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R-585-9-6-2
A FIELD TRIP REPORT FOR
NORTH PENN WATER AUTHORITY - AREA 1
PREPARED UNDER

TDD NOS. F3-8608-04/F3-8612-27
EPA NOS. PA-2043, PA-1267
CONTRACT NO. 68-01-7346

FOR THE
HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

DECEMBER 12, 1986

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY

REVIEWED BY

APPROVED BY

Timothy Silar

TIMOTHY SILAR
GEOLOGIST

William Wentworth

WILLIAM WENTWORTH
ASSISTANT MANAGER

Garth Glenn

GARTH GLENN
MANAGER, FIT III

100088

1.0 INTRODUCTION

1.1 Authorization

NUS Corporation performed this work under Environmental Protection Agency Contract No. 68-01-7346. This specific report was prepared in accordance with Technical Directive Document Nos. F3-8608-04/F3-8612-27 for the North Penn Water Authority (NPWA) - Area 1 site located in Souderton, Pennsylvania.

1.2 Scope Of Work

NUS FIT. III was tasked to conduct a home well survey and sampling. Sampling efforts were directed toward obtaining groundwater from wells around and between NPWA wells S-9 and S-10 and the three potential responsible parties: Gentle Cleaners, Granite Knitting Mills, and Parkside Apartment, which was previously a dry cleaner.

1.3 Summary

NPWA - Area 1 is located in Souderton, more specifically south of Main Street between Green and Chestnut Street. NPWA has two wells (S-9 and S-10) located within this area that are contaminated with tetrachloroethene (PCE). Three potential responsible parties have been identified within the area by NUS FIT III (TDD No. F3-8512-31).

NUS FIT III conducted a home well survey and sampling of the area. An analysis of these groundwater samples can be found in section 3.0.

2.0 FIELD TRIP REPORT

2.1 Summary

On Friday, August 22, 1986, NUS FIT III staff members Timothy Silar, Randy Patarcity, Andrew Frebowitz, and Charles Meyer conducted a home well survey at NPWA - Area 1. Thirteen groundwater sampling points were selected and presented in a sampling to EPA.

On Thursday, August 28, 1986, NUS FIT III staff members Timothy Silar, Randy Patarcity, Richard Callahan, Richard Cecchine, and Roger Gould performed groundwater sampling at NPWA - Area 1. Two 40-ml volatile organic analysis (VOA) samples were taken from each well. Samples were delivered by NUS personnel to NPWA for organic chemical analysis.

2.2 Persons Contacted

2.2.1 Prior to Field Trip

Mr. James Maza
Lawyer for Granite Knitting Mill
114-120 East Broad Street
P.O. Box 739
Souderton, PA 18964
(215) 723-4374

Ms. Lorie Acker
U.S. EPA
841 Chestnut Streets
Ninth and Chestnut Streets
Philadelphia, PA 19107
(215) 597 3165

Mr. Curry Gingrich
Manager of Granite Knitting Mill
38 Green Street
Souderton, PA 18964
(215) 723-8121

Mr. Michael Coll
Souderton Borough Manager
31 W. Summit Street
Souderton, PA 18964
(215) 723-4371

Ms. Judith Coyle
Laboratory Manager for NPWA
200 N. Chestnut Street
P.O. Box 591
Lansdale, PA 19446
(215) 855-3617

Ms. Dorthia Landis
112 West Chestnut Street
Souderton, PA 18964
(215) 723-4195

2.2.1 Prior to Field Trip (continued)

Ms. Pat Root
143 Green Street
Souderton, PA 18964
(215) 723-6431

Mr. L.D. Hildebeitel
12 Green Street
Souderton, PA 18964
(215) 723-4586

Ms. Kuremsky
27 Green Street
Souderton, PA 18964
(215) 721-0853

Mrs. Joeseeph Day
161 Main Street
Souderton, PA 18964
(215) 723-4850

2.2.2 At the Site

Mr. L.D. Hildebeitel
12 Green Street
Souderton, PA 18964
(215) 723-4586

Mr. Owen Kratz
NPWA
200 N. Chestnut Street
P.O. Box 591
Lansdale, PA 19446
(215) 855-3617

Mrs. Kuremsky
27 Green Street
Souderton, PA 18964
(215) 721-0853

Mrs. Joeseeph Day
161 Main Street
Souderton, PA 18964
(215) 723-4850

Mr. Robert Schwoyer
23 Green Street
Souderton, PA 18964
(215) 721-4768

Mr. Carry Gingrich
Granite Knitting Mill
38 Green Street
Souderton, PA 18964
(215) 723-8121

TDD Number E3-8608-04/E3-8613-37
 EPA Number N/A

2.3 SAMPLE LOG

360001

Site Name NRUA - Area 1

HAZARDOUS MATERIALS			SAMPLING LOCATION	PHASE	SAMPLE DESCRIPTION	DATE	TIME	PH	COMMENTS/OBSERVATIONS	LABORATORY
Organic	Inorganic	High Hazard								
N/A	N/A	N/A	NRUA well 5-10	Ag.	Municipal well	8/26/86	10:04	N/A	Purged	NRUA
			NRUA well 5-9		Municipal well (off-line)		09:54		Purged	
			Sunderbn Rose well		abandoned base well		11:40		Purged - 2 hour	
			"		"		09:30		before purging	
			112 West Chestnut St		abandoned private well		11:54		not purged	
			143 Green St.		"		10:17		"	
			97 Green St.		"		10:30		"	
			93 Green St.		"		10:37		"	
			19 Green St		"		11:05		"	
			Granite Knitting Mill		abandoned industrial well		10:50		"	
			160 Main Street		abandoned private well		12:15		"	
			141 Main Street		"		09:03		"	
			Replicate of 160 Main St		"		12:15		"	
			Garrett & West 4th St		"		02:30		"	
			302 Main St		"		12:16		"	
✓	✓	✓	Blank		"		02:30		"	

2.4 Site Observations

- o Due to the large capacity of the hand-dug home wells, they were not purged.
- o Grab samples were taken for all home wells.
- o NPWA wells S-9 and S-10 were purged.
- o The Souderton Borough well was purged for two hours (one volume). After two hours, the pH and conductivity value readings remained constant and the well was sampled. A sample was also taken before purging.

RESULTS OF SOUBERTON AREA SAMPLING PERFORMED BY NUS

Samples Collected: 8-28-86

Date Analyzed: 9-2-86

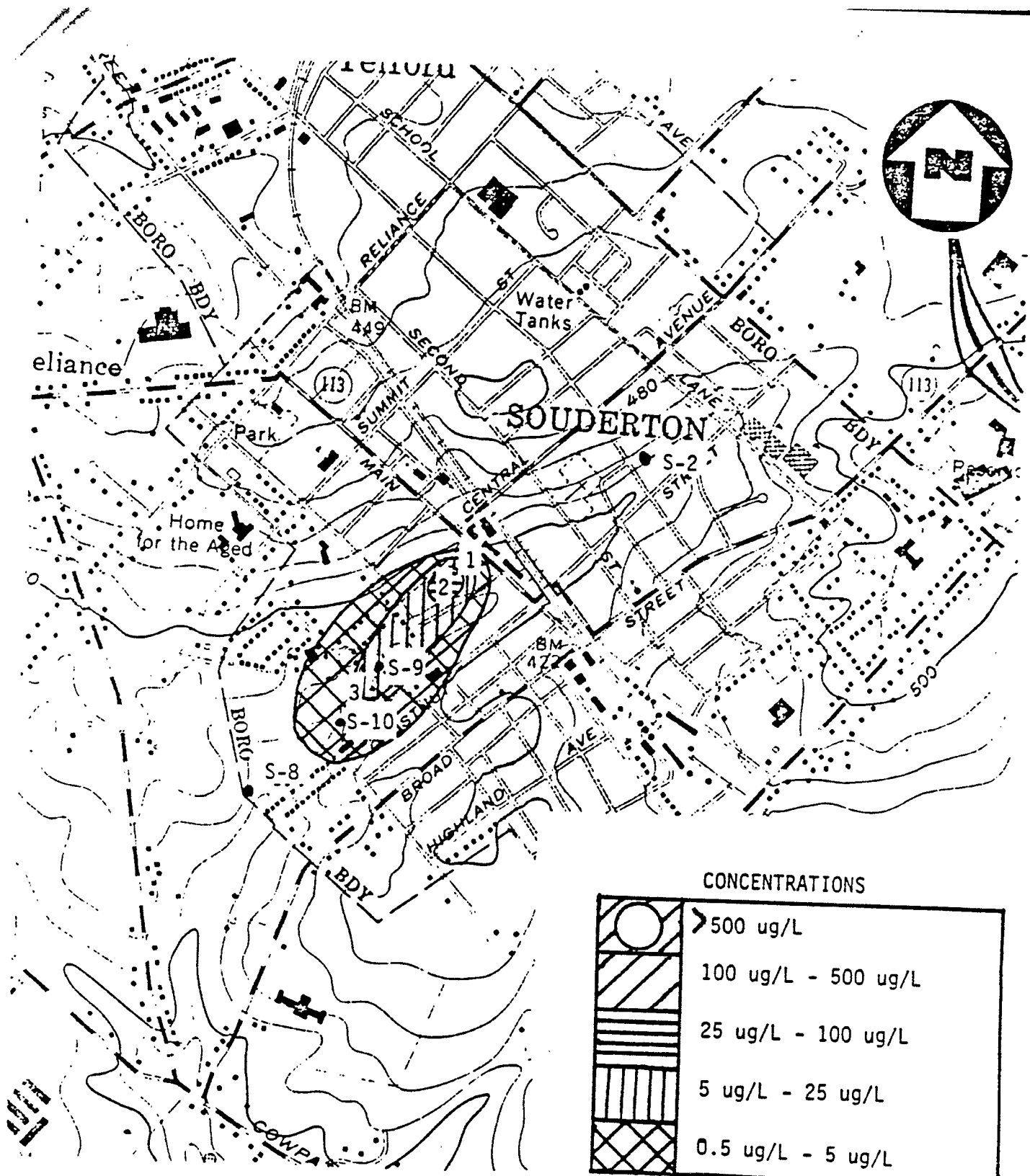
Analyzed by: J.A. Coyle, North Penn Water Authority Laboratory

Method Used: EPA Method 502.1

All results expressed as ug/L.

NPWA SAMPLE #	NUS SAMPLE #	LOCATION	1,1-DCE	1,1-DCA	c/t-1,2-DCE	1,1,1-TCA	TCE	PCE
1825-86	S-1	NPWA Well S-10	<0.5	<0.5	<0.5	<0.5	<0.5	1.7
1827-86	S-2	NPWA Well S-9	<0.5	<0.5	<0.5	<0.5	<0.5	13.4
1829-86	S-3	Soud Borough Well after 2 hours	<0.5	<0.5	0.5	<0.5	5.0	4.5
1831-86	S-4	Soud Borough Well before purge	<0.5	<0.5	<0.5	<0.5	4.8	3.5
1833-86	S-5	112 W. Chestnut St	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1835-86	S-6	143 Green St	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1837-86	S-7	27 Green St	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1839-86	S-8	23 Green St	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1841-86	S-9	12 Green St	<0.5	<0.5	<0.5	<0.5	<0.5	4.1
1843-86	S-10	Granite Knitting Mill	9.9	4.4	23.0	249.5	12.2	33.5
1845-86	S-11	160 Main St	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1847-86	S-12	161 Main St	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1849-86	S-13	Duplicate of S-11 160 Main St	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1851-86	S-14	Corner of Nile & Walnut Sts	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1853-86	S-15	302 Main St	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1855-86	S-16	Blank	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

100094




AREA 1
(no scale)

- 1 GENTLE CLEANERS INC.
- 2 GRANITE KNITTING MILLS INC.
- 3 PARKSIDE APARTMENTS

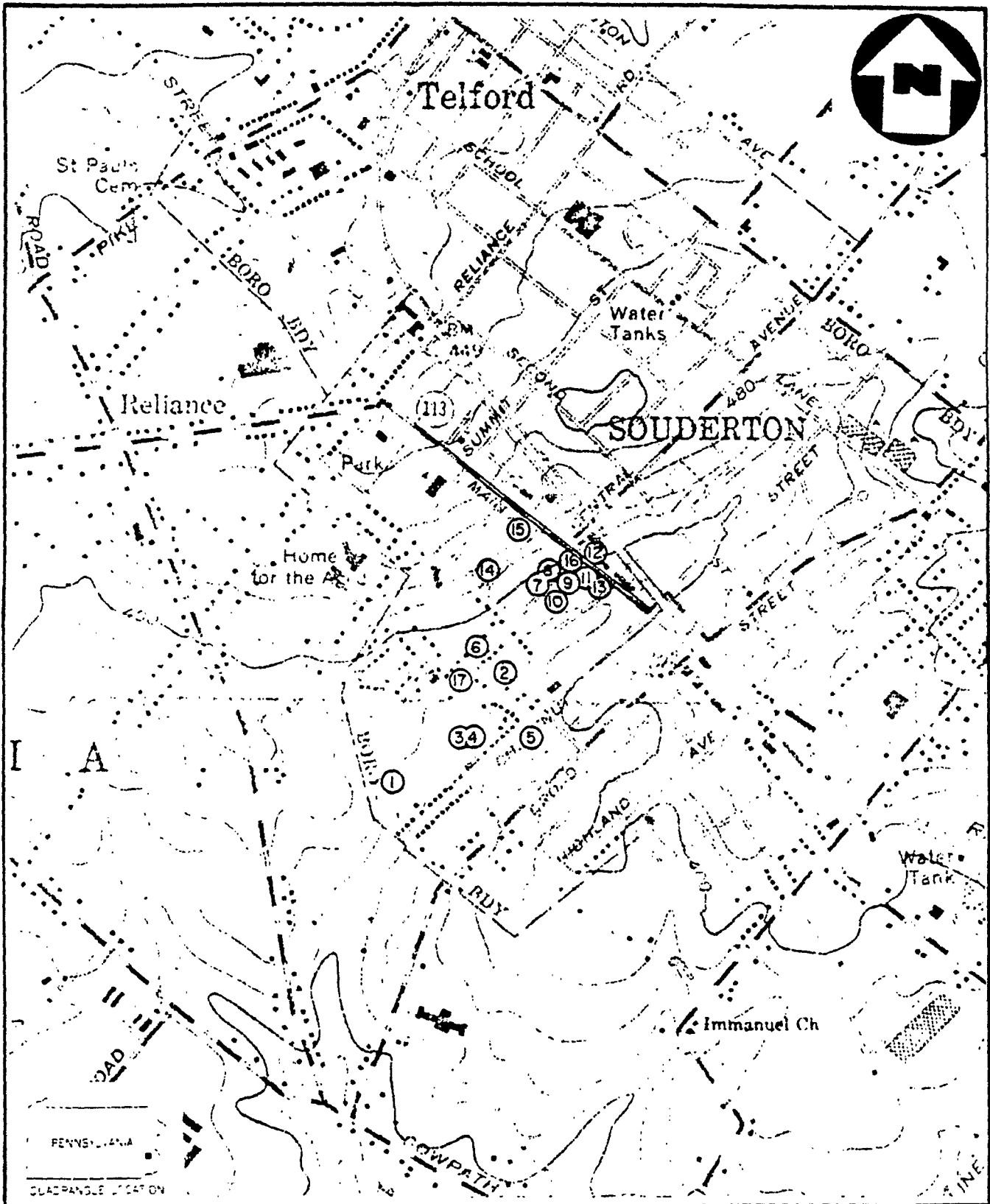
FROM REFERENCE 5

100095

FIGURE 1



A Halliburton Company



SOURCE: (7.5 MINUTE SERIES) USGS TELFORD, PA., QUAD.

SAMPLE LOCATION MAP
NORTH PENN WATER AUTHORITY (N.P.W.A.)
 (NO SCALE)

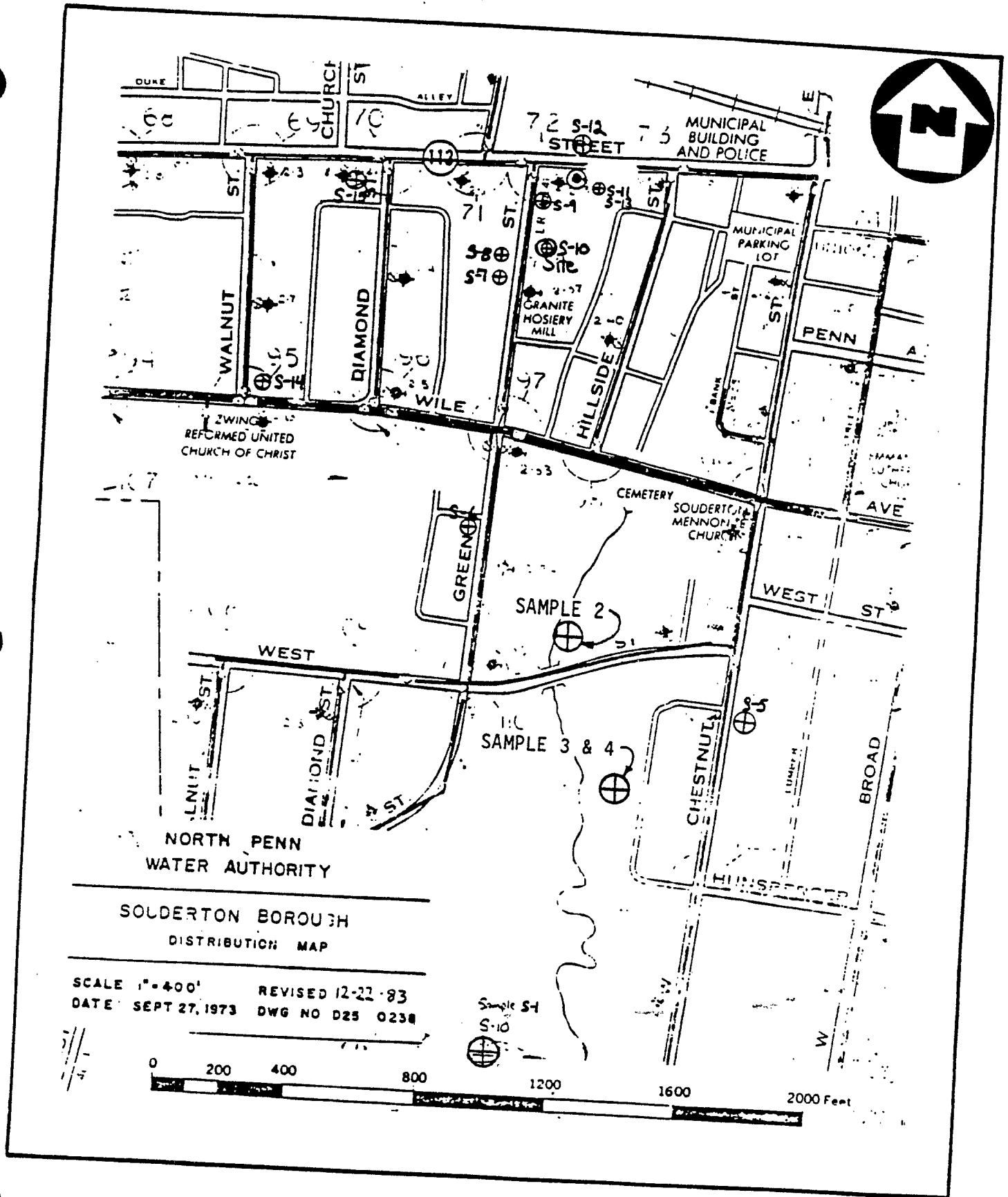
FIGURE-2

100096



Key for Sample Location Map

1. NPWA, Well S-10
2. NPWA, Well S-9
3. Souderton Borough Well
4. Souderton Borough Well
5. 112 West Chestnut Street
6. 143 Green Street
7. 27 Green Street
8. 23 Green Street
9. 12 Green Street
10. Granite Knitting Mill Well
11. 160 Main Street
12. 161 Main Street
13. Duplicate of 160 Main Street
14. Corner of Wiles and Walnut Streets
15. 302 Main Street
16. Gentle Cleaners (No samples were taken)
17. Parkside Apartments (No samples were taken)



SAMPLE LOCATION MAP
 NORTH PENN WATER AUTHORITY AREA I
 1"=400'

FIGURE 4

100098

Source: NUS FIT III
 TDD No. F3-8607-07



R-585-9-6-7
A HAZARD RANKING SYSTEM FOR
GENTLE CLEANERS, INC./GRANITE KNITTING MILL, INC.
PREPARED UNDER

TDD NO. F3-8607-07
EPA NO. PA-2043/PA-1267
CONTRACT NO. 68-01-6699

FOR THE
HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

OCTOBER 10, 1986

NUS CORPORATION
SUPERFUND DIVISION


SUBMITTED BY

REVIEWED BY

APPROVED BY


TIMOTHY SILAR
GEOLOGIST


BRUCE R. PLUTA
SENIOR STAFF SCIENTIST


GARTH GLENN
MANAGER, FIT III

100099

Facility Name: Gentle Cleaners, Inc./Granite Knitting Mill, Inc.

Location: Souderton, Montgomery County, Pennsylvania

EPA Region: III

Person(s) in Charge of the Facility: Mr. Harry M. Maurer, Gentle Cleaners, Inc.
Unknown, Granite Knitting Mill, Inc.

Name of Reviewer: Timothy Silar Date: October 10, 1986
NUS Corporation

General Description of the Facility:

The Gentle Cleaners, Inc./Granite Knitting Mill, Inc. site is located in Souderton, Pennsylvania.

Contamination of groundwater with tetrachloroethylene (PCE) was discovered by North Penn Water Authority (NPWA) in 1979. Presently, NPWA well nos. S-9 and S-10 are contaminated with PCE. Gentle Cleaners used PCE from 1953 until 1983. Presently, they use PCE along with 1,1,1-trichloroethane (1,1,1-TCEA). Recently, 1,1,1-TCEA was discovered in a private well 200 feet south of the Gentle Cleaners facility. In addition, Granite Knitting Mill had used PCE as part of a dry cleaning process at the plant for an unspecified period of time. The highest concentrations of contaminants are found in Granite Knitting Mill's well, located midway between the two facilities. It appears that inadequate containment and/or sloppy housekeeping of hazardous substances at one or both of the aforementioned facilities has contaminated the groundwater in the area.

Geologically, the site is located in the Brunswick Formation, which is considered to be hydrogeologically interconnected to interfingering portions of the Lockatong Formation within the study area. Therefore, for Hazard Ranking System purposes, the Brunswick Formation and the interfingering portions of the Lockatong Formation comprise the aquifer of concern. Groundwater serves over 71,922 people within a 3-mile radius of the site and is the only source of potable water; thus, it is the route of major concern.

Scores: $S_M = 35.57$ ($S_{gw} = 61.54$ $S_{sw} = N/A$ $S_a = N/A$)
 $S_{FE} = N/A$
 $S_{DC} = N/A$

QA
Done E. Eggen
10-10-86

FIGURE 1
HRS COVER SHEET

100100

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible, summarize the information you used to assign the score for each factor (e.g. "Waste quantity equals 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document and for a given point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: Gentle Cleaners, Inc./Granite Knitting Mill, Inc.

LOCATION: Souderton, Montgomery County, Pennsylvania

COORDINATES:

Latitude 40° 18' 39"

Longitude 75° 19' 31"

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10-10-86

GROUND WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

1,1,1-Trichloroethane (1,1,1-TCEA)
Trichloroethylene (TCE)
Tetrachloroethylene (PCE)
1,1-Dichloroethane
1,1-Dichloroethylene

Rationale for attributing the contaminants to the facility:

Evidence of improper waste handling and disposal was first detected by North Penn Water Authority (NPWA) in 1979. At this time, it was discovered that NPWA well S-9 was contaminated with PCE (ref. no. 20). Responses to EPA 104 (e) letters indicate that two facilities (Gentle Cleaners, Incorporated and Granite Knitting Mill, Incorporated) had used PCE in their individual processes (ref. nos. 4 and 6).

Further groundwater sampling and analysis by NUS FIT III and NPWA indicated 1,1,1-TCEA contamination of 249.5 ppb in the Granite Knitting Mill well, which is located 200 feet south of the Gentle Cleaners facility (ref. nos. 2 and 3). Further investigation showed that a product used by the cleaner called Puro (ref. no. 4) contains 100 percent 1,1,1-TCEA (ref. no. 5) Since background wells are clean (ref. no. 2) and the Granite Knitting Mill well shows a significant increase in the aforementioned contaminants and their degradation products, the source of contamination is believed to be in the Gentle Cleaners/Granite Knitting Mill area.

Reference nos. 2, 3, 4, 5, 6, and 20

* * *

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

The Gentle Cleaners/Granite Knitting Mill site, located in the Triassic Lowlands Section of the Piedmont Province, lies within bedrock mapped as that of the Brunswick Formation; the Brunswick underlies a significant portion of the study region. To the north and south of the site, thin bands of the Lockatong Formation have been identified. A geologic map depicting the areal extent of these formations is included in reference no. 12. That portion of the three-mile radius designated as the aquifer of concern, depicted in reference nos. 17 and 17A, consists of the Brunswick Formation and interfingering portions of the Lockatong Formation.

The Brunswick Formation is composed of reddish-brown shale, mudstone, and siltstone (ref. nos. 7 (pgs. 15 and 16), 8 (pg. 9), 9 (pg. 3), and 11 (pg. 33)). The Lockatong is described as a massively bedded, medium to dark gray argillite, interbedded with thinner sequences of gray to black shale, siltstone, and marlstone (ref. nos. 7 (pg. 25), 8 (pg. 7), 9 (pg. 3), 10 (pg. 7), and 11 (pg. 30)).

*DA - David E. Egan
10-10-80*

The Brunswick and Lockatong Formations are conformable (ref. no. 8 (pgs. 7 and 8)). Considerable interbedding of the two takes place along contacts (ref. nos. 8 (pg. 7) and 11 (pg. 30)). An interpretive geologic cross section has been included in reference no. 21 to indicate the nature of bedding near transitional boundaries between the Brunswick and Lockatong Formations. The above occupy a series of disconnected and downfaulted basins (ref. nos. 10 (pg. 6) and 11 (pg. 24)) in which they dip to the north-northwest, the Brunswick and Lockatong dipping an average of 20 degrees (ref. no. 7 (pgs. 15 and 25)). The trace of a large normal fault, which trends east-west, transects the three-mile radius; the fault trace may be located on site (ref. no. 12).

Both formations are generally composed of fine-grained rocks, where primary porosity is small and associated permeability is low. As such, most groundwater in the region is found within, and transmitted through, secondary porosity features such as fractures, joints, faults, and bedding plane partings (ref. nos. 7 (pgs. 10 and 13), 8 (pgs. 11 to 15), and 11 (pgs. 31, 32, and 34)). Wells of the region have been completed as open rock holes (ref. no. 11 (pg. 34)).

Within the Brunswick Formation, the most important of these openings are the nearly vertical joint planes, which criss-cross each other at various angles; these openings provide for an interconnection of channels for groundwater flow. However, both the number and width of these openings vary from bed to bed. As a result of the depositional environment, the rocks form a series of overlapping lens-shaped beds (ref. no. 8 (pgs. 11 and 12)).

Secondary permeability features displayed within the Lockatong are similar to that of the Brunswick; yet, here the openings tend to be more narrow and more widely spaced (ref. nos. 7 (pg. 25) and 8 (pg. 15)).

Interconnection of the above formations is carried out in large part via secondary features (joints and fractures), which allow for the majority of groundwater transmission and storage. These formations have also been documented as contemporaneous; intertonguing of the Lockatong and Brunswick is well documented. That portion of the three-mile radius that has been excluded from the aquifer of concern largely represents the main body of the Lockatong Formation in the region. The relative permeability of the Lockatong Formation is lower than that of the Brunswick Formation; hence, it has been excluded.

Depth(s) from the ground surface to the highest seasonal level of the saturated zone (water table(s)) of the aquifer of concern:

N/A

Depth from the ground surface to the lowest point of waste disposal/storage:

N/A

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

N/A

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10-10-86

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

	<u>Toxicity</u>	<u>Persistence</u>	<u>Matrix Value</u>
1,1-Dichloroethylene	3	2	15
TCE	2	2	12
PCE	2	2	12
1,1,1-TCEA	2	2	12
1,1-Dichloroethane	2	2	12

Reference nos. 1, 2, and 13

Compound with highest score:

1,1-Dichloroethylene

A value of 15 was assigned.

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

As the source of contamination is unknown, the total quantity of waste disposed cannot be determined; however, as uncontained substances have been detected in the groundwater regime, a value of 1 was assigned.

Reference nos. 1, 2, and 3

Basis of estimating and/or computing waste quantity:

N/A

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10-16-86

5 TARGETS

Groundwater Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

The aquifer is used for municipal and residential drinking water supplies, with no alternative unthreatened source presently available for the private residential wells.

A value of 3 was assigned.

Reference nos. 14, 15, 16, 17, and 22

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

The nearest well currently in use, NPWA well S-2, is located north-northeast.

Distance to above well or building:

The distance from the contaminated well at Granite Knitting Mill to NPWA well S-2 is 1,900 feet.

A submatrix value of 4 was assigned.

Reference nos. 1, 2 (sampling results and sample location map), and 17, and 14^{DE}

Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

NPWA (main system) 13,141 hookups x 3.8 people per hookup	= 49,936 people (ref. nos. 14 and 22)
Hatfield Borough Water Authority	= 10,000 people (ref. no. 15)
Telford Borough Water Authority	= 7,000 people (ref. no. 16)
1,312 private wells	
1,312 wells x 3.8 people per well	= 4,986 people (ref. no. 17)
Total population served	= 71,922 people

Reference nos. 14, 15, 16, 17, and 22

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10-10-86

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

There is no known use of groundwater for land irrigation.

Reference nos. 18 and 19

Total population served by groundwater within a 3-mile radius:

The total population is 71,922.

A submatrix value of 5 was assigned.

A matrix value of 40 was assigned.

Reference no. 1

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10-10-84

SURFACE WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

No information is available which indicates that hazardous substances are available to migrate via surface water pathways. In addition, potential contamination of receiving surface water is not considered as a significant threat; therefore, the surface water route was not evaluated.

Rationale for attributing the contaminants to the facility:

N/A

* * *

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

N/A

Name/description of nearest downslope surface water:

N/A

Average slope of terrain between facility and above-cited surface water body in percent:

N/A

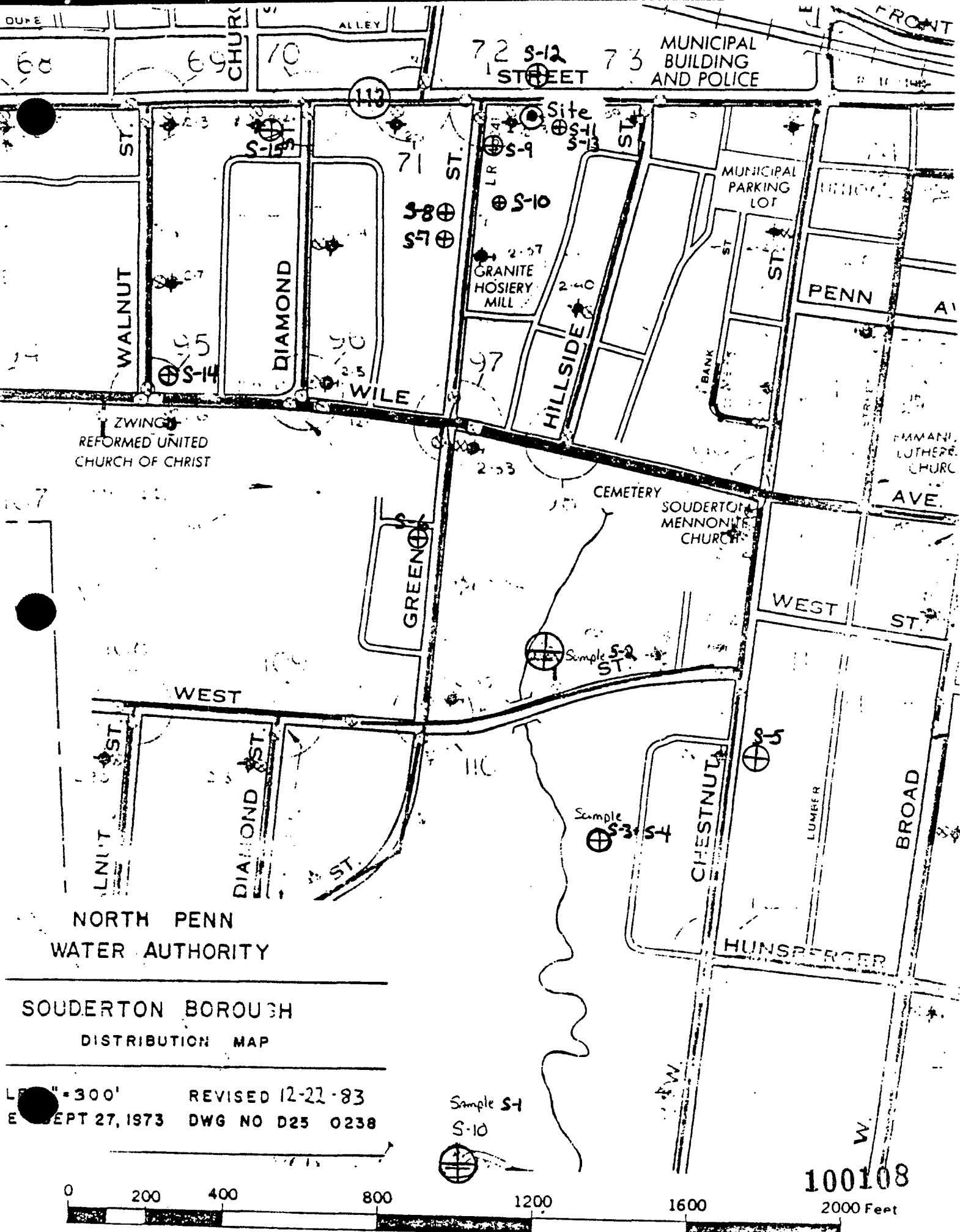
Is the facility located either totally or partially in surface water?

N/A

Is the facility completely surrounded by areas of higher elevation?

N/A

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David E. Egan
10-10-86



MUNICIPAL BUILDING AND POLICE

72 S-12 STREET 73

WALNUT ST.

DIAMOND ST.

71 ST.

HILLSIDE ST.

MUNICIPAL PARKING LOT

PENN AVE.

ZWING REFORMED UNITED CHURCH OF CHRIST

GRANITE HOSEY MILL

CEMETERY SOUDERTON MENNONITE CHURCH

EMMANUEL LUTHERAN CHURCH

GREEN ST.

WEST ST.

WEST ST.

WALNUT ST.

DIAMOND ST.

ST.

CHESTNUT ST.

LUMBER

BROAD ST.

NORTH PENN WATER AUTHORITY

SOUDERTON BOROUGH DISTRIBUTION MAP

Scale: 1" = 300' REVISION: 12-21-83
 Date: SEPT 27, 1973 DWG NO: D25 0238

Sample S-1 S-10

100108
 2000 Feet

