ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PRELIMINARY SITE ASSESSMENT

FRANKLIN CLEANERS SITE
TOWN OF HEMPSTEAD

SITE NO. 130050
NASSAU COUNTY

DATE: MARCH 1993

Prepared for:

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

50 Wolf Road, Albany, New York 12233

Thomas C. Jorling, Commissioner

Division of Hazardous Waste Remediation
Michael J. O'Toole, Jr., P.E., Director

BY:

NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS
Division of Sanitation and Water Supply
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Engineering Investigations at Inactive Hazardous Waste Sites
Preliminary Site Assessment
Franklin Cleaners Site Site No. 130050

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1.0 Executive Summary

The Franklin Cleaners site is located in the Village of Hempstead, Nassau County, New York, on a small 60 ft by 90 ft lot at 206-208B South Franklin Street. The site is part of a small strip mall of five stores that was constructed in 1956. A dry cleaner has operated at the site since the late 1970's - early 1980's. In 1991 dry cleaning operations ceased and for a brief period it was occupied by a retail clothing store; currently the site is vacant.

In March of 1990, the Nassau County Department of Health (NCDOH) investigated a complaint of tainted drinking water from a resident's private wells downgradient of the Franklin Cleaners site at 6 Linden Avenue. Samples from the well showed significant levels of tetrachloroethylene (PCE), (29,000 ppb). The NCDOH subsequently inspected the Franklin Cleaners site as a potential source of the PCE at 6 Linden Avenue and sampled soils from the dry cleaner's basement and backyard. The analytical results for the soil samples showed extremely high levels of TCE, as high as 650,000 ppb.

Under contract to the New York State Department of Environmental Conservation (NYSDEC), the Nassau County Department of Public Works, Hazardous Waste Services Unit (NCDPW), conducted a preliminary site assessment to more fully identify groundwater impacts resulting from past activities at the Franklin cleaners site.

NCDPW performed a detailed survey of all existing groundwater monitoring wells in the vicinity of the Franklin

Cleaners site and determined groundwater flow to be in a south-southwest direction. Four monitoring wells were then located and installed, one upgradient and three downgradient of the site. All wells were installed by the hollow stem auger method and penetrate the top twenty feet of the water table.

During installation no split spoon soil samples showed any level of volatile contamination as measured by a field HNu photoionization detector.

Following development and a two week standing period, all wells were sampled for each major group of organic compounds found in the Target Compound List, as well as metals.

Results of the groundwater sampling showed no concentrations above the method detection limits for semivolatile organics, pesticides and PCB's. Volatile organic compounds (VOC's) were identified in all wells. However, only well FC-2 exhibited a level above the method detection limit. Well FC-2, located directly downgradient of the site contained a total of 88 ppb of VOC's, 83 ppb of tetrachloroethylene and 5 ppb of methylene chloride. No unusual levels of metals were identified, with the exception of a slightly elevated sodium concentration.

The total VOC level in well FC-2 was below the MCL of 100 ppb, established for the total of the listed principal organic and unspecified organic contaminants. However, tetrachloroethylene exceeded the class GA standard of 5 ppb

established in the New York State Department of Environmental Conservation Technical and Operational Guidance Series (TOGS) 1.1.1 dated November 15, 1991.

The existence of PCE in well FC-2 confirms it's presence in the upper glacial aquifer downgradient of the Franklin Cleaners site. Since the upgradient well, FC-1, was clean and the previous NCDH sampling of the Franklin Cleaners site identified PCE in the soils there, it is apparent that Franklin Cleaners is the source of the groundwater contamination.

Although the levels of contamination found in FC-2 were lower than historically found in the private wells at 6 Linden Ave., the presence of PCE is significant. It is possible that the monitoring well is not located in the central portion of the plume where levels would be considerably higher.

It is recommended that the Franklin Cleaners site be classified as a class 2 site, in that it poses a significant threat to the environment and public health. Future work recommended includes the removal of contaminated soil at the Franklin Cleaners site, re-sampling of the PSA wells and re-sampling of the private wells at 6 Linden Ave. This information should be used to install additional monitoring wells to further delineate the extent and degree of contamination at the Franklin Cleaners site.

2.0 OBJECTIVES

The Nassau County Department of Public Works, Hazardous Waste Services Unit, under contract to the New York State Department of Environmental Conservation, Bureau of Hazardous Site Control, conducted a preliminary site assessment of the Franklin Cleaners site, located in the Town of Hempstead, Nassau County, New York.

The investigation was initiated in response to the discovery of contamination in a private well located downgradient of the Franklin Cleaners site. The contaminants of concern included tetrachloroethylene, trichloroethylene and cis-1,2-dichloroethylene. The purpose of this investigation was to determine if the source of contamination was related to activities at the Franklin Cleaners site, determine geologic and hydrologic conditions beneath the site, further delineate the extent and degree of contamination and evaluate it's impact on any sensitive receptors as defined in the scope of work.

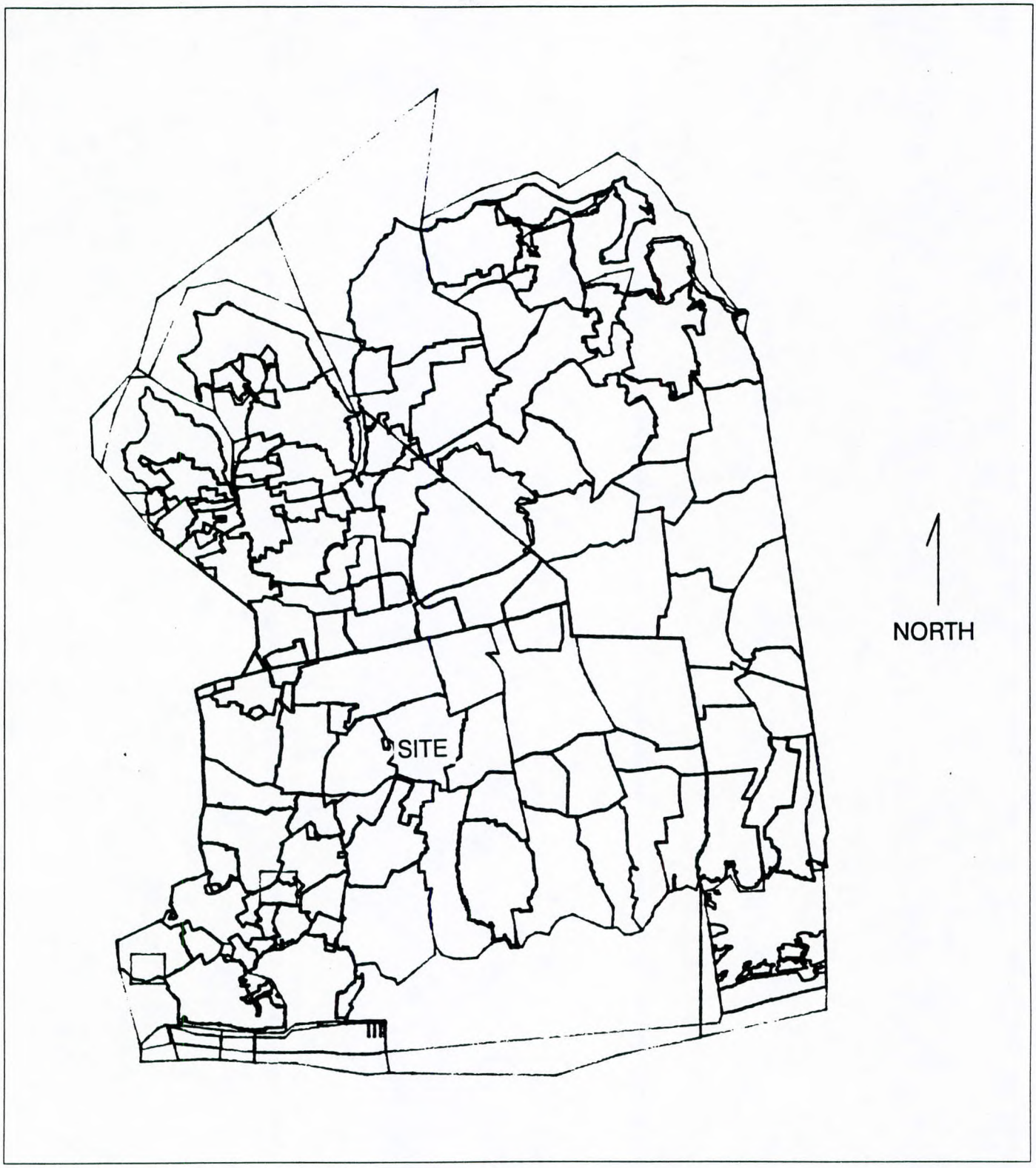
3.0 BACKGROUND

3.1.0 Site Location and Description

The Franklin Cleaners site is located in the Village of Hempstead, Nassau County, New York (see Fig. 1). The building proper is located at 206-208B South Franklin Street, Hempstead, New York. The building was erected in 1956 on the 60ft. x 90ft. lot. The structure is typical of two story brick and cinder block construction and is part of a small strip mall of five store fronts with apartments on the second story. The surrounding area consists mainly of residential homes with some light commercial properties along South Franklin Street and light to moderate commercial and industrial properties along Peninsula Avenue to the North. Two public supply wells, N-3668 and N-8264, are located approximately 700 feet west-southwest of the site on Laurel Avenue between Elm and Linden Avenues. The wells are screened approximately 500 feet below grade (see Fig. 2).

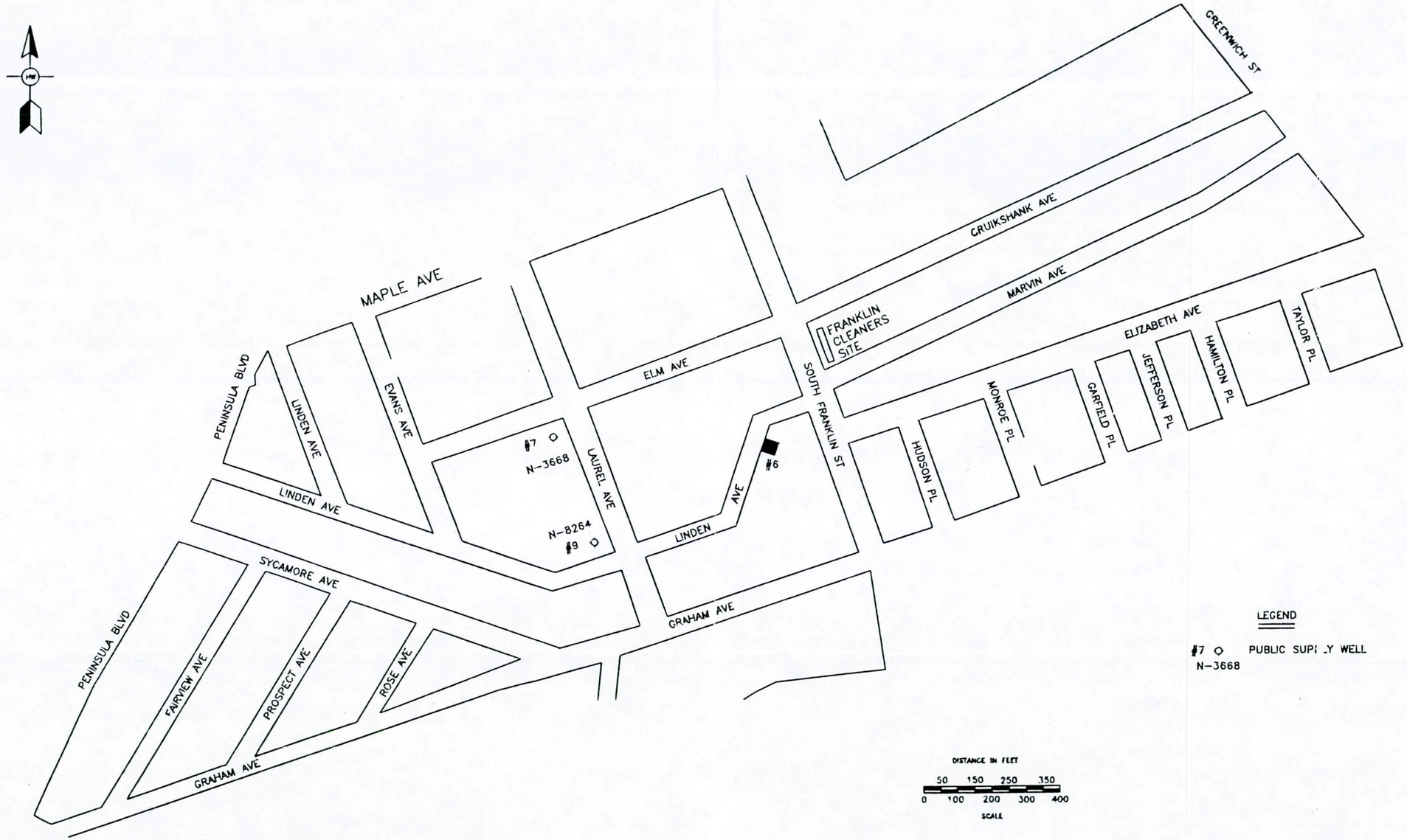
3.1.1. Site History

According to the Village of Hempstead, Office of Business Licensing records, the Franklin Cleaners site is owned by Incoronata Perna of 807 Taft Street, West Hempstead, N.Y., and has operated as a dry cleaners since the late 1970's -early 1980's. In 1990, the facility changed names from Franklin Cleaners to Grace Cleaners. Grace Cleaners ceased operation in 1991. In 1992, a retail clothing store operated briefly, but has since closed. At the writing of



Franklin Cleaners Site, Nassau County, New York

Figure 1



LEGEND

#7 ◇ PUBLIC SUPPLY WELL
N-3668

			FILE NAME: \DWG\FCFIG-2	CONTRACT NUMBER: S87015		SHEET NO 1 OF 1	COUNTY OF NASSAU DEPARTMENT OF PUBLIC WORKS SANITATION & WATER SUPPLY HAZARDOUS WASTE SERVICES UNIT	FIGURE 2 FRANKLIN CLEANERS VILLAGE OF HEMPSTEAD, NEW YORK N.Y.S. SITE NO. 130050 SITE PLAN
			SCALE AS SHOWN	DWG NO XX	DRAWN BY J.ZIMMET	DATE 10/29/92		
0	ORIGINAL RELEASE	XX	DESIGNED BY T.KELLY	DATE 10/28/92	CHECKED BY S.URBAN	DATE 11/4/92		
NO.	REVISION DESCRIPTION	DATE						

this report, the building is vacant.

In March of 1990, the Nassau County Department of Health (NCDOH) investigated a complaint of tainted drinking water from a residential home located at 6 Linden Avenue, Hempstead, New York (see Fig. 2). The residence was found to have two private wells on site, a drinking water well and an irrigation well. This information is contained in a report entitled "Contamination Of Private Well Located At 6 Linden Avenue, Hempstead, N.Y.". Table 1 summarizes the water quality data from the private wells sampled as part of that report.

TABLE 1

VOLATILE ORGANIC ANALYSIS SUMMARY
6 LINDEN AVE., HEMPSTEAD, N.Y.

WELL #	IRRIGATION WELL	BATH TAP
TOTAL DEPTH	32 ft.	45 ft.
DATE	3/28/90	3/9/90
Compound		
cis-1,2-Dichloroethylene	U	2
Trichloroethene	U	4
Tetrachloroethene	29,000	5,500

NOTES:

U = Undetected

ALL RESULTS IN UG/L

LABORATORY: Nassau County Health Department
Environmental Health Laboratories

As a potential source of the contamination at 6 Linden Avenue, the Nassau County Department of Health inspected the premises of Franklin Cleaners and subsequently collected soil samples from the basement and backyard of the dry cleaners. The soil samples were analyzed by the NCDOH Organics laboratory, in Hempstead, N.Y. and showed significant levels of Tetrochloroethylene (PCE), an established product used in dry cleaning. Remedial efforts, such as the removal of contaminated soils, were not undertaken as part of the NCDH investigation. Table 2 summarizes the results from the soil sampling effort at the Franklin Cleaners property.

TABLE 2

SOIL SAMPLES – FRANKLIN CLEANERS SITE
VOLATILE ORGANIC ANALYSIS SUMMARY

SAMPLE #	Basement–1	Basement–2	Rear Alley – 1
TOTAL DEPTH	0" – 10"	0" – 10"	0" – 10"
DATE	4/24/90	4/24/90	4/24/90
Compound			
Tetrachloroethylene	9,400	U	650,000
Trichloroethylene	U	U	1,700
c–1,2–Dichloroethylene	U	U	680

NOTES:
U = Undetected
ALL RESULTS IN NG/G
LABORATORY: Nassau County Health Department
Environmental Health Laboratories

A comparison of contaminants found in the wells at 6 Linden Avenue with identical compounds detected in the soils at the Franklin Cleaners site initiated this investigation.

4.0 Scope of Work

4.1.0 Selection of Monitoring Well Locations

Groundwater monitoring wells were proposed in this investigation in order to qualify and quantify possible groundwater contamination in the area of the Franklin Cleaners site. Well selection was based on three factors; 1) Regional groundwater flow direction, as determined by existing groundwater monitoring wells, 2) Significant receptors in the area that could potentially be impacted and 3) Physical obstructions or barriers to drilling operations.

On April 18, 1992 NCDPW hydrogeologists gathered water level information from seven existing groundwater monitoring wells in the vicinity of the Franklin Cleaners site. The following table summarizes the water level information:

Table 3

WATER TABLE ELEVATIONS, NCDPW MONITORING WELLS
APRIL 18, 1992

WELL	MEASURING POINT ELEVATION	TOTAL DEPTH	DEPTH TO WATER	WATER TABLE ELEVATION
F-9	62.26	34.65	21.12	41.14
F-10A	52.84	51.30	19.76	33.08
X-28	43.77	32.70	19.70	24.07
F-11A	46.73	49.90	18.98	27.75
X-25	57.70	46.05	28.05	29.65
G-14A	69.83	45.20	23.55	46.28
G-15B	55.18	47.00	14.98	40.20

This information was used to construct a groundwater flow map for the area of concern. Groundwater flow was determined to be in a south - southwest direction as indicated in Figure 3. A site walkthrough was performed in order to evaluate existing field conditions that could potentially interfere with drilling operations. Above and below ground utilities (gas, electric, water, etc.) were considered along with other physical obstructions. Additionally, a review of significant receptors in the area was undertaken in order to optimize the proposed location of the groundwater monitoring wells to be installed. Two (2) public supply wells, N-3668 and N-8264, were identified as significant receptors approximately 700 feet west - southwest of the site.

Four locations were chosen as a result of these criteria (see Figure 4). FC-1 was selected as an upgradient location to be used to evaluate the quality of groundwater entering the area of concern. FC-2 was located 175 feet downgradient of the suspected source in order to evaluate water quality between Franklin Cleaners and the contaminated private wells at 6 Linden Street. FC-4, located 600 feet downgradient of the Cleaners was used to evaluate groundwater quality downgradient of the private wells. FC-3 was located on the west side of Linden Street in order to evaluate any potential contamination moving in the direction of the two public supply wells located on Laurel Avenue.

Source: U.S.G.S. Lynbrook–Freeport Quadrangles (1969)

X–25 – NCDPW Monitoring Well #

◆

29.65 – Water Table Elevation

Scale: 1 : 24000

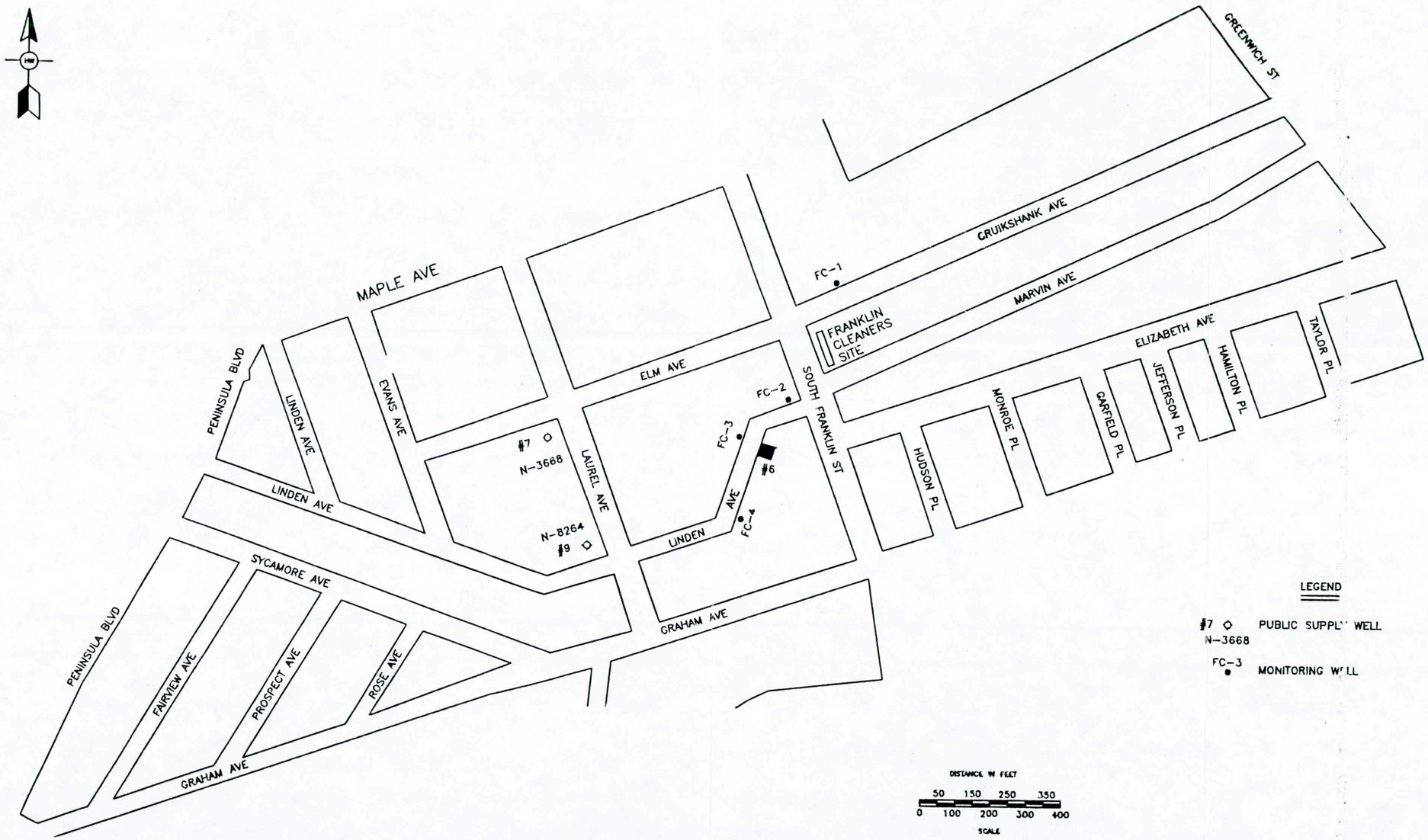
Site Location:

Lat. – 40° 41' 55"

Long. – 73° 37' 23"

WATER TABLE ELEVATION
April 18, 1992

Figure 3



			FILE NAME: \DWG\FCFIG-6	CONTRACT NUMBER: S87015		SHEET NO: 1 OF 1	COUNTY OF NASSAU DEPARTMENT OF PUBLIC WORKS SANITATION & WATER SUPPLY HAZARDOUS WASTE SERVICES UNIT	FIGURE 4 FRANKLIN CLEANERS VILLAGE OF HEMPSTEAD, NEW YORK N.Y.S. SITE NO. 130050 MONITORING WELL LOCATIONS
			SCALE: AS SHOWN	DWG. NO.: XX	DRAWN BY: J.ZIMMET	DATE: 10/29/92		
0	ORIGINAL RELEASE	XX	DESIGNED BY: T.KELLY	DATE: 10/28/92	CHECKED BY: S.URBAN	DATE: 11/4/92		
NO.	REVISION DESCRIPTION	DATE						

4.1.1 Groundwater Monitoring Well Installation

Four groundwater monitoring wells were installed as part of this investigation between November 12 and November 23, 1992. Larry E. Tyree, Inc., Farmingdale, N.Y., under an existing contract with Nassau County Department of Public Works (NCDPW) was employed as the driller. A CME-75 drill rig was used to advance 12 inch outside diameter hollow stem augers to the desired depth. Groundwater monitoring wells were constructed using 4 inch, flush thread, schedule 40 polyvinyl chloride (PVC) casing with 4 inch, 0.020 slot, PVC well screens. Table 4 summarizes monitoring well construction. The annular space between the well screen and borehole was filled with a No. 2 morie gravel to at least 3 feet above the top of the well screen. A bentonite pellet seal with a minimum thickness of 1 foot was installed above the gravel pack and the remaining annular space was sealed with a bentonite cement grout. A locking valve box and cover was installed at grade. A typical well construction diagram is presented in Fig. 5.

TABLE 4

Franklin Cleaners Site, Hempstead, N.Y.
Groundwater Monitoring Well Construction Details

Well #	Date Of Installation	Method Of Installation	Measuring Pt. Elevation	Screen Setting (El.)	Total Depth
FC-1	11/13/92	Auger	53.55	33.55 to 13.55	40 ft.
FC-2	11/23/92	Auger	53.18	36.18 to 16.18	37 ft.
FC-3	11/13/92	Auger	52.64	35.64 to 15.64	37 ft.
FC-4	11/13/92	Auger	53.80	36.80 to 16.80	37 ft.

DEPARTMENT OF PUBLIC WORKS
DIVISION OF SANITATION & WATER SUPPLY
NASSAU COUNTY, NEW YORK

FRANKLIN CLEANERS SITE

UPPER GLACIAL MONITORING WELL

CONSTUCTION DETAIL (TYPICAL)

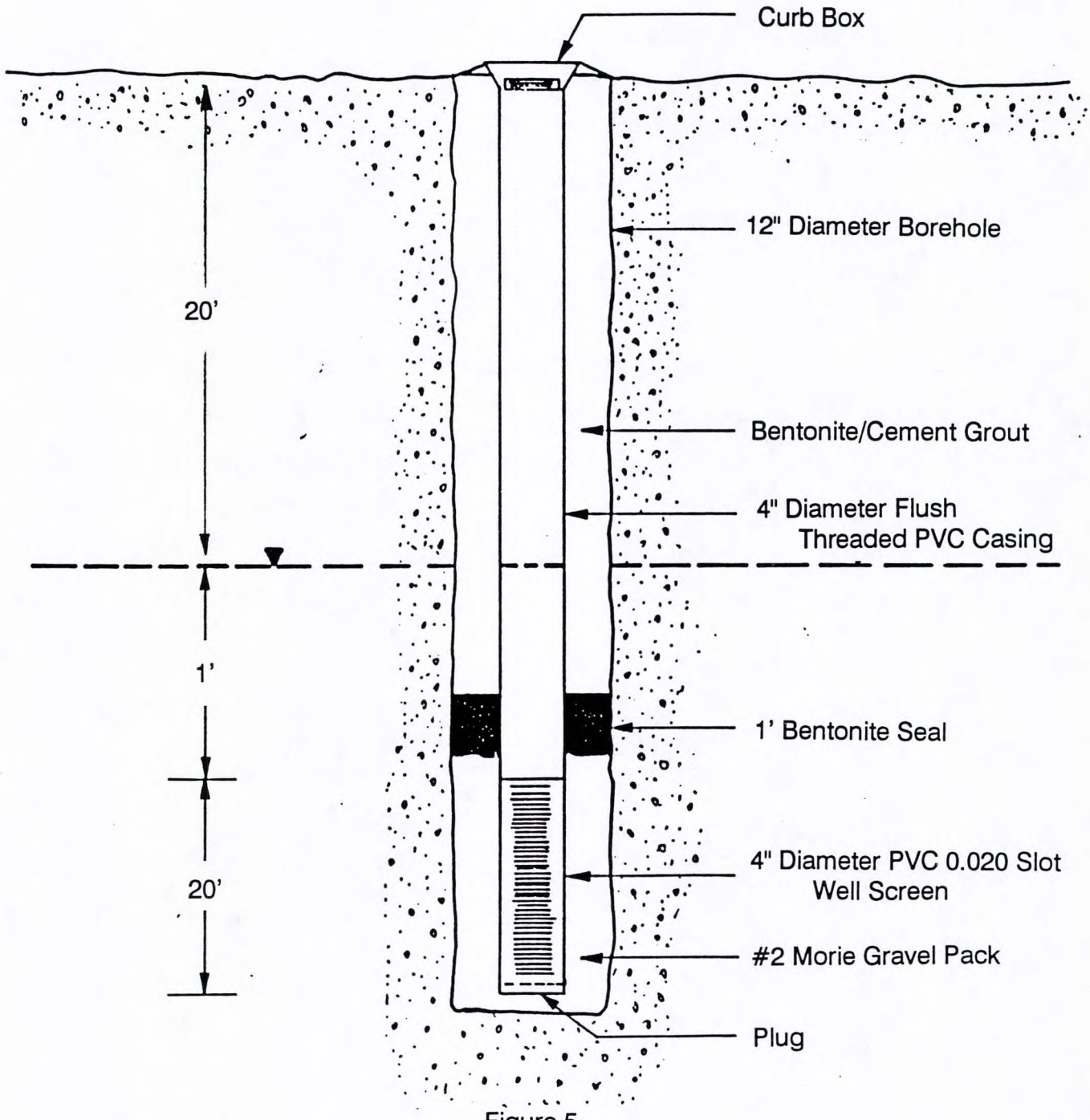


Figure 5

All of the wells installed during this investigation were developed using the over pumping method. Wells were developed with a Grundfos model 25S submersible pump for at least 1 hour or until the nephelometric turbidity units (NTU's) were below 50. Specific pumping rates and total development time are presented with the well logs in Appendix A, accompanying this report.

4.1.2. Groundwater Sampling

After development, wells were allowed to stand at least 2 weeks in order to permit stabilization of the formation with the gravel pack prior to sampling. The wells were sampled on December 30, 1992 for the full target compound list (TCL). Prior to sampling, each well was purged of a minimum of three borehole volumes of water using a decontaminated Grundfos Redi-flo II submersible pump. To assure that water was entering the well from the surrounding formation, temperature, specific conductivity, and pH were monitored using a YSI Model 3500 water quality meter until stabilization. Turbidity was also monitored during sampling in order to assure a sample of less than 50 NTU's. Table 5 summarizes the parameters observed during pumping.

Once the parameters had stabilized, sampling could take place. Samples were obtained using a decontaminated stainless steel bottom load bailer lowered into the well using dedicated nylon cord. The samples were transferred to labeled laboratory bottles and immediately packed into

coolers with ice. The appropriate chain of custody and laboratory forms were forwarded with the samples to NYTEST Laboratories, Port Washington, New York.

Table 5

GROUND WATER SAMPLING SUMMARY

DATE	WELL NO.	VOL. PURGED (gallons)	TEMP. (oC)	pH	Sp.COND. milli-mhos/cm
12/30/92	FC-1	365	15.7	6.09	.214
12/30/92	FC-2	100	16.8	5.93	.253
12/30/92	FC-3	175	15.3	5.96	.497
12/30/92	FC-4	125	16.3	5.88	.302

4.1.3. SOIL SAMPLING

During drilling activities, split core barrel (split spoon) soil samples were collected at 5 foot intervals from grade to the water table. The split spoon was driven ahead of the lead auger into undisturbed formation with the CME's auto hammer. Samples were then retrieved and logged by NCDPW hydrogeologists for color, grain size, sorting, mineral content, compactness and matrix. Blow counts were collected and are included with the well logs in the supporting documentation section of this report. Each split spoon was decontaminated with steam prior to the installation of each borehole in order to minimize the potential for cross contamination. Additionally, spoons were washed with alconox and a potable water rinse prior to each sample. All samples

were placed in labeled jars with sealed covers and allowed to volatize for 1/2 hour. Head space analysis was performed using an HNU photoionization detector with an 11.7 eV probe.

5.0 SITE ASSESSMENT

5.1.0 Site Geology

Long Island is composed of consolidated rock overlain by loose unconsolidated sediments. The pre-Cambrian bedrock slopes to the southeast and is overlain by upper Cretaceous and Pleistocene sands, gravels and clays.

Three major aquifers make up most of Long Islands water supply. The Lloyd sand member of the Raritan formation is the deepest, resting directly on the bedrock. The clay member of the Raritan formation separates it from the Magothy formation, a thick expanse of alternating beds of fine sands, clays, silts and some coarse beds of sand and gravel. The Upper Glacial aquifer consists of a wide variety of fluvio-glacial deposits including beds of fine to coarse stratified sand and gravel, boulder clays or tills consisting of unstratified mixtures of clay and boulders and some fresh water lake deposits composed of silt and clay. The outwash deposits in Nassau County are frequently low in rock and mineral particles and consist mainly of yellow stained and clear quartz.

The site is underlain by glacial sands and gravels of Pleistocene age typical of a glacial outwash plain. A review of lithologic well logs obtained during drilling operations reveals stratified tan-brown-orange, fine to coarse grained, subangular to subround, quartz sand and gravel.

5.1.1. Water Level Measurements and Site Hydrogeology

A synoptic round of water levels were taken on December 12, 1992. These measurements were converted to elevations (Table 6) and used to prepare the water table configuration map shown in Figure 6. The map shows a general north-northeast to south-southwest flow direction which is consistent with regional flow for the study area. A horizontal gradient of 0.0019 feet per foot was calculated across the site. A vertical gradient was not determined as part of this assessment.

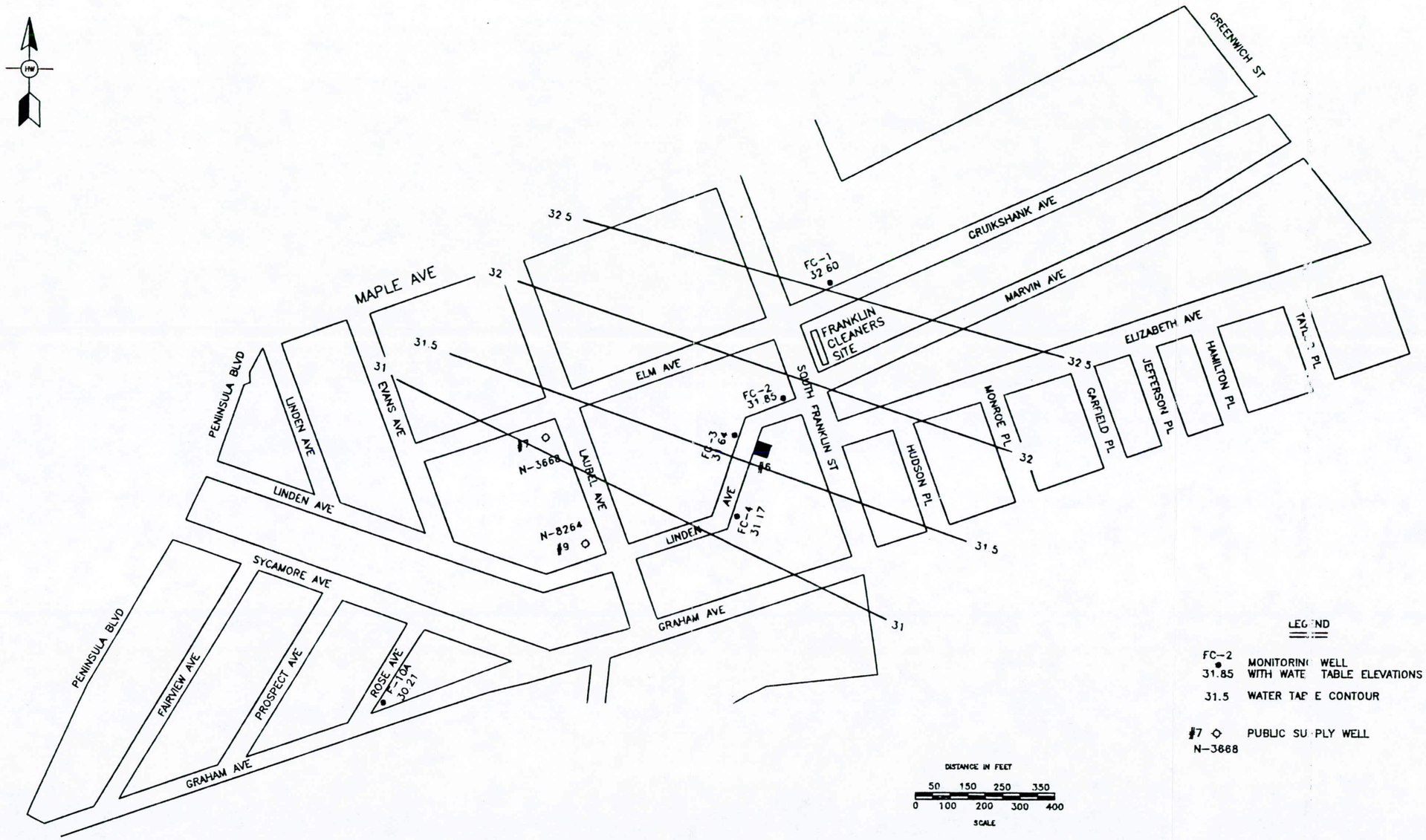
Table 6

Franklin Cleaners Site, Hempstead, N.Y.
Water Table Elevations – 12/2/92

MONITORING WELL	M.P. ELEV.	D.T.W.	W.T. ELEV.	TIME OF MEASUREMENT
FC-1	53.55	20.95	32.60	1339
FC-2	53.18	21.33	31.85	1348
FC-3	52.64	21.00	31.64	1356
FC-4	53.80	22.63	31.17	1400

5.2.0. Soil Sample Results

Soil samples were screened in the field for the presence of organic vapors using an HNU photoionization detector. After collection, the soils were logged by NCDPW hydrogeologists and placed in a sealed, dedicated glass jar and allowed to volatize for at least 1/2 hour prior to screening with the HNU photoionization detector. None of the head space readings were above background and no visual



LEGEND

FC-2 ● 31.85 MONITORING WELL WITH WATER TABLE ELEVATIONS

31.5 WATER TABLE CONTOUR

#7 ◇ N-3868 PUBLIC SUPPLY WELL

DISTANCE IN FEET

0 50 100 150 200 250 300 350 400

SCALE

0	ORIGINAL RELEASE	XX
NO.	REVISION DESCRIPTION	DATE

FILE NAME: \DWG\FCFIG-6		CONTRACT NUMBER: S87015	SHEET NO. 1 OF 1
SCALE: AS SHOWN	DWG. NO. XX	DRAWN BY: J.ZIMMET	DATE 10/29/92
DESIGNED BY: T.KELLY	DATE 10/28/92	CHECKED BY: S.URBAN	DATE 11/4/92

COUNTY OF NASSAU
DEPARTMENT OF PUBLIC WORKS
SANITATION & WATER SUPPLY
HAZARDOUS WASTE SERVICES UNIT

FIGURE 6
FRANKLIN CLEANERS
VILLAGE OF HEMPSTEAD, NEW YORK
N.Y.S. SITE NO.130050
WATER TABLE CONTOURS 12/2/92

evidence (ie. staining, odor , etc.) were observed while drilling, therefore, no laboratory analysis of soils was performed.

5.3.0. Groundwater Analysis

The groundwater sampling results obtained from the sampling effort can be evaluated by examining each group of analytes and the individual concentrations of those compounds found to be above detectable limits. Each of the compounds detected in groundwater beneath the site can then be compared to existing groundwater and drinking water standards. Laboratory report sheets are included in the supporting documentation accompanying this report.

The results of the analyses for each of the major groups of organic compounds found in the Target Compound List are as follows:

Semivolatile Organic Compounds:

Concentrations below detectable limits for all groundwater monitoring wells sampled.

Pesticides / PCB's:

Concentrations below detectable limits for all groundwater monitoring wells sampled.

Metals:

Inorganic analysis performed on groundwater samples from the site indicate that most compounds were below detectable limits. Table 7 summarizes the results from the analysis.

TABLE 7

INORGANIC ANALYSIS – FRANKLIN CLEANERS SITE WELLS

	monitoring wells				MCL or Class GA
COMPOUND	FC–1	FC–2	FC–3	FC–4	Standards/GV
Aluminum	U	90.4 (b)	U	U	NS
Antimony	U	U	U	U	3
Arsenic	U	U	U	U	25
Barium	25.8 (b)	46.4 (b)	80.8 (b)	58.5 (b)	1000
Beryllium	U	U	U	U	3
Cadmium	U	U	U	U	10
Calcium	24,100.0	24,300.0	49,500.0	29,000.0	NS
Chromium	U	U	U	U	50
Cobalt	U	U	U	U	NS
Copper	U	U	U	U	200
Iron	U	68.8 (b)	U	U	300
Lead	U	U	U	U	25
Magnesiuim	2,870.0 (b)	3,080.0 (b)	11,200.0	4,080.0 (b)	35000
Manganese	13.2 (b)	11.9 (b)	1.3 (b)	4.9 (b)	300
Mercury	U	U	U	U	2
Nickel	U	U	U	U	NS
Potassium	2,310.0 (b)	2,580.0 (b)	3,250.0 (b)	2,480.0 (b)	NS
Selenium	U	U	U	U	10
Silver	U	U	U	U	50
Sodium	19,600.0	24,400.0	60,900.0	30,000.0	20000
Thallium	U	U	U	U	4
Vanadium	U	U	U	U	NS
Zinc	18.6 (b)	U	10.2 (b)	U	300
Cyanide	U	U	U	U	100

Notes:

Laboratory – NYTEST, Inc.

U – Below Detection Limit

(b) – Identified in Method Blank

NS – No Standard

GV – Guidance Value

All Results in UG/L

Barium, calcium, magnesium, manganese, potassium and sodium were identified in all four groundwater monitoring wells. Additionally, aluminum and iron were detected in well FC-2 and zinc was detected in wells FC-

1 and FC-3. It is worthy to note that all of these compounds, with the exception of calcium and sodium, were detected in the method blanks. No published standards exist for calcium. However, in wells FC-2, 3 and 4, sodium concentrations did exceed the 20 mg/l standard recommended for individuals on severely restricted sodium diets.

Volatile Organic Compounds:

Volatile organic compounds (VOC's) were identified in all of the wells sampled during this investigation, however, only well FC-2 exhibited levels of VOC's above the method detection limit. Well FC-2 contained a total of 88 ppb of VOC's consisting of tetrachloroethylene (83 ppb) and methylene chloride (5 pbb). Methylene chloride, a common laboratory contaminant, was also detected in wells FC-1, FC-3 and FC-4 at 1 ppb, 1 ppb, and 2 ppb, respectively. Additionally, methylene chloride was identified in the trip blank at 3 ppb. It is important to note that the detection limit for methylene chloride is 10 ppb therefore all concentrations are given as estimates since it was identified below method detection limits. Acetone, another common laboratory contaminant, was identified below detectable limits in well FC-4 at an estimated 6 ppb.

5.3.1 Groundwater Quality

The concentrations of VOC's detected in well FC-2 were compared with the maximum contaminant levels (MCL's) established for drinking water in New York State (10NYCRR, Subpart 5.1), the class GA groundwater standards (NYCRR 703.5) and guidance values (NYSDEC-TOGS 1.1.1.). The total VOC level in well FC-2 was below the MCL of 100 ppb, established for the total of the listed principle organic and unspecified organic contaminants. However, tetrachloroethylene, exceeded both the individual principle organic contaminant level of 5 ppb set for that compound and the class GA standard, also set at 5 ppb.

Methylene chloride did not exceed the MCL or class GA standard of 5 ppb in any of the wells where it was identified. Methylene chloride, identified at very low levels, is a common laboratory contaminant, present in virtually every laboratory atmosphere, it is likely that it was in the distilled water provided by the laboratory since it was detected in the laboratory's trip blank.

Acetone was identified in well FC-4 at an estimated 6 ppb. Again, the detection limit for acetone is 10 ppb therefore, the value given represents only an estimated concentration. Acetone does not exceed the MCL of 50 ppb for individual unspecified organic contaminants. No class GA standards have been established for acetone.

6.0 CONCLUSIONS

Following a review of past Nassau County Department of Health soil sampling data and the analytical results from the past sampling of a private homeowner's well, four water table monitoring wells were installed for the Franklin Cleaners Preliminary Site Assessment (PSA), one upgradient of the site and three downgradient.

Monitoring well FC-2, downgradient of the Franklin Cleaners site and upgradient of the private homeowner's well, was the only PSA well to identify groundwater contamination. The level of contamination identified at FC-2 is very low in comparison to the source area soils contamination (>650,000 ppb PCE) and the groundwater contamination at the private homeowner's wells (>29,000 ppb PCE).

Several factors may account for the lower than expected concentration in FC-2. One possibility is that the groundwater contamination plume emanating from the Franklin Cleaners site is a very narrow plume, and well FC-2 is located on the less concentrated side, rather than in the heart of the plume. Another possibility is that the well screens at FC-2 and the private well may be at slightly different depths, such that FC-2 may not be intercepting the most contaminated segment of the contaminant plume.

Although FC-2 shows much less contamination than the private well farther downgradient, the 83 ppb of PCE is still well above groundwater standards (5 ppb). Therefore, considering that there are no other potential sources nearby,

the upgradient monitoring well is clean, PCE is the primary cleaning agent used by dry cleaners, and there is well documented on-site soil contamination, it is evident that the Franklin Cleaners site is the source of the local groundwater contamination.

7.0 RECOMMENDATIONS

Based upon the findings of the Franklin Cleaners Preliminary Site Assessment, 83 ppb of PCE was identified in a monitoring well installed immediately downgradient of the site. Although the 83 ppb of PCE identified is low in comparison to the very high levels identified in the soils on-site and a private homeowner's well farther downgradient, it still is well above the 5 ppb groundwater standard for PCE. It is recommended that the Franklin Cleaners site be classified as a Class 2 site, in that it poses a significant threat to the environment and to public health.

It is also recommended that prior to the installation of additional monitoring wells during future Remedial Investigation work, that another sampling round of the PSA monitoring wells and, if possible, the private homeowner's well be completed to better understand past inconsistencies with the level of contamination in various wells.

Lastly, being that extremely high levels of PCE (>650,000 ppb) were detected in past studies by the Nassau County Department of Health, in the basement and adjacent alley to the Franklin Cleaners site, it is recommended that an Interim Remedial Measure be implemented to remove the contaminated soil.

8.0 References

Chapter I State Sanitary Code, Part 5, Drinking Water Supplies (Statutory Authority: Public Health Law 225) Subpart 5-1, Public Water Supplies, March 11, 1992.

De Laguna, W., Perlmutter, N.M. and Suter, R., 1949, Mapping of Geologic Formations and Aquifers of Long Island, New York New York State Groundwater Bulletin GW-18.

Nassau County Department of Health Report, 1990, Contamination of Private Well Located at 6 Linden Avenue, Hempstead, N.Y.

New York State Deparment of Environmental Conservation Technical & Operational Guidance Series (1.1.1.) Ambient Water Quality Standards and Guidance Values November 15, 1991

Water Quality Regulations for Surface Waters and Groundwaters, 6NYCRR Parts 700-705 Effective September 1, 1991.

APPENDIX A

Well Logs

DEPARTMENT OF PUBLIC WORKS
DIVISION OF SANITATION AND WATER SUPPLY
HAZARDOUS WASTE SERVICES UNIT
NASSAU COUNTY, NEW YORK
WELL LOG

PROJECT: Franklin Cleaners
DATE PREPARED: January 11, 1993
PREPARED BY: M. Flaherty
WELL NO.: FC-1
LOCATION: North side of Cruikshank Ave. 200 ft. East of S. Franklin St.
M.P. ELEVATION: 53.55
DRILLER: Larry E. Tyree (K. Watson)
TYPE OF RIG: Failing F-10 (Auger)
DRILLING STARTED: November 12, 1992
DRILLING ENDED: November 12, 1992
PAGE: 1 OF: 2

WELL DATA
HOLE DIAM.(IN): 12 "
FINAL DEPTH (FT): 40 '
CASING DIAM.(IN.): 4 "
CASING LNTH.(FT): 20 '
SCREEN SET.(FT.) 20'-40'
SCREEN SLOT/TYPE: .020PVC
WELL STATUS: Monitoring

SAMPLER
TYPE: Split Spoon
HAMMER 140 LB. (Auto)
FALL: 30 IN.

G.W. READINGS

DATE	DTW	WTE
12/02/92	20.95	32.60

DEVELOPMENT
Overpumping for 1 hour at 8 GPM

DEPTH (ft.)	LITH-OLOGY	USCS CLAS.	SAMPLE DESCRIPTION	SAMPLE NO.	REC.	DEPTH	BLOWS
0			0-2' Brown-black topsoil				
		GM	2-7' Black-brown, fine, silty quartz sand with trace gravel.	1	16"	5-7'	28/2ft
10		SW	7-12' Orange-brown, medium to coarse, subangular to subround quartz sand with granules.	2	18"	10-12	25/2ft
		SP	12-20' Tan-brown, fine to coarse, subangular to subround, well sorted quartz sand with trace gravel, some dark minerals.	3	16"	15-17	24/2ft
20		SW	20-25' Orange-brown, fine to coarse, moderately sorted quartz sand with some granules.	4	16"	20-22	36/2ft
			Sample saturated at 25 ft.	5	18"	25-27	21/2ft
30		SP	25-42' Tan-brown, fine to medium, some coarse, well sorted quartz sand, trace granules.	6	18"	30-32	28/2ft