D: Attachment D includes the official transcript of the Public Hearing on the Proposed Plan for the Cleanup of the NSCC Site located in Salisbury, North Carolina.

## II. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

### A. Background on Community Involvement

Awareness of and concern about the National Starch plant are very high in the communities which are adjacent to and nearby the site. National Starch has received considerable local media attention, primarily in The Salisbury Post (formerly the Salisbury Evening Post). In the 1960s and 1970s, Proctor Chemical (later acquired by National Starch) experienced incidents of escaping vapor clouds and chemical spills at the Lumber Street plant. Two such incidents were reported in The Salisbury Post in April and October, 1979. In both incidents, a vapor cloud escaped from the plant when a piece of equipment malfunctioned. Chemical spills and equipment malfunctions were also reported in March and April 1980 for the Cedar Springs Road Plant, the location of the Superfund site.

The Salisbury Post reported in 1982 that three Rowan County firms, including Proctor Chemical on Cedar Springs Road, were included in a list of 174 sites in North Carolina that may contain hazardous wastes. Proctor Chemical Safety Director, Lane Brown, was quoted in The Salisbury Post article as stating that about 350,000 gallons of waste material from the production of textile products were stored in evaporation lagoons and trenches between 1971 and 1978.

The single event which was most significant in heightening community awareness about National Starch was the explosion that occurred at the firm's Lumber Street Plant on September 21, 1983. The explosion destroyed a section of the plant, injured four employees and 14 firemen, sent debris over a four block area, and required 75 families to be evacuated from the area for a short time. This incident received national media attention. In the aftermath of the explosion, residents in the nearby neighborhoods urged that National Starch move the potentially explosive mixing operations to its Cedar Springs Road Plant. Even though National Starch responded quickly to cleanup and repair damage to surrounding homes, a petition was circulated urging National Starch to move their operations to the Cedar Springs Road Plant. An article in The Salisbury Post on October 4, 1983, indicated that the petition had been signed by 166 people.

In November, 1983, The Salisbury Post reported that the Mooresville office of the North Carolina Division of Environmental Protection was investigating complaints of unpleasant odors from neighborhoods in the vicinity of the Cedar Springs Road Plant. The residents of Kings Forest and Stonybrook complained that the plant was emitting odors which were bad smelling and irritating to the eyes. No odors were found and the residents were told that even if the plant were emitting odors it would be difficult to enforce North Carolina's air pollution control regulation in this instance.

On August 16, 1984, a production process at the Cedar Springs Road Plant boiled over, releasing a vapor cloud containing acetic acid. The vapor cloud effected vegetation up to 1.5 miles from the plant in a northeasterly direction. National Starch was fined a total of $10,000 on February 11, 1985, by the North Carolina Department of Natural Resources and Community Development, Division of Environmental Management, for the unlawful discharge of a hazardous substance and

for failing to immediately report the discharge to the Department. As reported in The Salisbury Post, this release angered residents in the nearby Trailer City mobile home park. Residents complained of breathing problems and peeling paint on trucks and mobile homes. Residents were also reported to express concern about the secrecy which surrounds the plant and lack of response by National Starch's insurance company adjusters. Other residents were worried about effects on children and not being able to open doors or windows or run air conditioners for fear that the bad air would be drawn into their homes. A local resident has filed a $2.5 million lawsuit against National Starch from this incident, charging that the release damaged personal property and that personal injury occurred.

In a September 7, 1984 Salisbury Post article a local doctor was reported to have diagnosed between five and ten cases of chemical bronchitis as a result of the August 16, 1984 vapor cloud release from the National Starch Cedar Springs Road Plant. The doctor and a North Carolina Department of Human Resources toxicologist were quoted as stating that their investigations on health effects were hampered by National Starch's refusal to provide proportions of the mix that resulted in the vapor cloud release. According to The Salisbury Post, National Starch officials were unavailable for comment.

An article appearing in the Thursday, September 6, 1984 edition of The Salisbury Post reported that three of the monitoring wells on the National Starch site were contaminated with unknown pollutants. The North Carolina Division of Environmental Management was reported as having to rely on National Starch to identify the substances found in the water samples. The article also referred to tests conducted at a private well in the Little Acres Mobile Home Subdivision in March 1984 in which a number of contaminants had been discovered. Subsequent testing of the well in June 1984 found no contaminants, leading officials to believe that the March samples had been contaminated in the laboratory.

In October 1984, an article appearing in The Salisbury Post cited former and current city employees' accounts that National Starch buried liquid waste from its Lumber Street plant at the City of Salisbury's Town Creek and Grants Creek wastewater treatment plants. The employees were not sure how much had been dumped or how long the dumping lasted, but thought the dumping occurred as early

as 1967 to 1971. Metal 55-gallon drums were also said to have been buried at the city sites. City officials were quoted as saying they did not believe the dumping had occurred. National Starch officials admitted that a dump existed at its Cedar Springs Road Plant site but not at any other location. Subsequent searching of the two treatment plant sites by both state and city agency personnel found no evidence of buried wastes.

In March, 1985, the National Starch site was selected for inclusion on the proposed expansion of the National Priorities List. The Hazard Ranking System (HRS) score was 31.9. The decision to include the site on the proposed list was published on April 10, 1985, in the Federal Register. An article titled "National Starch: the neighbor's views" appeared in The Salisbury Post on April 1, 1985. The article described mixed feelings in the communities near the plant. Some of the residents within Kings Forest subdivision believed that National Starch was a responsible company with an excellent record, and that National Starch would work with the EPA and cleanup the dump. Residents of Trailer City were concerned about the effects on their health and believed their community had borne the brunt of living near National Starch. The article reported that, at least once per week, odors described as everything from rotten eggs to fish, drifted through the park, forcing residents inside their mobile homes. Some residents were reported as being ready to move but don't know where to move.

The lead story in The Salisbury Post on August 21, 1985, was about a chemical explosion which injured two workers at the National Starch Cedar Springs Road Plant. The explosion occurred as a pilot-scale manufacturing process was being conducted. No hazardous runoff or emissions resulted from the incident.

A local citizens group, Citizens for A Safe Environment (CASE), was organized in August 1985, after the Clean Water Fund of North Carolina approached community members who had expressed concerns about the site and offered to help them start a citizens group. In a letter to the editor of The Salisbury Post published on September 17, 1985, a spokesperson for the group stated that the objectives of the group are to: 1) determine the current surface and well (aquifer) water quality surrounding the National Starch Cedar Springs Road Plant; 2) get the dumpsite cleaned up effectively and promptly; 3) express concern over National

Starch's recent safety record; 4) encourage National Starch to display improved communications and community relations; and 5) develop long-range environmental awareness in the South Rowan County area.

A public meeting was held on September 4, 1985. EPA officials, National Starch representatives, members of CASE, and a representative of the Clean Water Fund were in attendance, as well as about 60 residents. The Salisbury Post reported in an article about the meeting that, "the assurances by high ranking National Starch officials did little to dissuade the fears of the 60 residents" in attendance. Residents were quoted as saying that National Starch was not showing responsible safety or citizenship to the community and that National Starch had made the area around Airport Road a bad place to live. National Starch representatives were reported as having met repeatedly with EPA officials and stated that National Starch will cleanup the dump if the site makes the NPL. National Starch officials also agreed to meet with the Clean Water Fund and residents to address residents' demands.

Following the public meeting, held on September 4, 1985, CASE organized a rally to coincide with the passage of a truck called the Times Beach Bullet through the area, which was carrying waste samples from Superfund sites in Belmont, Mount Holly and Shelby to Washington, D.C. Participating in the rally were representatives of the Sierra Club, National Campaign Against Toxic Hazards, and the Clean Water Fund of North Carolina. The Salisbury Post reported that about 30 people attended the rally. A local resident was quoted that "a lot of people are disappointed with the seemingly endless bureaucratic snarls that seem to be part of this game." A petition, containing 815 signatures of residents from southern Rowan county, asking that National Starch clean up the site, was sent along with the waste samples. It was reported that local and state representatives, Charlotte Gardner and Brad Ligon, attended the rally to demonstrate their support for CASE.

In keeping with discussion held at the public meeting of September 4, 1985, National Starch arranged for a group of citizens to tour the National Starch Cedar Springs Road Plant. A synopsis of the tour appeared in The Salisbury Post on October 15, 1985. The tour was reported to have received mixed reviews from

CASE members. Some residents stated they felt safer since National Starch had told them things they had not been told before. Other residents were not convinced that the toxic waste would not get into their water in the future. National Starch did not provide information about the substances used at the plant, claiming that such information was confidential. This approach left some doubt in the minds of some residents. At the start of the tour, National Starch refused to include a Salisbury Post reporter and a representative from the Clean Water Fund on the grounds that the tour was for southern Rowan County residents only. National Starch eventually relented and the Clean Water Fund representative was allowed to take part in the tour, although the reporter was not.

In April 1986, neighbors around the National Starch Cedar Springs Road Plant, particularly those residing in Trailer City, complained of a strong odor that made their eyes burn and caused dizziness. As reported in The Salisbury Post on April 1, 1986, the Salisbury Fire Department received several calls about an odor at approximately 7:15 pm on March 31, 1986. Fire officials could find nothing at the plant, which had been closed for the Easter holiday. In another article, fire fighters responded to a call from a nearby resident who thought that an explosion had occurred a the Lumber Street Plant. The fire department found nothing, no explosion, no vapor cloud, and no fire.

The front page story in The Salisbury Post on June 25, 1986, reported that a toxic cloud escaped from a reactor vessel at the National Starch Cedar Springs Road Plant. Acrylic acid was released to the atmosphere when a safety relief valve opened to release the pressure that had built up in the reaction vessel. The safety relief valve would not open and release chemicals to the atmosphere under normal operating conditions. It is designed to open only when potentially explosive conditions exist, as they did at the time of the accident. The Salisbury Fire Department sealed off Cedar Springs Road at US Highway 601/BUS 29 and Airport Road. Some nearby residents reported burning eyes, irritated lungs, and headaches. Residents interviewed after the incident were quoted as saying that it was not safe around the plant. Residents also complained about odors during the evening hours.

A representative of CASE appeared before the county commissioners on July 7, 1986. An account of this presentation appeared in The Salisbury Post on July 7, 1986. The commission was asked to study what could be done to improve safety and communications at National Starch. As a result, the commissioners asked that the county attorney look into the request to determine what the county could do. It was reported that CASE members faced a bureaucratic snarl, a lack of support from county officials and secrecy from National Starch.

The community had maintained a high level of awareness and concern regarding National Starch as a result of the incidents reported in the media. According to the National Starch Operations Manager, National Starch has had to contend with media reports that were, at times, either less than factual, or misleading. The lack of information and the manner in which National Starch dealt with some of the reported incidents may have contributed to the heightened awareness and the lack of credibility that National Starch has within the community. Community awareness appears to increase, sometimes unnecessarily, each time National Starch has an incident. As described by the National Starch Operations Manager, the Cedar Springs Road Plant fire alarm at the Salisbury Fire Department is tied into the plant sprinkler system, sounding the alarm whenever a water pressure drop is sensed, whether or not the sprinkler system has been activated. The fire department apparently races to the Cedar Springs Road Plant, sealing off Airport Road and US Highway 601/BUS 29 at Cedar Springs Road as a standard precaution. Any citizen passing these points will, given National Starch's track record, immediately assume the worst has occurred, namely an explosion similar to the one which occurred at the Lumber Street Plant or a vapor cloud release as occurred in 1984. Without the release of adequate information, rumors get started and what may have been a false alarm becomes a serious incident in the eyes of the community.

Residents in the area also tend to monitor fire and police scanner radios. They have often listened to idle chatter or indecision among firemen, who were waiting for directions from the fire chief or plant officials. This too, has allowed for inaccurate information to be circulated through the community. Each case or example cited above, although not directly related to the proposed Superfund effort at the site, is evidence of the community involvement with National Starch

and provides a basis for getting information about the Superfund Site to the community in an effective and credible manner.

B. Community Concerns

During the public meeting held on September 4, 1985, a number of questions and demands were presented by the citizens group CASE. The consensus of a cross section of the community interviewed in preparing this community relations plan was that these questions and demands were not directly addressed at the meeting. Individuals who attended the meeting said that speakers confused many of the residents by using technical terms that the residents did not understand. In light of the general concern that officials were not paying attention to the community members, the questions and demands presented by CASE at the public meeting are summarized below:

Questions

1) What has EPA found out about the groundwater on the National Starch site?

2) Are the chemicals that are deposited in the trenches hazardous to our (residents) health?

3) Will Superfund be more interested in the site following the field investigation?

4) Is there any evidence of illegal dumping of chemicals at this time?

5) How quickly will cleanup procedures begin, following the field investigation?

6) Will an alarm or horn be required for National Starch during explosions or leaks? (Public use)

7) What are the long-term effects on humans of the chemicals deposited in the trenches?

8) Considering the N.C. Department of Agriculture, Hardee's food distribution warehouse, and 3 Guy's Grocery warehouse are near the National Starch site, is there any possibility of contamination of public food?

9) Will EPA suggest or require National Starch to finance and control its own fire department on its own premises?

10) Will EPA Officials be more strict in the future on chemical dumping and handling of such chemicals on this site?

Demands

1) Residents' wells be checked in immediate area.

2) Better public relations between National Starch, neighbors and surrounding businesses.

3) A public alarm system by National Starch to alert nearby businesses and neighbors of an explosion or chemical leak.

4) Periodic checks by a qualified source of the National Starch site to prohibit chemical violations. (Prefer some outside source)

5) The right to participate from the beginning to the end of the Superfund process.

6) Timely notification of all steps in the Superfund process before they are taken, with reasonable time allowed for comments and response.

7) Progress reports regarding onsite activity with provisions for citizen comment.

Many of these same issues and concerns were expressed during the interviews with local citizens. The community had mixed opinions regarding odors and safety practices employed at the site, concerns which are not directly related to the Superfund site. All of the residents interviewed agreed that if National Starch (or its predecessor, Proctor Chemical) had disposed of hazardous wastes on the site, National Starch should clean up the site. Given previous incidents at National Starch plants in Salisbury and the manner in which National Starch has provided information to the community, a majority of the community members interviewed had little confidence in National Starch's ability to clean up the site or provide accurate information to the community. As a result, many people stated that they would only feel confident if a third party such as EPA were involved in overseeing National Starch efforts at the site.

Some of the specific concerns expressed by residents in the Kings Forest Subdivision included the observation that the creeks behind their homes which drained the National Starch site have "funny smells" and frequently appear to have oil slicks. Residents are afraid to let their children play in the creeks

or on National Starch's property which adjoins their backyards. The possible effects of the Superfund site on property values was also a frequently mentioned concern. One resident suggested that property values may have been affected more by articles in The Salisbury Post dealing with National Starch's problem than by the fact that the subdivision is located adjacent to a Superfund site. Since the Kings Forest subdivision is on city water, concerns about groundwater contamination were not as important as the odor and site access problems, potential for explosion, and accidental releases of vapor clouds. Kings Forest residents consider that they were "lucky" that the wind was blowing in the opposite direction when the acetic acid cloud was released in 1984, but are worried that next time they may not be so lucky. Most people expressed disappointment that the Rowan County officials appear to be unwilling to help, telling residents that it was a city, rather than county, matter.

Several residents referred to the September 4, 1985 public meeting, stating that they had anticipated more direct response to their questions and concerns than had been provided at the meeting. Residents felt that the meeting participants talked above their heads and were not addressing their questions. As a result, a number of residents walked out of the meeting.

Another frequently expressed concern was that National Starch was covering up something. This concern appears to stem from National Starch's public statement about incidents at the plant, which appeared to suggest that "things were under control" when, in many residents' view, they were not. In addition, National Starch has been reluctant to release information on the chemicals used and refused to take CASE representatives inside the Cedar Springs Road Plant during the plant tour.

Residents in areas along Gaskey Road, in the Little Acres Mobile Home Subdivision and in the trailer park on the east of U.S. Highway 601/BUS 29 shared many of the same concerns as residents of Kings Forest, but because they relied on private wells for water, groundwater contamination was a higher priority for the citizens. Residents along Gaskey Road have a creek that drains the National Starch property running through their property. These residents are concerned

about domestic animals drinking the contaminated creek water, and have asked EPA to sample the creek.

## III. SUMMARY OF MAJOR QUESTIONS AND COMMENTS RECEIVED DURING THE PUBLIC MEETING AND EPA'S RESPONSES TO THESE COMMENTS

The following is a summary of the major oral comments, concerns, and questions raised during the public meeting on July 30, 1990 by the local residents together with EPA's responses to these comments.

COMMENT: A local resident expressed concern regarding the resampling conducted in the surface water system adjacent to the site. The results indicated low levels of contamination in both surface water and sediment; however, the sampling was conducted after Hurricane Hugo and may have been affected by excess rainfall overflowing the runoff containment system. The resident questioned how EPA could be certain of contaminant levels now or in the future when additional rainfall and/or hurricanes occur.

RESPONSE: EPA recently conducted further testing or requested that the northeastern tributary be resampled. Data submitted the week prior to the meeting indicated contamination in both surface water and sediments. Further study is required.

COMMENT: A local resident questioned whether the surface water sampled was runoff from present operations at the site.

RESPONSE: To date, EPA has received only preliminary surface water sampling results and can not provide a definitive answer at this point in time.

COMMENT: A local resident stated concern that the contamination levels detected may be due to past operations or current site operations. The resident questioned why EPA could not identify the source of contaminants and whether testing would continue until the source was identified. The resident also expressed frustration with EPA officials stating that Hurricane Hugo was used as an excuse and the entire process was taking too long.

RESPONSE: EPA recently received the preliminary sampling results. The Supplementary Remedial Investigation Report stated that Hurricane Hugo and the resulting runoff caused the contamination. EPA, however, was not satisfied with this determination and requested additional sampling which was completed earlier in the month. Although Hurricane Hugo occurred ten months earlier, the supplemental Remedial Investigation Report was not submitted then and the most current data indicates that the contamination is not due to Hurricane Hugo. Another problem exists.

COMMENT: A local resident questioned if the contamination was caused by onsite operations.

RESPONSE: Onsite operations may be the cause, but this cannot yet be confirmed. (The EPA official used the contour map to explain where the resampling took place.) Resampling efforts should provide more definitive information.

COMMENT: A local resident stated that samples from the runoff in the tributaries were submitted by the resident two years ago and that "oil and junk" were present in Grants Creek; yet EPA claims to have only recently discovered this.

RESPONSE: This is not the first indication of contamination. The Proposed Plan specifically applies to the tributaries and the ROD for Operable Unit 1 requires periodic monitoring until plans are made to address the contamination in the tributary. It is a long process and it has been two years.

COMMENT: A resident argued that five years had passed since the process began and fourteen years had passed since the burying of waste was discontinued. The resident expressed concern regarding the possibility that pollutants were present in the runoff from the site and questioned whether citizens would have to wait five more years to have this confirmed by EPA. The resident stated that EPA should leave it out if they are not planning to resolve the problem.

RESPONSE: The investigation began in 1986 and the initial results indicated certain water contamination. It was originally thought that the contamination came from a trench area, but that was disproved. It was later thought that the

contamination originated from the plant property; however, after the plant incorporated spill control measures, surface water contamination remained. Now EPA is uncertain of the source of contaminants and must reinvestigate.

COMMENT: A local resident asked EPA to identify the contaminants.

RESPONSE: EPA is addressing the soil problem and, as a whole, migration of contaminants from the site will be stopped. Once the extractions are completed, the main source of contamination will not be as great a threat to the community. The main contaminant is 1,2 dichloroethane and may be present because of residual contamination or current plant operations; this has not been determined.

COMMENT: A local resident asked EPA to confirm that contaminants are still present, migration still occurs, and therefore, the problem is not solved.

RESPONSE: That is correct, the problem has not been solved. However, EPA sampled further downstream and determined that once surface water left the site property, it was no longer contaminated.

COMMENT: A resident questioned how far down stream from the site the initial search was conducted, and if it reached Grants Creek.

RESPONSE: No. In 1987, downstream sampling was conducted to Mr. Edison's house.

COMMENT: A resident stated that their water was not tested.

RESPONSE: Only surface water was sampled.

COMMENT: A resident asked how many parts per million were detected.

RESPONSE: The levels were measured in parts per billion and the highest concentration detection was less than two parts per billion in surface water.

COMMENT: A local resident expressed confusion regarding the map and asked what the symbols meant.

RESPONSE: The map depicts the groundwater extraction system and was included in the handouts to aid in answering questions.

COMMENT: A local resident questioned why EPA was unconcerned about contamination discovered at a depth of 18 feet when area water wells reach depths of 100 feet.

RESPONSE: The measurement of 18 feet pertained to the soil in the trench area; not groundwater.

COMMENT: A resident added the concern that if the soil was contaminated at 18 feet, the groundwater would also be contaminated and at an earlier meeting it was explained that groundwater moves one foot per year. Therefore, there was concern that contaminated water would eventually reach drinking water wells.

RESPONSE: The measurement of one foot per year refers to lateral movement; not vertical movement.

COMMENT: A resident explained that the area is experiencing drought conditions and that groundwater moves up and down.

RESPONSE: The groundwater will be addressed in the pump and treat system. Extraction wells will be installed within two months and are designed to capture and contain the contaminate plume. The extraction design will stop the migration of contaminants in the groundwater. There will also be an extensive monitoring system to ensure that the extraction system works.

COMMENT: A resident questioned whether the "No Action" alternative was intended for soil, while groundwater would be pumped out. The resident expressed confusion regarding how the soil will remain the same while the groundwater is under remediation.

RESPONSE: EPA representatives explained that the confusion resulted from the existence of two separate operable units; Operable Unit 1 addressed contaminated groundwater and Operable Unit 2 addressed contaminated trench area soils. In 1988, EPA proposed the groundwater extraction system to clean up Operable Unit

1; contaminated groundwater. In addition to groundwater remediation, the Record of Decision (ROD) for Operable Unit 1 required additional studies on the trench area soils and monitoring of the northeast tributary to determine the contaminant source. The present meeting proposes no further action on soils. The "No-Action" Alternative will be considered along with the others. No further action would allow natural rainfall to percolate through the soil. The pump and treat system will actively draw waters through the contaminated soil area. All alternatives are evaluated on nine criteria. The groundwater remediation will take 25 to 30 years. The groundwater pump and treat system will stop contaminant migration, but the contaminants present will have to be addressed. Modeling of soil flushing estimates that this alternative will require 22 years for completion. In effect, the soils will be addressed with the groundwater pump and treat system.

COMMENT: A resident questioned how many years groundwater would be pumped.

RESPONSE: Approximately 25 to 30 years.

COMMENT: A resident questioned whether the cost described in the handout applied to groundwater cleanup.

RESPONSE: No, the figures provided apply only to soils.

COMMENT: A local resident questioned whether the wells were all installed and operating and expressed confusion regarding the terminology used in the handout.

RESPONSE: Using a figure provided in the handouts, the EPA representative identified the locations of the monitoring wells for the original remedial investigation.

COMMENT: A resident asked how deep the wells are.

RESPONSE: Some wells reach the saprolite, or soil material, and others reach the bedrock. Some locations have paired wells. The depth of the wells varies because the depth of the bedrock varies.

COMMENT: A resident questioned whether all the wells described were contaminated.

RESPONSE: The EPA representative used a diagram to explain that the wells near the trench area were found to contain high levels of volatile organics. The groundwater migrates toward the southwest tributary and the furthest downgradient well revealed no contamination. The highest levels of contamination are in the trench area; this area was identified as the source; therefore, wells will be installed into the saprolite in the trench area. Three wells, indicated on the diagram, will be installed in the trench area and will reach the bedrock system. Pumping the bedrock wells will also influence the saprolite; aiding in the site cleanup. Additional wells will be installed into the bedrock downgradient of the source area in order to stop migration. Monitoring wells will be used to ensure that the system of extraction wells is effective.

COMMENT: A resident inquired about the monitoring well depths.

RESPONSE: Monitoring well depths will vary depending on the depth of the bedrock. Near the trench areas, bedrock is located at depths of 20 to 30 feet. In areas adjacent to the southwest tributary, bedrock is found at shallower depths.

COMMENT: A resident questioned if all monitoring wells were contaminated.

RESPONSE: Analytical results from the wells located in the trench areas confirmed contamination. Levels of contamination found decreased as distance down gradient from the trench area increased. Analytical results from the outlying down gradient wells indicated no contamination.

COMMENT: A resident expressed confusion stating that the soil was contaminated at 18 feet, a well was contaminated at approximately 30 feet and the contamination must continue deeper than 30 feet.

RESPONSE: During the initial investigation, various levels of contaminants were found, depending on location of the boring. However, none of the sampling

locations revealed levels as high as expected. Therefore, it was concluded that groundwater was flushing through the soil. EPA proposes to allow this natural flushing of the soil to continue and begin remediation efforts with the contaminated groundwater.

COMMENT: A resident stated that the proposed remedial alternative would take too long.

RESPONSE: Groundwater cleanup is a difficult process.

COMMENT: The resident asked how long Alternatives 3, 4, and 5 would take.

RESPONSE: Opinions vary on the duration of those alternatives. However, no matter what is done with the soil, groundwater remediation will require 25 to 30 years to complete.

COMMENT: A local resident questioned why EPA should allow water to infiltrate contaminated soil which then contaminates the water. The resident questioned if it would not be more beneficial to replace the contaminated soil with clean soil.

RESPONSE: Despite the chosen method for soil remediation, groundwater remediation will require 25 to 30 years.

COMMENT: A local resident stated that remediation of the site would take less time if Alternatives 3, 4, or 5 were chosen and cost should not be a factor in the decision.

RESPONSE: The appropriate alternative is chosen based on nine criteria for evaluation. Cost must be a part of the decision. There seems to be confusion regarding the levels of contamination detected at 18 feet. The soil was contaminated at 18 feet, not the groundwater.

COMMENT: A local resident questioned whether the groundwater was more contaminated than the soil at 18 feet and why it would not be reasonable to remove the soil.

RESPONSE: Originally the source of contamination in the soil was serious. However, now the soils have been flushed; reducing the level of contaminants so they are no longer a threat to human health. The level of contamination detected in the groundwater is a threat to human health, especially since there is a possibility of groundwater consumption. Therefore, the groundwater must be addressed and the remediation process will require 25 to 30 years to complete. The contaminated soil is no longer a threat and it lies 18 feet below land surface; further reducing the potential threat. Thirty years for groundwater remediation is only an estimate. Remedial activities will continue until the contaminants reach an acceptable level.

COMMENT: A local resident questioned what the acceptable level is.

RESPONSE: Monitoring wells are in place to allow continued examination of contaminant levels. Toxicologists have developed cleanup goals for the site that determine the level at which the groundwater will be useable. The extraction wells will be utilized until these usable levels are met. Using computer modeling based on the contamination levels present, the remediation is estimated to require 25 to 30 years. Technology is not available at the present time to clean up the site in less time.

COMMENT: A resident of Stonybrook questioned why no monitoring wells were installed on the northeast side of the site. Although groundwater was expected to flow in the other direction, the resident expressed concern that some water may seep to the northeast.

RESPONSE: There are five wells located on that side of the site. The trenches are on a ridge that drops off more steeply toward the southwest than toward the plant.

COMMENT: A resident stated that there is another branch, called the southwest tributary, that runs along Camp Road and into Grants Creek. For several years officials claimed that contamination was present in that tributary and another business was blamed. There is a pond at the corner of Cedar Springs and National

Starch. The pond is fed by a spring on the National Starch property. The resident questioned where the water came from.

RESPONSE: EPA was unaware of the spring.

COMMENT: The resident stated that the spring was approximately 100 feet from the property line.

RESPONSE: The contaminant plume migrates in the opposite direction. The contaminated groundwater cannot migrate to that spring.

COMMENT: A representative of National Starch spoke to help clear confusion regarding the location of the pond and spring. He stated that the map was of poor quality. The pond is near the new W.A. Brown facility and does not originate from the National Starch property. The spring that feeds the pond does not originate from National Starch property.

RESPONSE: EPA recently studied onsite groundwater and surface water flow. Contamination will not flow upstream to the spring. Surface water flow is to the north along the northeast tributary.

COMMENT: A resident asked EPA to clarify of the directions of groundwater and surface water flow.

RESPONSE: Evidently, some of the surface water in the creeks originates from the springs and flows to the north through the northeast tributary.

COMMENT: A resident questioned whether that water had been tested.

RESPONSE: Yes, the water was sampled earlier and again this month. EPA has obtained the preliminary results.

COMMENT: A resident questioned what type of zoning restrictions will be placed on the National Starch and Chemical Corporation Superfund Site and the

surrounding 250 (approximately) acres. The resident questioned if only industrial development will be allowed.

RESPONSE: EPA is unsure at this time. It is National Starch's responsibility to inform any prospective buyers that the site is a Superfund site. This is a part of the Consent Decree administered by a court of law.

COMMENT: A resident and representative of National Starch stated that for all practical purposes, nothing can be built on the site. If a subdivision were developed in the surrounding area, it is unlikely that the homes would sell. Therefore, the potential development of the entire area is very restricted. That is why residents advocate complete site cleanup.

RESPONSE: Comment acknowledged; no further response.

COMMENT: A resident questioned where the contaminated water would be disposed.

RESPONSE: The present design plans require utilization of several different technologies to remove volatiles and metals from the water before discharging into the publicly owned treatment works.

COMMENT: A resident asked what the alternative plan is if the publicly owned treatment works does not allow this type of discharge.

RESPONSE: An alternative discharge method will be determined. One option is to obtain a discharge permit under the National Pollution Discharge Effluent.

COMMENT: A resident argued that the state is having difficulty siting an industrial waste incinerator. This could present obstacles to the water treatment plan for this site.

RESPONSE: No, that will not affect water treatment. EPA is only looking for a place to discharge the water.

COMMENT: A resident questioned whether the water would be transported to the Salisbury Waste Treatment Facility and how it would be treated.

RESPONSE: The water will be treated through air stripping before it leaves the site. There are several stages in the treatment, including a precipitant phase and a bio-remediation phase, that will remove the contamination to meet cleanup goals.

COMMENT: A resident questioned in what building the treatment would occur.

RESPONSE: According to the Administrative Order Consent Decree, National Starch is responsible.

COMMENT: A local resident inquired about other facilities where water treatment is in process that might serve as examples.

RESPONSE: There are groundwater treatment systems all around the country, including two in North Carolina; the Celanese site in Shelby and the Sodyco site in Charlotte.

COMMENT: A resident asked if the referenced sites are performing the same operation and, if so, how long have they been operating.

RESPONSE: Yes. The Celanese site has been in operation for at least a year and the Sodyco operations began last month.

COMMENT: A resident expressed concern about the odor from the site and asked if something could be done to solve the problem.

RESPONSE: The soils in the trench area are too deep to produce emissions. The odor problem is not addressed under Superfund.

COMMENT: A resident stated that it was previously explained that groundwater, soils and air were evaluated to determine an HRS score of 28.5. The resident questioned if air was evaluated during the scoring process.

RESPONSE: During the HRS scoring process, air quality is considered. However, odors emitted from active operations cannot be addressed under CERCLA. CERCLA Superfund was designed for abandoned areas; this site is a current operating facility. The trench area was used for disposal prior to 1980; therefore, that area is subject to CERCLA.

COMMENT: The resident questioned whether the ground surface pollution of the northeast drainage system would be addressed since it is produced by current plant operations.

RESPONSE: Yes, it is addressed under Superfund.

COMMENT: A resident questioned whether regulations exist to address facility design problems that allow discharge into the atmosphere and possible explosion. That may be the source of contamination in the northeast drainage system.

RESPONSE: You have described a possible contamination source that will have to be investigated. The entire National Starch site is included on the Superfund list. If current operations are responsible for surface water contamination, it will be addressed.

COMMENT: A resident questioned whether chemicals would be released to the air during the extraction and air stripping process and if an air discharge permit is required.

RESPONSE: No contaminants will be released into the atmosphere. The system is designed to contain the contaminants in compliance with the Clean Air Act.

COMMENT: A resident commented that wells should be installed on the northeast side and groundwater and surface water studies should be conducted every year or every 2 1/2 years to determine whether the cleanup effort is successful.

RESPONSE: Acknowledged comment; no further response.

COMMENT: A resident questioned how chemicals can be detected in high concentrations at one location and in lower concentrations (or absent) in locations downstream.

RESPONSE: The chemicals detected were volatile organics which tend to evaporate. The movement of the water and the exposure to air caused them to evaporate.

COMMENT: A resident disagreed stating that one chemical, 1,2-dichlorobenzene, will not evaporate.

RESPONSE: The question was answered in general terms.

COMMENT: A resident questioned whether heavy metals were detected downstream.

RESPONSE: No.

COMMENT: A resident questioned whether contaminants were found in the sediment and whether they also migrate downstream.

RESPONSE: Volatile organic compounds were found in the sediment but were not detected downstream. The saprolite soils in the trench area are weathered, byproducts of the bedrock; mainly sandy, silt material. Residual organics were detected in these soils. The water table depth in the area is greater than 20 feet; within the saprolite soils. Extraction wells will be installed within the saprolite soils. The pumping will lower the water table and cause infiltration. Some of the chemicals detected may reach acceptable levels within a few years; however, others (e.g., 1,2-dichloroethane) could require 20 to 30 years to reach acceptable levels.

COMMENT: A resident questioned whether the contaminants must migrate to the water table before concentrations will diminish.

RESPONSE: Yes, contaminants will move to the water table and then be transported to the extraction system.

COMMENT: A resident questioned how chemicals can be detected in high concentrations at one location and in lower concentrations (or absent) in locations downstream.

RESPONSE: The chemicals detected were volatile organics which tend to evaporate. The movement of the water and the exposure to air caused them to evaporate.

COMMENT: A resident disagreed stating that one chemical, 1,2 chloride benzene, will not evaporate.

RESPONSE: The question was answered in general terms.

COMMENT: A resident questioned whether heavy metals were detected downstream.

RESPONSE: No.

COMMENT: A resident questioned whether contaminants were found in the sediment and whether they also migrate downstream.

RESPONSE: Volatile organic compounds were found in the sediment but were not detected downstream. The saprolite soils in the trench area are weathered, byproducts of the bedrock; mainly sandy, silt material. Residual organics were detected in these soils. The water table depth in the area is greater than 20 feet; within the saprolite soils. Extraction wells will be installed within the saprolite soils. The pumping will lower the water table and cause infiltration. Some of the chemicals detected may reach acceptable levels within a few years; however, others (e.g., 1,2-dichloroethane) could require 20 to 30 years to reach acceptable levels.

COMMENT: A resident questioned whether the contaminants must migrate to the water table before concentrations will diminish.

RESPONSE: Yes, contaminants will move to the water table and then be transported to the extraction system.

COMMENT: A resident asked if the process is basically leaching.

RESPONSE: The water will mix with the groundwater and become part of the groundwater problem.

The contamination at this site involves subsurface soil and groundwater. The groundwater is the route of transport. Therefore, natural leaching will correct the soil contamination and the extraction system will correct the groundwater.

COMMENT: A resident asked how much water will be pumped and whether the pumps will run continuously.

RESPONSE: The pumpage rate may vary. In the beginning, monitoring will help determine rates and operating times. This site may require periodic pauses in pumping to allow the system to rebound.

COMMENT: A resident asked who will run the system and make daily decisions.

RESPONSE: The system is automated and monitoring will be conducted regularly.

COMMENT: A resident asked who will perform the monitoring.

RESPONSE: National Starch is responsible for monitoring and for contacting EPA when problems occur.

COMMENT: A resident questioned if it was possible for the water to migrate to an underground water flow, other than the water table, and cause the contamination to spread.

RESPONSE: No. The system is designed to set up a barrier and capture the contaminated groundwater.

COMMENT: A resident stated that the theory was understandable but expressed concern that the groundwater may, possibly, move laterally (e.g., through a fracture in the bedrock) and risk further spread of the contaminants.

RESPONSE: Extensive research was completed before this system became an alternative. By studying permeability rates and direction of groundwater flow, potential problems are anticipated. An extensive monitoring program was developed to detect any problems that occur.

COMMENT: A resident questioned whether extensive geological surveys and system studies were conducted on the bedrock at the site.

RESPONSE: Yes; that was part of the remedial investigation and additional studies were conducted during the design phase.

A computer code called "Rescue" was used to develop capture zones for the wells and project a rate of extraction. The modeling illustrated that capture zones will be present, in effect, providing a wall.

COMMENT: A resident asked how the contaminant wall was spaced with regard to the wells and how deep into the bedrock it reaches.

RESPONSE: It reaches less than 500 feet; the depth varies. The modeling program used considers several common equations along with the slope of the water table. The program produced a capture zone that covers the entire area and each individual well. The contaminant plume is within the capture zone for the four wells.

COMMENT: The resident asked for a more specific estimate of the containment wall depth.

RESPONSE: During the remedial design it was determined that there are very few fractures in the bedrock below 170 feet. The aquifer does not produce much water at that depth and there is no reason to install wells below that depth; therefore, the wells are above the 200 foot mark.

COMMENT: A resident questioned how deep the contaminants are in the aquifer.

RESPONSE: EPA has yet to determine the specific depth.

COMMENT: A resident questioned whether the contaminants would reach a depth of 185 feet if 185-foot wells were installed.

RESPONSE: The contamination will move with the groundwater flow. The groundwater will flow horizontally within the more fractured interval rather than moving downward. The extraction system allows for a large open area to pump water from. The wells will be open and contamination in the different zones will move horizontally to the discharge area.

COMMENT: A resident asked to clarify whether contaminants above 170 feet will migrate down to that level for extraction.

RESPONSE: Yes. The saprolite and the bedrock are totally interconnected in the trench area. The contaminants percolate down through the saprolite, into the water table and finally, into the bedrock.

COMMENTS: A resident asked who National Starch hired as consultants and whether the consultant will be in charge of monitoring.

RESPONSE: National Starch hired International Technologies Corporation as consultants. They will be assisting throughout construction and monitoring

COMMENT: A local resident stated that without the consulting engineers, the meeting is a public relations effort. In one year to 18 months further restrictions may be placed on transporting wastes outside the state. The resident expressed concerns that at that time, companies will do whatever they want with hazardous wastes. Five to 15 years have passed and there still seems to be little control of the contamination at the National Starch site.

The resident added that a gentleman employed by EPA was paid $20,000 to work on the site and decided that the wastes should be stored above the ground. However, this method is not effective.

RESPONSE: Industrial waste is a national problem. There are laws in effect now and new laws passed every day to help control/remedy the problem.

COMMENT: A resident stated that National Starch is in violation of their current discharge permit and asked if EPA was aware of it.

RESPONSE: No, EPA was not aware of it. That is a state delegated program but EPA will investigate the violation.

COMMENT: A resident asked if the method of treatment discussed would dramatically increase the amount of effluent.

RESPONSE: No. One of the criteria is that the discharge effluent be within compliance.

COMMENT: A resident questioned whether new, more restrictivce regulations enacted in the future would apply to this site.

RESPONSE: Yes.

COMMENT: A resident asked what authority the North Carolina Department of Environmental Health and National Resources (DEHNR) has regarding discharges and emissions at National Starch.

RESPONSE: There are many departments of the DEHNR. The Mooresville regional office has authority over NPDES permits, discharge into creeks, air permits, etc. The Superfund Section, part of the Division of Solid Waste Management, addresses the past waste disposal practices at National Starch. Each group has its own legislative and regulatory authority.

COMMENT: A resident asked who, exactly, should be contacted regarding the site.

RESPONSE: Contact the Division of Environmental Management in Mooresville. For Superfund issues, contact the Superfund Section. EPA will obtain a contact name and telephone number for you.

## IV. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA'S RESPONSE TO THESE COMMENTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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

4WD-NSRB

September 28, 1990

Mrs. Joe Gainer, Jr.
24 Briarwood Terrace
Salisbury, North Carolina 28144

Subject: National Starch & Chemical Corporation Site
Salisbury, North Carolina

Dear Mrs. Gainer:

This letter is written in response to your letter received by the Agency. I apologize for not getting back to you earlier.

Your letter identified concerns that you have about emissions that occurred every night from the National Starch site. Unfortunately, the Superfund Program cannot answer the questions you posed concerning these emissions since we have no documentation concerning the historical plant operations that would require burning. However, a copy of your letter has been forwarded to the Air, Pesticides and Toxics Management Division. Though your letter did not specifically state it, I got the impression that the emissions no longer occur. The Agency will ask National Starch whether any burning is conducted currently and exactly what is burned.

I do realize that this letter does not provide you with the answers you were looking for, but I will try to coordinate with personnel in the Air Division to provide you with an additional response. Please do not hesitate to contact me if you have any questions and/or suggestions. My number is 404/347-7791.

Sincerely,

Barbara H. Benoy
Remedial Project Manager
Waste Management Division

Printed on Recycled Paper

generation to disposal. The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing of hazardous substances. RCRA is designed to prevent new, uncontrolled hazardous waste sites.

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

**Superfund:** The common name used for CERCLA, also referred to as the Trust Fund.

**Supplemental Remedial Investigation:** Additional field studies conducted to define the nature and extent of contamination at a site.

Dear Sirs,

For years and years, the Chemical Company put out emissions every nite about 3 A.M. I could smell it hard and fast I could sit out on the porch but before another hour.

Then we are had in daytime, I have been face red & burned - eyes watering & [illegible] up - ever since of this place came into Tulsa to stay.

I have seen evergreen trees blackened on the side where they have burned by the [illegible] coming from The Chemicals.

Are anyone know what hazardous [illegible] has been burned that I have exposed to.

I don't know if anyone will read this, or care but they ought to more [illegible] some decent, outside painting.

Sincerely,

Mrs. [illegible]

Joe J. Gainer Jr.
24 Briarwood Terrace
Salisbury, NC 28144

NORTH SUPERFUND

CHARLOTTE, NC 282
PM
28 JUL
1990

25

Jul 31 9 03 AM '90

Mr. Lawrence Durham
Community Relations Coordinator
US EPA, Region IV
345 Courtland Street N.E.
Atlanta, GA 30365

N. Superfund

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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

4WD-NSRB

September 28, 1990

Becky Brown
Route 5, Box 131
Trinity, North Carolina 27370

Subject: National Starch & Chemical Corporation
Salisbury, North Carolina

Dear Ms. Brown:

This letter is written in response to your phone call and letter concerning the news article enclosed with your correspondence. Thank you for taking the time to write and for submitting copies of the signatures that you obtained concerning the High Rock Lake area.

Your letter identifies concerns that you have about the discharge from the National Starch Site located in Rowan County. The Remedial Design, also known as RD, does provide for the final discharge of the treated water to enter into the Wastewater Treatment Plant. This is done after extensive treatment is conducted on site to reduce the contamination.

The Record of Decision for the groundwater cleanup at the National Starch site was issued in September 1988 after a formal public comment period was held. The Administrative Record for the site is located at the Rowan County Library in Salisbury. Cleanup of the contamination in the groundwater is essential due to the use of the groundwater aquifer for drinking water.

The State of North Carolina has suggested that a cooperative study be conducted between the State and EPA to evaluate the final effluent from the National Starch Site. That effort is presently being coordinated.

I understand that your concerns are not addressed in the manner that you might have hoped for, but I will contact you when the cooperative study between the State and EPA gets underway. Please do not hesitate to contact me if you have any questions and/or suggestions. I can be contacted at 404/347-7791.

Sincerely,

Barbara H. Benoy
Remedial Project Manager
Waste Management Division

Printed on Recycled Paper

Barbara 9-10-90

Enclosed is the newspaper clipping from the Dispatch of Lexington N.C. that we discussed over the phone on Sept. 5th.

Also enclosed is approximately 500 signatures of concerned people on this lake. These are not near the signatures I could get, if more are needed please advise. These signatures represents only 2 days of working the small area of Southwest in that I am located on the lake.

As you know High Rock has undergone a great change over the last 10-12 years in which beautiful family homes have been built in a starting range of 100,00-300,00 + up.

Records I'm sure will indicate in years past High Rock has taken it's share of pollutants of one source or another + we the people of this lake do not want anymore.

Thank you again for your time + any help you can give us concerning this matter.

Please contact me at the following numbers when you have looked into this enclosed article.

Thank You

Phone: 704-798-1393
919-861-5982

Becky Brown
Route 5 Box 131
Trinity N.C. 27370

# Officials Protest Plan To Put Water From Chemical Plant In High Rock

The Associated Press

Federal plans to use High Rock Lake as the receiving basin in a cleanup of one of the North Carolina's most contaminated chemical dumps are prompting second looks by state and local officials.

The U.S. Environmental Protection Agency, in a project expected to take 30 years, wants to detoxify a Superfund site in Rowan County by having 200,000 gallons of tainted ground water pumped daily from the grounds of a chemical plant, treated at the site and piped to a Salisbury sewage plant.

After further cleansing at the Grants Creek Wastewater Treatment Plant, the water would be discharged into Grants Creek and enter the northern end of High Rock Lake.

Federal records show that five acres are contaminated with 11 known cancer-causing compounds, the result of the plant's having dumped 350,000 gallons of chemical waste into unlined trenches between 1971 and 1978.

But those plans for removing billions of gallons of water, which the EPA authorized in September 1988, are delayed by construction plans and state and local permit reviews.

And a second phase of the project dealing with at least 250,000 cubic yards of contaminated soil still awaits state approval.

John Vest, the director of utilities for Salisbury, said that the EPA's plans to pump out treated contaminated ground water by the end of September are immature.

"The EPA has them on a fast track that will be hard to meet," Vest said. "The city has agreed that it will accept the treated water, but only if it meets all federal, state and local standards."

The signatures listed are people that live on and around High Rock Lake and are deeply concerned about articles stating that water from one of North Carolina's most toxic sites is going to possibly be dumped into the lake water.

O. T. Brown
Howard Harris
Clyde Mills
Kathleen Mills
Richard Nance
Patricia Taylor
Peggy Jewett
Dwight Wrenn
Peggy Wrenn
O. P. Sutherland
Herbert R. Warfford
Virgie H. Warfford
Alice Stanley
George R. Stanley
Jill Leonard
Les Tulbert
Edgar Tulbert
Doris A. Stanley
Wanda Basinger
Betty Kimbrell
Wayne Gromatz
R. R.

Phil Nance
Carl Prescell
Roger Langston
Christine L. Sutterson
Melissa Wallace
Lynne Leonard
Rick Leonard
Mary Johnson
Sandy McCullough
Susan M. Lothridge
Doris A. Brower Sr.
John P. Story
Ethel Mabry
James Harrison
Jerry Baker
Rick Hinkle
Phil Swaim
Aldean Sheppard
Larry Sheppard
Sylvia S. Tolbert
Jack V. Tolbert

Marlene Cadams
Gale Clecker
Michael D. Kennedy
Jerry Hallman
Tiffany Winkler
Mildred F. Everhart
Charles Wa

(BACK)

The signatures listed are people that live on and around High Rock Lake and are deeply concerned about articles stating that water from one of North Carolina's most toxic sites is going to possibly be dumped into the lake water.

Sonny Owen
Kaye Fry
Cindy Walser
George Walser
Joyce Lohr
Sue Johnson
Jimmy Sullivan
Barry Huff
Paul Lohr
Rita Shipton
Charles W. Pence
Henry Wolfe
Glendola Owens
Lynn Chrington
Norman G. Riccelli
Jim O. Thomson
Lewis Owens
Van Zoolkowski
Tracy Fine

Pat Harden
Brad York
Tina Hughes
Guy Hancock
J. R. [illegible]
Brenda Hancock
Betty Jean Floyd
Fred Sandoval
Ronny Feiler
Brent [illegible]
Raymond S. Sutcliffe Jr.
Dana Philemon
Suzanne D. Vance
Jim Ewis
Jean Jackson
Niles Lee Tapp
Paul Van Jennings
William T. Everhart
Tim Perkins
Gary Owens
Gary Owens

Rick Cook
Catherine Ana
Anna Kearns
Jane Kearns
Renee Rogers
Scotty Gr[illegible]
Barbara Fre[illegible]
Dr. N. J. [illegible]
Walbert Sp[illegible]
Wanda [illegible]
David [illegible]
Cynthia Stewart

Claude Hawes
Randy Everhart
Rusty Owens
Pete Wheeler
Ray Cook
Sally Cook
Jamie + Sharon Burns
Dennis Johnson
Don Owens
Frank Tipper
Margaret B. Heaps
Jamie Lee
Pat Tipper
Jim Lee
Jack Westmoreland
Cindy Clendenin
Dot Wilson
Garland Young
John Setzer
Karen Setzer
[illegible]
[illegible]
Jan B. Barber
[illegible]

Nell Weidell
Mark Woodall
Steve Boyce
Jamie Huffman
Gary Watts
Gary Floyd Hedrick
Larry Sheppard
Aldora Sheppard
[illegible] Jr.
Reba D. Farmer
Frankie Hunt
Gerry D Hunt
Clifford Farmer
L. G. Moses
Frances Byerly
Mike Byerly
Kyle Johnson
Steve Holland
Brian Hoot
Tommy Young
Irene Young
Dale Pike
Frances Britt
[illegible]

The signatures listed are people that live on and around High Rock Lake and are deeply concerned about articles stating that water from one of North Carolina's most toxic sites is going to possibly be dumped into the lake water.

Ruth Cooper
Terry Floyd
Robert B. McCoy
Robert D. Colbert
Lovvinia Reddick
Robert (NMN) Colbert
Cheryl Colbert
Ronnie Davis
Angela Davis
Fran Robbins
Patty E. Trantham
Casey R. Trantham
Ronnie C. Trantham
Kenny Ray Idol
H. E. Haworth, Jr.
Verace + Becky Cross
Eddie Morgan
Greg Parker
Nancy Ramsey
Brandon Harris
Dawn Martin
[illegible]

Lynn Taylor
Rick Taylor
Harlan Floyd
[illegible]
Cynthia Morris
[illegible]
[illegible]
Jeff Lemond
Dan Idol
Tommy Idol
[illegible]
Helene Smith
[illegible]
Jason Everhart
Libby Everhart
David Osborn
Patsy Osborn
Mark Brown
Jim Ward
Bernie Miller
[illegible]

Protest to put water from Chemical plan
in High Rock Lake.

Mr. & Mrs. Doyle Quate
Mrs. Susan Latham
Mr. & Mrs. Ronnie Lawson
Mrs. Jim Griffin
Zola S Younts
Mr. & Mrs. Lindsay Sink
Mr + Mrs Randy Beasley
Evelyn Finney
Mr. + Mrs. Darrell McLemore
Mr. + Mrs. Michael Venable
Mr + Mrs. Gene Hiatt
Mr. Mrs. William Pullian
Mr Jean C. Calhoun
Ms Connie Fritts
Mr. + Mrs. Clegg Yarbrough
Craig Idol
Mr. + Mrs. Rick Fraley
Mr + Mrs Berry Sink
Carrie Sigmon
Jennifer Cooper
Bobby McDaniel
Larry Sigmon
Casey Sigmon
Tiffany Sigmon

The signatures listed are people that live on and around High Rock Lake and are deeply concerned about articles stating that water from one of North Carolina's most toxic sites is going to possibly be dumped into the lake water.

Helen Hodge
J. W. Weisner
Donnie Hyler
Lisa Philemon
Velma Hyler
Chad Philemon
Teel Roy
Phil Brooks
Mike Intuder
Phil Marce
Drew Koontz
William J. Martin
Victor Everhart
Herbert Everhart
Opal Everhart
Cindy Everhart
Donna mize mize
Jeff mize mize

David Martin
Jerry Pickett
Tony Reaves
Ted Brady
Jimmy Thompson
Mike Hyler
Kenneth E. Alsher
David A. Cooper
Anna M Cooper
Donna Weisner
Kelley Hunt
Don Kimmer
Dave Owen
[redacted]
Anne Newland
Gary Hyler
Peter Ker
Jimmy Giles
Dale Giles
Scott Poole

Janet Moore
Larry Peterson
Norma Jean Hass
Clarton Jones
Clayton Crotts
Allen Pickering
Lori King
Bill Dun
John B. Ki
Russell Jo
John
Sherry A
Billy Jon
Mike Hi
William Brinkle
Beth Lewis
Walter Ke
Sandra Hen

The signatures listed are people that live on and around High Rock Lake and are deeply concerned about articles stating that water from one of North Carolina's most toxic sites is going to possibly be dumped into the lake water.

| | |
|---|---|
| Wayne Brandon | Rt 19 Box 3530 Lex. N.C. |
| Walter Wood | Rt 19 Box 4510 Lex. N.C |
| Allen Dunning | Rt #19 Box 2540 Lex. N.C |
| Sidney Dunning | Box 60 Hickory Point Lex. N.C |
| Jeff Berg | Rt 9 Box 3037 Lex N.C |
| Gary Smith | 2822 New Jersey Ch. Rd. Lex. N.C. |
| Donna Kerns | Rt. 19 Box 3530 Lex NC |
| Bob Voyles | Rte 1 Box 748 Linwood NC. 27299 |
| Ruth Morgan | Rt. 19 Box 3904. Lexington NC. 27292 |
| Robert Lee Coppley Jr. | P.O. Box 455 Linwood N.C. 27299 |
| Cecil Spencer | 2721 New Jersy Chr. Rd Lex. NC 27292 |
| Tim Crotts | Rt 6 Box 1254 Lexington N.C. 27292 |
| Ronnie Walser | 305 Martin Ave. Lex. N.C. |
| Mona Tilton | Route 19, Box 3904, Lexington, N.C. 27292 |
| Robert Morgan | Rt. 19 Box 3904, Lexington NC |
| Mikey L. Bailey | Rt. 7 Box 6306 Lexington, N.C. |
| Paul Walker | Rt 7 Box 1794 - Lexington NC |
| Tonya Nenley | Rt 9 Box 3704 Lex. NC |
| Ray Harris | Rt 3 Box 432-13 Lexington, NC |
| Don W. Wood | Rt. 5 Box 256 Lexington NC 27295 |
| Tom Williams | Rt 2 Box 216 Robbins NC 27325 |

The signatures listed are people that live on and around High Rock Lake and are deeply concerned about articles stating that water from one of North Carolina's most toxic sites is going to possibly be dumped into the lake water.

Tammy Swing
Lee Swanson
"Pudin" Smith
Tammy Weaver
Kelly Hedrick
Bill Secrest
R Keith Cook
Hilda D. Leonard
O.J. Williams
Jim Everhart
Julia Everhart
Robert Coleman
Joe Darr
Paul Evans
Judy Johnson
Sandra J. Johnson
Ronald Swanson
Debra Hudson
Pat Connor

Butch Freeman
Gary Rendrill
Mr. & Mrs. Kenneth Leonard
Judi Secrest
Judy Lanier
Kenneth Walford
Reid Rhodes
Sandi Cross
Bill Graham
Judy Graham
Clifton Floyd
Danny Byrd
Linda Davis
Thelma Smith
Stanley H Register
Beck P Register
Jerry W. Everhart
Joe Smith
Linda Floyd
Buddy Floyd
Raymond Parker
Jim Williams
Jim Everhart

Harold Lassiter
Carl Weaver
Leonard Hughes
Wendy Hughes
Mary E. Hughes
Mike Hughes
Diane Smith

(Back)

James Peterson
Robert R. Branco
Harry Evans
Jerry C. Bailey
Harry Cantrell
Kevin Dan
Mark Dan
Ken W. Hayes
Sherry L. Cole
Henry E. Cole
Denise Friedman
Gregory Friedman
Russ D. Combs
Doris V. Combs
Judy A. Combs
Lisa Semonco
Danny Semonco
Jeff Combs
Tangy L. Combs
Tammy B. Combs
Brandon Kyle Semonco
Barbara Hurley
Norman Hurley
David Daniel
Francis Daniel Jr.
Terry Yost
Gail Dove
Tom Thomas

Cutty Combs
Rodney Cox
Timmy Smith
Steve Meyers
Chris McDaniels
Sean Cynch
Ricky Seekford
Lee Burch
Marsha Burch
Lynda Boyd-Willox
David Thompson
Bobby Thompson
[illegible]
Duane M. Russell
Mary E. Russell
Claude E. Bo[illegible]
[illegible]
Robert M. [illegible]
Andy Jackson
Opal Tilley
L. D. Tilley
Kathy Sysinger
Allen Sysinger
Melissa Sysinger
Nancy D. [illegible]
Tim Schert
Wayne Evans
Daniel Kemiser

Please Sign

Glenda Dykes 9-7-90
C. R. McCullough 9-8-90
Deborah S. Whitt
Ron Tucker 9/
Roger Waber
Ronald Waller
Brenda Gray Waller
David F. Eunkart 9-7-90
Larry J. Blankenship
William Wade
Raymond D. Miller SR.
Joseph Miller
Crystal L. Sutton
Jerry Cassidy
Paul M. Marks II
Pat Hance
Keela Hance
Rachel Bailey
Scottie P. Hane
Cheryl R. Hanes
Tina Parker
David Long

The signatures listed are people that live on and around High Rock Lake and are deeply concerned about articles stating that water from one of North Carolina's most toxic sites is going to possibly be dumped into the lake water.

Joyce Coppley
Christy Coppley
Ernest Murray
Judy G. Murray
Nellie V. Moore
Lois A. Moore
Glenda Cockrum
Adam M. Dare
Katherine Dare
Ginger Hance
[illegible]
[illegible]
W. P. Dennis
Selma Dennis
Loretta Clevenger
Ricky Clevenger
John Miller
Larry Miller
Dale Jones
[illegible]

[illegible]
Alfred Lee Hemingway
Mary H. Hemingway
Bobby Brown
Ruth Bayseinger
Susie Dowdy
Ricky D. Brown
Roger Frye
Grady Brown
[illegible]
Joyce Allred
June W. Lowe
Shirley Worthington
Glenda Hoover
Mark Blair
Larry Simon
Larry Bond
Michael Gillette
[illegible]
Tracy Shives
[illegible]

Sharon [illegible]
Linda K[illegible]
W. T. Bro[illegible]
Flaude E[illegible]
Carrie S[illegible]
Kathy Bl[illegible]
Brunn[illegible]
Bobby He[illegible]

ATTACHMENT A

NATIONAL STARCH AND CHEMICAL CORPORATION SITE

PROPOSED PLAN

EPA Region IV

# SUPERFUND PROGRAM PROPOSED PLAN FACT SHEET

## NATIONAL STARCH & CHEMICAL CORPORATION SUPERFUND SITE
Salisbury, Rowan County, North Carolina

JULY 1990

### INTRODUCTION

The U.S. Environmental Protection Agency (EPA) is issuing a **Proposed Plan** concerning the contamination at the National Starch and Chemical Company (NSCC) Superfund site in Salisbury, North Carolina (see Figure 1). The Proposed Plan is provided in accordance with Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** to provide opportunity for public review and comment on the **remedial alternative** selection for the site, specifically for soils in the area known as the trench area (see Figure 2).

The recommended cleanup plan includes allowing natural soil flushing by rainfall. This will be in conjunction with the **groundwater pump and treatment system** previously approved in the first **Record of Decision (ROD)** issued by the Agency in 1988.

This Proposed Plan:

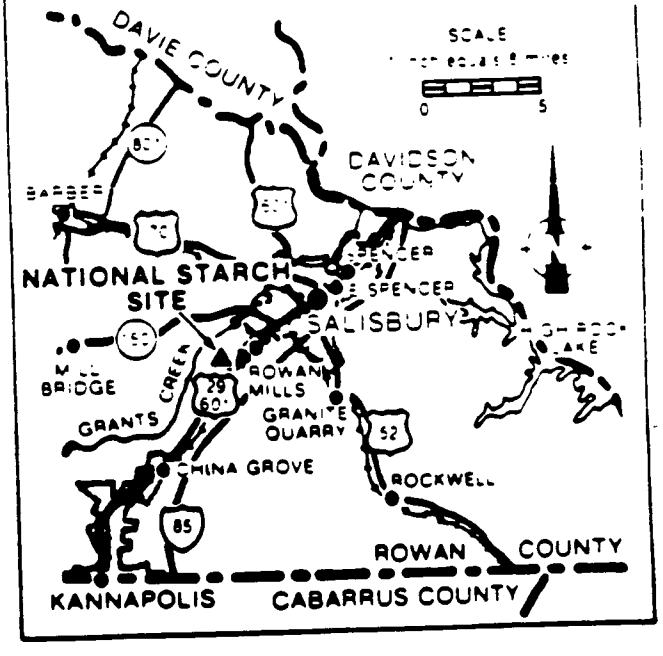
1. Explains opportunities for the public to comment on the remedial alternatives;

2. Includes a brief history of the site and principal findings of the Supplemental Remedial Investigation;

Figure 1

Site Location Map

National Starch and Chemical Corporation Site
Rowan County, North Carolina




**DATES TO REMEMBER**

- Public comment period on alternatives to control contaminated soil: July 30 - August 29, 1990
- Public Meeting
  Date: July 30, 1990
  Time: 7:00 p.m.
  Place: Salisbury Civic Center
  315 South Boundary Street
  Salisbury, North Carolina
  (704) 638-3275

1986. These activities resulted in the issuance of the first ROD for the site.

The first ROD addressed the remedy for the groundwater contamination at the site. The ROD specified that residual soil contamination in the trench area be further investigated to determine whether the area still could be considered a major source of groundwater contamination. The first ROD also required that monitoring be conducted on the surface water and sediments adjacent to the site. Detection of contamination in the surface water would require a more focused study to determine the source.

These two areas, the trench area and the surface water system, are being addressed under what EPA has termed Operable Unit 2. A separate ROD is required for each Operable Unit.

## RESULTS OF THE SUPPLEMENTAL REMEDIAL INVESTIGATION

EPA required that NSCC conduct additional soils sampling and analysis to determine the levels of contaminants in the trench area, the potential impact of the trench area on the groundwater, and to determine the leachability of the soils in the trench area. EPA also required collection and analysis of surface water and sediment samples in the adjacent stream to determine whether surface water was impacted. The findings of these activities are summarized below.

Soil Quality: As directed by the first ROD, additional soil samples were collected in the trench area and residual contamination was confirmed. Significant levels of contamination was found approximately 18 feet below land surface. The only route of contamination migration at this depth is directly into the groundwater. The groundwater remedy was selected in 1988 (the first ROD). With the remedial design completed, construction on the system begins Fall of 1990.

Surface Water Quality: Resampling was conducted in the surface water system adjacent to the site. Results detected low levels of contamination in both the surface water and the sediments. This sampling was conducted immediately after the Salisbury area was impacted by Hurricane Hugo and may be a result of excessive rainfall overflowing the runoff containment system at the site. More extensive sampling was conducted during July 1990 to obtain current data on the stream. Results of this sampling effort will provide adequate information to determine if contamination still exists in the surface water or sediments. If contamination is detected, the sampling is designed to determine if contamination is from historical disposal of wastes or if runoff from current site operations is the prevailing problem. In the event that no contamination is detected, the first ROD requires that monitoring of this stream continues on a periodic basis.

## ENDANGERMENT ASSESSMENT

In the original RI report, an endangerment assessment of exposure pathways was conducted for the site and specifically included the soils in the trench area. The purpose of the assessment was to determine present and future potential risks to public health and the environment posed by the site, and specifically the soils for this Operable Unit, based on existing conditions. EPA has concluded that the major risk to public health and the environment would result from ingestion of contaminated groundwater. This risk was addressed in the first ROD through the remedy selected for groundwater. The second operable unit will not affect this scenario.

## SCOPE AND OBJECTIVES OF THIS REMEDIAL ACTION

EPA addressed the immediate groundwater problem with the selection of the groundwater remedy under the first Operable Unit decision to stop the introduction of contaminated groundwater into the unaffected portion of the aquifer. The remedial action options presented in this Proposed Plan constitute the second Operable Unit for the site.

The objectives of Operable Unit 2 are to: ensure that cleanup standards for the site are developed for all appropriate media; implement a cleanup alternative that is protective of human health and the environment; and select a remedy that meets the above criteria in a cost effective manner.

## PUBLIC COMMENT PERIOD

The distribution of this Proposed Plan is required by CERCLA, and is provided to explain the remedy selection process and encourage participation in this second part of the cleanup decision. EPA is

criteria EPA must use to narrow the list down to the final alternatives being considered for soil remediation.

EPA uses the following nine criteria to evaluate alternatives identified in the FS. While overall protection of human health and the environment is the primary objective of the remedial action, the remedial alternative selected for the site must achieve the best balance among the evaluation criteria considering the scope and relative degree of contamination.

1. Overall Protection of Human Health and the Environment addresses how an alternative as a whole will protect human health and the environment. This includes as assessment of how public health and environmental risks are properly eliminated, reduced, or controlled through treatment, engineering controls or institutional controls.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) addresses whether or not a remedy complies with all state and Federal environmental and public health laws and requirements that apply or are relevant and appropriate to the conditions and cleanup options at a specific site. If an ARAR cannot be met, the analysis of the alternative must provide the grounds for invoking a waiver.

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

4. Reduction of Toxicity, Mobility, or Volume looks at three principal measurements of the overall performance of an alternative. The 1986 amendments to the Superfund statute (SARA) emphasize that, whenever possible, EPA should select a remedy that uses a treatment process to permanently reduce the level of toxicity of contaminants at the site; the spread of contaminants away from the source; and the volume, or amount, of contamination at the site.

5. Short-term Effectiveness refers to the technical and administrative feasibility of an alternative, including the availability of materials and services needed to implement the alternative.

6. Cost includes the capital (up-front) cost of implementing an alternative, the cost of operating and maintaining the alternative over the long term, and the net present worth of both capital and operation and maintenance costs.

7. State Acceptance addresses whether based on the review of the RI/FS and Proposed Plan, the state concurs with, opposes, or has no comment of the alternative EPA is proposing as the remedy for the site.

8. Community Acceptance addresses whether the public concurs with EPA's Proposed Plan. Community acceptance of this Proposed Plan will be evaluated based on comments received during the *Public Comment Period*.

## SUMMARY OF THE REMEDIAL ALTERNATIVES

A complete list of the remedial alternatives being considered for soils at the NSCC site is presented in Table 1. After screening and evaluation of these initial alternatives, the following five remedial alternatives remained under consideration for Operable Unit 2 soils.

### Alternative 1: Natural Soil Flushing (No Further Action)

This alternative would allow for the naturally occurring precipitation (rainfall) to percolate into the trench area infiltrating into the groundwater and ultimately being extracted through the groundwater pump and treat system. This alternative effectively uses the same leaching process that was originally used for disposal of the waste waters. Clean water is allowed to filter through the subsurface soils into the groundwater. The groundwater remedy selected under Operable Unit 1 is designed to prevent further migration of the groundwater plume. Contamination will be reduced over time through biodegradation, leaching and natural volatilization of contaminants.

Incinerated material will be analyzed prior to replacement in disposal areas to ensure that remediation and ARAR levels have been achieved. After replacing the incinerated soils, the disposal areas will be covered with topsoil and revegetated.

Estimated Present-Worth Costs
for excavation, onsite incineration, disposal, operations and maintenance: $52,125,000

Alternative 5: Excavation and Offsite Disposal

In this alternative, 250,000 cubic yards of contaminated soil in the trench area would be excavated and transported to a RCRA permitted landfill for disposal.

The 250,000 cubic yards of contaminate soil only addresses the soil in the unsaturated zone; the contaminated soil in the saturated zone would not be excavated.

Estimated Present-Worth Costs
for excavation, transportation, disposal, and site restorations: $51,900,000

EPA'S RATIONALE FOR SELECTING THE PREFERRED ALTERNATIVE

Based on current information and analysis of the RI/FS reports, and the original and supplemental investigations, EPA believes that the preferred alternative, Alternative I, Natural Soil Flushing (No Further Action), for the NSCC site is consistent with the requirements of the Superfund law and its amendments, specifically Section 121 of CERCLA and the National Contingency Plan (NCP). All of the alternatives presented in this Proposed Plan would provide overall protection of human health and the environment, including the No Further Action alternative. In EPA's analysis, the No Further Action alternative would achieve a balance of the nine selection criteria. The soils in the trench area can only contribute contamination to the groundwater. Groundwater remediation has been decided; the design stage has been completed, construction of the pump and treat system will start in the Fall of 1990. Remediation of groundwater takes many years to achieve the cleanup levels as defined by existing environmental laws. The No Further Action alternative works in conjunction with the pump and treat system in a passive manner without impacting either the schedule or the costs of the remedial action at the site. Any other alternative selection would introduce concerns including delays in the groundwater remediation, additional costs, waste handling, construction and implementation problems. The preferred alternative, Natural Soil Flushing: 1) provides short- and long-term protection of human health and the environment, 2) will attain Federal and state applicable and appropriate public health and environmental requirements (ARARs), and 3) utilizes a permanent solution to the maximum extent practicable.

Glossary

**Administrative Order of Consent:** A legal agreement between EPA and the potentially responsible parties (PRPs) whereby the PRPs agree to perform or pay the cost of a site cleanup. The agreement describes actions to be taken at a site and may be subject to a public comment period.

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

**Aquifer:** An underground rock formation composed of material such as sand, soil, and/or gravel that can store and supply groundwater to wells and springs.

**Biodegradation:** The breakdown and removal of contaminants by the use of naturally occurring microbial activities found in subsurface soils.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):** A Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act. The Acts created a special tax that goes into a trust fund, commonly known as Superfund, to investigate and cleanup abandoned or uncontrolled hazardous waste sites. Under the program, EPA can either pay for site cleanup when the responsible parties cannot be located or are unwilling or unable

generation to disposal. The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing of hazardous substances. RCRA is designed to prevent new, uncontrolled hazardous waste sites.

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

**Superfund:** The common name used for CERCLA, also referred to as the Trust Fund.

**Supplemental Remedial Investigation:** Additional field studies conducted to define the nature and extent of contamination at a site.

ATTACHMENT B

NATIONAL STARCH AND CHEMICAL CORPORATION SITE

PUBLIC MEETING SIGN IN SHEETS

**National Starch & Chemical Corporation Site**
**Public Meeting Sign In Sheet**
**July 30, 1990**

| Name | Address | Telephone Number | Affiliation | Do you want to be included on the mailing list? | How did you learn about this meeting? |
|---|---|---|---|---|---|
| Wendy Shive | Hwy 150 Rt 6110 Rockwell | (704) 279-4251 | | ✓ | paper |
| MITCH EIDSON | 4330 S MAIN ST | 704 637-6257 | | ✓ | PAPER |
| Ruth M. Eidson | 4330 S Main St | 704 633-4129 | | ✓ | |
| Robert W Eidson | 4330 S. Main St | 704 633-4129 | | ✓ | |
| Vernon Jones | 134 Stonybrook Rd Salisbury NC 28144 | 704 636-8973 | | ✓ | Salisbury Post |
| Peter Powell | 2780 Miller Rd | 857-5762 | | ✓ | Sal. Post |
| John C Vest | 400 N. Church St. | (704) 638-5204 | City of Salisbury | ✓ | Mailed notice |
| Rachel Ferguson | 2915 S Main St | 636-3109 | Salisbury | ✓ | Notice |
| H. Michael Henderson | 345 Courtland St. N.E. Atlanta, Ga. 30365 | 347-3931 | USEPA | NA | WORK |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**National Starch & Chemical Corporation Site**
**Public Meeting Sign In Sheet**
**July 30, 1990**

| Name | Address | Telephone Number | Affiliation | Do you want to be included on the mailing list? | How did you learn about this meeting? |
|---|---|---|---|---|---|
| Wes Young | 2512 Walker Ave Winston-Salem | 633-8930 | Salisbury Post | yes | mail |
| Ralph Simpson | PO Box 194, WS, NC 27102 | 919 761-0711 | | yes | mail |
| Bruce Wilkebeck | 106 Stonybrook Rd. | 633-5041 | Neighbor | yes | Mail |
| Mike Hinderer | IT Corporation of Knoxville TN | 615 690-3211 | IT | yes | Mail |
| TED Valerio | 10 Finderne Ave Bridgewater NJ 08807 | 201-685-5050 | National Starch | YES | mail |
| AM Pancrowski | PO Box 399, SALISBURY 28144 | 633-1731 | NATIONAL STARCH | YES | |
| Jim Walker | 2030 Ken Ave | 633-5535 | Community | No | Court House |
| T.D. Martin | 402 Deese Road Monroe, NC 28110 | 704-282 8603 | Winston-Salem Journal | Yes | media |
| DON PRUITT | 107 Lancelot Rd., Salis | (704) 636-4095 | Citizen | Yes | media + mail |
| JM Arey | 625 Catawba Rd | 633-4551 | MOBILE HOME PK LITTLE ACRES | YES | mail |
| C. Overcash | 224 East Bank St. | 6-1507 | RICCB / R.U.A. P.C.A.P. | YES | SALISBURY POST |
| Mickey Young | 108 Stonybrook Rd | 633 7729 | Schools | yes | Neighbor |
| Dell Bost | RT # 2 Salisbury N.C. | | | yes | |
| | | | | | |
| | | | | | |
| | | | | | |

ATTACHMENT C

NAMES, ADDRESSES AND TELEPHONE NUMBERS
OF THE INFORMATION REPOSITORY DESIGNATED FOR
THE NATIONAL STARCH AND CHEMICAL CORPORATION SITE

1. Rowan County Public Library
   201 West Fisher Street
   Salisbury, North Carolina 28144
   Contact: Jennifer Carpenter
   (704) 638-3000

2. EPA Record Center
   345 Courtland Street, NE
   Atlanta, Georgia 30365
   (404) 347-0506

ATTACHMENT D

---

THE OFFICIAL TRANSCRIPT OF THE PUBLIC INFORMATION MEETING
ON THE PROPOSED PLAN FOR CLEANUP
OF THE NATIONAL STARCH AND CHEMICAL CORPORATION SUPERFUND SITE
LOCATED IN SALISBURY, NORTH CAROLINA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

PUBLIC INFORMATION MEETING

National Starch and Chemical Corporation

Superfund Site

July 30, 1990

Salisbury Civic Center

315 South Boundary Street

Salisbury, North Carolina

Julia W. Biggers

Official Court Reporter

SF-740 PENGAD/INDY MUNCIE IN 47302

# A G E N D A

INTRODUCTION AND WELCOME

SUPERFUND PROCESS OVERVIEW AND SITE STATUS

SITE BACKGROUND AND REMEDIAL INVESTIGATION SUMMARY

FEASIBILITY STUDY RESULTS

EPA'S RECOMMENDED ALTERNATIVE

COMMUNITY RELATIONS

QUESTION AND ANSWER SESSION

PARTICIPANTS:

Elma Akin

Gizelle Bennett

Barbara Benoy

Jack Butler

Joe Claypoole

Messrs. Edison (father and son)

Michael Henderson

Vernon Jones

Bruce Kolkebeck

Rich Muza

Ray Paradowski

Don Pruitt

Mike Sturdivant

Alfred Wilson

Local Citizens

July 30, 1990, 7:00 P.M.

MS. BENOY: I guess we can go ahead and get started. I'm not used to a mike. I can project usually pretty well. Good evening and welcome. Good evening. (Microphone Difficulties) My name is Barbara Benoy, and I am current Remedial Projects Manager for the National Starch site here in Salisbury I am an employee of the Environmental Protection Agency, and I'd like to thank you for coming out to tonight's meeting. The last public meeting that was held was held here in 1988 when the groundwater extraction system for the cleanup of groundwater at the site was proposed and then approved. It was also decided at that point in time that further investigation of the soils in the trench area needed to be done. The more extensive sampling was done under a separate remedial investigation, and in order for us to do that, we broke the site into operable units. And I'll discuss that a little bit further. Operable Unit 1 addressed the groundwater contamination and the remediation of that groundwater plume. It also required periodic monitoring of the surface water system and the sediment, specifically the northeastern tributary. Operable Unit 2 focused mainly on the trench area soils, and the purpose of tonight's meeting is to present the findings of the trench area investigation and to propose to you, the community, a proposed plan for the remediation, the cleanup of that area. This meeting also initiates the first day of

SF-740 PENGAD/INDY MUNCIE IN 47302

a 30-day formal public comment period. This comment period is designed to obtain the comments, concerns, and the questions that you, the community, might have. Acceptance of our proposed plan is a vital part of the decision-making process. Because it is so important to the agency, a court reporter is here tonight and is recording the meeting. A transcript will be generated, and it will ensure that the agency can adequately address each and every question. A copy of that transcript will be sent and made available at the information repository. The information repository has been established for several years now, or at least two years, when the first Operable Unit was addressed. A subsequent administrative record of all the documentation for Operable Unit 2 is now located there. I did stop by the library today. It was not on the shelf yet. It will be on the shelf in the morning. The administrative record is also a required part of our program. All the documents that are used to substantiate our decision for cleanup of the site are contained in the administrative record and are available for your review. Many of you have probably reviewed this administrative record, and again I'd like to reiterate that Operable Unit 2, the trench area documentation, is now there. If I can turn your attention to the agenda, all of these overheads that I have are included in your handouts. Some of the topics that we're going to cover tonight -- the introduction and welcome, we've pretty

SF-740 PENGAD/INDY MUNCIE IN 47302

much covered that; the Superfund process, we're going to talk about what that process is, where we are with the National Starch site; some site history, some of which I will cover as a site-wide basis; and then I'll really elaborate on this Operable Unit, this trench area, the results of the remedial investigation and feasibility study for that trench area. Then we will propose the EPA Proposed Plan and discuss the EPA Proposed Plan, and then community relations will be discussed. Michael Henderson will be presenting that. Then at that point in time, we do reach the question and answer period, and that is the main focus of tonight's meeting. I will try to keep my presentation short and brief so that we can use some of the time for your questions, and hopefully answer all of your questions. Comments may be submitted to us tonight but also may be submitted to us in writing anytime between now and August 29, 1990, which is the end of the 30-day comment period. There should be comment cards. Are commen cards available? We have self-addressed stamped envelopes out on the table. Please feel free to take them to submit comments to us. You may think of something later on. Please use this opportunity to submit them to us. Any comment that you have, whether it's on the Proposed Plan or whether it's on any of the alternatives presented in the feasibility study, which is one of the documents located or included in the administrative record, any comment is welcome. It's not just for the Propose

SF-740 PENGAD/INDY MUNCIE IN 47302

1 Plan, but any comment that you have, any concern. Please
2 feel free to bring it to our attention. And now, if you will,
3 I have several people that are available tonight that will
4 be answering your questions, and I need to introduce them
5 at this time. If you would, please stand when I call your
6 name. Michael Henderson. Michael is Community Relations
7 Coordinator with EPA for this site. Michael has been here
8 at other public meetings. You may already know him, have met
9 him. Elma Akin. Elma is with our Health Assessment Office,
10 also in Region 4 EPA Office. Ms. Gizelle Bennett. Gizelle
11 was the previous Remedial Project Manager for this site.
12 She is now my current supervisor. She's here also as the
13 historian for the site activities. Rich Muza. Rich Muza
14 is from our Groundwater Division, our Groundwater Technology
15 Unit of our Water Division, also an EPA employee. Rich has
16 been involved with the review and the project for quite some
17 time. Mr. Joe Claypoole. Joe Claypoole is an employee of
18 CDMFPC. That's a contractor to the EPA. We are required
19 to have third-party oversight when the potentially responsible
20 party conducts activities at the site. It is to ensure that
21 EPA's protocol, procedures, the workplan that was approved,
22 that all of our requirements are adhered to. Also with us
23 tonight is Mr. Jack Butler from the North Carolina Department
24 of Environmental Health and Natural Resources, and we would
25 like to thank you for coming tonight, Mr. Butler. In 1980,

SF-740 PENGAD/INDY MUNCIE IN 47302

1 Congress passed the Comprehensive Environmental Response
2 Compensation and Liability Act, known as CERCLA. The act was
3 passed to deal with some of the hazardous waste sites that had
4 come into existence in this nation. The law is also commonly
5 known as Superfund. This law requires the EPA to determine
6 the nature and the extent of contamination at the Superfund
7 site. When Superfund was reauthorized in 1986 by the Superfund
8 Amendment and Reauthorization Act, known as SARA, stringent
9 cleanup requirements were also added. A site can be discovered
10 in a number of ways, but usually what happens is the State
11 brings it to EPA's attention, and at that time, either the
12 State or the EPA conducts an investigation, site inspection
13 or preliminary assessment to determine if the site is in
14 fact eligible for the Superfund. I usually have a slide. I'm
15 sorry I don't have it tonight. It would help in the explana-
16 tion. After a preliminary assessment or site inspection is
17 conducted, data is gathered and subjected to what we call a
18 hazard ranking system, or HRS. It's a numerical system, and
19 a score is derived. We look at the groundwater, we look at
20 surface water, and we look at air. We look at whether or not
21 the water is consumed. We also look at the environmental
22 factors. Any score above 28.5 makes the site eligible for
23 proposal for the National Priorities List, known as EPL.
24 Now, I know I use a lot of acronyms of the alphabet, so please,
25 if I need to remind you or explain what something means, please

SF-740 PENGAD/INDY MUNCIE IN 47302

feel free to let me know. Once a site is proposed for the EPL, we conduct a PRP search, which is a search to identify any potentially responsible parties. We allow the potentially responsible parties to negotiate the terms under which they can do the investigative work. That eliminates EPA needing to seat cost if we do it. It allows the PRP to go ahead and foot the bill, if you will. In order to allow the PRP to conduct the site activities, the work, the investigations, we do it under what is known as an Administrative Order on Consent, and that's a legal document which is negotiated, and it's the terms that are outlined under which EPA will allow them to do the work. If agreement cannot be made, EPA can spend Superfund monies and then seek cost damages for the cost. A remedial investigation, an RI, is then conducted. This is an in-depth study to determine the nature and the extent of the contamination at the site and the groundwater, the surface waters, and soils. We determine as much as possible so that we can develop the different technologies to clean up the site. That is done under a feasibility study. We take the available technologies -- for example, for soils or for groundwater -- and then we determine whether or not those technologies can work for the contamination of the media of concern, and then we look at them from a site-specific basis. Some of the alternatives are further developed, and then one proposed plan is selected and presented to you for

SF-740 PENGAD/INDY MUNCIE IN 47302

1 your acceptance and your comments. All the comments from the
2 State, from the community, from the environmental data, other
3 environmental laws, these are all taken into account in the
4 selection of the alternatives, and then the final selection
5 is contained in EPA's Record of Decision, or ROD. The ROD
6 is then submitted to the EPA Regional Administrator for appro-
7 val. After approval, the EPA may then again enter into
8 negotiations with PRPs for them to conduct the remedial design,
9 RD, and the remedial action, RA -- known as RD, RA. The RD
10 is the engineering plan, the design, the location, the speci-
11 fications, the actual plan, the writing of what the cleanup
12 is going to require. The RA, the remedial action, is the
13 actual implementation of that cleanup. And then only after
14 the remedial action, the cleanup, has been completed can a
15 site be taken off of the National Priorities List. And now
16 for some site background. The National Starch and Chemical
17 Corporation site is located just outside the Salisbury City
18 Limits along Cedar Springs Road. In 1938, Edward Proctor
19 founded Proctor Chemical Compnay. In 1968, thirty years later,
20 he purchased a large tract of land, approximately 400 acres,
21 along Cedar Springs Road. In 1969, the company was purchased
22 by National Starch and operated as a separate subsidiary.
23 In 1970, construction of the Cedar Springs Road Plan began.
24 In 1983, Proctor Chemical Company dissolved, and the opera-
25 tions were merged with National Starch, the overall company.

1 National Starch Chemical Corporation site -- I didn't say
2 that right; I'm sorry -- is currently in operation, producin
3 textile finishing products and specialty chemicals. During
4 the period from 1971 to 1978, washwaters were disposed of in
5 trenches in the western area of the site. These washwaters
6 amounted to approximately 350,000 gallons and consisted of
7 salt brine, sulfuric acid solutions and solvents. The trench
8 area is about five acres and is made up of trenches which
9 were 200 to 300 feet long and approximately eight feet deep.
10 Disposal of the washwaters continued in a trench until the
11 water no longer readily percolated into the ground. In 1976,
12 National Starch determined groundwater contamination in the
13 surficial aquifer, or the surface aquifer. In 1977, North
14 Carolina confirmed those results. In 1985, National Starch
15 was proposed to the National Priorities List. In 1986, EPA
16 and National Starch signed a consent order to allow them to
17 conduct the remedial investigation and feasibility study.
18 And in 1988, the first ROD, Operable Unit 1, for the ground-
19 water contamination was signed. Since that time, the remedial
20 design of the groundwater system has been finalized, and
21 construction of the pumping treatment system is scheduled
22 to begin fall of this year. Your handout is not necessarily
23 in order. If you notice, the trench area is west of the
24 building or the site plan area. You will notice also on t
25 separate figure -- maybe this is the one we should -- the

SF-740 PENGAD/INDY MUNCIE IN 47302

1 bore hole location in the trench area. For my presentation
2 I'm going to be very general, and there will be more informa-
3 tion, more specific information, provided or available when
4 we go to our question and answer period. Based on the
5 results of the remedial investigation in the trench area,
6 contamination, visual contamination in the soils, was found,
7 but not at the concentrations that we had originally antici-
8 pated. It was much lower contamination levels. The majority
9 of the site contamination in this area is found approximately
10 18 feet below the land surface, which again is not a direct
11 hazard, a direct contact hazard. It's very far, very deep
12 below the ground surface; and that is a major factor in how
13 we look at the decision for a cleanup plan. Again, there
14 was residual contamination, but at concentrations lower than
15 what we anticipated. In fact, we have seen some concentrations
16 in the groundwaters that are higher than those we found in the
17 soils. I need one of these fact sheets. As I said when
18 I was discussing the Superfund process, we take different
19 technologies and we look at what's available, we look at the
20 media that's contaminated, and for Operable Unit 1, we made
21 a decision on the groundwater, and that design has been
22 implemented, and again the construction should begin this year.
23 So for this particular Operable Unit, we were only looking
24 at the soils. So we already had an idea of what technology
25 to look at. If you take a look at the fact sheet, on Page 6 --

SF-740 PENGAD/INDY MUNCIE IN 47302

1 Page 5 and Page 6 -- some of the alternatives, some of the
2 technologies that were looked at, are written and presented.
3 For soils, you can look at soil cleaning treatments, soil
4 flushing, soil washing; you can look at containment, which is
5 capping, or even containment which is not just a cap but a
6 diversion system -- not diversion system -- let me see if
7 I can explain. Not just a cap, but also in the ground itself
8 to keep the soils from migrating any further. You take those
9 technologies and you apply them to the site, and you come up
10 with a site-specific recommendation. EPA's Preferred Plan
11 for this particular Operable Unit is, if you have read the
12 fact sheet and no further action, based on the fact the soil
13 contamination was not as high as we anticipated, based on t
14 fact that the soils, the contamination found in the soils, was
15 found at approximately 18 feet below the ground surface, the
16 most significant levels, and based on the fact that the ground-
17 water pump and treat will address those soils, EPA has
18 considered that the No Further Action alternative meets the
19 balance of the criteria that we must look at. The ground-
20 water pump and treat extracts the groundwater and essentially
21 allows the natural water to flush the soils. The nine criteria
22 that we're required to look at are the overall protection of
23 the human health and environment; compliance with ARARs,
24 which are the applicable or relevant and appropriate requi-
25 ments, any environmental statutes, Clean Water Act, any state

SF-740 PENGADI INDY MUNCIE IN 47302

laws; the long-term effectiveness and permanence; the reduction of toxicity, mobility and volume; short-term effectiveness; implementability, cost, which did play a large part in this; state acceptance; and community acceptance. The other alternatives that were proposed or were looked at and developed also had problems with them, such as excavation. The problems that we have to deal with when we dig up soils, we may then, in fact, in the transportation of them and the finding of places to locate them -- it's not only costly but it also poses other hazards. The fact that they're 18 feet below the land surface, the cost of excavation, the cost of either disposal or incineration, also plays into the decision-making process. There is some more information on the facts in the fact sheet about the proposed land. And now I will turn it over to Michael Henderson. I want to go ahead and allow the questions that you have to be the major part of our presentation.

MR. HENDERSON: As Barbara said, my name is Michael Henderson, and I'm going to keep mine brief, too, because this is basically your meeting, to hear your comments and your concerns about the proposed remedies we have for National Starch. Basically, when EPA talks about community relations, we're talking about a two-way street. We're talking about EPA presenting information to the community and letting the community know what's going on; but we're also talking about

SF-740 PENGAD/INDY MUNCIE IN 47302

1 receiving information from the community, because as it
2 stands now, our region -- we cover eight states from Kentucky
3 to Mississippi -- is about a thousand employees but we have
4 no district office. We work basically out of Atlanta. So
5 we need your input from the community to know what's going
6 on in this state and what you know about the history of the
7 state. So it's a give and take situation. You give us
8 information; we give you information. And we work together
9 to make it work for everybody. The idea behind it is when we
10 come out to deal with community relations at a site, the
11 first thing we do is what we call a Community Relations
12 Plan. The idea is to have our contractors come out, or, if
13 we don't have contracting monies, someone from our staff will
14 come out, and we go and talk to the community, those people
15 who live, say, a mile to three miles from a site. We find
16 out about what are their economic concerns, what are some of
17 their environmental concerns, what are some of their health
18 concerns. We use this information to develop a plan to say:
19 How will we address these concerns during the remedial process
20 or during the studies and our cleanup? We use this to say:
21 Well, maybe these people need to have a public meeting --
22 for example, like the meeting we have today. Or there may be
23 a need for a situation where we need a facts sheet to be
24 sent out to you in the mail. Or we may say we need to go
25 get a press release and put it in a newspaper or a public notice.

SF-740 PENGAD/INDY MUNCIE IN 47302

1 We also sometimes use what we call availability sessions in
2 which we'll have situations where we'll set up in a library
3 and the community can come and talk to us on a one-on-one
4 basis. We do use this type of thing. We have also sometimes
5 gone door-to-door talking to the community or sitting down in
6 people's homes -- whatever we think is basically needed to
7 make sure that the community is informed of what's going on,
8 and that we are informed of what their concerns are.
9 We have what we call, as Barbara stated earlier, the informa-
10 tion repository. The idea behind this is to take sample
11 results, information from meetings such as this, and any other
12 general information about EPA, and place it in a local situa-
13 tion in your community where you don't always have to call
14 EPA or write EPA for information. As stated earlier, the
15 administrative record, which basically details everything
16 which we've done up to this point to come to that conclusion
17 and make that public decision, is placed there. General
18 information about EPA is placed in the information repository.
19 We are at the stage now at the end of the feasibility stage
20 where we do have the required public comments period, which
21 is from July 30 to August 30 -- August 29, I'm sorry -- a
22 public comments period. The next stage, when you get to the
23 remedial design stage, there is a requirement also that we
24 do a remedial design fact sheet to make sure that you're
25 aware that this was the proposal we've accepted, this is the

SF-740 PENGAD/INDY MUNCIE IN 47302

1 design, and you have an option to look at that and see
2 exactly what we're going to be doing. You will be kept in-
3 formed during the entire process, all the way through the
4 remedial act and all the way through the time when it's
5 finally deleted from the National Priorities List. We have
6 to keep you informed, one way or the other, as to what's
7 going on. I caution you as citizens to use it. If you've
8 got a concern, if you've got a question, use it. Your tax
9 money pays our salaries, so make us earn it. The only thing
10 I caution you about me is that you may not like the answer
11 that I'll give you. I will find you an answer. You may not
12 necessarily like it, but I will tell you the truth to the bes
13 of my ability. One of the interesting programs that has
14 developed in community relations in the last couple of years
15 is a program called TAG. It's a technical assistance grants
16 program. What this program does is it allows a community
17 group to apply for a grant up to $50,000.00 to hire their own
18 technical consultant to interpret what EPA does. Educational
19 entities, governmental entities, they're not allowed to apply
20 for these grants. National environmental groups can't. It
21 has to be a local group. One of the things about this is that
22 you may get three or four groups to apply for it in a community
23 and we say we first try to get those groups to work together
24 to consolidate as one, because only one group can get the
25 grant. If not, then we have to evaluate all four or all five,

SF-740 PENGADI INDY MUNCIE IN 47302

however many apply, and then we can only take one. There is a 20 percent matching fee for this grant, but this 20 percent matching fee can be done in kind. It does not have to be 20 percent of the total money. For example, if you have a lawyer who dedicates 20 hours to you and charges you $100.00 an hour, you say: Well, okay, I have $2,000.00 of in kind fees. Or somebody dedicates free secretarial services for you. You can use all this to total up to that 20 percent. One of the other things to be aware of in this grant is that it's paid after the fact. In other words, you will hire somebody and you work during the quarter, and then you submit the bill to EPA and we in turn give you the money to pay the bills off. This is one of the things you have to look at. If anyone is interested in finding out more about the technical assistance grant, you should call or write Denise, D-e-n-i-s-e, Bland, B-l-a-n-d. She's a Technical Assistance Grant Specialist for Region 4 in Atlanta, and that's 345 Cortland Street Northeast, Atlanta, Georgia 30365. This is basically just a quick nutshell. I will get around to answer any questions anybody has about our community relations. Thank you. Back to you, Barbara.

MS. BENOY: At this point in time, we're opening up for questions if you want to. It's up to you. How do you want to do it? Would you like me to -- okay.

SF-740 PENGAD/INDY MUNCIE IN 47302

UNIDENTIFIED SPEAKER: Page 3, bottom paragraph, says: Surface Water Quality. Resampling was conducted in the surface water system adjacent to the site. Results detected low levels of contamination in both the surface water and the sediments. This sampling was conducted immediately after Hurricane Hugo, and it may be a result of excess rainfall overflowing the runoff containment system at the site. The thing that scares me is there's going to be more hurricanes. I guess my question is if it's going to rain, how are you going to know?

MS. BENOY: We have also recently conducted further -- or requested that that northeastern tributary be resampled, and the results have indicated that there is surface water contamination and sediment contamination, and that's got to be further studied. National Starch and their consultant reported the data to us last week. It is under evaluation. It must be addressed also.

UNIDENTIFIED SPEAKER: Is that runoff from the present operations of the plant or --

MS. BENOY: Because the results are still preliminary, I really don't know. I wish I had a definitive answer.

UNIDENTIFIED SPEAKER: I also had the same concern because that's the thing that stood out. With Hugo, actually there wasn't -- we have other rains that are just as much.

SF-740 PENGAD/INDY MUNCIE IN 47302

We've had other rains since then. Sounds like to me that in the rain specter, it may be, with their operations right now, it could be historical or waste runoff from the current site operations. If you raise that specter in the report, why don't you have the results here?

MS. BENOY: I --

UNIDENTIFIED SPEAKER: In other words, you're going to test it until you get the right answer?

MS. BENOY: No, sir. The question is two-fold, I think. The first question is why don't we have the results tonight --

UNIDENTIFIED SPEAKER: Yes.

MS. BENOY: -- and EPA has just recently received those results. We received them last week. They are still preliminary results. I apologize. That was part of what I was supposed to present. My notes --

UNIDENTIFIED SPEAKER: We've waited two years to get an answer, and then you come up a week before and say: Uh-oh, we're going to use Hugo as an excuse.

MS. BENOY: No, sir. I'm trying to find a figure to help out here. No, sir, it is not an excuse. It was presented in the supplementary remedial investigation that it was believed -- this was presented to the agency -- that Hurricane Hugo and the runoff at the site caused the contamination. EPA responded by saying: That is not good enough. You

SF-740 PENGAD/INDY MUNCIE IN 47302

must go resample. The resampling was done earlier this mont Joe Claypoole was there when it was done, oversaw the activity, and the results came in last week.

UNIDENTIFIED SPEAKER: Hugo was last September.

MS. BENOY: Yes, sir.

UNIDENTIFIED SPEAKER: That's ten months.

MS. BENOY: The remedial investigation was not turned in in September, but yes, sir, I understand. This does give us the most current data though. It gives us an answer. It was not Hurricane Hugo. We can acknowledge that. There is a problem.

UNIDENTIFIED SPEAKER: From their on-site operations Is that what you're saying?

MS. BENOY: I can't confirm that. I can't say definitively. That may be the cause. There may be historical contamination. That's what this study was designed for. Their contour map, the contour lines also on this figure, if you look, here's the National Starch site itself, and where SW-11, SW-12, this flows this way through the site. If you notice these three bars, the bars with the three dots, surface water samples, sediment samples, and bank soil samples were collected. Hopefully it will give us more definitive information. We took samples from upstream and then from downstream locations, and we focused on this area right here. And it should give us enough information.

SF-740 PENGADINDY MUNCIE IN 47302

UNIDENTIFIED SPEAKER: Two years ago I brought samples in here that showed them every one of the samples that I had taken where there was runoff in tributaries, and every one was -- ha, ha, ha. Now, you know, two years later you say you just found it.

MS. BENOY: No, sir.

UNIDENTIFIED SPEAKER: There was oil and all kinds of junk in that tributary, Grants Creek, the place where --

MS. BENOY: Yes, sir.

UNIDENTIFIED SPEAKER: From the runoff.

MS. BENOY: I don't mean to indicate that this is the first indication. Specifically, our proposed plan is dealing with the tributaries. The first ROD of Operable Unit 1 continues to call for periodic monitoring until we make definitive plans of how to deal with contamination in the tributary. Unfortunately, it is a very long process. I agree it has been two years and we're still --

UNIDENTIFIED SPEAKER: It has been five years since we started this, and it has been fifteen years -- fourteen years -- since they stopped burying the waste. You know, this is just -- and then you come in here tonight and say that they may be letting pollutants and contamination run off their site; and, you know, do we expect to wait five more years to hear that? Because that's going in Grants Creek.

MS. BENNETT: Barbara, let me say something to that.

SF-740 PENGAD/INDY MUNCIE IN 47302

UNIDENTIFIED SPEAKER: You might as well have left it out if you're not going to do anything about it.

MS. BENNETT: Well, as you may know, we started this investigation back in '86, and the initial result of that sampling did show certain water contaminated. We originally thought it was coming from a trench area. Later we found it wasn't. We originally thought it was run off from the plant property, but the plant was put into spill ocntrol, or whatever, and we thought that that had eliminated it. But we still are seeing surface water contamination, and we have to try to find out where it's coming from. Right now we don't know. That's why, since this latest sampling has shown additional contamination, we have to go back, and we're going to have to find out where that is.

UNIDENTIFIED SPEAKER: What other contamination?

MS. BENNETT: But in the meantime, we are still doing something about it.

UNIDENTIFIED SPEAKER: What are the contaminants?

MS. BENNETT: We are still doing something about the soil. Barbara can tell you what the contaminants were that we found. But if you look at the site as a whole, we are stopping migration of the main source of the contamination from the site. Once we get the extractions over, it should start calming down, and that would be what we would consider a main source of the contamination and threat to the people in

SF-740 PENGAD/INDY MUNCIE IN 47302

the area.

UNIDENTIFIED SPEAKER: The main contaminant now seen is 1, 2 dychloride, and that's --

UNIDENTIFIED SPEAKER: Could you say that a little louder? I couldn't hear you.

UNIDENTIFIED SPEAKER: The main contaminant that they saw during the last sampling was 1, 2 dychloride. That could have been from the residual contamination. It doesn't necessarily mean it's coming from the plant right now. We're still looking at the data.

UNIDENTIFIED SPEAKER: But if there's still something there, still movement --

UNIDENTIFIED SPEAKER: Right.

UNIDENTIFIED SPEAKER: -- whether it's from the present operation or whether it's past operations --

UNIDENTIFIED SPEAKER: That's correct.

UNIDENTIFIED SPEAKER: -- the problem hasn't been solved.

MS. AKIN: Well, that is correct that the problem hasn't been solved, but what we did do is EPA went out and sampled further downstream, and we found that once the surface water left the site property, it was no longer contaminated.

UNIDENTIFIED SPEAKER: The initial search on the lot or property, how far down to the site are we talking about? Did it make it to Grants Creek or --

SF-740 PENGAD/INDY MUNCIE IN 47302

MS. AKIN: No, we sampled right on down there the stream, specifically where Mr. Edison has pointed out behind his house.

UNIDENTIFIED SPEAKER: Is that off --

(Several people speaking at one time)

MS. AKIN: And when EPA came out to sample, that was about '87, maybe?

UNIDENTIFIED SPEAKER: Didn't test us.

MS. AKIN: They sampled the surface water.

UNIDENTIFIED SPEAKER: How many parts per million are we talking about?

MS. AKIN: We're talking about parts per billion here.

(Several people speaking at one time)

MR. MUZA: Okay, the highest concentration found was less than two parts per million in the surface water. Nothing left the site. All samples were taken.

UNIDENTIFIED SPEAKER: I don't understand this map. I wish you could explain it a little better, the numbers and -- I don't know what it's about.

MS. BENOY: This is the groundwater extraction system, and the reason I brought this map was because I anticipated questions.

MR. MUZA: Why don't you put that other one up there because it has the little --

SF-740 PENGAD/INDY MUNCIE IN 47302

UNIDENTIFIED SPEAKER: If you want groundwater questions, I've got one. I want to know how come you're knocking off of doing anything about it because it's 18 feet down? Our wells are 100 feet deep. Groundwater goes down. When we had the meeting here several years ago, they assured us that groundwater only fell one foot a year. By Jove, this has gone faster than that. Eighteen feet down is a pretty good piece. I'm not even going to live before that danger is striking my well.

MS. BENOY: The eighteen feet that I was discussing earlier is the soil in the trench area.

UNIDENTIFIED SPEAKER: It still goes in the groundwater. Okay, now, you said 18 feet down, you weren't so concerned about that water, and the groundwater's down 18 feet.

MS. BENOY: No, that's the soils, the residual contamination in the soil.

UNIDENTIFIED SPEAKER: That still went down, didn't it?

MS. BENOY: Yes, ma'am.

UNIDENTIFIED SPEAKER: If it's down there in the soil, it's going to be in the groundwater, too.

MS. BENNETT: The one foot, or whatever it is that you said, that refers to the movement of the groundwater laterally, not vertically.

UNIDENTIFIED SPEAKER: Well, you know, we're going

SF-740 PENGAD/INDY MUNCIE IN 47302

through a drought through here. Groundwater is up and down.

MS. BENNETT: Yes, it is, but the groundwater itself is going to be addressed in the pumping and treat system that we have. Those extraction wells will be going in within the next two months. So that will go ahead -- that will mitigate your concern about the groundwater migrating toward your well.

MS. BENOY: That groundwater extraction system was designed to capture, to stop movement of the contaminate plume, to contain it. It will stop the migration of the contaminants in the groundwater.

UNIDENTIFIED SPEAKER: You're sure that's the design --

MS. BENOY: We also have --

UNIDENTIFIED SPEAKER: I like that word design. I can understand that one.

MS. BENOY: There's also a monitoring -- an extensive monitoring system -- to ensure that the groundwater extraction system works. Yes, sir?

UNIDENTIFIED SPEAKER: Your no further action is for the soil itself?

MS. BENOY: In the trench area, right.

UNIDENTIFIED SPEAKER: But you're going to pump the groundwater out?

MS. BENOY: Yes, sir.

UNIDENTIFIED SPEAKER: Or move the contaminants by pumping groundwater? That's the proposal? No soil movement

SF-740 PENGAD/INDY MUNCIE IN 47302

1 but pump water out?

2 MS. BENOY: Let me explain again because I know that
3 it's not quite -- it's not very clear. In 1988, EPA proposed
4 in a public meeting just like this the groundwater extraction
5 system to clean up the groundwater. EPA felt that there was
6 adequate data to make a decision concerning the groundwater,
7 and that Operable Unit, that first record of decision was
8 specifically for the groundwater extraction system. It also
9 required that the northeast tributary be monitored on a periodic
10 basis to determine whatever source existed. So that decision
11 on the groundwater pumping treatment system was made in 1988.
12 There was a public comment period also. Tonight's meeting
13 is a proposal for no further action on those soils. That
14 alternative, that first option that we're looking at, number
15 one, the no further action, must be looked at by the agency
16 to determine what would exist if nothing else were done for
17 those particular soils. We're required to do that. This
18 option allows natural rainfall to percolate through the soil
19 much the same way the waters that were disposed there perco-
20 lated into the soil. But the pump and treat system will
21 actively draw those waters through the contaminated soil area.
22 They're designed that way. They're located in the areas of
23 extensive contamination of the groundwater. They will pull
24 the water through, effectively flushing, and EPA is proposing
25 or its position is that the hazards and the problems and the

SF-740 PENGAD/INDY MUNCIE IN 47302

1 costs with capping, with excavating, with any other alterna
2 that we have a balance of a nine-point criteria with leaving
3 them. That they will be addressed. Above and beyond that,
4 extensive modeling was performed. The groundwater remediation
5 itself is going to take decades, in the nature of 25 to 30
6 years. That's where we are. With groundwater pump and treat,
7 it will stop the migration, but what is in the groundwater now
8 has got to be addressed. The modeling that was done on the
9 soil flushing is going to take approximately 22 years. So
10 effectively, the soils will be addressed with the groundwater
11 pump and treat. Did I answer your question on what's being
12 decided to clarify that?
13 UNIDENTIFIED SPEAKER: The point is, in essence,
14 there's no removal of any soils. It's merely removal of the
15 groundwater and treating of groundwater.
16 MS. BENOY: But that decision -- yes, sir. Yes, sir.
17 UNIDENTIFIED SPEAKER: How long is it going to be
18 pumped off? How many years is it going to be pumped off?
19 MS. BENOY: Approximately 25 to 30 years.
20 UNIDENTIFIED SPEAKER: Well, you gave a number --
21 UNIDENTIFIED SPEAKER: At what cost? Excuse me.
22 At what cost? This cost that was here on this first step,
23 this first option?
24 MS. BENOY: No, sir.
25 UNIDENTIFIED SPEAKER: That doesn't deal with the

SF-740 PENGAD/INDY MUNCIE IN 47302

groundwater cleanup, does it? That was a separate issue that we talked about two years ago.

UNIDENTIFIED SPEAKER: It's none of those figures there.

UNIDENTIFIED SPEAKER: No, it's none of those figures.

MS. BENOY: These figures are only for the soils. That groundwater pump and treat system, the decision, record of decision for that system, was made in 1988. This is again for the soils. Yes, sir?

UNIDENTIFIED SPEAKER: I just want to repeat my question of half an hour ago.

MS. BENOY: I'm sorry.

UNIDENTIFIED SPEAKER: Could you tell me what the wells are and are they all operating now, and just explain -- I don't understand what the bedrock -- I don't understand exactly what -- and I sure don't understand plume, periphery, and monitoring.

MR. MUZA: Okay. Now, basically on this particular figure just to the left of the National Starch and Chemical Corporation plant is the trench area. That's those strange-looking boxes. There are four of them delineated in there. That's the source area. That's where they were digging the pits 8 to 10 feet deep and disposing of this waste water and percolating it down basically into the soils and watertable. We've got monitoring -- all those little black dots, the NS slash and then the number, those are monitoring wells for

SF-740 PENGAD/INDY MUNCIE IN 47302

the original remedial investigation.

UNIDENTIFIED SPEAKER: How deep are they?

MR. MUZA: Okay. They're either in the saprolite, which is the soil material, or into the bedrock. In some locations there's paired wells. There would be a well on the saprolite and a well on the bedrock. Other locations there's just one or the other.

UNIDENTIFIED SPEAKER: How many feet down?

MR. MUZA: If you're talking about the bedrock out there, it varies as you head down toward the southwest tributary.

UNIDENTIFIED SPEAKER: I know. We live out that way.

MR. MUZA: And up near the trench areas, you would have to go down about 20 to 30 feet to get to the bedrock, but the watertable itself is about 20 feet in depth at that point. It's in the saprolite. Farther down toward the southwest tributary you have much less soil, and the bedrock is a much shallower depth because it slopes away from the trench bridge areas.

UNIDENTIFIED SPEAKER: And they're all contaminated?

MR. MUZA: No. No.

UNIDENTIFIED SPEAKER: It was the last time.

MR. MUZA: Okay. The wells up near the trench area, NS-9, NS-17, NS-8, some of those showed very high levels of volatile organics. Moving away --

SF-740 PENGAD/INDY MUNCIE IN 47302

UNIDENTIFIED SPEAKERS: Rich, why don't you go up on the stage and point those out?

MR. MUZA: Now, those wells are right along here at the periphery of the disposal areas. Moving away, groundwater is flowing this way toward the southwest tributory. Going away from those wells, you know, we saw detections in some of the downgradient wells. The farthest downgradient came up clean. So we had an idea of what the plume movement was. They've actually put in some more of these piezometers. I think there's a couple of additional piezometers. That's what P-4 is in this area since we didn't have wells over in this area. So we pretty much delineated a plume that's moving, contamination in the groundwater that's moving toward the southwest tributary. What we're proposing to do is, as Barbara said, decided two years ago -- the final design is in, we've looked at it, the EPA has done some modeling to see theoretically if it would work and such -- one of the ideas is up in the trench areas, since that's where our highest levels of contamination are and that's the source area, to put in a series of wells. These different boxes delineate different things. The circular ones, these are extraction wells that are going to be put in. Okay? Those will be in the soils, in the saprolite, the trench area. Some of those soils still have contamination; some of the contamination is in the unsaturated zone above these locations. Those will be

SF 740 PENGAD/INDY MUNCIE IN 47302

1 pumping the saprolite area to try and, you know, draw the
2 groundwater out and any infiltration that's coming in --
3 as Barbara was saying, the natural flushing of these source
4 areas here, these contaminated soils. That's going to take
5 care of contamination in the saprolite, in the soils near
6 the source areas. The square boxes delineate three extraction
7 wells within the bedrock. They're within the bedrock. That
8 will go down into the bedrock system and once again take care
9 of the bedrock within the source area. Now, another thing
10 you've got to know is when you start popping these bedrock
11 wells, they're going to influence that saprolite soil, too.
12 The groundwater system out there, there's no dividing line
13 as far as water is concerned. It's moving, infiltrating di
14 ward, hitting the watertable within the saprolite, and then
15 the groundwater in the saprolite and groundwater in the bed-
16 rock, it's all interconnected, and the water is going to
17 move downward into the bedrock, and that's where most of the
18 actual movement occurs. When we start pumping these wells,
19 these bedrock wells, we're also going to influence the
20 saprolite. So they'll be working in concert with these
21 to help clean up that source area. Now, as I was saying,
22 that's where our highest levels of contamination are. We
23 also don't want contaminants to migrate down to the southwest
24 tributary or beyond. Therefore, these bedrock wells and
25 contamination at this point, our data shows it has moved from

SF-740 PENGAD/INDY MUNCIE IN 47305

1 the saprolite up here down into the bedrock. We're putting
2 in or are going to have a series of bedrock extraction wells
3 put in at this point to stop the downgradient migration of
4 the contamination. So it's a two-fold system. Let's clean
5 up the source area as quickly as possible, as well as let's
6 stop the migration downgradient. That's what all those
7 different boxes mean. As I was saying, these are the monitor-
8 ing wells that are out there. Once this system is put on,
9 in effect, we'll be looking to use these monitoring wells
10 to determine what water levels, how turning on these four
11 wells here and these six up here is affecting the water levels,
12 whether we're getting the drying in that we want, whether
13 we're capturing the contaminants by plotting all the numbers
14 and looking at some maps to see, to make sure. We're going
15 to do monitoring, and also there will be water quality sampling
16 done.
17 UNIDENTIFIED SPEAKER: Well, how are you going to
18 check those deep wells there, the wells that you've had a
19 good while?
20 MR. MUZA: The bedrock wells?
21 UNIDENTIFIED SPEAKER: No. Well, yes. The deep ones.
22 MR. MUZA: The deep ones?
23 UNIDENTIFIED SPEAKER: Yes, that have been out there
24 a good while. The monitoring wells.
25 MR. MUZA: Okay, they were sampled there in the

SF 740 PENGAD/INDY MUNCIE IN 47302

1 design phase just recently. That would have been -- what was
2 the date of that sampling? Because typically what we like to
3 do is, I mean, as you're saying here, the remedial investiga-
4 tion out there was quite a few years ago. Before we go in
5 and design this nice little system, we like to get a snapshot
6 of where is the contamination now, what has happened in those
7 couple years period, so they were sampled within the last year
8 before the design was done.
9 UNIDENTIFIED SPEAKER: Then the water was --
10 MR. MUZA: So it's basically what we saw there in
11 the RI. There is contamination. It's right in here. We
12 saw that in the remedial investigation.
13 UNIDENTIFIED SPEAKER: Well, that's where one of
14 those wells is?
15 MR. MUZA: That's where the -- all of these wells
16 were sampled. Like I said, a --
17 UNIDENTIFIED SPEAKER: I can't understand. She said
18 that the soil was contaminated 18 feet down. This well here
19 is 30-some feet, and it's contaminated. You know that that
20 contamination has gone further down than that.
21 MR. MUZA: Okay, that would -- what's happening, the
22 source area, the way the trenches were dug out, they were
23 8 to 12 feet deep, and then water was placed in them and
24 allowed to infiltrate in. So what we started seeing was er
25 were borings done in the initial remedial investigation, and

SF-740 PENGAD/INDY MUNCIE IN 47302

the soil concentration levels in the borings that were placed in these old areas didn't bear out the kind of concentration we saw in some of these monitoring wells in the groundwater. We just weren't seeing the levels that you would expect to get those types of contamination in the groundwater. That's why we had the additional sampling done. The borings that were done, the additional borings, once again showed there is contamination in the soil, but it just doesn't approach the levels that you would anticipate to get some of the numbers we had here. So, you know, it showed that the contaminants were just flushing through the soils. There was some adhesion of contamination onto the soil that exists today, residual contamination, but the huge majority of it was just flushed downward with the percolating water into the groundwater system. And that's the main focus of the groundwater remediation. The remediation system that we're talking about here tonight is to allow natural infiltration to flush out the levels that we have found remaining in those soils. It's going to infiltrate in, and contamination will be carried with the infiltrating rainwater through the soils and into the groundwater, and then become a part of our cleanup system.

UNIDENTIFIED SPEAKER: But you said you wanted it to - you wanted to solve the problems as quickly as possible. Right?

MR. MUZA: Uh-huh.

SF-740 PENGAD/INDY MUNCIE IN 47302

UNIDENTIFIED SPEAKER: And how many years is that going to be? Twenty? Twenty-five?

MR. MUDA: Well, that groundwater cleanup is certainly one of the most difficult things we deal with in environmental concerns.

UNIDENTIFIED SPEAKER: Okay. If you selected Alternatives 3, 4 and 5, how long would they take?

MR. MUDA: Well --

UNIDENTIFIED SPEAKER: On that same example.

MR. MUDA: Okay, I think that one of them is using some flushing.

UNIDENTIFIED SPEAKER: I mean incineration or digging it out and carrying it away, bringing back other dirt?

UNIDENTIFIED SPEAKER: There are different opinions.

UNIDENTIFIED SPEAKER: It shouldn't be like that. If you're going to solve a problem, go ahead and solve it.

MS. AKIN: No, what we're saying is just that no matter what we do with the soil, groundwater is still going to take 25 to 30 years.

UNIDENTIFIED SPEAKER: Yes, but when you filter that water through contaminated soils, it contaminates the water again. You have to pick that water back up. Right? You're not solving anything. In other words, if you dig the dirt up to begin with, the water is going through clean dirt after you carry the good dirt back.

SF-740 PENGAD/INDY MUNCIE IN 47302

UNIDENTIFIED SPEAKER: Right.

MS. AKIN: But your groundwater -- the groundwater there will still be dirty. It will still be dirty.

UNIDENTIFIED SPEAKER: Groundwater remediation --

UNIDENTIFIED SPEAKER: How can it be dirty when you dig up the soil?

MR. MUZA: Well, whether we do that or not, you know it's going to take a long time to clean the groundwater.

UNIDENTIFIED SPEAKER: It would be quicker doing the 3, 4 and 5. I heard the lady talking and she said that EPA was considering the project -- should never consider that. Since the company is paying for it -- the government is not paying for it -- price shouldn't even come into view. Cleaning up the place shouldn't --

MS. BENCY: EPA does not make that decision. That decision comes from Congress. Those nine-point criteria, we have no choice. Cost must be part of the decision. Let me see if I can --

UNIDENTIFIED SPEAKER: See if they understand the 18-foot thing. I want to be sure everybody is clear on this 18 foot. That apparently causes a good bit of confusion.

UNIDENTIFIED SPEAKER: It doesn't cause any confusion. We just want an explanation.

UNIDENTIFIED SPEAKER: Well, I think it causes confusion because it was soil, not the water, that was contaminated.

SF-740 PENGADINDY MUNCIE IN 47302

1 UNIDENTIFIED SPEAKER: We understood that. But
2 you said --
3 (Several people talking at once)
4 UNIDENTIFIED SPEAKER: The soil didn't have as much
5 contamination as the water did deeper than that. Right?
6 That was somewhat surprising.
7 UNIDENTIFIED SPEAKER: Doesn't it seem like it's more
8 reasonable to dig up that soil?
9 UNIDENTIFIED SPEAKER: I know where you're coming
10 from.
11 MS. BENOY: If I may, when the operation of disposing
12 of the water in those trenches was stopped, the source in the
13 soil was a lot more contaminated back then. We have actua
14 seen these soils not the source that they used to be. It's
15 not as highly contaminated. That's our rationale for not
16 digging them up. The groundwater, the majority of the soil
17 contamination has already leached through the groundwater, and
18 the groundwater was the major risk problem that we had because
19 the consumption of groundwater could occur, but the risk that
20 these soils posed is not one to human health. They're 18
21 feet below the groundwater. By leaving them and allowing
22 the final flushing to occur naturally, whether we dig them
23 up or not, the groundwater contamination problem is a problem
24 we've got to deal with and we've got to acknowledge it's
25 going to take 30 years. The source -- the soil is not a major

SF-720 PENGADINDY MUNCIE IN 47302

source anymore, and that's the reason that -- a main part of the reason -- that we've elected to allow the natural flushing.

UNIDENTIFIED SPEAKER: There's really nothing magic about 30 years either. In fact, as fast as this stuff is moving, what we'll do is monitor until the contaminants are below a certain level, cutoff level.

UNIDENTIFIED SPEAKER: What is your cutoff level going to be?

MR. MUZA: Are you referring to the monitoring wells you see out there?

UNIDENTIFIED SPEAKER: Yes.

MR. MUZA: Now, this is what we would call points of compliance wells near the source area. That would be like NS-17, NS-9, NS-8, NS-11. We've got a series of numbers put together in the record, the decision that on a human health basis, there were contaminant concentrations. Elma Akin knows how those are developed. They're developed by toxicologists, and those are the cleanup goals, to meet levels that that groundwater would be usable at those levels. That's the criteria. Until those levels are met, we'll be running those extraction wells out there. Those years are just a number that's given. It's done by some projection, done by computer modeling, something that hydrologists like doing, and it's a way of projecting the time it's going to take

SF 740 PENGADINDY MUNCIE IN 47302

1 based on the concentrations we've seen. But it could tak
2 longer, and that's what the monitoring is all about. That's
3 why we do the monitoring. We're going to make sure this
4 thing is going to work, and it could take awhile.
5 MS. BENOY: First off, please identify yourself,
6 EPA people, so that the court reporter can record that.
7 And secondly, I just wanted to respond also in that we don't
8 have the technology yet that we'll clean up groundwater faster
9 We wish that we did. Yes, sir?
10 MR. KOLKEBECK: Well. I'm just curious. Why don't
11 you have any of the wells on the northeast side? I realize
12 the water is supposed to be running this way, but couldn't
13 there be a possibility of a fissure or something, bedrock, that
14 would make it run the other way? If you're picking up sediment
15 if you're picking up levels over on the complete other side,
16 on the Airport Road side -- I don't know if you're familiar
17 with it or not -- shouldn't there be something in there?
18 I would feel a lot better. I'm sorry. My name is Bruce
19 Kolkebeck. I live in Stoneybrook, which is on the other side,
20 as a matter of fact.
21 MR. MUZA: Okay, basically -- I'm not sure about
22 what this area shows on here, but those wells that you see,
23 NS-24, NS-2. NS-3, 13, 14, those are located on that site.
24 The area topographically, the trenches are sort of on a knc...
25 a ridge area, and it drops off more steeply toward the southwest

SF-740 PENGAD/INDY MUNCIE IN 47302

tributary than it does toward the plant itself.

MR. KOLKEBECK: There's also a branch that comes out and runs down along Camp Road. Okay? It runs down into Grants Creek. Like I said, it runs --

UNIDENTIFIED SPEAKER: They're calling that the southwest tributary. Apparently that's it. It comes down the back side and comes around. Now, that wooded area --

(Several speaking at one time)

MR. KOLKEBECK: Okay, that's what runs through? Okay, that makes more sense.

UNIDENTIFIED SPEAKER: Now, what upset me was that they're saying for the past two to five years, we have seen evidence of contamination in that other tributary. They always want to blame Brown Refrigeration or somebody like that.

UNIDENTIFIED SPEAKER: Do you have a map of the surrounding property on the other side?

MS. BENOY: I don't know if this is going to be enough.

UNIDENTIFIED SPEAKER: All right, where is the corner of Cedar Springs property?

UNIDENTIFIED SPEAKER: Cedar Springs is that side of the boundary of the property that --

UNIDENTIFIED SPEAKER: There's a pond right at the corner of Cedar Springs and National Starch, and this is fed by a springhead on National Starch's side. Now, where's

SF 740 PENGAD/INDY MUNCIE IN 47302

that water coming from?

MS. BENOY: I'm not aware of the spring, Joe, or a pond. Are you --

UNIDENTIFIED SPEAKER: It's not a hundred feet off the line. I don't know why you wouldn't be aware of it.

UNIDENTIFIED SPEAKER: Where is it on that map? Just down to the bottom of it from that hatched area? Is that where you're talking about?

UNIDENTIFIED SPEAKER: It's on the corner of Cedar Springs Farms that was built there, and then across just on the other side of that farm is -- we have 82 acres.

UNIDENTIFIED SPEAKER: The contaminant plume goes the other way, goes -- it does not go toward that corner of the property, so there's no reason the contaminated groundwater would go into that, be discharged under that spring.

MS. BENOY: I'm not sure what area of the site you're talking about. Is it along Cedar Springs Road that you're talking about?

UNIDENTIFIED SPEAKER: The pond is about as big as this building, or maybe a little bigger.

UNIDENTIFIED SPEAKER: The one on the farm?

UNIDENTIFIED SPEAKER: The one on the farm there.

(Discussion in the audience)

MS. BENOY: Can you point it out on the map?

UNIDENTIFIED SPEAKER: I don't know where Cedar

SF-740 PENGAD/INDY, MUNCIE IN 47302

Springs farm, the corner, is on that map.

MS. BENOY: Is there someone that might know?

UNIDENTIFIED SPEAKER: Would it be right in there? Is that where you mean? Right in this area --

UNIDENTIFIED SPEAKER: Further south.

(Discussion, several speaking at once)

MR. PARADOWSKI: I'm Ray Paradowski from National Starch. What I think we're talking about is, if I can get this -- it's not a good map to look at. We're looking at the plant site. This is the National Starch boundary which comes through here. The new industrial park is basically this area and a road comes through here now and back over into Camp Road. The part he's referring to is right about in this area behind where W. A. Brown has put the new facility, has a new facility where the 50 or 60 is. Here's a pond here, which doesn't really originate out of the National Starch property. It's really on what used to be the Caldwell farm really.

UNIDENTIFIED SPEAKER: You know where that lake is?

MR. PARADOWSKI: It's a small pond right about --

UNIDENTIFIED SPEAKER: What does that water come from?

MS. BENOY: I don't know unless it's fed from springs

UNIDENTIFIED SPEAKER: It is a spring in there. That's what runs down the side of National Starch until it

SF 740 PENGAD/INDY MUNCIE IN 47302

reaches Grants Creek.

MR. PARADOWSKI: It's not out of National Starch's property.

UNIDENTIFIED SPEAKER: Well, you may have left a little of it on the line.

MS. BENOY: Yes, sir?

UNIDENTIFIED SPEAKER: The way the contour of the land looks to me, it's running from Proctor down that way, if the springhead is coming out from Proctor's side. Now, I don't know. That's the way it looks to me and the way the land falls away.

MS. BENOY: I was on the site Friday because I needed to understand better how the flow of the land was, and if you're talking about a pond area down somewhere in here, the flow is this way, and it would not impact the flow upstream if the groundwater -- I mean surface water -- flows downstream. So we won't see contamination flowing upstream. Yes, sir?

UNIDENTIFIED SPEAKER: Did you say the flow was to the north?

MS. BENOY: Surface water flow.

UNIDENTIFIED SPEAKER: Surface water flow is to the north?

MS. BENOY: Yes, sir, on that northeast tributary, yes, sir.

SF-740 PENGAD/INDY MUNCIE IN 47302

UNIDENTIFIED SPEAKER: Okay, the groundwater flow is to the south and the west?

MS. BENOY: May I use your pen? There are springs that are located in this area. Now, I didn't go and look at the springs, but evidently that is where some of the surfac water in the creeks originates, and the flow in this northeast tributary is in this direction, yes. It flows north.

UNIDENTIFIED SPEAKER: That water has been tested?

MS. BENOY: Yes, sir. There have been samples, and again we sampled this month and have preliminary results from those.

UNIDENTIFIED SPEAKER: Where is Cedar Springs Road on that map?

MS. BENOY: Correct me if I'm wrong, but this is Cedar Springs Road right here.

UNIDENTIFIED SPEAKER: It was supposed to be part of the solution of the first alternative, was to restrict deeds - restrict development of the site. Are we -- in essence, nothi can be built on the Superfund site until cleanup is done. Is it true that -- have we just zoned all this land that National Starch owns? If you look around, you see Kings Fores sits right in the middle of it. This block that comes in there, is that going to be zoned industrial, the only alterna- tive going to be zoning it industrial at this point? That's kind of scary.

SF-740 PENGAD/INDY MUNCIE IN 47302

MS. BENOY: The question is what is the zone restriction that --

UNIDENTIFIED SPEAKER: I understand that you're not responsible for that, but in essence, if the Superfund site is on the property, is the whole property subject to that kind of restriction?

MS. BENOY: The whole property meaning --

UNIDENTIFIED SPEAKER: In other words, the whole property. I don't know how many acres are down there. I'd draw a number of 250. I would think somewhere around in there. I would think that there's quite a bit of land down there to be used many different ways. I don't know. I don't know their plans are.

MS. BENOY: The question is what these restrictions are that are placed on the site?

UNIDENTIFIED SPEAKER: What deed restrictions, yes.

MS. BENOY: I don't know the answer to that question. Do you know the answer?

UNIDENTIFIED SPEAKER: It says that in here.

MS. BENOY: Right. I don't know what specific restrictions -- what the deed actually says is what I need.

UNIDENTIFIED SPEAKER: Whose responsibility will that be?

MS. BENOY: National Starch.

UNIDENTIFIED SPEAKER: You've got to be kidding.

SF-740 PENGAD/INDY MUNCIE IN 47302

I mean I don't see any county government officials here tonight.

MS. APIN: No, in our first consent decree that we signed with National Starch -- and that is administered by a court of law, not by EPA -- it says that in any kind of transaction National Starch has on any of its property, they have to let the buyer be aware of the site being on the Superfund list. There are also certain restrictions for the trench area, areas that we have found contaminated.

MS. BENOY: Does that answer your question?

UNIDENTIFIED SPEAKER: Well, probably more National Starch's question. I guess so.

MR. PARADOWSKI: I just -- you can't build on it. Really you just can't build on it. I mean for all practical purposes, you can't build on the immediate area, just the trench area. I would imagine that if you build a nice subdivision on it, I don't care how nice it was, you probably couldn't sell a home on it either, the immediate area around it. So what scares us now is the entire property is subject to change of purpose.

UNIDENTIFIED SPEAKER: I think that's why you've heard so much about wanting to clean it up completely.

MR. PARADOWSKI: We've got enough factors on our side

MS. BENOY: Yes, sir?

UNIDENTIFIED SPEAKER: What's going to happen to the

SF-740 PENGADINDY MUNCIE IN 47302

water when you get it out of the ground? Where are you going to dispose of it?

MS. BENCY: In the design there's a treatment, a treatment train. There are several things that are used, several different technologies that are used to remove volatil remove metals, and the option right now is after the bio-treatment is discharged to the local publicly owned treatment works, the sewer system -- that's a design right now. Yes, sir?

UNIDENTIFIED SPEAKER: What happens -- I mean you're saying -- what happens if Mr. Wilson's group back there decides that, you know, they're going to protect against that or if the City of Salisbury says they're not going to let do that?

MS. BENCY: What's going to happen then, we have to determine an alternate discharge method or point. One option would be to have a discharge permit under the National Polluti Discharge Effluent.

UNIDENTIFIED SPEAKER: Yes, but the State is having a very difficult time siting an industrial waste incinerator right now. These groups could block you from treating water.

MS. AKIN: No, they could't block us from treating the water.

UNIDENTIFIED SPEAKER: They're blocking the governmer of North Carolina right now.

SF 740 PENGAD/INDY MUNCIE IN 47302

MS. APIN: We're treating the water on site by means of -- the only thing we're looking for is a discharge for the water. Like maybe if you can't do that, maybe an alternate place like maybe Grants Creek or something.

UNIDENTIFIED SPEAKER: My understanding is you were going to pump it up to or carry it up to Salisbury Waste Treatment facility.

MS. APIN: No. The water will be treated on site before it leaves the site property.

UNIDENTIFIED SPEAKER: How can it be treated?

MS. BENOY: Do you want me to reiterate?

UNIDENTIFIED SPEAKER: I didn't catch it.

MS. BENOY: Air stripping. There is a precipitant phase. There's a bio-remediation stage. There are several stages in the treatment of this water to remove all of the contamination down to our action levels, our cleanup levels.

UNIDENTIFIED SPEAKER: That sounds like a plant almost Whose building is it and who operates that plant?

MS. BENOY: National Starch is responsible for that. It is under the administrative order consent decree which is --

UNIDENTIFIED SPEAKER: That sounds like letting the fox in the hen house.

MS. BENOY: Yes, sir?

UNIDENTIFIED SPEAKER: Do you have anybody else that you've done this for? Do you have an example of where it has

SF 740 PENGADLINDY MUNCIE IN 47302

1 worked for perchance someplace else who has had the same
2 problem and you did this and it worked, was in the process
3 of working, or whatever?
4 MS. AKIN: Sure. We have groundwater treatment
5 systems all around the country, particularly in North Carolina
6 where we have the Celanese site in Shelby and we also have
7 the Sodyco site right in Charlotte where we have the ground-
8 water treatment system in existence right now.
9 UNIDENTIFIED SPEAKER: It's basically doing the same
10 thing, getting the pollution from -- out from under?
11 MS. AKIN: Right.
12 UNIDENTIFIED SPEAKER: How long have they been doing
13 that for you?
14 MS. AKIN: Celanese has been doing it for at least
15 a year, and Martin-Marietta and Sodyco started up last month.
16 UNIDENTIFIED SPEAKER: I'd like to say one thing
17 about the smell. It's terrible. I don't understand why they
18 can't do something about that.
19 MS. BENOY: Because we're required to record the
20 meeting, sir, I need to allow her just a moment or two.
21 BRIEF RECESS
22 MS. BENOY: Hopefully you didn't state a lot of
23 comments that you really wanted to state to us in your dis-
24 cussion over the break. It is important that we record t s,
25 so if we can try not to have discussion and debate amongst

SF-740 PENGAD/INDY MUNCIE IN 47302

ourselves, we will try to do one on one, one at a time. It is very difficult to record it, so if we could just be aware of that, please. Yes, sir. You were --

UNIDENTIFIED SPEAKER: Well, I didn't know whether you were going to take up the smell down there that the plant gives off. I don't know whether -- do y'all do anything about that? We call every so often to Mooresville, but the smell -- I don't know whether it's the soil you're talking about or whether it's the plant itself.

MS. BENOY: The soils that we have, that we're discussing in the trench areas, are too far beneath the land surface to give off any emissions. Any plant emissions or smells or whatever, no, sir, they are not being addressed under the Superfund.

MR. HENDERSON: Barbara, would you kindly remind them again to state who they are and who they represent, please?

MS. BENOY: Yes, could we please try to do that? Yes sir?

MR. JONES: Vernon Jones, representing Stoneybrook. In your initial remarks, you were saying that you consider groundwater soils and air to come up with your 28.5 to determine Superfund. Now, you're saying air played no effect in coming up with that 28.5?

MS. BENOY: There is -- in the hazard ranking system there is a part that we have to deal with the air. Surplus

PENGADINDY MUNCIE IN 47302 SF-740

1 was generated to deal with or passed into law to deal with
2 abandoned waste sites. Active operations and any fumes or
3 smells cannot be addressed under CERCLA. CERCLA Superfund
4 is for abandoned areas, and this is a current operating
5 facility. This trench area was used as a disposal area
6 prior to -- well, obviously prior to 1980. So when CERCLA
7 was passed, that area was subject to being addressed under
8 CERCLA. Am I answering your question?
9 MR. JONES: Yes. Same scenario there. In this ground
10 surface pollution of the northeast drainage system, okay,
11 if it's coming from the on-site or on-going operation, it's
12 not going to be covered by Superfund?
13 MS. BENOY: It is being covered by Superfund.
14 MR. JONES: Okay. Now, is there anybody plugged into
15 the correlation between a system that is designed -- their
16 operation is designed to discharge into the atmosphere any-
17 thing from that plant. It is a system design that if it
18 fails and there is an explosion, the pressure valve will be
19 released into the atmosphere. This is a possible source of
20 your northeast contamination. That whole building is designed
21 as a non-containment building. It's designed to blow out.
22 That was in the Salisbury Post when the valve plug about
23 two years ago did not release. Has anybody correlated that?
24 MR. PARADOWSKI: If I understood his question, 's
25 not -- that's part of the active operation of the plant. That

SF-740 PENGADINDY MUNCIE IN 47302

1 won't be addressed.

2 MS. BENOY: The active operation is not being

3 addressed under CERCLA.

4 MR. JONES: I'm on the northeast. I'm on that pollu-

5 tion, contamination of the northeast trenches.

6 MS. AHIN: So what you're proposing to us is that

7 the current scenario that you just described may be the

8 source of the contamination of the surface water? Is that

9 what you're saying?

10 MR. JONES: Yes.

11 MS. AHIN: Okay. Well, that's something we're going

12 to have to look at in the future. We haven't really looked

13 into that completely yet, but we will take that under con-

14 sideration and look into that part of it. We don't deal

15 with the active plant per se, but the entire National Starch

16 site is on the Superfund list. We look at all the soil sur-

17 face water around there, so if something in their current

18 operations is causing that surface water contamination, then

19 they're going to have to address that.

20 MR. JONES: You should look at the conditions and

21 the way the pressure leak valves are set up.

22 MS. BENOY: Okay. Yes, sir?

23 MR. WILSON: Alfred Wilson. In speaking to air

24 quality, initially when National Starch begins extracting

25 water from the contaminated area, the plume, it was said that

SF 740 PENGADINDY MUNCIE IN 47302

it would be processed through an air stripping operation. Is that when the volatile chemicals and organic compounds are released into the air, or what happens to those? Are they released? Do they have to have a permit, air discharge permit, for that operation, and how will EPA address that, and by us being in a non-payment area, will it have any effect on that?

MS. BENOY: I'm not sure I got all of your question. The first part was during the air stripping process, will those contaminants be released into the atmosphere. The answer is no. The system is designed to contain the contaminants within the air, and it goes through activated carbon or -- I might not get the specifics of the design right -- but it is -- they're captured. They're not released into the atmosphere. That's the -- the Clean Air Act that's going into effect is also going to be one of those stringent requirements that we have to adhere to. Just because we have our own law for CERCLA doesn't mean we can ignore the other laws. Yes?

UNIDENTIFIED SPEAKER: I have a comment. I would really like to see some wells on the northeast side. And I wish there was -- rather than wait every five years to do a study on the groundwater and the surface water, I would like to see it done at least every year if you think it could be done that often. If that wouldn't be possible, then I

SF-740 PENGAD/INDY MUNCIE IN 47302

don't see why you can't cut it down to every two and a half years at least, and especially the first few years of this things. I mean it's obvious you have a site here right within the state, and it's too soon to tell, to know just yet. As a resident, I'd really like to see really something -- I'd really like to know this is working, starting to work, and that it's not expanding. Just a comment.

MS. BENOY: Okay. Yes, sir?

UNIDENTIFIED SPEAKER: In regard to the contamination of the valves in the surface water, how can that be found at a point in the stream at one location on the site, and then as it flows off-site, disappear from the water? What happens to those contaminations?

MS. BENOY: The question is how can you find high concentrations of certain contaminants at one point in the stream and then not see it or see less concentrations downstream?

UNIDENTIFIED SPEAKER: Well, I believe you said earlier that none was found in the surface water after it flowed off-site.

MS. BENOY: The nature of the chemicals that we're seeing are volatile organics, and predominantly what happens is that they evaporate. If you have even certain household chemicals, you can smell them because they volatilize. They evaporate. They go into the atmosphere. The same thing

PENGADINDEX MUNCIE IN 47302 SF-740

1 happens. It's in the surface water, and because of the
2 movement of the water and because of the surface of the water
3 being exposed to the air, it dissipates; it evaporates. That's
4 the nature of the way that chemical behaves.
5 MR. PRUITT: Don Pruitt. I would challenge you on
6 that. If you're talking about acetone, alcohol -- but 1, 2
7 chloride benzene, you're talking about a chlorinated ring
8 compound. It might have a boiling point of 250 degrees.
9 It's not going to flash off.
10 MS. BENOY: I was trying to answer the question in
11 general terms. That's what happens in surface water.
12 MR. PRUITT: The engineering gentleman just identi-
13 fied one of the major contaminants as 1, 2 dychloride methane
14 and benzene.
15 MS. BENOY: Ethane.
16 MR. PRUITT: Ethane.
17 MS. BENOY: 1,2 dychloride ethane, which does
18 volatilize quite readily.
19 UNIDENTIFIED SPEAKER: How about the heavy metal
20 stuff to be present? Were they found one place downstream,
21 heavy metals?
22 UNIDENTIFIED SPEAKER: No.
23 UNIDENTIFIED SPEAKER: Were contaminants found in
24 the sediment in a stream bed?
25 UNIDENTIFIED SPEAKER: Volatile organic compounds wer

SF-740 PENGAD/INDY, MUNCIE IN 47302

yes.

UNIDENTIFIED SPEAKER: So that also hasn't been four to migrate downstream?

UNIDENTIFIED SPEAKER: Exactly. I would like to better characterize the soil that is in the site that's going to be left to be naturally treated with regard to the permeability and percolation process, including, say, the tim and distance to groundwater and to the extraction point. Can you give us a picture of what's happening there?

MS. BENOY: Do you want the trench area map?

MR. MUZA: Yes. Well, right here is the trench area, as we said. Basically the saprolite soils there are weathered byproducts of the bedrock. They're mainly a sandy, silt material. You do get some adhesions because of the silkiness of the organics. That's what we saw. We saw some residual organics down there in those soils. The water-table depth in that area is greater than 20 feet. I can't tell you exactly offhand. These wells will give us those numbers. The watertable is within the saprolite, within the soil. There's going to be extraction wells in those saprolite soils. That's what the circular points are with the ring around it. Those are extraction wells within the saprolite. Those will be pumping, which will lower the watertable in that area, and then you're going to get the infiltration. There was modeling that's been done that shows some of the

SF-740 PENGADINDY MUNCIE IN 47302

compounds, the concentrations we saw, residual concentrati
where -- at levels where, you know, within a few years infil-
tration itself could rid those contaminants from the soils.
Some of the other ones, like the 1,2 dychloride ethane, which
is what I consider the predominant contaminant of this site,
that's at some higher levels, but as we're saying, the pump
and treat action could take, you know, decades. It could take
20 or 30 years. I mean we're looking most likely at a minimal
of 20-plus years for that type of process. That's 20 years
allowing rainfall infiltrating through these soils, and there
are wells, as you can see. I mean these are the -- the trench
areas were right in this area. These wells are right there
The scale on this map, I mean that's 500 feet there. Those
wells are right in that area. As the contaminants are taken
off by the infiltrating rainfall, they're going to be travelin
very short distances to be extracted by those wells laterally.
If they're traveling vertically, we know that contamination
is within ten feet of the watertable. The levels we're seeing
are pretty much within ten feet of the watertable. We're
seeing levels between 15 and 25 feet in some of the samples
that were taken that had contamination. The watertable is
just over 20 feet at that area.

UNIDENTIFIED SPEAKER: Will the contamination have
to continue down until it reaches the watertable before y
see the concentrations diminish?

PENGAD/INDY MUNCIE IN 47302 SF-740

MR. MUZA: It's going to move into the watertable, and at that point it will be transported to the extraction system. Part of the ground -- that's the whole thing. What we're doing here is letting nature take its course and letting the groundwater remediation system clean it up. That's what's going to do the major part of the cleanup.

UNIDENTIFIED SPEAKER: Basically a leaching. You're just letting it leach down and then you're pumping the leach out?

MR. MUZA: Right. It's going to mix with the groundwater and become a part of the groundwater problem.

MS. BENOY: One at a time.

MR. MUZA: At this facility, what we have, because the contamination is subsurface soil contamination and groundwater contamination, that's the route of transport, the groundwater, and the system that's being put in, the natural leaching is just letting nature take its course for what residual soil contamination exists out there. The groundwater extraction system is going to clean up nature's product basically.

UNIDENTIFIED SPEAKER: How much volume of water are we talking about here for each wall?

MR. MUZA: Pumpage rate? Offhand, I forget what they're projecting.

UNIDENTIFIED SPEAKER: Do they run continuously?

SF 740 PENGAD/INDY MUNCIE IN 47302

1 MR. MUZA: Yes, unless -- yes, with the situation
2 being in bedrock, during the initial startup we're really
3 going to have to do some monitoring to see what type of rates,
4 you know, can be attained, and in times, in this type of
5 system, there may be a pause pumping that might have to be
6 used. What that would mean would be, you know, pumping for
7 days or weeks and then shut off to let the system rebound a
8 little and then pumpage again. That way you're surging.
9 You're getting some movement, allowing some movement down-
10 grade and then pumping out, because the bedrock setup like
11 this, there's times when you can hit an area where you're
12 getting very good quantities of water, and other times you
13 don't get that.
14 UNIDENTIFIED SPEAKER: Is there going to be a full-
15 time person to do this, or how are you going to -- how is it
16 going to be staffed to handle that if these decisions are
17 going to have to be made on a timely basis? Are you going
18 to have someone drive all the way from Atlanta and say: Well
19 it's running pretty good today; I think I'll leave it on?
20 MR. MUZA: Well, it's an automated system, but there
21 will be monitoring done on a regular basis, and the key part
22 is the monitoring that's going to be done. Later samples
23 are taken, the water level data is taken --
24 UNIDENTIFIED: By EPA, or are we talking about
25 National Starch?

SF-740 PENGADINDY MUNCIE IN 47302

MS. BENOY: National Starch. They are required also to contact us when there's a problem. We don't just step out of the picture. We're involved every step of the way. Yes, sir?

UNIDENTIFIED SPEAKER: What assurances do you have or data or modeling that the downgrading of the wells won't increase the spread of the contaminants, the plume, contaminated plume, drawing into, say, an underground water flow or some other underground stream? Is that a possibility?

MR. MUZA: In this setup, you know, this system here, we are basically just doing pumpage around the source. This system is letting the natural flow bring the contaminants, along with some pumpage from those four wells, to that point so they can be taken out. It's basically that we're setting up a barrier here by using these wells. We're going to set up a barrier, and as the groundwaters flow in from here downward, headed that way, it's going to get taken out. It's going to be captured at that point.

UNIDENTIFIED SPEAKER: Well, I understand the theory. They'll draw the aquifer down.

MR. MUZA: Uh-huh.

UNIDENTIFIED SPEAKER: Creating a pressure or a void that the groundwater runs forward, but it seems that the potential is there to increase the spread of contaminants toward those downgrading wells, and if you have movement of

SF-740 PENGADINDY MUNCIE IN 47302

1 groundwater, say laterally, through some vault or fractu in
2 the bedrock, potentially it would seem like a risk to further
3 spread the contaminants.
4 MS. BENOY: That's why a lot of study goes into this
5 before the design is implemented or even put on the table.
6 The permeability rate, the direction of the groundwater flow,
7 it's very much engineered. We try to anticipate problems.
8 We can't guarantee the problems will not occur. But that's
9 why the monitoring program is so extensive.
10 UNIDENTIFIED SPEAKER: Have extensive geological
11 surveys and system studies been done of the site, on bedrock
12 at the site?
13 MR. MUZA: That was all part of the remedial inves-
14 tigation. There were more studies done in the design phase
15 also. And in regard to your question on modeling, I did
16 in-house modeling on this site, putting in these extraction
17 wells and using a computer code called Rescue, which will
18 develop capture zones for the wells, and at the projected
19 rate of extraction, it shows that the capture zones are going
20 to be there to provide a wall along this point.
21 MS. BENOY: Yes, sir?
22 UNIDENTIFIED SPEAKER: What's your spacing of the
23 wall with regard to the wells themselves?
24 MR. MUZA: The wells themselves?
25 UNIDENTIFIED SPEAKER: The containment wall that's -

SF-740 PENGAD/INDY MUNCIE IN 47302

MR. MUZA: Basically less than 500 feet, somewhere in that --

UNIDENTIFIED SPEAKER: That's the depth?

MR. MUZA: They're into the bedrock. They're put into the bedrock.

UNIDENTIFIED SPEAKER: I know the bedrock is less than 20 feet. How far into the bedrock? You want 100 feet, 200 feet, 500 feet?

MR. MUZA: The contamination from the monitoring wells is seen -- in bedrock aquifers, the most fractures or the most permeable zone for flow is in the upper part. So those will be screened within the upper regions of the bedrock. I don't -- I can't memorize all those numbers. I'm sorry.

UNIDENTIFIED SPEAKER: You said you did the modeling. How deep -- what's the cone of depression on these?

MR. MUZA: The best way to answer that is the program that I used produces a capture zone. The cone of depression doesn't always give you the answer. You know, people sit there and they use certain equations and say: Okay, this is the mid-point between these two wells based on this equation. Now, if we get one foot of dry-down from this well, one foot from that well, it should work. That's not always the best way to do it because you have to use the slope of the watertable also, and the program that I worked with, Rescue, takes into account the slope of the watertable. Based on that

SF-740 PENGADINDY MUNCIE IN 47302

program, I couldn't tell you exactly the cone of depression and how far this cone of depression from this well will extend from that well. What it produced was a capture zone that showe the capture zones for each individual well were overlapped, and in this entire area, let's just say in generic terms, this entire area like this was socked in, was within the capture zone of those four wells. And that's what we were looking at. That's what we wanted to know. That way the plume we delineated is within that capture area of those four wells.

UNIDENTIFIED SPEAKER: You can't give me a ballpark number on how deep the wells are going to be?

MR. MUZA: I forgot.

MR. CLAYPOOLE: About 185 feet.

UNIDENTIFIED SPEAKER: Who are you?

MR. CLAYPOOLE: My name is Joe Claypoole with CDM. While they were doing the remedial design, they put in several bedrock wells and they drilled down to approximately 200 feet below ground surface, and the fracture system -- basically the fractures -- you get less fractures with depth, and down to about 170 feet, that's substantial fractures. Below that, you hardly saw any fractures, and therefore, the aquifer doesn't produce much water down there. That's pretty much the extent of the aquifer. There would be no reason to wells below that depth. That's the reason they're above the

SF-740 PENGAD/INDY MUNCIE IN 47302

200-foot mark. Sorry, I should have stepped in sooner.

MS. BENCY: Thank you.

UNIDENTIFIED SPEAKER: How deep have contaminants been found in the aquifer under the site?

MR. MUZA: I don't know the specific depth, you know but a number of these wells are bedrock wells, and there was contamination detected in those wells. I would have to get out the table. I mean we're talking, you know, there's 24 wells out on that site.

UNIDENTIFIED SPEAKER: What if you put the 185-foot wells in there and you pump it until you get contaminants out, and then eventually the contaminants will be down to 185 feet? Is that roughly correct?

MR. MUZA: The contamination will tend to move with the groundwater flow, and if the fractures -- with wells like this with bedrock area, you pretty much would use an open section throughout the fractured bedrock. If the contamination is within the upper 40 feet of the fractured bedrock, that's the way it's going to go. I mean I look at groundwater flow and contaminant migrations -- it's energy. And it's going to take the least, you know, hardworking path. It's going to flow horizontally within that more fractured interval rather than being sucked downward, and that's -- with this type of setup you get a large open area that you're going to be pumping the water out of. Even when, you know,

PENGAD/INDY MUNCIE IN 47302
QF-740

1 people have a domestic well, you may have to drill that we
2 200 feet deep and you may have to have it open from 100 feet
3 to 200 feet to hit as many fractures as possible to get enough
4 water to exist for, you know, daily consumption. It's the
5 same type of thing here. Those wells will be pretty much
6 open, and any contamination in the different zones is going
7 to move horizontally through those zones to the discharge.
8 UNIDENTIFIED SPEAKER: It's just assumed that down
9 to 170 feet it's all one aquifer and above that you assume
10 the contamination extending down to that level will be plumed
11 from that level?
12 MR. MUIR: That's what I'm saying. Basically in
13 trench areas, the saprolite and the bedrock, they're totally
14 interconnected. The saprolite is the recharge zone. The
15 contaminations were percolating down, and the waste water
16 was put in a trench, percolated down through the saprolite
17 into the watertable and the saprolite, and continued to work
18 its way down into the bedrock. And that's the data showing
19 that the contamination moved down into the bedrock wells, and
20 that's the permeable zone where horizontal movement princi-
21 pally takes place.
22 MS. BENOY: Yes, sir?
23 UNIDENTIFIED SPEAKER: It's obvious that National
24 Starch has hired some consultants. I don't really know w.
25 they are. Are you dealing with these consultants? Are they

SF-740 PENGAD/INDY MUNCIE IN 47302

1 going to be in charge of this monitoring of the wells, and
2 if they are, who are they? Sorry, you gave me some initials
3 but I didn't really understand.
4 MS. BENOY: The questions are who has National
5 Starch retained as their consultants and --
6 UNIDENTIFIED SPEAKER: What will they be charged
7 monetarily? Is that a tricky question?
8 MS. BENOY: Ray, would you like to address that ques-
9 tion?
10 MR. PARADOWSKI: Yes, Ray Paradowski from National
11 Starch. We have engaged International Technologies Corporation
12 as consultants. They are one of the most qualified, I think,
13 environmental agencies in the area, consulting firms. They
14 have been working with us, I guess, from -- since 1984, and
15 even before this... (inaudible) They will be, unless we
16 have some falling out of some sort, to the best of my know-
17 ledge, they will be working with us through the construction
18 of the entire facility and then assisting us with whatever
19 monitoring is required by us in conjunction with the State
20 and EPA type agencies.
21 MS. BENOY: Thank you. Yes, sir?
22 MR. PRUITT: Yes, I would like to make just one
23 comment and then I'll shut up and everybody can clap or
24 whatever. My name is Don Pruitt. What bothers me -- and
25 I think more or less this is the -- if we take away the

SF 740 PENGADLINDY MUNCIE IN 47302

1 consulting engineers, this is more or less just a public
2 relations effort. I think we've pretty well said that.
3 This state is anywhere from a year to eighteen months away fro
4 not being able to do anything with their industrial waste.
5 They can -- as prospects look, they will not be able to ship
6 it outside the borders of this state, and what concerns me
7 and what concerns me with you folks is you're so splintered
8 into different groups that in eighteen months, with these
9 groups running around and saying no, no, no, they're saying
10 to store this stuff above ground like in recycling, like you
11 do aluminum cans and newspapers and clear glass. Well, the
12 past 40 to 50 years has shown that doesn't work, so in
13 eighteen months, all these large industrial plants are going
14 to be given carte blanche. In other words, they're not
15 going to have anything to do but dump it out in the field and
16 dig trenches and dump it in the rivers. And what are you
17 people going to do then? I mean you can't even get the
18 people from Mooresville, and I feel for them because if they
19 come out, they're harassed by other people, but, you know, this
20 is my concern, is that, you know, we're down the road here
21 anywhere from five to fifteen years, and you come in here and
22 you introduce possibly new evidene that they're still -- they
23 still don't have control over chemicals on the site. And
24 then we're looking down the road to a year to eighteen months
25 from now when the State is going to say: Hey, National Starch

SF-740 PENGAD/INDY MUNCIE IN 47302

hey Hoescht-Celanese, take care of your own waste. There's only two alternatives. They either burn it, spread it on the side of the road or try to incinerate it themselves, which is the same as burning it, or they dig a hole like these guys did and put it in a trench. And, you know, I think we're, you know -- it's unbelievable that five years down the road -- and obviously this is not one of the more critical sites, but five years down the road, we're still talking and we're still saying that we don't have answers, and, you know, I pity your job in trying to keep up with these sites here in North Carolina when in eighteen months these people aren't going to have anywhere to put their waste.

MS BENOY: Mr. Pruitt, you are right that --

MR. PRUITT: Let me add one comment. There's a gentleman who identified himself as working for the EPA who came to this county and was paid somewhere around $20,000.00 by some of these groups, and came here and said: The answer is to store this waste above ground. Well, my friend, that's what we've been doing for 20 to 40 years, putting it in barrels and burying it in the ground or digging trenches and burying it in the ground. The answer has got to be if we all -- our jobs, their jobs, my job, everybody's job in here, depends on industry, and there has got to be a way that you people have got to convince Bush and his cronies to give you enough money to go out here and police these people, because in

SF-740 PENGAD/INDY MUNCIE IN 47302

1 eighteen months, they're not going to have anything to do
2 but going out and digging a trench and burying more. And then
3 are we still 20 years from now going to be coming back in
4 here -- most of us -- well, these two back here will be back --
5 but everybody else will be dead and gone.
6 MS. BENOY: Mr. Pruitt, I appreciate your sharing
7 that. The industrial waste, the waste problem that we have
8 in this country is a national problem. There are laws that
9 are in effect today. We are having new laws on the books
10 every day. We've proposed to Congress, both in the federal
11 arena as well as the state arena. And I appreciate your
12 sharing that. It is a big problem, yes, sir.
13 UNIDENTIFIED SPEAKER: I read in the Salisbury Po
14 that National Starch is in violation of their current discharge
15 permit. Is National -- I mean is EPA aware of this, and how
16 will additional discharge from this treatment system be
17 handled by National Starch and how will that be dealt with?
18 MS. BENOY: The discharge permit that you are dis-
19 cussing, your question is are we aware of the violations in
20 the permit. Is that your question?
21 UNIDENTIFIED SPEAKER: Yes.
22 MS. BENOY: The program that you're speaking of is
23 a state delegated problem, and it's under also a separate
24 federal group in the EPA. No, sir, I am not aware of it.
25 The State would be the first line of action. I will look into
that.

SF-740 PENGADINDY MUNCIE IN 47302

UNIDENTIFIED SPEAKER: Since you're approving this method for treatment, you know, it seems obvious that this would dramatically increase the amount of effluent.

MS. BENOY: One of the criteria is that the discharge effluent be within compliance. If we have an out-of-compliant discharge problem, then no, sir, we could not -- we would not add to that problem. Yes, sir?

UNIDENTIFIED SPEAKER: Is the discharge going to be grandfathered, if new and more restrictive criteria comes into effect that the standard would be lowered, the parts per million would be lowered, is this discharge going to be putting out -- going to be grandfathered?

MS. BENOY: Yes, sir. The guidance we have is as more stringent requirements come into law, then yes, sir, we have to adhere to those more stringent requirements.

UNIDENTIFIED SPEAKER: Another point here. What is the relation of the North Carolina Department of Environmental Health and Natural Resources and their present operation?

MS. BENOY: I don't understand your question.

UNIDENTIFIED SPEAKER: Everybody keeps saying: Well that's the regional office, DEHNR, and so forth. What effec are -- you mentioned just a moment ago that this violation will state it comes under DEM or DEHNR -- how and what authori do they have over National Starch as far as permitting discharges and emissions?

SF-340 PENGADINDY MUNCIE IN 47302

MS. BENOY: Jack Butler?

MR. BUTLER: My name is Jack Butler. I work with the Superfund Section of DEHNR. I might explain that there are a lot of parts of the Department of Environmental Health and Natural Resources, new departments. The Mooresville regional office is required to, as part of the Division of Environmental Management, they have authority over a number of things, including NPDS permits, discharge in creeks, air permits, on-going environmental permits with plants. The Superfund Section is a section of the Division of Solid Waste Management. This is actually three sections under the Division of Solid Waste Management. One of them is, in the Solid Waste Section, is landfills; one is Hazardous Waste Section, which is the regular program; and there's also the Superfund Section, which is what I'm in. RECRO deals with RECRO requirements -- Resource, Conservation and Recovery Act of the operation at National Starch. Superfund Section deals with past waste disposal practices at National Starch. I realize all those different groups are really confusing, but each group has its own legislative authority and regulatory authority. We have our own limitations of what we can address and what we're not allowed to address, and if we have to, we refer to another section. If that answers your question --

UNIDENTIFIED SPEAKER: Well, let's narrow it dow. a little more. Who -- these folks over here said they called

SF-740 PENGAD/INDY MUNCIE IN 47302

Mooresville and got no answer. They said it was under Superfund. How do we avoid not running into that roadblock again? Who can we contact?

MR. BUTLER: Again, the present on-going operation would be addressed by the Division of Environmental Management, which is the Mooresville office. Anything to do with Superfund or the Superfund Section, I can give you our phone number if you would like it.

UNIDENTIFIED SPEAKER: For on-going operations, the persons named and contacted for --

MR. BUTLER: Just offhand, I don't know the name.

MS. BENOY: We can obtain that name for you and get back to you. If you would write your name down and your question down on a piece of paper -- could you do that -- and I'll find out that information, that name for it, and I will submit it to you. Are there any more questions? Tonight's meeting is to propose to you a plan to address the soils and the trench areas. Many of your concerns have been specific to the groundwater. One of the most important, if not the most important, criteria that we address when we look at the cleanup of the site is the public health. The groundwater contamination, if it were to be left alone, would continue to pose an unacceptable problem to public health. That groundwater problem is being addressed. The pump and treat system is scheduled for construction within the next few months

On the soils, yes, they continue to have residual contamination but at much lower levels. The agency is proposing to you that we continue with the groundwater extraction system and allow the natural percolation of rainfall, together with the pump and treat system, to flush out the soils. The soils, if left this way, do not pose a significant health threat. They're not exposed to the public. The contaminants that they migrate into is the groundwater, and that will be addressed in the pump and treat system. We do appreciate your comments. We hope that you have adequately had answers tonight. If you still have questions, we still welcome and encourage you to write them in and submit them to us. I hear that your concern is more focused on the groundwater and on the northeast tributary, and those are problems that continue to be dealt with, and again, we encourage any questions, any concerns, any comments, and I would like to thank you very much for coming out tonight.

**(Hearing Concluded)**

SF.740 PENGAD/INDY MUNCIE IN 47302

# APPENDIX B - LETTER FROM SUPPORT AGENCY

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

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

William L. Meyer
Director

September 24, 1990

Mr. Greer C. Tidwell
Regional Administrator
U.S. EPA Region IV
345 Courtland Street
Atlanta, GA 30365

RE: Conditional Concurrence with the Record of Decision (Operable Unit #2)
National Starch and Chemical Company NPL Site
Salisbury, Rowan County, NC

Dear Mr. Tidwell:

North Carolina appreciates the opportunity to comment on the attached Draft Record of Decision (ROD) for the subject site, and we look forward to working with EPA on the final resolution of the problems at this site. The State concurs with the ROD for Operable Unit #2 subject to the following comments, conditions, or exceptions listed below.

1. Contamination in the northeast tributary is not addressed in the ROD for Operable Unit #2. Because repeated sampling events show the tributary sediments and water to be contaminated, it is imperative that this creek be remediated. It is our understanding that an Operable Unit #3 will be created to specifically address contamination in the northeast tributary.

2. The proposed plan to allow natural soil flushing to remediate the contamination is understandable given the levels and depth of the contaminants, however subsurface samples should be taken periodically to monitor declining soil concentrations. It is understood that groundwater extraction/treatment will be continued until groundwater cleanup goals have been met. The current contaminated subsurface soil may prolong the time period for groundwater extraction, therefore we would advise that a more thorough analysis of the benefits of soil vapor extraction and soil flushing be conducted.

3. State concurrence in the Draft Record of Decision and Remedial Alternative Selection is based solely upon the information contained in the attached Draft Record of Decision and Remedial Alternative Selection. Should the State receive new or additional information which significantly affects the conclusions or remedy selection contained in the Draft Record of Decision and Remedial Alternative Selection, it may modify or withdraw this concurrence, effective immediately, upon written notice to EPA Region IV. Such notice shall contain a statement of the reason or reasons for the modification or withdrawal of State concurrence.

4. State concurrence in this Draft Record of Decision and Remedial Action Alternative Selection in no way binds the State to concur in future decisions or commits the State to participate in future activities regarding this site including but not limited, to remedial design selection or State participation, financial or otherwise, in the clean up of the site. The State reserves the right to review, comment and make independent assessments of all future work relating to this site.

In addition to the comments on the ROD for Operable Unit #2, the State has concerns about the overall Remedial Plan at the site which concern the remedial plans for the groundwater which is now in place.

1. The ROD for Operable Unit #1 states that the pretreated groundwater will be discharged to the National Starch Wastewater lagoon for further treatment. After review, we feel this violates RCRA rules because the lagoon does not meet RCRA minimum technical requirements (i.e., there is no double liner, no leachate collection system, nor 4 monitoring wells). It is imperative that this be corrected before implementing the remedial plan.

2. The air stripper operation must conform to the Air Toxics Standards promulgated in May 1990 (NCAC Title 15A, Chapter 2, Section .0610).

3. Community and State concerns dictate that risk assessments be conducted on the treated water discharges and air emissions from the site. The air emissions risks should be assessed at the property line and added to the ambient baseline risk. The total risk should not exceed the $1 \times 10^{-6}$ level. Likewise for surface water, the risk assessment should consider the risks posed by <u>all</u> sources discharging to High Rock Lake. The risk from the site plus risks from other dischargers should not exceed the $1 \times 10^{-6}$ level.

Again, the State appreciates the opportunity to comment on the Draft ROD, and we look forward to working with you on this site in the future.

Respectfully yours,

William L. Meyer

WLM/acr

cc: George Everett

## RISK ASSESSMENT CERTIFICATION

The Region IV risk assessment staff has reviewed the PRP-generated risk assessment for the National Starch and Chemical Company NPL Site, Salisbury, N.C. for compliance with current Agency health risk guidance and policy. It was discovered during ROD preparation that the risk assessment had inadequately documented the assumption that direct soil exposure pathways were incomplete. Subsequent sample data and site history have supported this assumption as stated in the risk assessment summary in the Record of Decision (ROD). Other aspects of the risk assessment were satisfactory. In accordance with the requirement of OSWER Directive No. 9835.15 (8/28/90), it has been determined that the risk assessment as summarized in this ROD conservatively conveys the upperbound cancer and the systemic toxicity risks posed through all reasonably likely current and future exposure scenarios by contaminants identified at this site. Therefore, it is acceptable to the Agency.

Elmer W. Akin — 9/27/90

ELMER W. AKIN
HEALTH ASSESSMENT OFFICER

DATE