09-01 Bladen Co.

R-586-3-9-15

STUDY PLAN
SCREENING SITE INSPECTION
BLADEN COUNTY LANDFILL
ELIZABETHTOWN, BLADEN COUNTY, NORTH CAROLINA
EPA ID #: NCD980502819

Prepared Under
TDD No. F4-8902-69
CONTRACT NO. 68-01-7346

Revision 0

FOR THE

WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

MARCH 14, 1989

NUS CORPORATION
SUPERFUND DIVISION

Prepared By	Reviewed By	Approved By
Kent Hankinson	Greg Schank	Murray Warner
Kent Hankinson Project Manager	Greg Schank Assistant Regional Project Manager	Murray Warner, P.E. Regional Project Manager

Sampling done March 27, 28, 29; 1989

NOTICE

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

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

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

KENT HANKINSON
GEOLOGIST

STUDY PLAN
SCREENING SITE INSPECTION
BLADEN COUNTY LANDFILL
ELIZABETHTOWN, BLADEN COUNTY, NORTH CAROLINA
EPA ID #NCD980502819
TDD NO. F4-8902-69

1.0 INTRODUCTION

The NUS Corporation Region 4 Field Investigation Team (FIT) has been tasked by the U.S. Environmental Protection Agency (EPA), Waste Management Division to conduct a Screening Site Inspection (SSI) at the Bladen County Landfill facility in Bladen County, North Carolina. The investigation will be performed under the authority of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The task will be performed to satisfy the requirements stated in Technical Directive Document (TDD) number F4-8902-69.

1.1 Objectives

The objectives of this sampling investigation are to collect information to assist in developing a site-specific preliminary HRS score and to determine if further investigation is required at this site.

Specific elements are:

- Obtain information to prepare a site specific preliminary HRS
- Provide EPA the necessary information to make decisions on any other actions warranted at the site.

1.2 Scope of Work

The scope of this investigation will include the following activities:

- Obtain and review background materials relevant to HRS scoring of site
- Obtain aerial photographs and maps of site, if possible
- Obtain information on local water systems
- Evaluate target population within a 4-mile radius of the site with regard to groundwater use, surface water use, and possibility of direct contact or fire and explosion hazard
- Determine location and distance to nearest potable well
- Develop a site sketch
- Collect environmental samples

1.3 Schedule

Week of March 27, 1989

1.4 Personnel

Project Manager - Kent Hankinson
FIT IV Personnel

1.5 Permits and Authorization Requirements

EPA is responsible for obtaining access to the site and permission to take photographs of site. In addition, EPA is responsible for all permits which may be required to accomplish this task.

1.6 Site History and Description

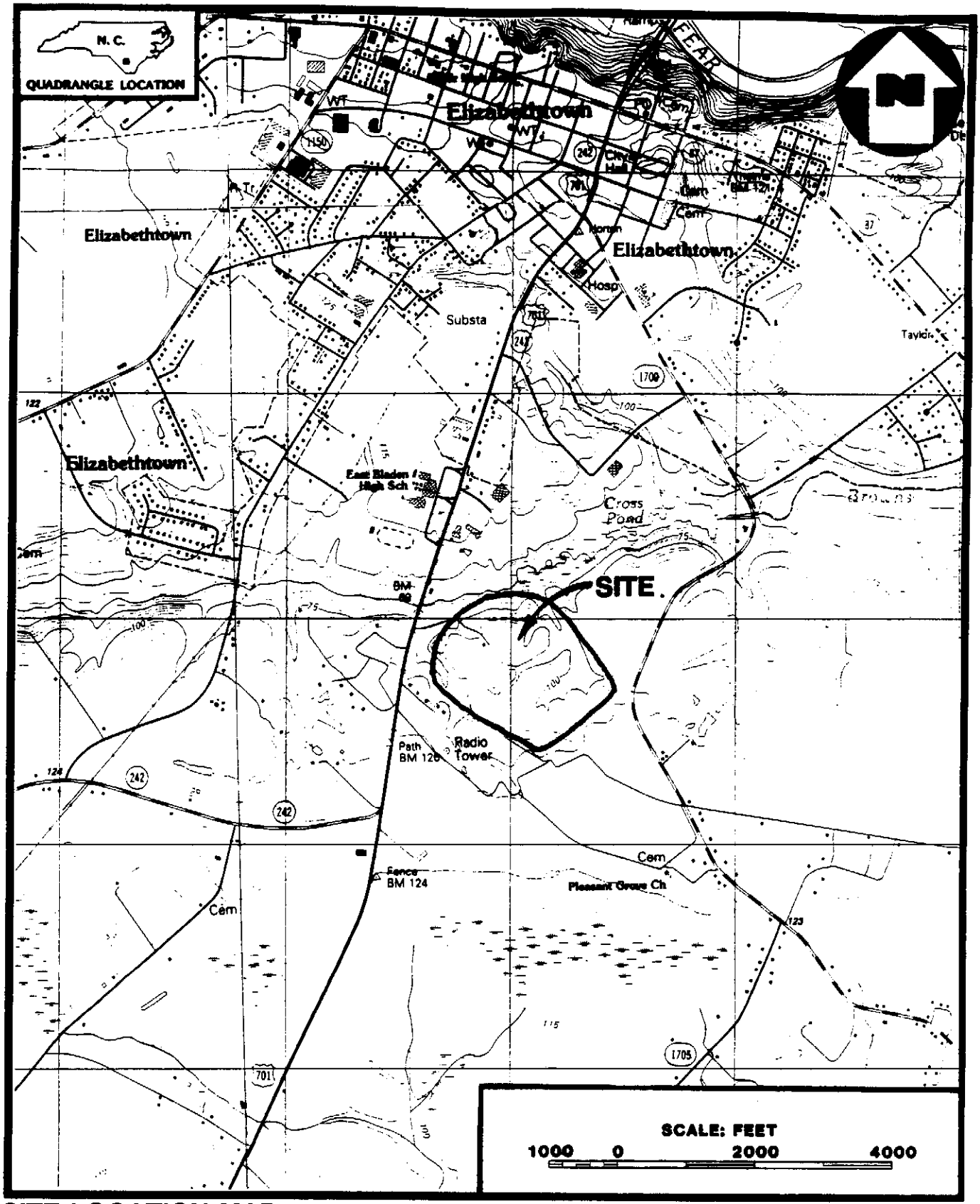
The Bladen County Landfill, located approximately 1 mile south of Elizabethtown, began current trench and fill operations in 1972 (Refs. 1, 2). Posted rules for the landfill currently prohibit disposal of hazardous or toxic wastes (Ref. 3). Cogentrics, a utility company, has disposed of fly ash waste/sludge in the landfill since 1986, under a permit from the State of North Carolina. Analysis of the waste indicated no inorganic contaminants above acceptable EP toxicity levels (Refs. 2, 4).

In 1973, an oil-like film was found in the dam area of Cross Pond, located within 1 mile of the landfill (Refs. 1, 5). Although the pond's owner thought the film was related to the landfill, state and county officials felt that a more likely source was overflow from an upstream slaughterhouse waste lagoon (Ref. 5).

In 1979, a surface water sample taken from a stream below the landfill was found to contain arsenic, chromium, copper, lead and zinc (Ref. 6). In 1986, the landfill received a Notice of Violation of groundwater quality standards from the State of North Carolina (Refs. 7, 8). Subsequently, a Bladen County contractor conducted an expanded groundwater investigation at the landfill. The State of North Carolina found that groundwater quality in the eastern area of the landfill appeared to be acceptable, but more information was needed for an additional portion of the landfill (Ref. 8). Bladen County currently conducts quarterly monitoring of groundwater at the landfill (Ref. 2).

1.7 Regional Hydrogeology

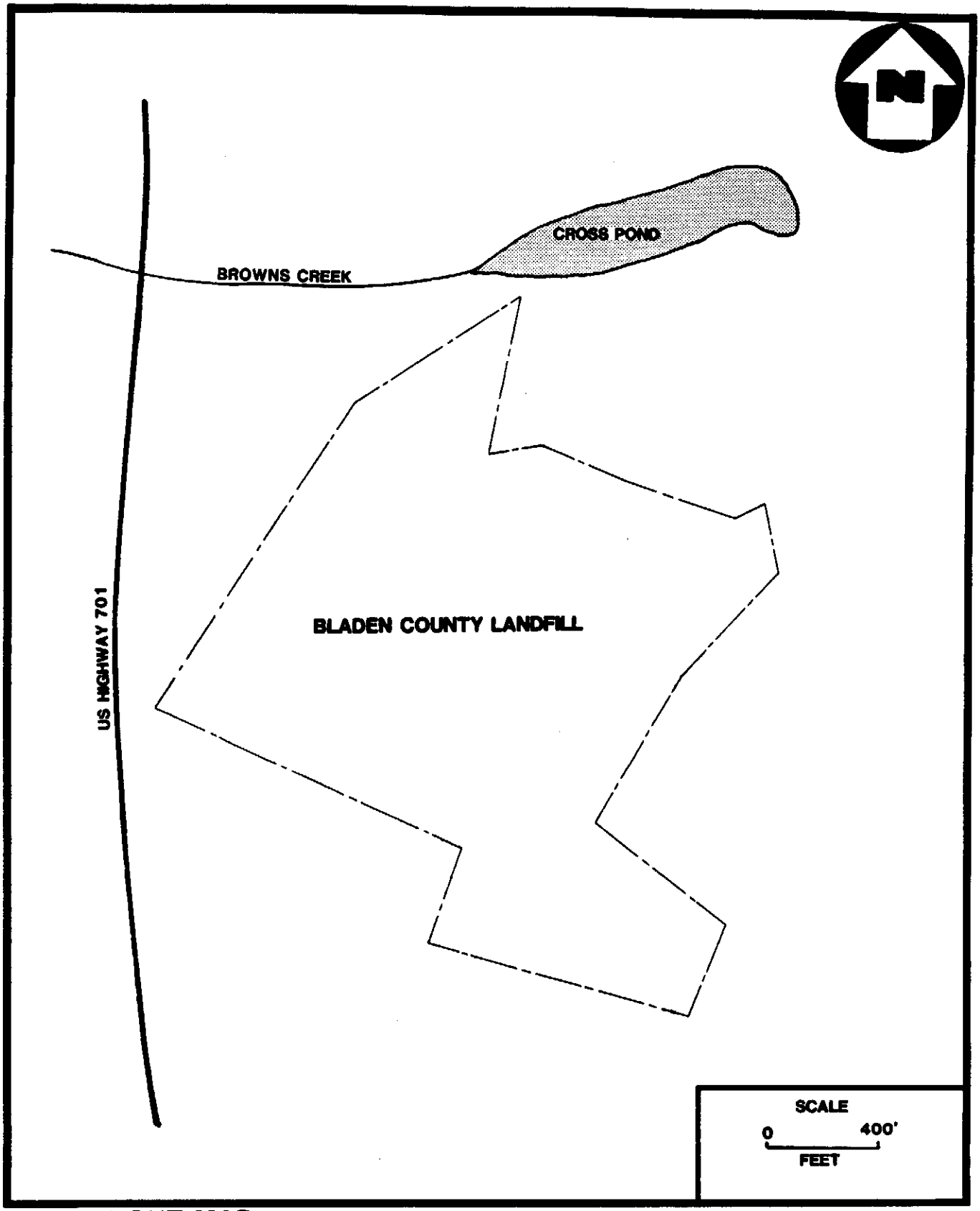
The Bladen County Landfill is situated in the Atlantic Coastal Plain physiographic province of North Carolina. The area is underlain by approximately 600 feet of sediments of Cretaceous and Pleistocene age.



SITE LOCATION MAP
BLADEN COUNTY LANDFILL
ELIZABETHTOWN, NORTH CAROLINA

FIGURE 1

NUS CORPORATION



SITE LAYOUT MAP
BLADEN COUNTY LANDFILL
ELIZABETHTOWN, NORTH CAROLINA

FIGURE 2

NUS CORPORATION

The geologic formations that underlie the facility, in descending order, are the surficial deposits of Pleistocene age and the Black Creek and Middendorf formations, both of Cretaceous age. The surficial deposits consist of very fine to coarse sand which is generally overlain with a mottled-tan sandy clay. Thickness of the sand ranges from 1 to 35 feet or more, while the clay ranges from 2 to 15 feet. The Black Creek Formation consists of crossbedded layers of dark gray, fine grained sandy clay and thin to massive beds of fine to coarse sand. The coarse sand ranges up to 20 feet in thickness, while the clay ranges up to 50 feet in thickness (Ref. 9).

Groundwater occurs under unconfined conditions in the surficial deposits and the upper sections of the Black Creek Formation. The strata of the Black Creek Formation are alternating layers of sand and clay, so that as groundwater moves southeastward down dip, it is confined. The water-table ranges up to 15 feet below ground surface in the Elizabethtown area. Multiple-screen wells in the Black Creek Formation in the Elizabethtown area have water levels of 15 to 20 feet below land surface. The Middendorf Formation is not used as a groundwater source in the area due to high chloride concentrations (Ref. 9).

The city of Elizabethtown has 4 wells with 1,875 combined connections within 3 miles of the landfill. The depth of each well is over 150 feet. There are approximately 20 private wells (80 ft. depths) within 1 mile (Ref. 3). The nearest well is approximately 1,000 feet from the landfill (Ref. 1).

2.0 SAMPLING INVESTIGATION

The sampling investigation will include the collection of sediment, subsurface soil, groundwater and surface water from background and downgradient locations. In addition, a groundwater sample will be collected from the nearest potable well. Sediment and surface water samples will be collected from upstream and downstream locations of Brown's Creek, a tributary of the Cape Fear River. Samples will be analyzed for extractable and purgeable organic compounds, pesticides, PCBs, cyanides and metals. Analyses will be performed under the Contract Laboratory Program (CLP).

2.1 Sediment Sampling

Three sediment samples will be collected. A control sample will be collected upstream of the landfill along the southern bank of Brown's Creek. A downstream sample will be collected at

TABLE 1

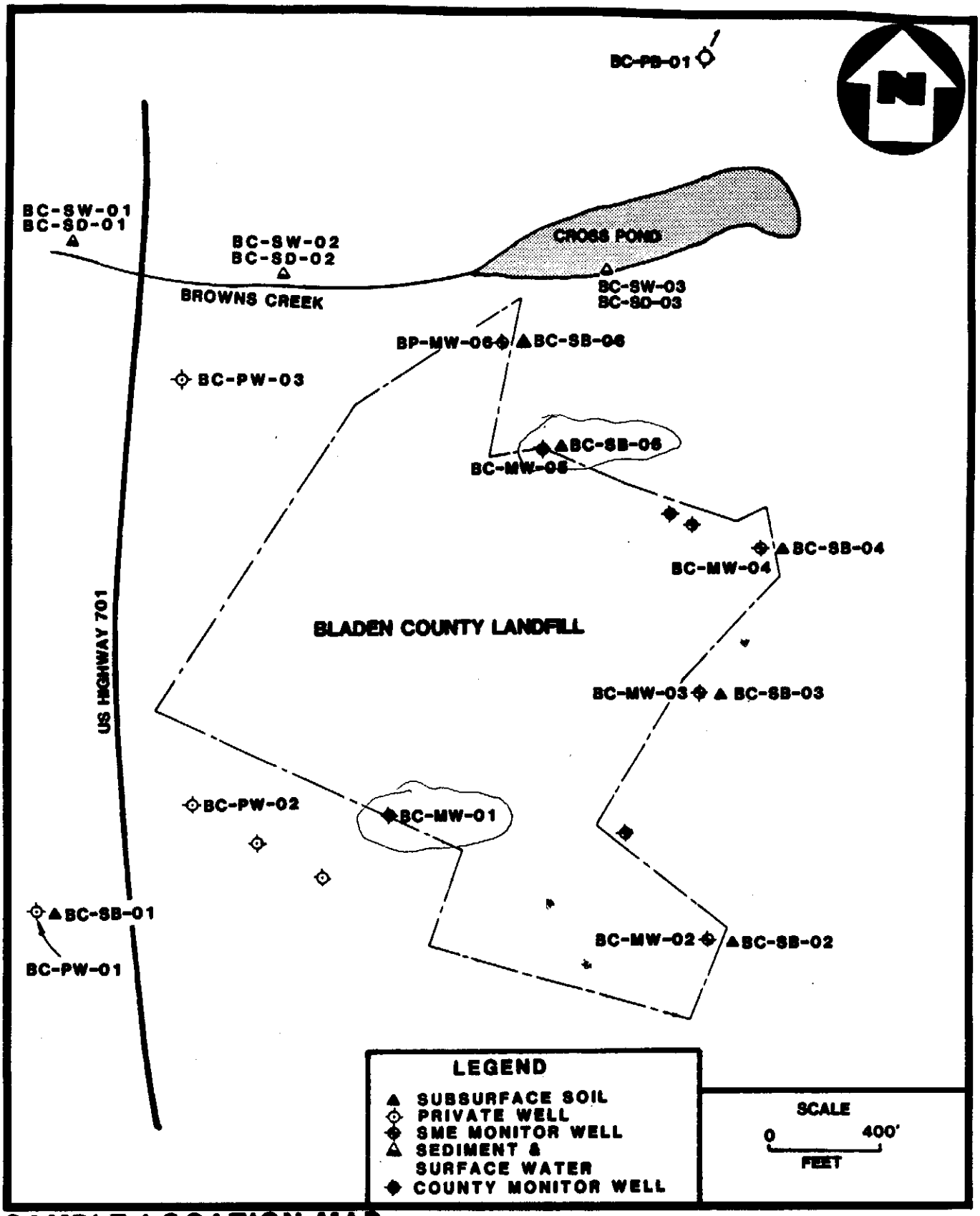
SAMPLE CODE DESCRIPTIONS AND LOCATIONS

Sample Code	Description	Location/Rationale
BC-PW-01	Groundwater	Southwest of landfill. Upgradient sample
BC-PW-02	Groundwater	Private well nearest landfill. Determine presence or absence of contamination
BC-PW-03	Groundwater	Private well northwest of landfill. Determine presence or absence of contamination
BC-MW-01	Groundwater	Monitor well on southwestern of landfill boundary
BC-MW-02	Groundwater	Monitor well on southeastern of landfill boundary
BC-MW-03	Groundwater	Monitor well on eastern boundary of landfill. Determine presence or absence of contamination
BC-MW-04	Groundwater	Monitor well on northeastern most boundary of landfill. Determine presence or absence of contamination
BC-MW-05	Groundwater	Monitor well on northern boundary of landfill/Determine presence or absence of contamination
BC-MW-06	Groundwater	Monitor well on northern most boundary of landfill. Determine presence or absence of contamination
BC-PB-01	Groundwater	Municipal well northeast of landfill/Determine presence of contamination
BC-SB-01	Soil	Southwest of landfill. Background sample
BC-SB-02	Soil	Southeastern boundary of landfill. Determine presence or absence of contamination
BC-SB-03	Soil	Eastern boundary of landfill. Determine presence or absence of contamination

TABLE 1

SAMPLE CODE DESCRIPTIONS AND LOCATIONS

Sample Code	Description	Location/Rationale
BC-SB-04	Soil	Northeastern most boundary of landfill. Determine presence or absence of contamination
BC-SB-05	Soil	Northern boundary of landfill. Determine presence or absence of contamination
BC-SB-06	Soil	Northern most boundary of landfill. Determine presence or absence of contamination
BC-SD-01	Sediment	Browns Creek Upstream of US Highway 701. Control Sample
BC-SD-02	Sediment	Browns Creek Upstream of Cross Pond. Determine presence or absence of contaminants
BC-SD-03	Sediment	Cross Pond junction with Browns Creek. Determine presence or absence of contamination
BC-SW-01	Water	Browns Creek Upstream of US Highway 701. Control Sample
BC-SW-02	Water	Browns Creek Upstream of Cross Pond. Determine presence or absence of contamination
CP-SW-02	Water	Cross Pond junction with Browns Creek. Determine presence or absence of contamination



SAMPLE LOCATION MAP
BLADEN COUNTY LANDFILL
ELIZABETHTOWN, NORTH CAROLINA

FIGURE 3

NUS CORPORATION

the intersection of Brown's Creek and Cross Pond. Sample codes and descriptions are listed in Table 1 and illustrated in Figure 3.

2.2 Surface Water Sampling

Three surface water samples will be collected. A control sample will be obtained upstream of the landfill along the southern bank of Brown's Creek. A downstream sample will be collected east of US 701 and at the intersection of Brown's Creek and Cross Pond. Sample codes and descriptions are listed in Table 1 and illustrated in Figure 3.

2.3 Subsurface Soil Sampling

Six subsurface soil samples will be collected. A background sample will be obtained southwest of the landfill across U.S. Highway 701 in the vicinity of the collection point for the upgradient groundwater sample. The remaining five subsurface soil samples will be collected from the eastern and northern margins of the landfill. Surface drainage flows in a northeasterly direction at the landfill. Sample codes and descriptions are listed in Table 1 and illustrated in Figure 3.

2.4 Groundwater Sampling

Ten groundwater samples will be collected from one public supply well, three private wells and six monitor wells. A background sample will be obtained from a location approximately 800 feet southwest of the landfill. A sample will also be collected from the public water supply well nearest the landfill. The three private wells proposed as groundwater sample locations are situated near the western perimeter of the facility. The remaining groundwater samples will be collected from permanent wells which have been installed along the perimeter of the landfill. Sample codes and descriptions are listed in Table 1 and illustrated in Figure 3.

2.5 Analytical and Container Requirements

Sample containers used will be in accordance with the requirements specified in the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986. The following is a description of the analysis and types of containers required.

Analyses	Container	Preservatives**
Ext. Organics, Water	1 gal., amber glass*	None
Volatile Organics, Water	40 ml., glass vial*	4 drops conc. HCL to pH <2
Metals, Water	1 liter, plastic	50% HNO_3 to pH <2
Cyanide, Water	1 liter, plastic	NaOH to pH >12
Ext. Organics, Soil/Sediment	8 oz., glass*	None
Volatile Organics Soil/Sediment	4 oz., glass*	None
Inorganics, Soil/Sediment	8 oz., glass*	None

* Sample container lids are lined with teflon.
** All samples will be iced to 4oC upon collection.

2.6 Methodology

All sample collection, sample preservation, and chain-of-custody procedures used during this investigation will be in accordance with the standard operating procedures as specified in Section 3 and 4 of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986.

All laboratory analyses and laboratory quality assurance procedures used during this investigation will be in accordance with standard procedures and protocols as specified in the Analytical Support Branch Operations and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division; revised June 1, 1985 or as specified by the existing United States Environmental Protection Agency standard procedures and protocols for the contract analytical laboratory program.

REFERENCES

1. U. S. Geological Survey, 1987. Topographic Quadrangles for Dublin, Elizabethtown North, Abbottsburg and Elizabethtown South, North Carolina. 7.5 minute series.

2. McMorris, Cheryl, 1987. North Carolina Solid and Hazardous Waste Management, letter to Denise Smith, USEPA Region 4, Preliminary Assessment Report for Bladen County Landfill. September 8, 1987.

3. Hay, Bob. NUS Corporation, Logbook No. F4-783 for the Bladen County Sanitary Landfill near Elizabethtown, N.C., TDD No. F4-8803-37. April 11, 1988.

4. McMorris, Cheryl A. September 10, 1987. Note to file. Re: Telephone conversation with Robert S. Carter, Plant Superintendent, Cogentrics Facility.

5. Dover, Terry F., March 14, 1973. District Sanitarian, State Board of Health. Report of Investigation or Inspection of Water Pollution of Cross Pond, Elizabethtown, North Carolina.

6. North Carolina Department of Human Resources, July 19, 1979. Chemical analysis of water from stream below Bladen County Landfill, Elizabethtown, North Carolina.

7. Wilms, R. Paul, August 27, 1987. N. C. Department of Natural Resources and Community Development. Memorandum to William L. Meyer. Re: Status Report - Notice of Violation Groundwater Standards, Bladen County Landfill, Elizabethtown, Bladen County.

8. Wilms, R. Paul, March 25, 1988. N.C. Department of Natural Resources and Community Development. Memorandum to Bill Meyer. Re: Proposed Bladen County Landfill Expansion.

9. Blankenship, R. R., 1965. Reconnaissance of the Ground-Water Resources of the Southport-Elizabethtown Area, North Carolina, North Carolina Department of Water Resources, Ground-Water Bulletin Number 6, 47 p.