Workplan.HW336025.06-15-1984.InterimPumpingPlan

ROUTING AND TRANSMITTAL SLIP Date 6/19[redacted]4

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REMARKS

attached is the interim pumping plan for Wallkill as proposed by Fred C. Hart. Please provide your comments by 6/22/84

to: Pat Wells
212-264-1216
US EPA
Hazardous Waste Sites B2
26 Federal Plaza
NY, NY, 10278

Thanks

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
Dave Rogers	Phone No. 212-264-4703

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TELEPHONE (415) 434-4641

WRITER'S DIRECT DIAL NUMBER
(212) 940-8707

June 15, 1984

BY HAND

Chief, Hazardous Waste Site Branch
Office of Emergency and Remedial Response
U.S. Environmental Protection Agency
26 Federal Plaza - Room 402
New York, New York 10278

Attn: David Rogers, Project Officer

Re: Wallkill Site

Dear Mr. Rogers:

Enclosed please find a copy of a proposed Interim Pumping Plan, prepared by Fred C. Hart Associates ("FCHA") pursuant to Sections III.A and B of the Administrative Order on Consent dated May 1, 1984 between EPA and General Switch Corporation (the "Order").

The proposal envisions pumping of four wells in the Wallkill area. During a two-week start-up period, adjustments will be made in the amount of water pumped from these wells so that (a) the pumping does not interfere with other wells in the area that are being used for water-supply purposes, and (b) the concentration of tetrachloroethylene in the pumped water does not exceed permissible levels in the sewer system into which it is pumped.

FCHA advises me that it is impossible to evaluate the effectiveness of an interim pumping plan for the purposes specified in III.A without actually conducting limited interim pumping for a period of approximately six weeks. Therefore, rather than waiting another two weeks to submit a detailed plan for an interim pumping program, as was envisioned in Section III.B of the Order, it is submitting that detailed plan herewith. The proposed plan assumes that the two-week start-up period will be sufficient to make the

adjustments described above, after which the six-week test period will begin to determine the effectiveness of the pumping program. At the end of the test period, FCHA will submit an evaluation with recommendations concerning the effectiveness of continuing a pumping program.

With this submission, General Switch is thus in compliance with Section III.A and B of the Order.

Very truly yours,

Grace Goodman

GG/ks

Enclosure

cc: Director, Division of Solid and Hazardous Waste
New York State Department of Environmental Conservation

Commissioner of Health
Orange County Department of Health

336 665

INTERIM PUMPING PLAN

Prepared By:

FRED C. HART ASSOCIATES, INC.

530 Fifth Avenue • New York, New York 10036 • (212) 840-3990

New York City • Washington D.C. • Denver • Las Vegas

INTERIM PUMPING PLAN

Prepared for:

U.S. Environmental Protection Agency

Region II

June 15, 1984

1.0 Introduction

Under the terms of the Consent Order, signed May 1, 1984 by U.S. Environmental Protection Agency (USEPA) and General Swith Corporation (GSC), it is necessary to evaluate the effectiveness of pumping condemned wells, or other wells as an interim measure for (1) removing contaminated groundwater from geologic formations in the area, and/or (2) preventing further migration of tetrachloroethylene (PCE) in the groundwater.

It is the objective of this report to provide the conceptual design for a program which, after approval, may be implemented rapidly and at reasonable cost, and which will demonstrate the feasibility of groundwater extraction and disposal as a remedial option to eliminate the PCE contamination problem. It is expected that the proposed system will be effective at least as an interim remediation system, and possibly as a permanent system. An evaluation will be made at the end of a six week trial period regarding the feasibility of this option and which will lead to recommendation for the design of a more permanent system.

2.0 Previous Groundwater Extraction Program

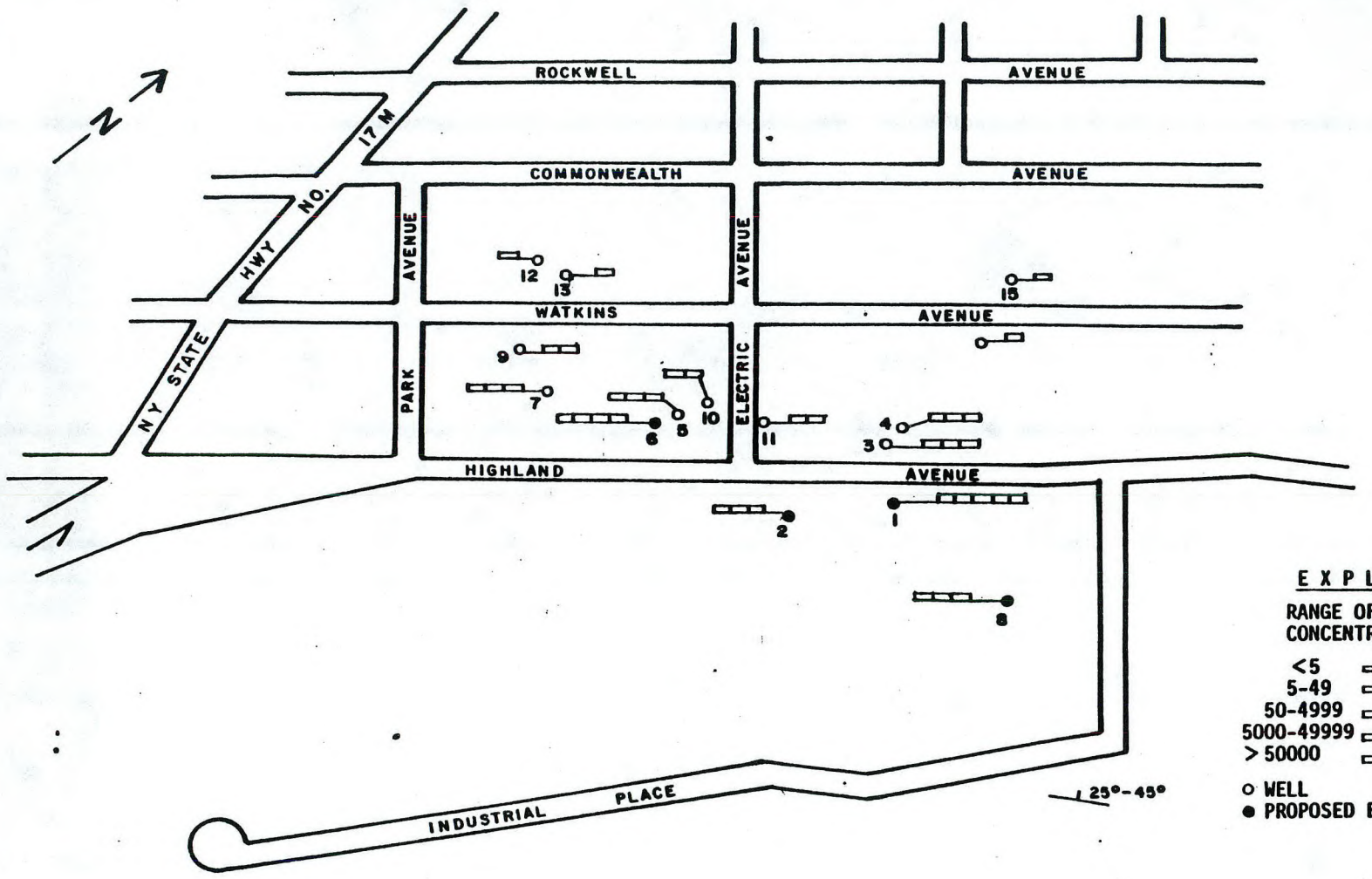
2.1 Program Summary

A limited pumping program was initiated for the USEPA by the Technical Assistance Team (TAT) between November 15 and December 26, 1983 until freezing weather made continued operation unfeasible.

The TAT groundwater extraction program was primarily limited to the Parella well (see Figure 1), although the Lobb well, located directly across Highland Avenue, was pumped for 2 days, while the Parella well was shutdown. The pumping rate varied between one-half and four gallons per minute (gpm). A total of 33,490 gallons of water were reported to have been extracted. Disposal was to the Wallkill Sewage system. Pump discharge was collected in a 2,000-gallon tank truck, from which it was transferred to a 5,000-gallon tank truck stationed at the manhole on Mud Mills Road, approximately two miles from the site. Water was then discharged into the Wallkill Sewer system at a rate which varied between one-half and two gpm. At an assumed average concentration of 74,500 ppb PCE, the TAT estimates removal of 20.75 pounds of PCE. No adverse reactions were noted at the Wallkill Treatment Plant during the period of discharge.

2.2 Contaminant Distribution

Concentrations of PCE above the 50 ppb criteria established by New York State Department of Health as the maximum permissible level allowed in drinking water have been found in seven private residences and one industrial well (General Switch). Lower concentrations (less than 50 ppb) have been detected in other wells in the vicinity. There appears to have been little change in PCE distribution over the period of investigation (October, 1983 to present). Figure 1 shows that generalized distribution of PCE. The ranges of values plotted were selected to distinguish the clustering of concentration values observed. Wells which had PCE contamination in only one analysis (e.g., Pitt) have not been shown. The values indicated are the highest verified concentrations for each well, and do not necessarily reflect the present concentrations.



WELL IDENTIFICATION

1. PARELLA
2. STOUT
3. LOBB
4. OSBORNE
5. BARRY
6. RUPPERT
7. ROBANNA
8. GENERAL SWITCH
9. RASMOSSAN
10. LEWIS
11. KNAPP
12. WINNER
13. MORSE
14. RADIVOY
15. PRIOR KING PRESS

EXPLANATION

RANGE OF TETRACHLOROETHYLENE CONCENTRATION (ppb)

<5	▫
5-49	▭
50-4999	▭▭
5000-49999	▭▭▭
> 50000	▭▭▭▭

○ WELL
● PROPOSED EXTRACTION WELL

100 300 500
0 200 400
SCALE (FEET)

FIGURE 1

TETRACHLOROETHYLENE CONTAMINATION DISTRIBUTION

PREPARED BY: FRED C. HART ASSOC.

A linear distribution of PCE concentration is readily apparent from the figure, trending approximately northeast to southwest. This closely approximates the attitude of bedding observed at an outcrop north of Lubricants Inc. on Industrial Place (strike, N45°E, dip 25° to 45° NW). This suggests that the primary PCE containing fractures are parallel to bedding. However, as will be discussed later, the greatest hydraulic connection between wells appears to follow a more northwest to southeast direction (probably a joint set). The traces of PCE (less than 5 ppb) observed in the Radivoy and Prior King Press Wells are probably following the favored hydaulic direction.

Figure 2 is a semi-logarithmic plot of concentrations of PCE by date of analysis for the seven condemned wells and the General Switch well. The highest concentrations detected have been in the Parella well, which had 260,000 ppb on November 15, 1983. Significant fluctuations in concentrations may be observed during November and December, 1983, during the interval of groundwater pumping from that well. Since pumping ceased, the concentrations have shown a slight decline. At the last avaliable analysis for the condemned wells, (March 22, 1984) the concentrations were 44,500 ppb.

The second highest concentration observed has been in the Ruppert Well. The well has been sampled on ony two occasions, showing 7,000 ppb on November 15, 1983 and 5,517 on February 3, 1984. On the second sampling date, samples were taken after 30, 60 and 180 minutes, during which time the concentration increased to 13,985 ppb.

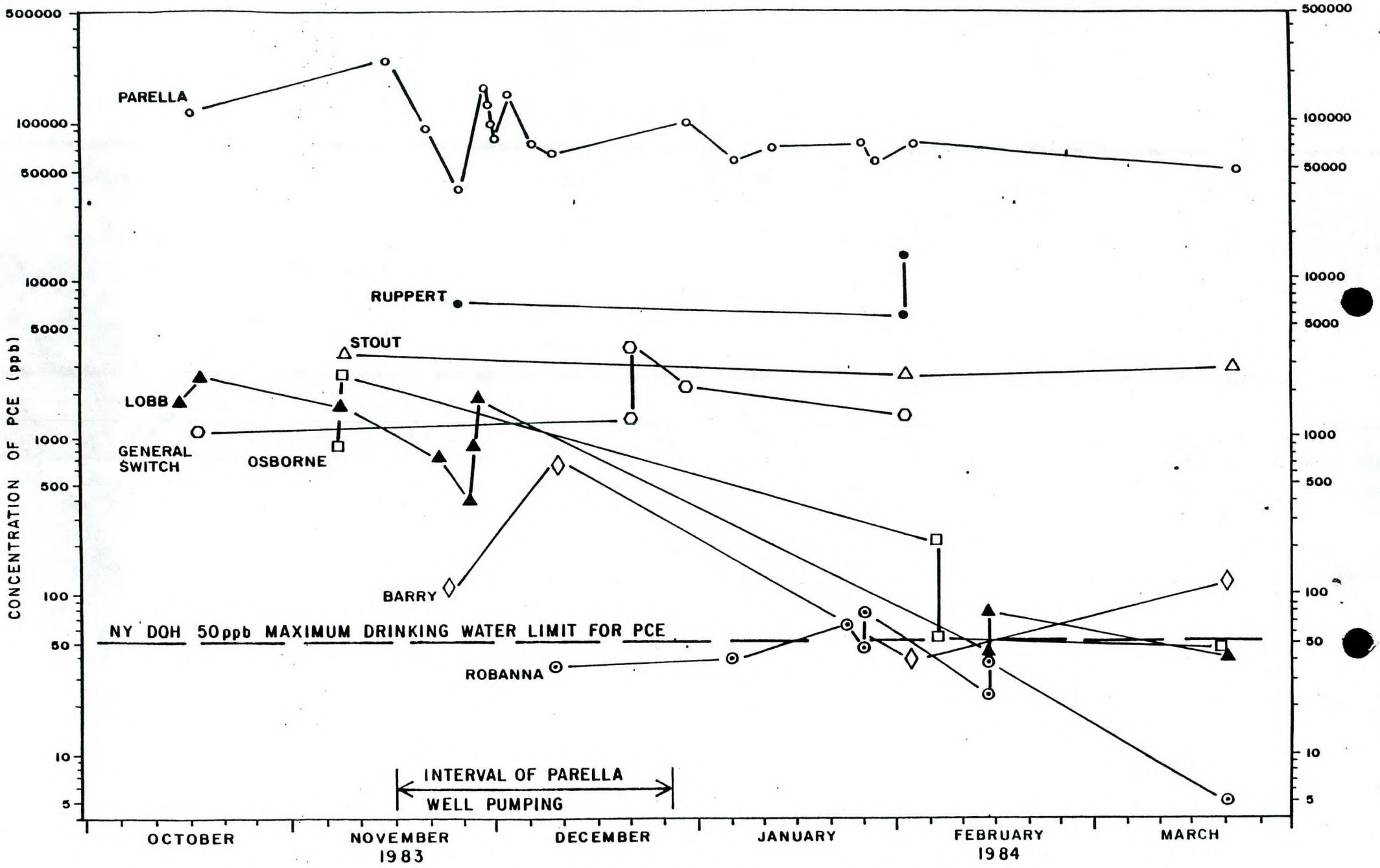


FIGURE 2 – VARIATIONS IN PCE CONCENTRATION WITH TIME

Concentrations observed over time in the Stout, General Switch, Osborne, Lobb and Barry wells are shown on Figure 2. With analyses on only three occasions, no trend can be seen in the Stout well. Levels have been greater than 2,000 ppb. On February 8, 1984, a time concentration test was performed, during which concentrations increased from 2,341 to 2,909 ppb after 60 minutes of pumping.

The General Switch well has been relatively constant in concentrations, with two notable exceptions. During a time-concentration test on December 22, 1983, samples taken after 15, 30 and 45 minutes of pumping increased in concentrations from 1,294 to 3,877 ppb. A sample taken one week later (December 29, 1983) was significantly higher than the values at 2,051 ppb. A second time-concentration test on February 2, 1984 showed a gradual increase from 1,440 ppb to 1,760 ppb after 180 minutes of pumping, followed by a slight decline to 1,660 ppb after 240 minutes. No analyses have been made since that date.

Concentrations in the Lobb and Osborne wells have shown similar trends over time (Figure 2). Both wells showed rapid concentration increases up to approximately 2,500 ppb prior the Parella well pumping, followed by a decline to levels slightly below the 50 ppb maximum permissible concentrations. Time-concentration tests (60 minute duration) of the two wells conducted in February showed opposite behavior. The Lobb well increased slightly over time, whereas the Osborne well declined.

The Barry well increased from 100 ppb on November 23, 1983 to 730 ppb on December 9, 1983. Subsequent analyses on February 7, 1984 and March 20,

1984 have been 39 and 118 ppb, respectively. The low value is probably the result of a pump test conducted by the TAT February 2, 1984, on the Ruppert well, approximately 50 feet to the northeast.

The Robanna well increased slightly in concentration between December and the end of January. A time-concentration test was performed on January 25. During that test, concentrations were 48, 78 and 76 ppb after 15, 60 and 90 minutes of pumping. Since that test, the concentration has dropped significantly, to 5 ppb on March 20, 1984.

2.3 Effectiveness of Previous Pumping

The preceding information and the limited hydraulic testing performed by the TAT suggests that the existing wells may be an effective means for extraction of contaminated groundwater. Data available on characteristics of the Austin Glen aquifer are as yet not sufficient to predict long-term effects of pumping the wells. The significant reductions in PCE concentrations in the Lobb and Osborne wells between October and November 1983 analyses (before and during pumping of the Parella well) with those of February and March, 1984 (following the pumping) may be explained by two possible mechanisms: either a slug of highly concentrated groundwater passed through the fractures feeding the wells; or the plume of contamination was pulled back toward the Parella well by pumping. The continued presence of PCE in the other wells in the area indicates that the second mechanism is the more likely.

The radius of influence of wells in the area appears to be relatively small and appears to be anisotropic. Data collected by the TAT suggestes that the influence of the Parella well is limited to approximately 350 feet. It also suggests that the preferred direction is generally along a northwest-southeast line, or roughly perpendicular to Highland Avenue. This was evident from drawdown patterns during a short duration pump test conducted on the Parella well on December 21, 1983, and is also apparent in the reduction of PCE concentration as shown in Figure 2. The most significant reduction in concentration following the pumping of the Parella well was in the Osborne and Lobb wells, located directly across Highland Avenue, within 200 feet of the pumping well. No apparent reduction can be observed in the Stout and General Switch wells, located to the southwest and northeast of the Parella well at distances of approximately 230 and 370 feet, respectively.

3.0 Recommended Interim Pumping Plan

3.1 Well Selection

Based upon foregoing analysis of the existing data on PCE distribution and concentration in the aquifer and available data on well construction and pumping characteristics, Fred C. Hart Associates (FCHA) recommends immediate conversion of four existing wells for groundwater extraction. These wells are:

1. Parella, 320 Highland Avenue
2. Stout, 316 Highland Avenue

3. Ruppert, 307 Highland Avenue

4. General Switch, 20 Industrial Place

These wells have been selected on the basis of their consistantly high concentrations of PCE and their distribution along the linear zone of contamination. The evidence available at present suggests that the PCE contamination is concentrated primarily in a fracture set parallel to the strike of the formation (northeast to southwest) although the most productive water-producing fractures appear to trend in a nearly perpendicular direction (northwest to southeast). It is expected that by proper adjustment of pumping rates from the four wells, a significant reduction will be made in PCE concentration in the aquifer with mimimum impact on groundwater availability in the area.

The proposed discharge will be directly into the sewer line from each property to the Middletown Sewer system. Permission from the Middletown Department of Public Works may be required. The method of connection and system startup procedures proposed are detailed in Section 3.2. The anticipated loading on the Middletown Sewage Treatment Plant is described in Section 3.3. The proposed plan is not expected to have any adverse impact on the plant. A detailed sampling plan for the startup period and continued monitoring is presented in Section 3.4.

3.2 Well Discharge

The four wells proposed for pumping under this plan are all currently equipped with pumps, although the wells are not presently in service. The

proposed discharge system will need to be custom fitted to each installation. Typical features of the system, as shown in Figure 3 are:

- low water cutoff and restart switching to be installed in the well casing.
- a gate valve for flow control
- a water meter for rate adjustment and total contributions measurement.
- an in-line sampling port
- a dual check-valve back flow preventer
- direct connections to the sanitary sewer connection inside the building.

The proposed low level cutoff and restart switching is considered a vital part of the system. In addition to protection of the pump from burnout by running dry, it will allow a fine tuning of each well. The cutoff and restart switch positions in the well may be adjusted, allowing control of drawdown at each well.

The gate valve and water meter will be used to adjust pumping rate from the well. By experimentation over the startup period, it will be determined whether restricted flow as an approach to steady state, or unrestricted flow with frequent on-off cycles controlled by the water level switching mechanism will produce better results.

After the wells are equipped with the discharge system as shown in Figure 3, the startup period will begin. Initial pumping rates will be low (approximately 1 gpm).

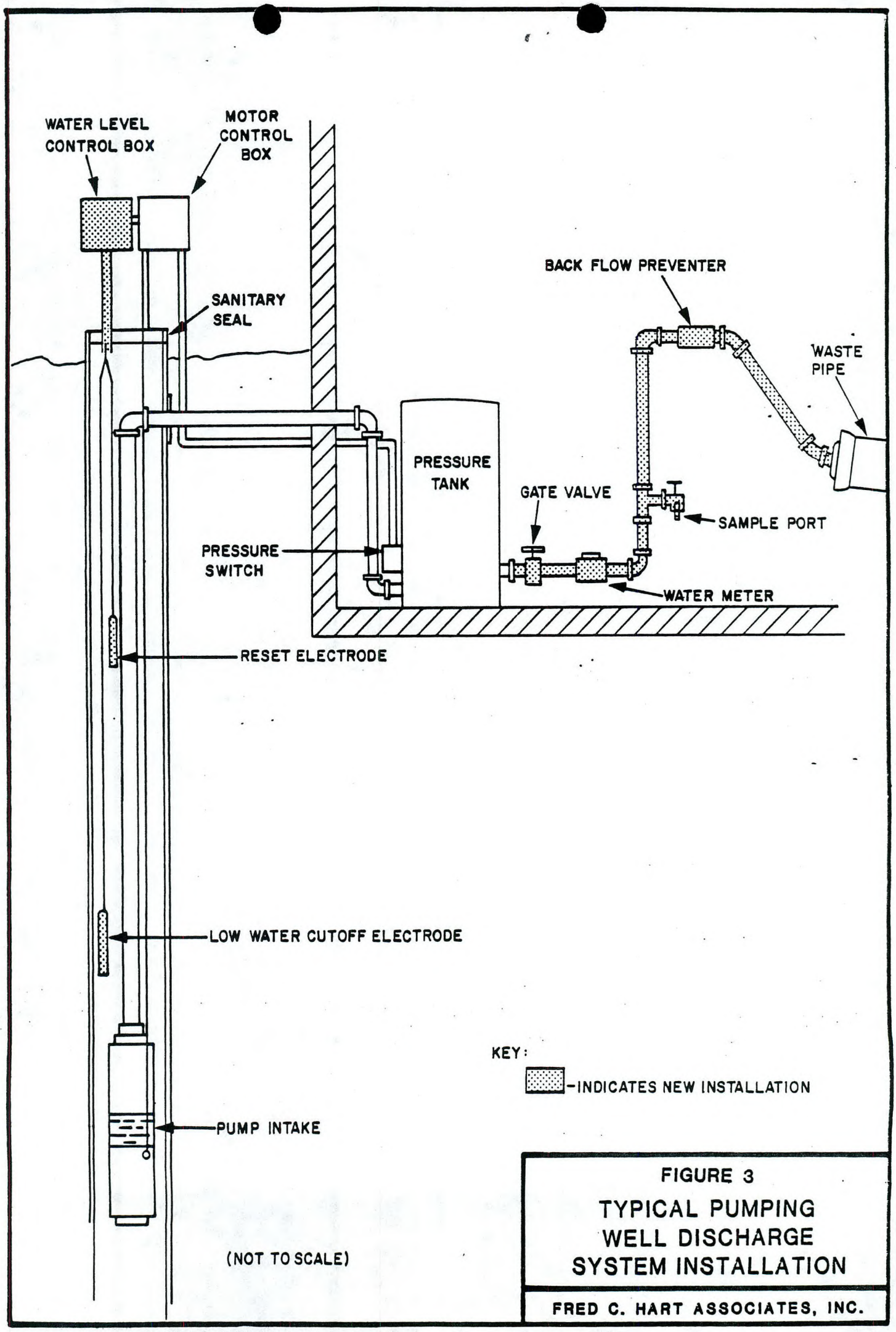


FIGURE 3

TYPICAL PUMPING WELL DISCHARGE SYSTEM INSTALLATION

FRED C. HART ASSOCIATES, INC.

The four wells in the proposed extraction system will be brought on line in the system at a rate of one well per day. Static water levels of the pumping wells and neighboring wells will be recorded. The initial setting for the low water cutoff will be approximately 10 feet above the pump intake. The initial reset switch setting will be ½ way between the low water setting and the static water level. When the well is started, the rate will be adjusted with the gate valve and water meter to the initial pumping rates (1 gpm for Parella, Ruppert and Stout, ½ gpm for General Switch). Samples will be collected and water levels measured while pumping continues. If necessary, the pumping rate and water level controls will be adjusted to maintain the initial pumping rate. Periodic measurements of neighboring wells will be made. If any neighboring wells still in use become endangered of dewatering by the extraction program, pumping rates will be reduced immediately.

Samples will be collected from each pumping well after startup, and at increasing time intervals thereafter. During the startup process, initial samples will be scanned in the field with an OVA to determine tetrachloroethlene concentrations. If concentrations exceed anticipated valves, flow may be reduced to avoid overloading the treatment plant. Duplicate samples will be collected for verification by laboratory analysis.

Samples will be collected at the Middletown Sewage Treatment Plant (STP), from influent and effluent streams. At least one sample set will be collected from the STP prior to pumping.

3.3 Anticipated Impact

During November and December of 1983, while the TAT was discharging water from the Parella well into the Wallkill Sewage Treatment Plant (WSTP), samples were taken from the discharge tanker, and at the WSTP influent and effluent streams. These data are summarized in Table 1.

A total of 33,400 gallons of contaminated water was discharged during a 40 day period, at an average of 835 gallons per day (gpd). With an average daily flow at the plant of 1.5 million gallons per day (mgd), the average contributions of the Parella well water was 0.05%. The calculated dilutions (assuming no other contribtions of PCE, using the average discharge tank concentration) is: 28,000 x 0.0005 = 14 ppb, which falls within the range observed at the plant influent.

The Wallkill STP was effective in removing PCE from the waste stream. The percent of PCE removed (using average influent and effluent valves) was approximately 83%.

Data from analyses of influent and effluent streams at the Middletown STP from December 1983 to February 1984 are presented in Table 1. The percent of PCE removed by the plant was approximately 87%.

The anticipated loading on the Middletown STP from the proposed Interim Pumping Plan at the anticipated starting rates is presented below. The assumed concentrations of the four wells are:

TABLE 1

Sample Location	Time Interval	Number of Samples	High (All values in ppb)	Low	Average
Discharge Tank	11/25 - 12/7/83	12	53000	2300	28000
Wallkill STP Influent	11/24 - 12/7/83	7	50	3	29
Effluent	11/24 - 12/7/83	7	11	1	5
Middletown STP Influent	12/7/83 - 2/9/84	4	30	3	12
Effluent	12/7/83 - 2/9/84	5	4	1	1.6

Parella	75,000 ppb
General Switch	1,500 ppb
Stout	3,000 ppb
Ruppert	15,000 ppb

These are considered "worst case" values. Actual values will probably be significantly lower.

Available data indicates that the General Switch well will produce at a maximum rate of ½ gpm. Assuming an average rate of 1 gpm for the other wells, the total discharge is expected to be 5,000 gpd at an average concentration of 30,000 ppb of PCE. Assuming an average flow at the plant of 3.7 mgd, the pumping discharge will amount to approximately 0.135% of the total flow. Calculated dilution (assuming no loss of PCE enroute) is: 30,000 x .00135 = 41 ppb.

If the average contributions to the influent from Table 1 is combined with the above, the anticipated average influent contributions will be 53 ppb. If we assume that the plant will remove 80% of the PCE, the anticipated effluent concentrations will be 10.6 ppb, which is well below the 40 ppb initial maximum limit suggested by New York DEC.

3.4 Sampling Program

Samples from the four proposed extraction wells, the four non-pumping condemned wells (Robanna, Berry, Lobb and Osborne) and the Middletown

Treatment Plant will be taken and handled in accordance with procedures discussed in the General Switch Site Operations Plan, and the Interim Monitoring Plan with exceptions to be noted below.

In addition to samples collected for laboratory analysis, samples will be collected for analysis in the field with an OVA, in order to provide rapid evaluation of PCE concentrations in the well discharge water.

Time-concentration series samples will be taken twice from each of the non-pumping condemned wells. A time-concentration series will consist of samples taken at the follow intervals after pump startup: 5 minutes, 15 minutes, 1 hour, 2 hours. The first time-concentration series will be taken prior to startup of the four extraction wells. A second series will be taken from one to two weeks after the system has achieved steady-state operations. Subsequently, these wells will be sampled after 15 minutes of running, concurrent with the Interim Monitoring program.

A time-concentration sampling series program will be conducted for each of the extraction wells during the startup period. Analysis will be done either by the OVA or by laboratory analysis, by the Direct Injection Method. Exact time intervals cannot be determined in advance, since it is anticipated that the wells will be cycling on and off. The interval between samples will increase as pumping continues approximately as follows:

15 minutes, 1 hour, 3 hours, 8 hours,
12 hours, 24 hours, 48 hours, 120 hours.

Weekly samples will be taken during the remainder of the trial period. A schedule for continued sampling will be determined based upon the results of the initial sampling, and will be presented with the Interim Pumping Plan Evaluation.

Samples from the treatment plant influent and effluent streams will be analyzed in the field with the OVA and will be confirmed by laboratory analysis. Samples will be taken prior to startup of the pumping wells, daily during the startup period and weekly during the remainder of the trial period. A schedule for continued monitoring, if needed, will be included in the Interim Pumping Plan Evaluation.

4.0 Pumping Plan Evaluation

Evaluation of the effectiveness of the Interim Pumping Plan will be an on-going process. It is not possible to predict the length of time that may be needed for removal of sufficient PCE to consider the aquifer "restored". It is hoped that a trend may become apparent after four to six weeks of pumping. It is proposed, therefore, that an Interim Pumping Evaluation be submitted to EPA within eight weeks from the date pumping begins. If a prediction can be made of the time needed for the proposed system to extract sufficient PCE to prevent the endangerment of the water supply of any homes still dependent on private wells, and if that time is sufficiently short that the system, modified as needed, will be cost-effective, continued operation will be recommended. Other possible options may be considered as well, such as the replacement of additional water supplies.

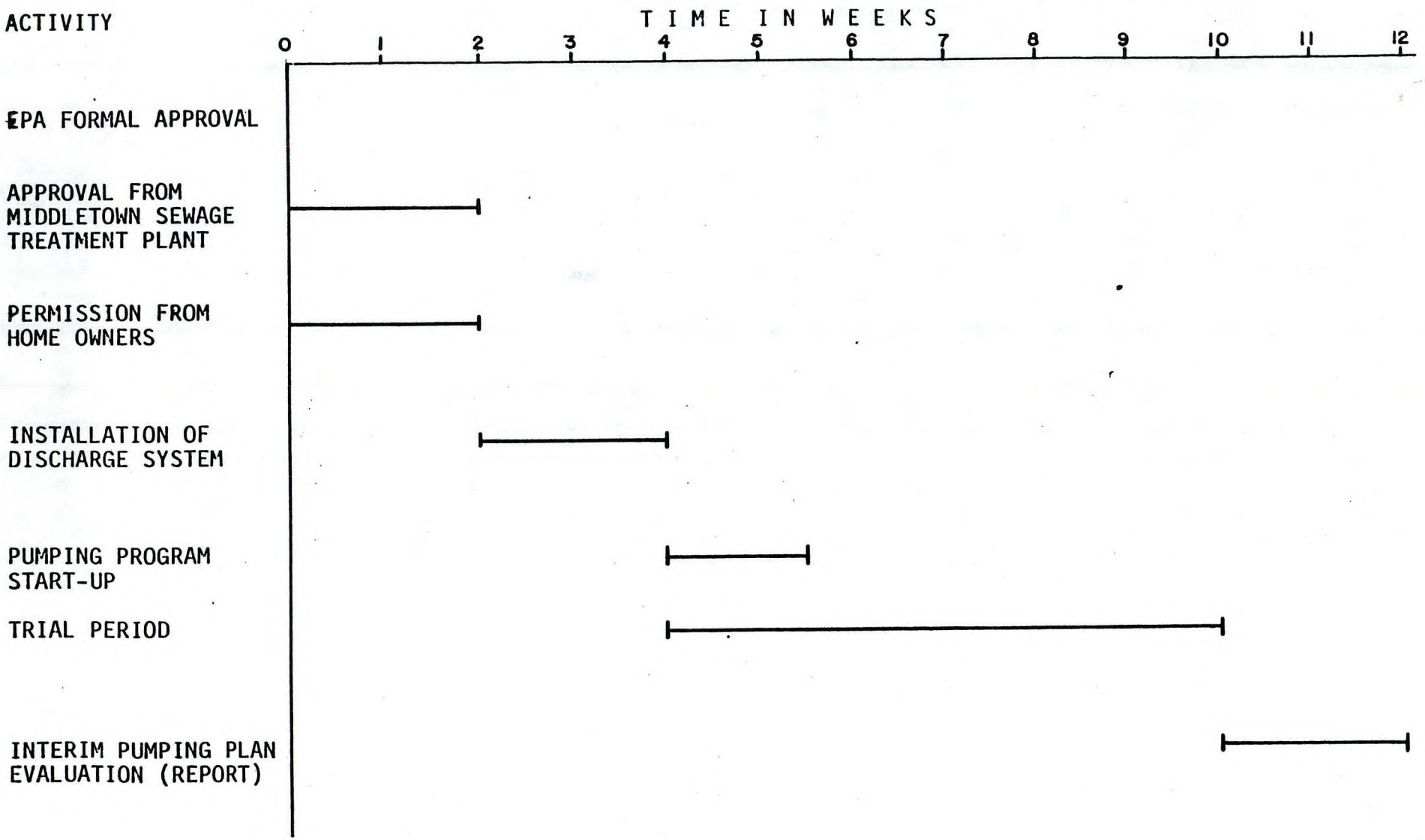
If it should become apparent that substantial modification of the Plan is required before submission of the evaluations. EPA will be notified immediately.

5.0 Implementation Schedule

The implementation of this proposed program is contingent upon receiving permission from homeowners to use their wells and from Middletown Department of Public Works to accept the water at their treatment plant in addition to approval by EPA. It is hoped that EPA, the New York DEC and the Orange County Health Department will assist, if needed, in obtaining these permissions.

The following schedule begins from the time formal EPA approval of the plan is received by FCHA.

INTERIM PUMPING PLAN–IMPLEMENTATION SCHEDULE



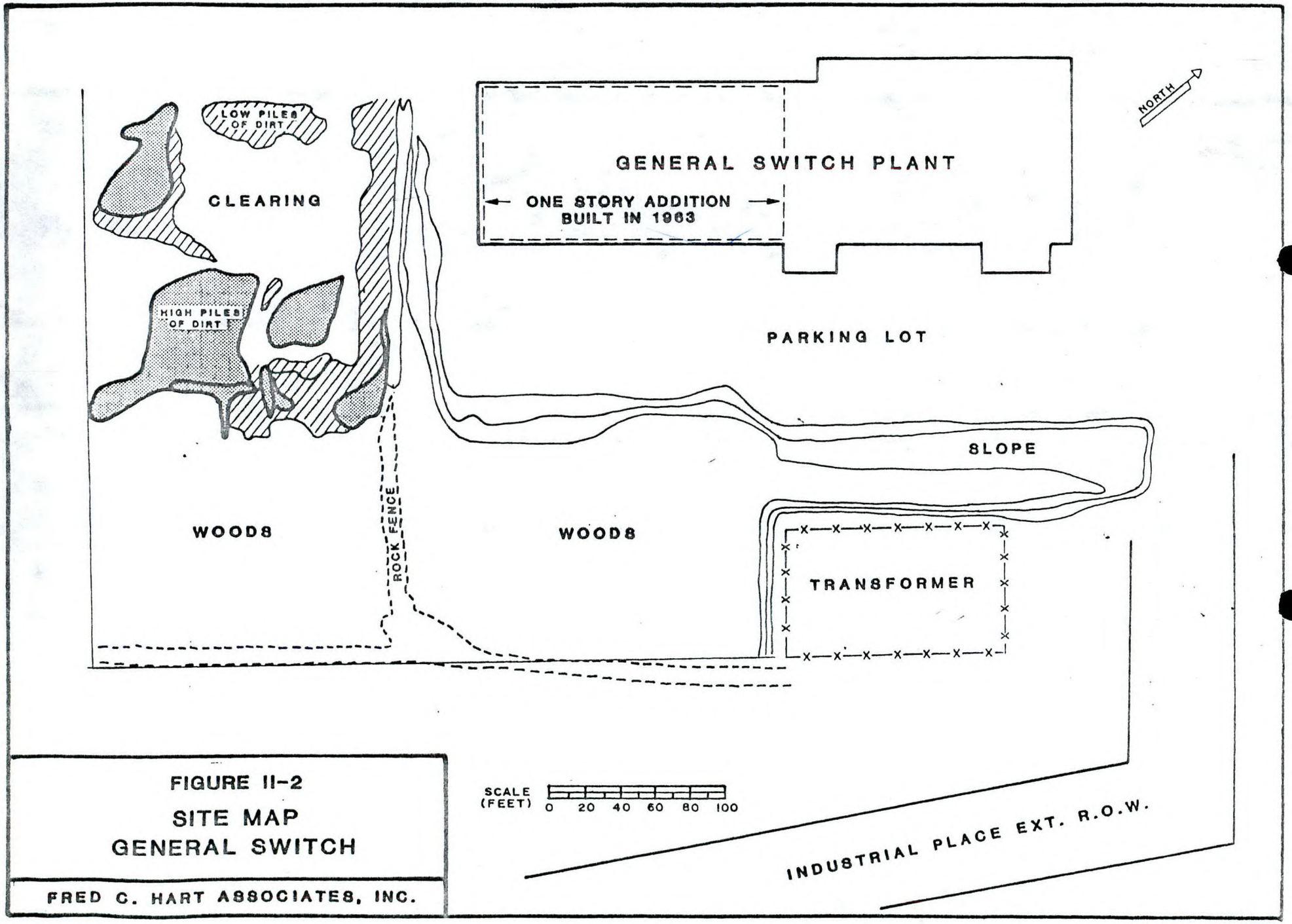


FIGURE II-2

SITE MAP
GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

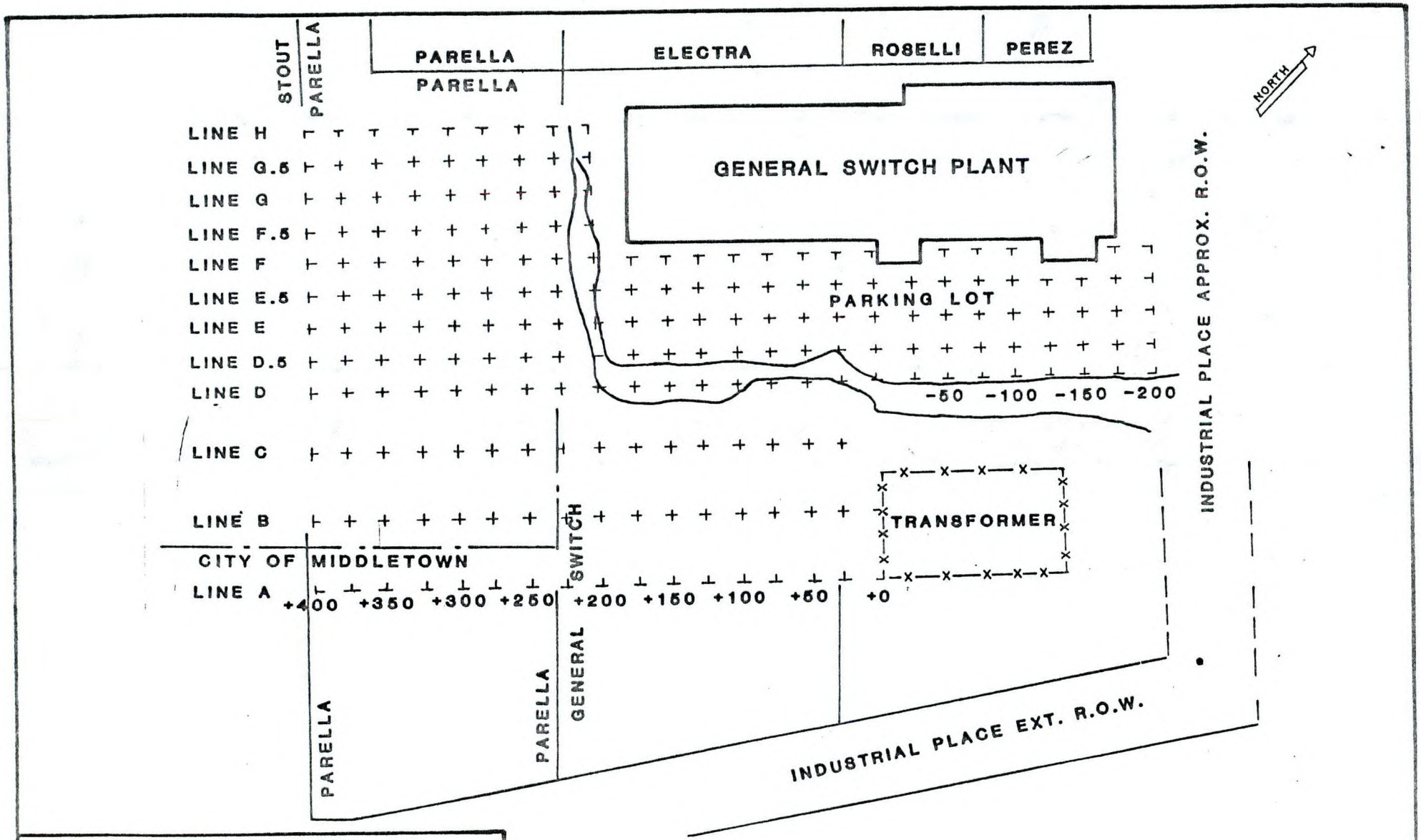


FIGURE III-1

SITE GRID MAP
GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

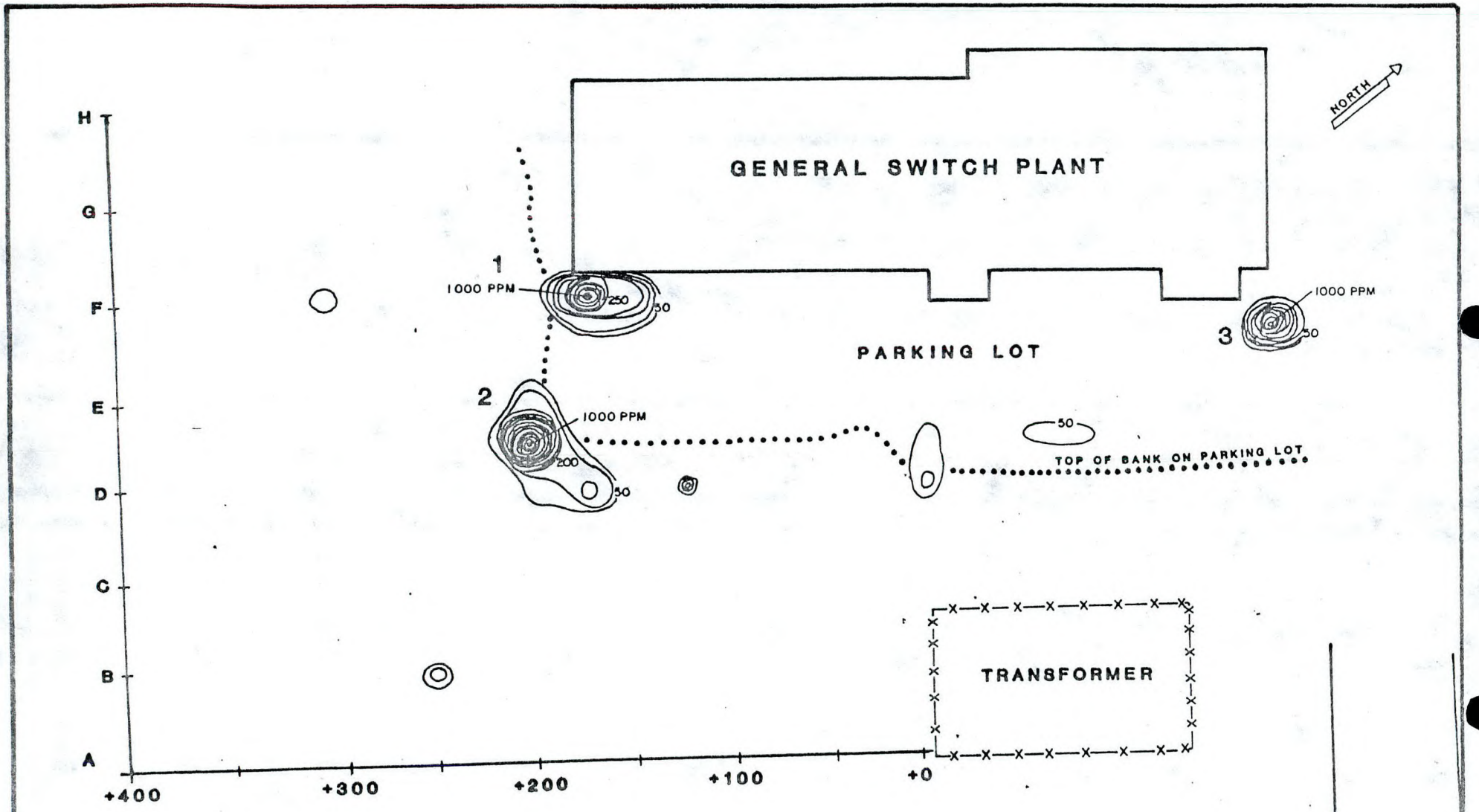


FIGURE III-2

OVA CONTOUR MAP
GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

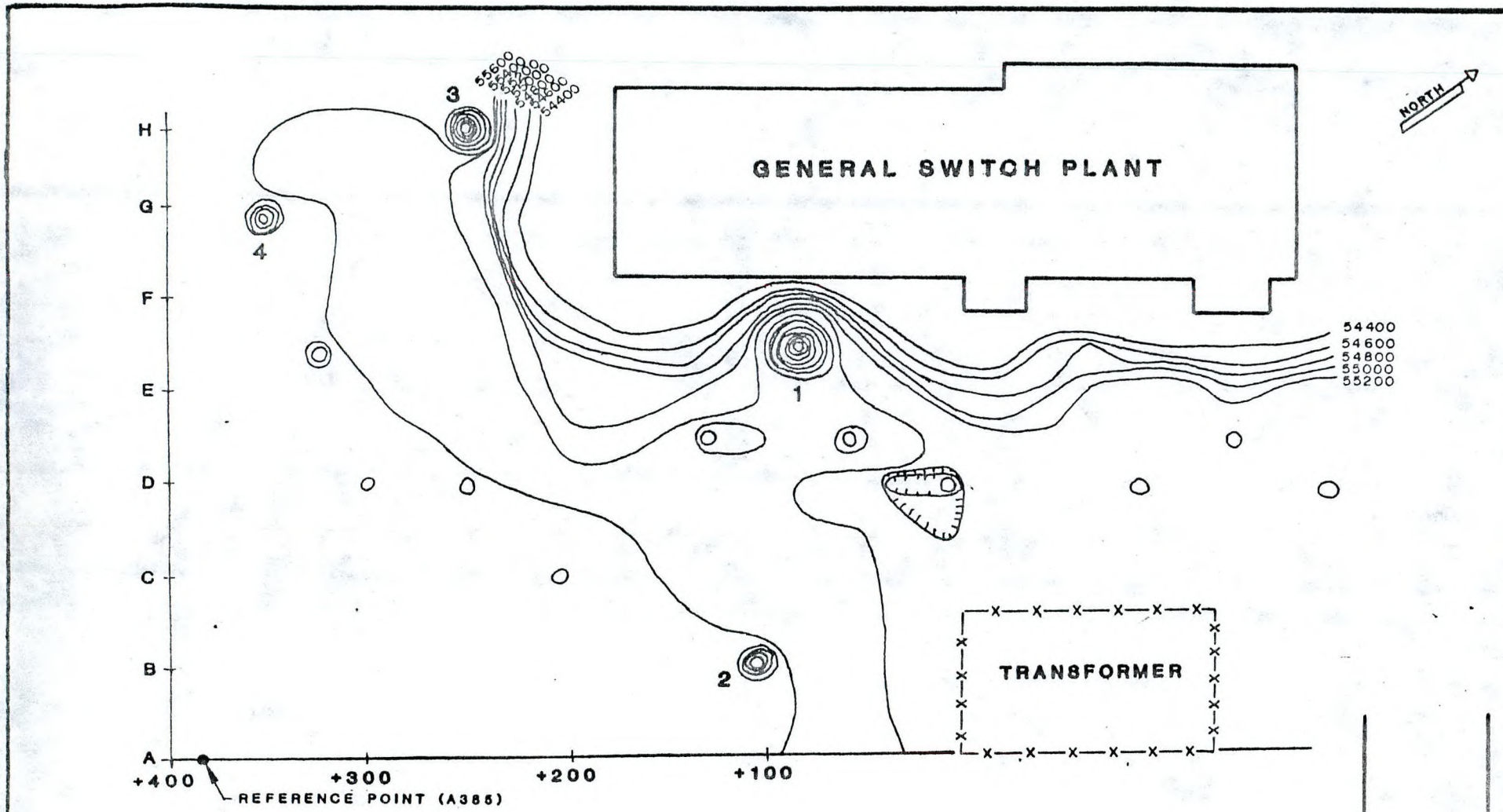


FIGURE III-3

MAGNETOMETRY CONTOUR MAP
GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

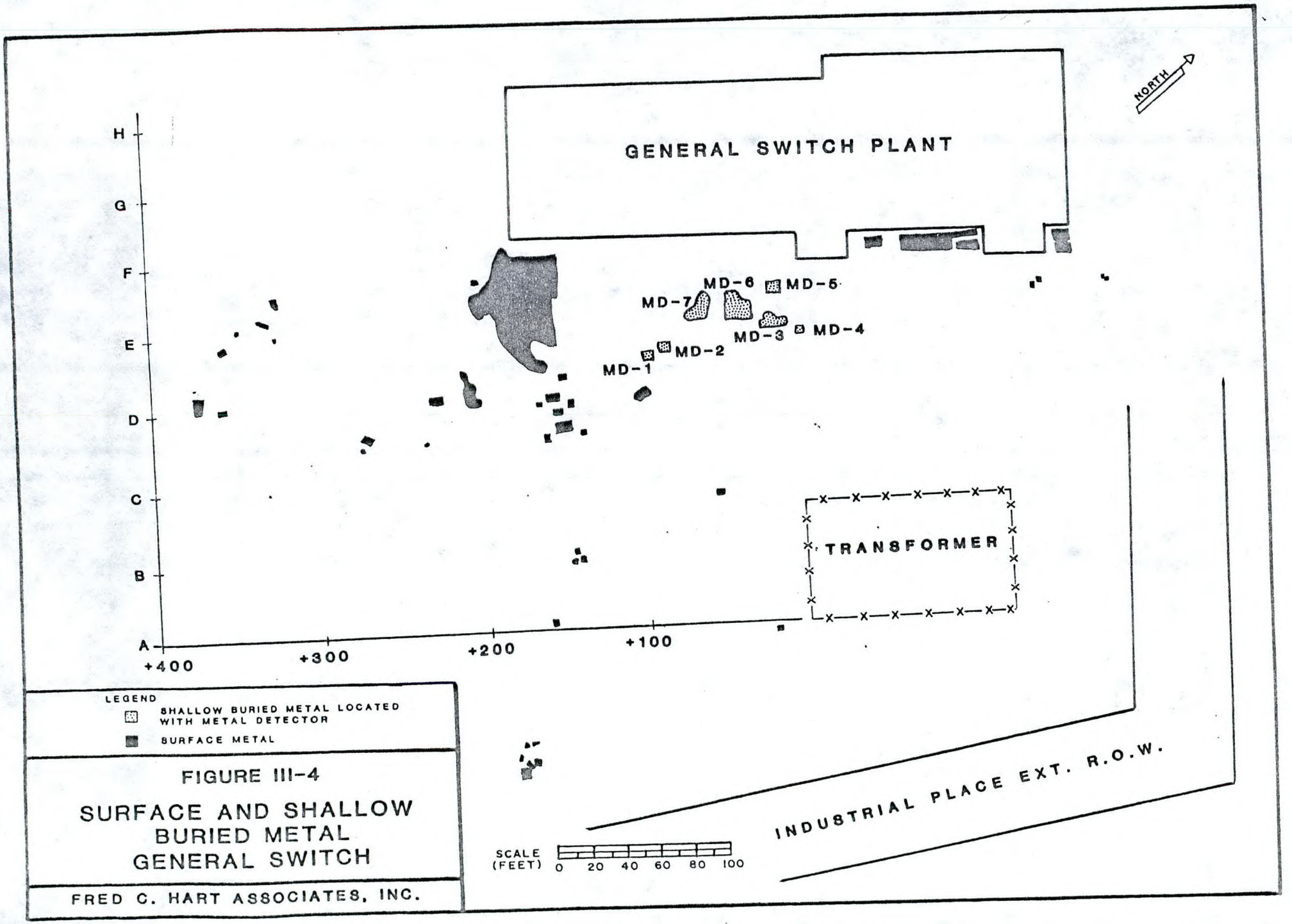


FIGURE III-4

SURFACE AND SHALLOW BURIED METAL GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

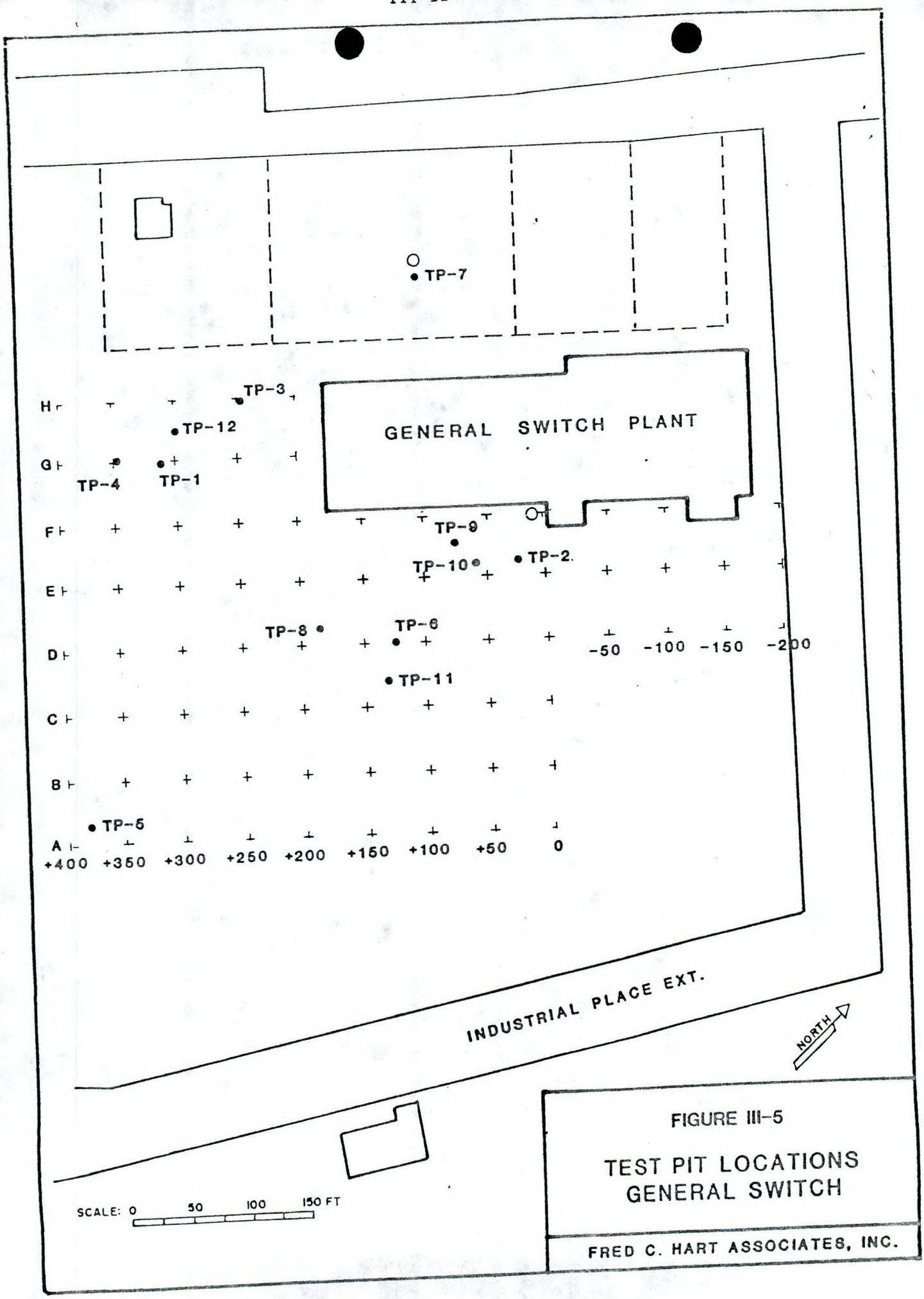


FIGURE III-5

TEST PIT LOCATIONS
GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

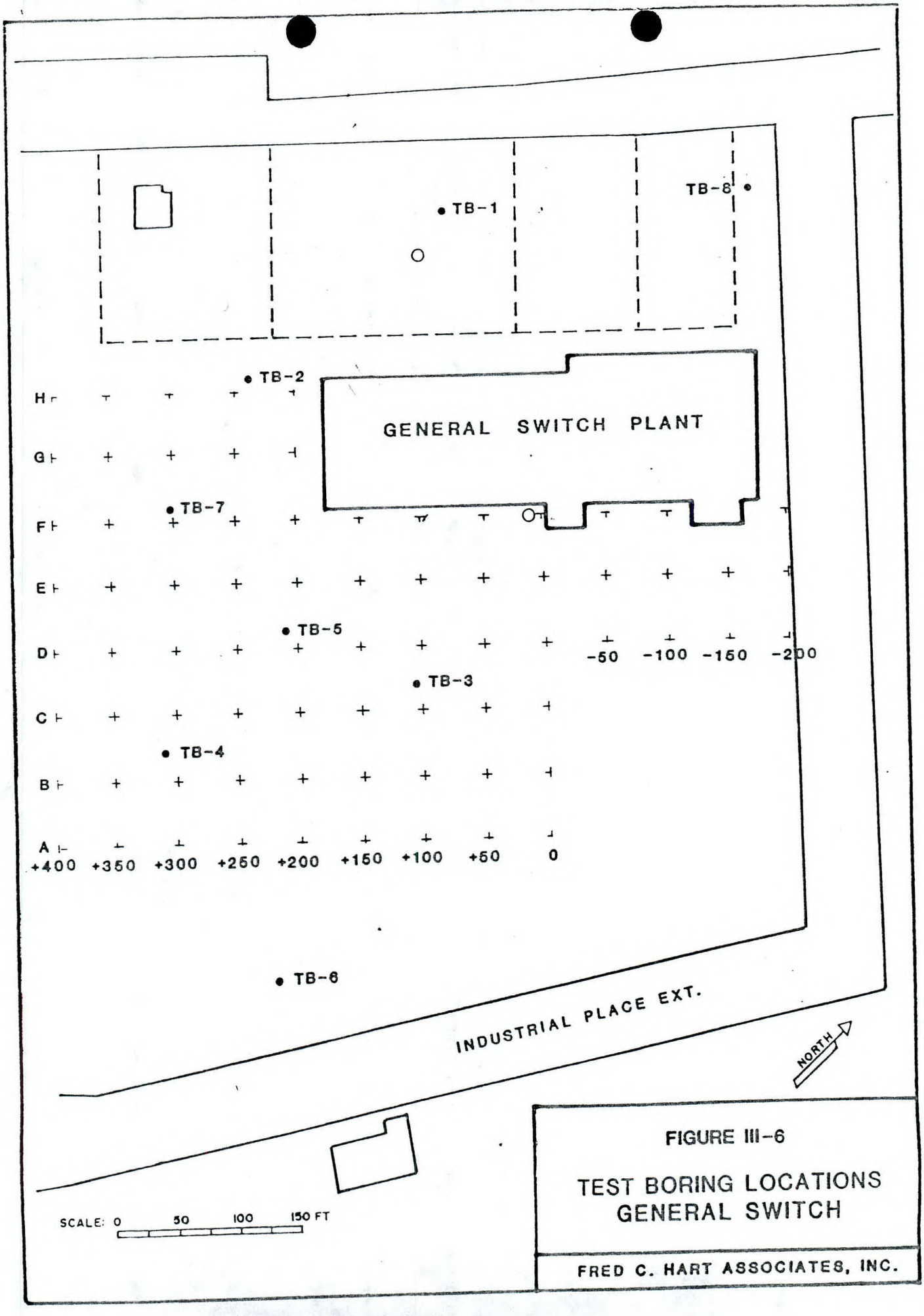


FIGURE III-6

TEST BORING LOCATIONS
GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

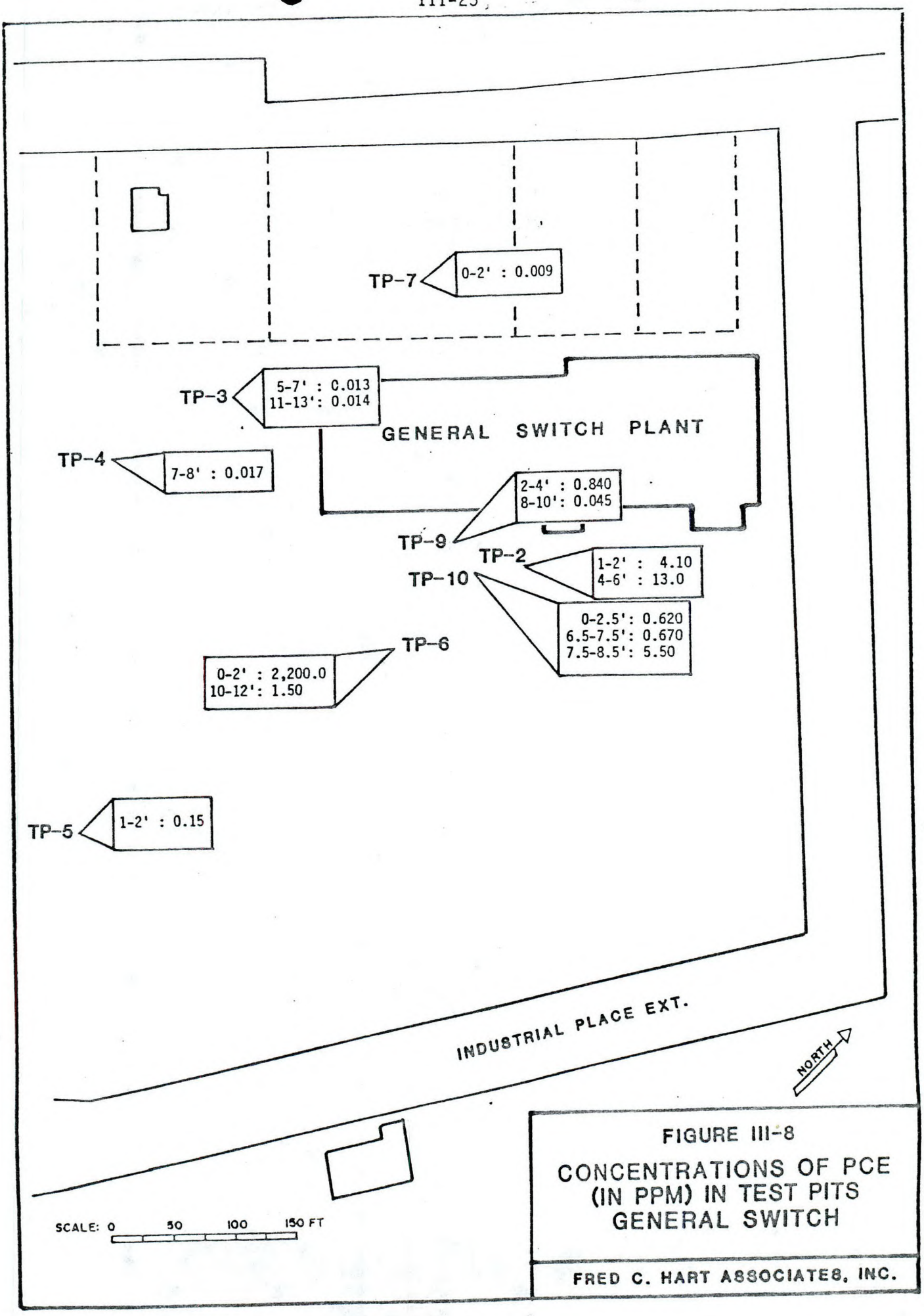


FIGURE III-8

CONCENTRATIONS OF PCE (IN PPM) IN TEST PITS GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

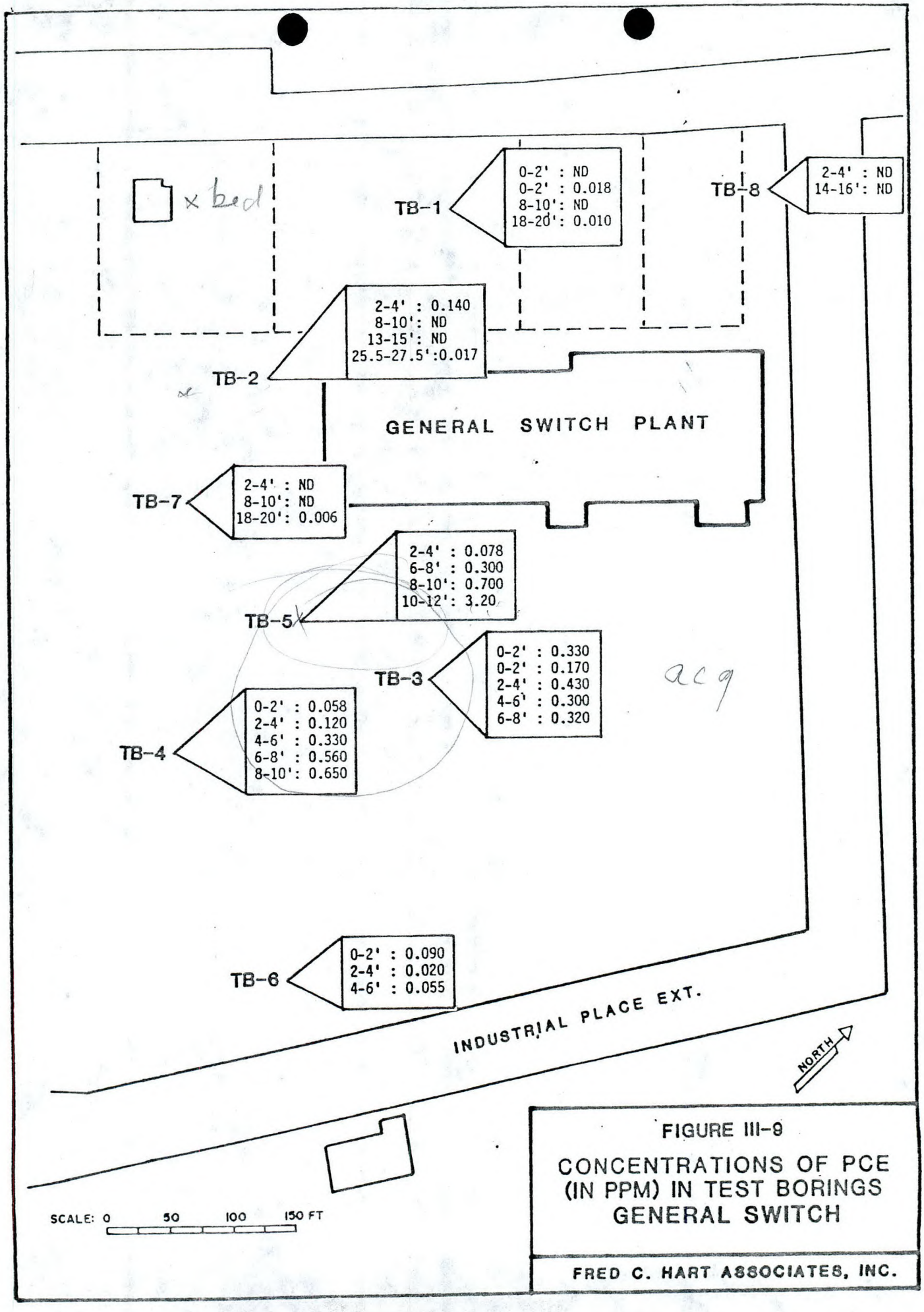


FIGURE III-9

CONCENTRATIONS OF PCE (IN PPM) IN TEST BORINGS GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

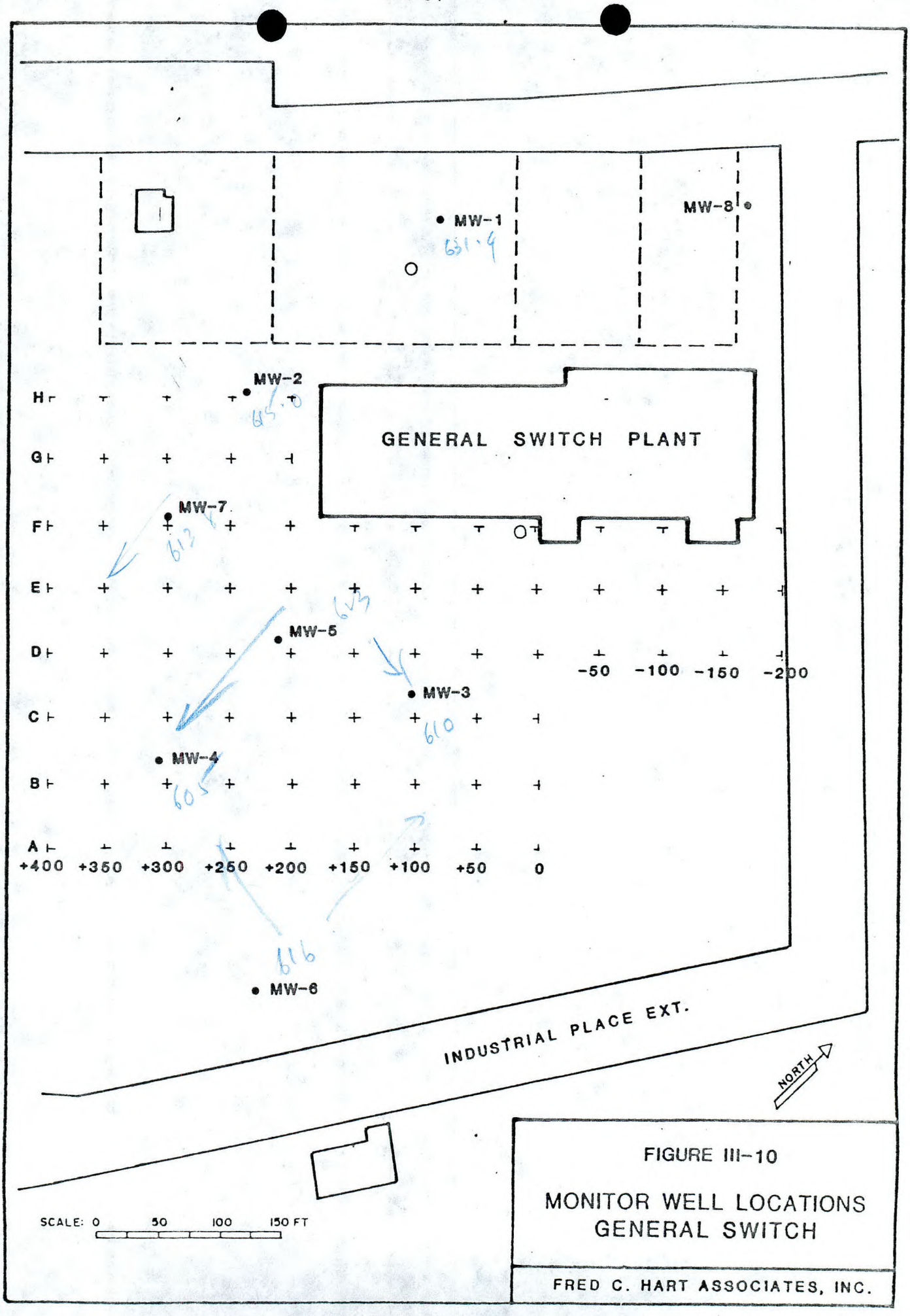


FIGURE III-10

MONITOR WELL LOCATIONS
GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

TABLE III-7

WELL CASING ELEVATIONS AND WATER LEVEL MEASUREMENTS

Well No.	Casing Elevation (ft above MSL)	Depth (ft) to Bottom of Well	Water Level Measurements (ft)**				
			9-13-84	9-14-84		9-19-84	
				AM	PM	AM	PM
1	648.17 631.4	21.43	18.01	16.43	16.58	16.90	16.99
2	635.05 615.09	39.01	20.33	20.03	19.42	20.34	20.25
3	622.29 610.01	13.10	12.21	12.24	12.11	12.32	12.43
4	615.29 605.07	10.83	10.20	9.87	9.90	10.28	10.83
5	623.95 623.95	13.21	13.11	13.07	Dry	Dry	Dry
6	620.60 616.0	7.01	6.23	4.94	4.35	4.59	4.51
7	624.77 613.8	20.19	12.80	10.83	19.13	11.11	11.07
8	651.17 ?	14.06	Dry	Dry	Dry	Dry	Dry

* Casing measurement point elevation
**Depth to wall as measured from casing measurement point

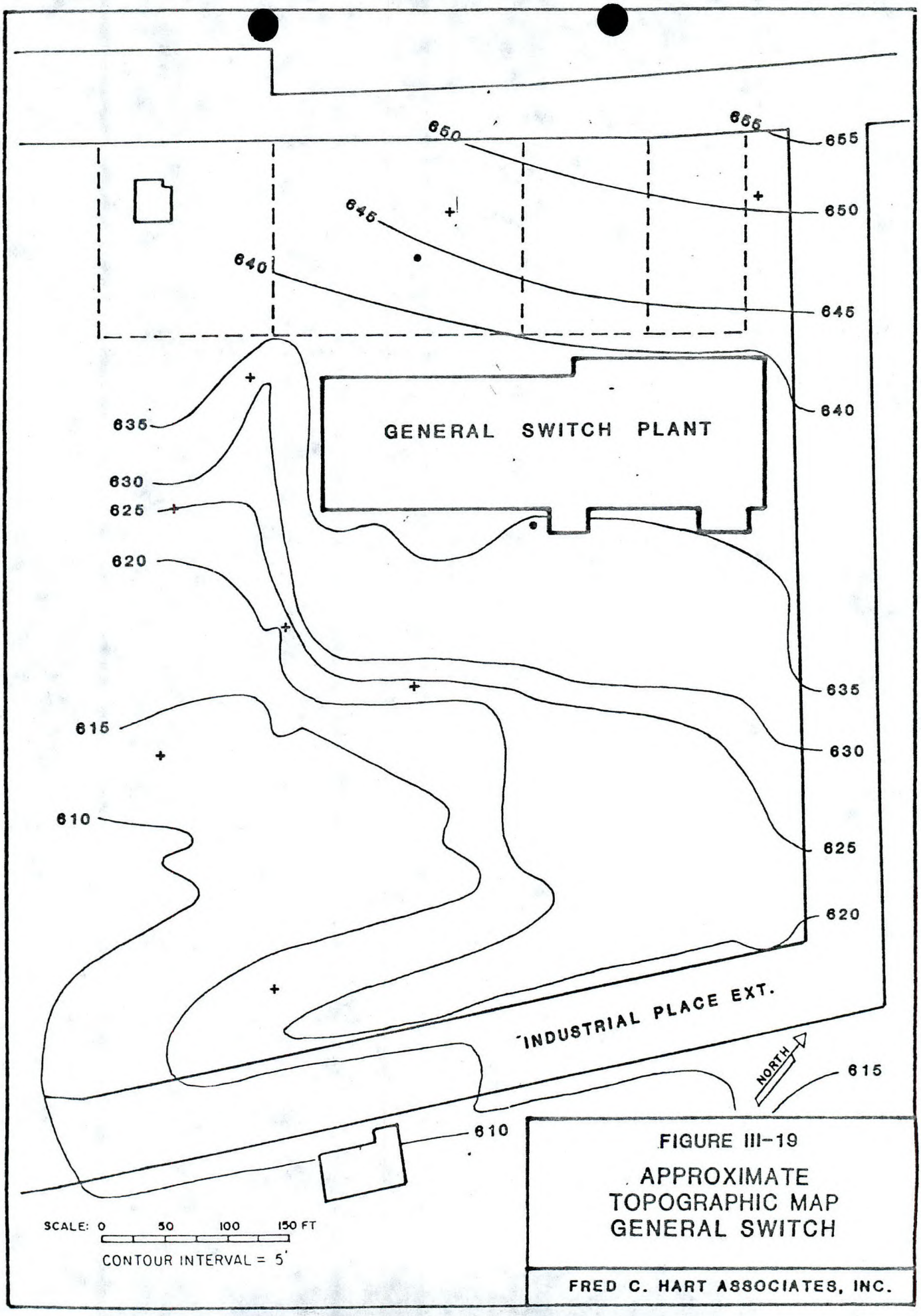


FIGURE III-19

APPROXIMATE TOPOGRAPHIC MAP GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

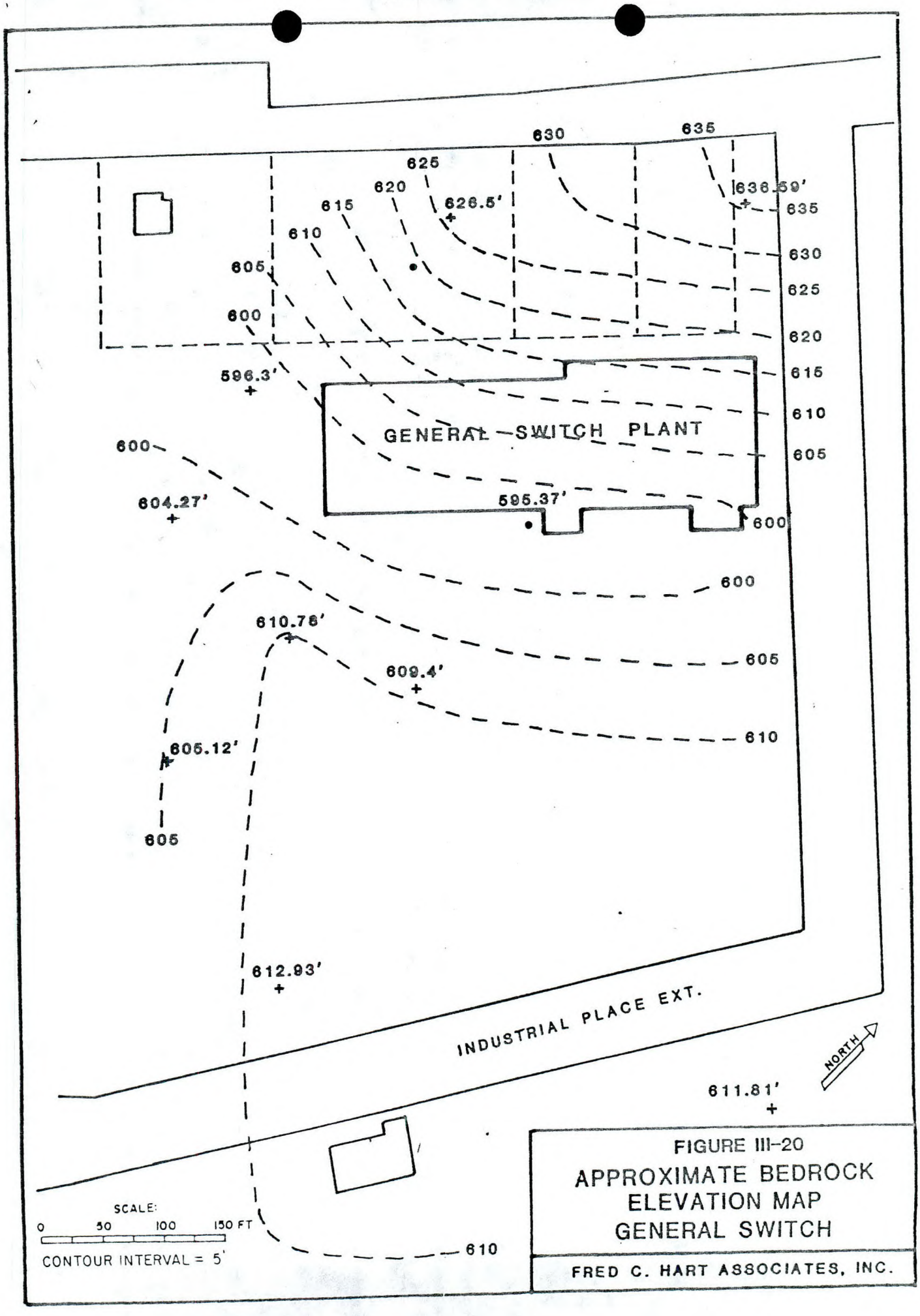
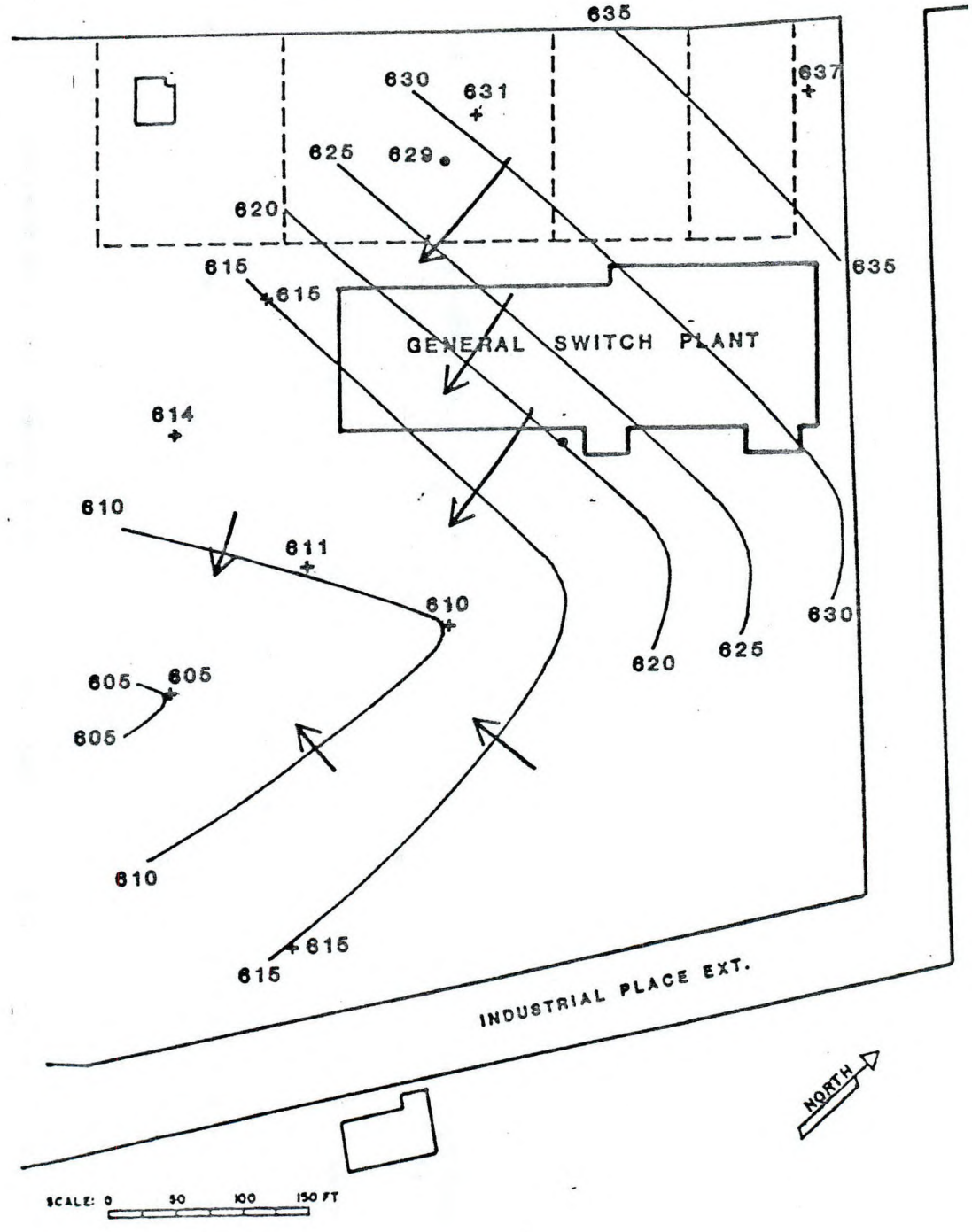


FIGURE III-20

APPROXIMATE BEDROCK ELEVATION MAP GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.



LEGEND

- WATER LEVELS MEASURED IN WELLS OPEN TO BASE OF SHALLOW TILL AND TOP OF SHALLOW BEDROCK
- 610 —— 610 CONTOUR OF WATER LEVELS MEASURED 9-14-84
- → POTENTIAL FLOW DIRECTION

CONTOUR INTERVAL = 5'

FIGURE III-21

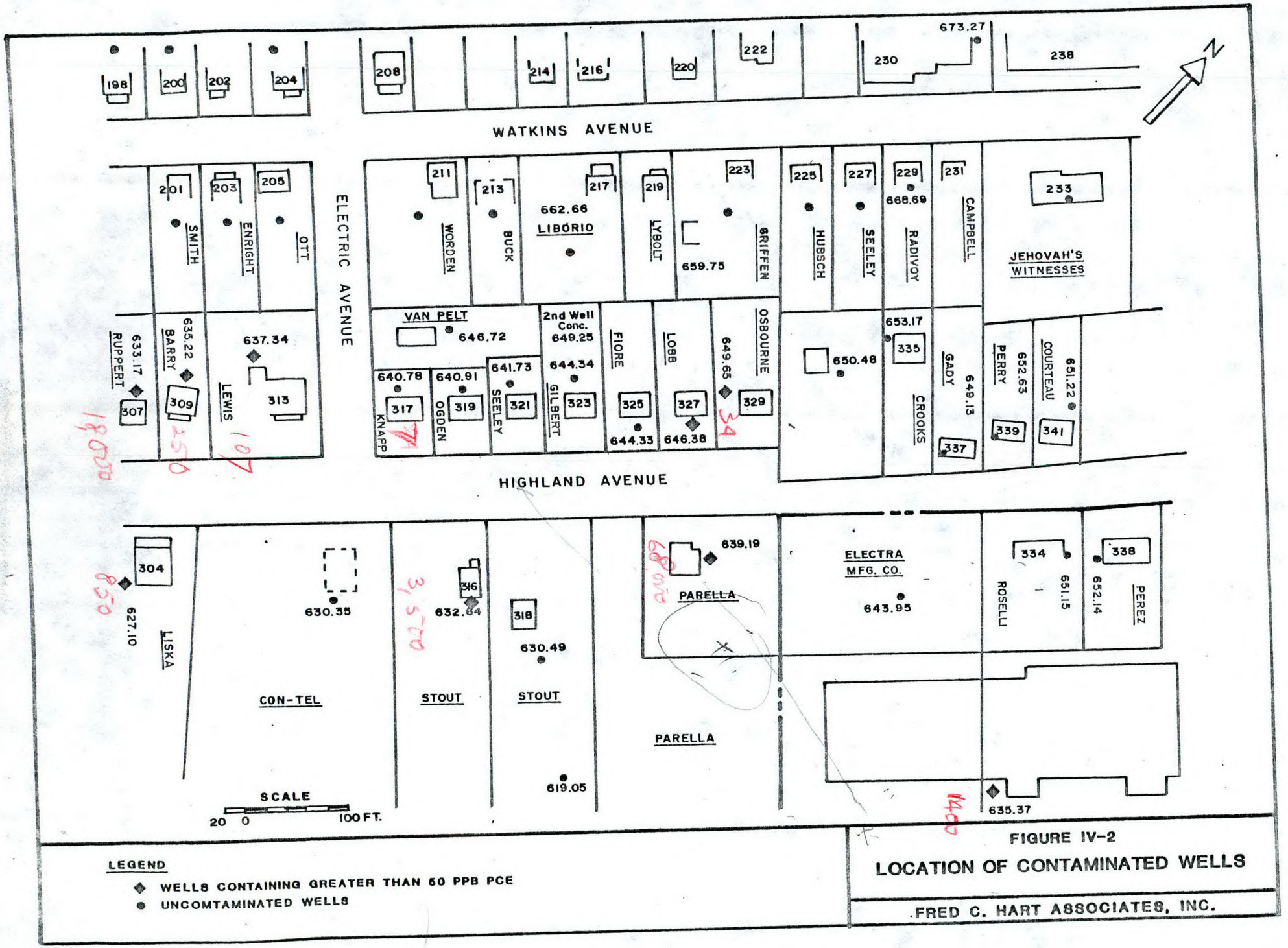
CONTOUR MAP OF WATER LEVELS* GENERAL SWITCH

FRED C. HART ASSOCIATES, INC.

TABLE III-8

PRINCETON TESTING ANALYSES: MONITOR WELL SAMPLES
(PCE VALUES IN ppm)

Well	Concentration (9-19-84)	Quality of Development and Recovery in Well
MW-1	0.001	Limited development, Slow recovery
MW-2	0.350	Full development, Good recovery
MW-3	27.0	Poor development, Poor recovery
MW-4	15.0	Poor development, Poor recovery
MW-5	Dry	Poor development, No recovery
MW-6	0.076	Poor development, Slow recovery
MW-7	0.034	Limited development, Slow recovery
MW-8	Dry	Poor development, No recovery



LEGEND

- ◆ WELLS CONTAINING GREATER THAN 50 PPB PCE
- ● UNCONTAMINATED WELLS

FIGURE IV-2

LOCATION OF CONTAMINATED WELLS

FRED C. HART ASSOCIATES, INC.