

**EXECUTIVE SUMMARY
PROPOSED REMEDIAL ACTION PLAN**

SITE NAME AND LOCATION

Columbia Ribbon and Carbon Manufacturing Company Site
Also Known as: Powers Chemco Site
City of Glen Cove
Nassau County, New York
Site Code: 130028

STATEMENT OF PURPOSE

This document describes the proposed remedial action for the Columbia Ribbon and Carbon Manufacturing Company Site "Columbia" (also known as the Powers Chemco Site), developed in accordance with the New York State Environmental Conservation Law (ECL), and consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC Section 9601, et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). Exhibit A identifies the documents that comprise the Administrative Record for the site. The documents in the Administrative Record are the basis for the proposed remedial action.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action described in this Proposed Remedial Action Plan, present a current or potential threat to public health, welfare, and the environment.

STATEMENT OF BASIS

This proposal is based upon the administrative record for the Columbia Site. A copy of the record is available for public review and/or copying at the following locations:

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7010
Hours: 8:30 AM - 4:45 PM Monday - Friday

New York State Department of Environmental Conservation
Region 1 Office
SUNY Campus, Building 40
Stony Brook, New York 11794
Hours: 8:30 AM - 4:30 PM Monday - Friday

Glen Cove Public Library
Glen Cove Avenue
Glen Cove, New York 11545

The following documents are the primary components of the administrative record:

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- B. Project Chronology
- C. Excerpt from Registry of Inactive Hazardous Waste Sites

**PROPOSED REMEDIAL ACTION PLAN
COLUMBIA RIBBON AND CARBON COMPANY SITE
A.K.A. POWERS CHEMCO SITE (#130028)**

I. SITE LOCATION AND DESCRIPTION

The former Columbia Ribbon and Carbon Manufacturing Company ("Columbia") disposal site is located in the City of Glen Cove, New York, Nassau County. The site is approximately 1200 feet north and 60 feet above the eastern end of Glen Cove Creek, which empties into Hempstead Harbor. Figure 1 shows the location of the site with respect to Glen Cove.

To the north and east of the site, properties are predominantly residential. To the west of the site is an industrial corridor that includes four other inactive hazardous waste disposal sites. These are the Mattiace Petro Chemicals Site (#130017), the Li Tungsten Site (#130046), the Captain's Cove Condominiums Site (#130032), and the Edmos Corporation Site (#130036).

The disposal area is approximately one and one-half acres in size and is being used as a parking area by the current owner, Konica Imaging U.S.A., Inc., (formerly Powers Chemco, Inc.). Figure 2 is a site plan for the site showing its approximate dimensions and orientation with respect to the surrounding buildings.

There are three principal aquifers in the area of the site. These are the upper glacial, Magothy, and Lloyd aquifers. Also, local bodies of perched groundwater are common in the area. The Magothy aquifer is the principal source of drinking water in the vicinity of the site. The City of Glen Cove draws water from the 200-300 foot zone of the Magothy. Based upon regional hydrogeological data, groundwater in the shallow upper glacial aquifer flows to the south towards Glen Cove Creek.

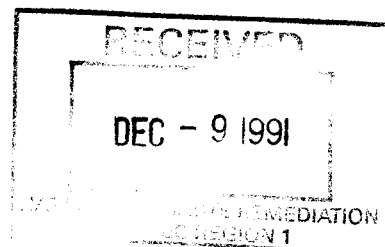
II. SITE HISTORY

For an undetermined period prior to 1979, Columbia disposed of wastes from the production of blue printing inks, carbon paper, and typing ribbon in open pits behind their manufacturing buildings. Apparently, wastes from 55-gallon drums were dumped into the open pits. The drums were then crushed and added to the pits before burial. An aerial photograph taken between 1950 and 1960 showed the location of two or three of these pits. Additionally, wastes were pumped through a two inch galvanized pipe from the Columbia plant directly into the pits. The hazardous and industrial wastes disposed of in the area include, but were not necessarily limited to, toluene, ethylbenzene, ethylacetate, and other residues from the formulation of printing inks.

In 1979, Powers Chemco, Inc. (Chemco) purchased a parcel of land, including the disposal area, from Columbia for use as a parking area. Chemco, a manufacturer of photographic equipment and supplies, was unaware that the parcel was heavily contaminated with hazardous and industrial wastes. In 1983, Chemco discovered the subsurface contamination while excavating in the area.

PROPOSED REMEDIAL ACTION PLAN
COLUMBIA RIBBON AND CARBON MANUFACTURING COMPANY SITE
ALSO KNOWN AS
THE POWERS CHEMCO SITE
NASSAU COUNTY, NEW YORK
ID NUMBER 130028

PREPARED BY
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION
FEBRUARY 1991



of two additional groundwater monitoring wells; one to replace a damaged well and one for use in a pump test to gather information on the yield and other characteristics of the sand and gravel unit. Additionally, the work plan identified a series of remedial alternatives to be evaluated in the feasibility study.

The agreement to perform the RI/FS was incorporated into a third Order on Consent signed April 4, 1988. The work was performed over the summer of 1988 and the first draft of the RI/FS Report was submitted in September 1988. The Department disapproved the first draft in May 1989. The second draft was submitted in March 1990 which was also disapproved in May 1990. The third draft was submitted February 1, 1991.

During the development of the RI/FS Report, Powers Chemco, Inc. was renamed to Chemco Technologies, Inc. which was subsequently purchased and renamed Konica Imaging U.S.A., Inc. A summary of the major milestones that have occurred during the course of the project are included as Exhibit 2.

III. CURRENT SITE STATUS

A. Summary of Field Investigations:

The following paragraphs summarize the components and conclusions of the field investigations performed at the site. For more detailed information regarding the individual investigations or for additional regional information, refer to the appropriate report(s) listed in the Administrative Record (Exhibit 1). A brief summary of the current conditions at the site can be found below in Section III.B, page 5.

The initial hydrogeologic investigation performed between November 1983 and February 1984 was commissioned to (1) obtain a preliminary assessment of the extent of the soil and groundwater contamination resulting from Columbia's waste disposal practices, and (2) estimate the number of buried drums in the disposal area. The techniques employed to accomplish these goals included a records search, a soil vapor survey, three surface geophysical surveys (electrical resistivity, metal detection, and magnetometry) as well as the completion of 18 test pits and six soil borings.

The test pits and soil borings were completed to confirm the results of the indirect geophysical techniques. Five of the soil borings were converted to monitoring wells. The results of soil and groundwater analyses (pre-removal action) are summarized in Tables 1 and 2. The predominant compounds detected were benzene, toluene, ethylbenzene, and xylenes. These compounds were also found to be predominant components in samples of ink and sludge taken from waste drums in the test pits.

The test pits and soil borings showed that the geology of the site is a complex combination of pockets of sand and gravel within deposits consisting largely of silt and/or clay. The disposal area appeared to be largely contained within one of these sand and gravel units underlain by several layers of low permeability materials.

for the performance of a Remedial Investigation/Feasibility Study (RI/FS). The RI/FS work plan was submitted in October 1987 and approved in December 1987. The work was carried out under a third order on consent between the Department and Powers Chemco dated April 4, 1988.

The 1988 field work consisted of the installation of two groundwater monitoring wells, the performance of a pump test, and the sampling/analysis of groundwater taken before and after the pump test. One of the wells was installed to replace a well which had become damaged (MW-3). As with the original well, the replacement well (MW-3R) has never yielded enough water for sampling. During 1990 MW-3R has consistently been found to be dry despite a year of greater than average precipitation. It is concluded that MW-3R is outside of the saturated sand and gravel unit containing the disposal area and is not screened deep enough to intercept the permanent water table at that location.

The second well was installed as a pump test well to gather information on the yield of the unit. This information was used along with slug test data from the other monitoring wells as the basis for the conceptual design of a pump-and-treat alternative in the feasibility study. The average hydraulic conductivity of the unit was estimated to be 3.6×10^{-5} feet per second and the average groundwater velocity was estimated to be 0.38 feet per day.

The analytical results of samples of groundwater taken from TW-1 before and after the pump test indicated essentially no change in the concentration of the detected contaminants over the course of the test period (less than five hours). As with previous results, toluene was present in the highest concentrations (62.8 ppm vs 2.5 ppm for the next highest constituent, xylenes).

B. Summary of Site Conditions:

For ease of reference, the following information summarizes the main characteristics of the Columbia site (all values are approximate):

Area to Remediate:	1.4 acres
Area of Highest Contamination:	0.5 acres
Average Depth to Water:	10 feet
Average Depth to Confining Unit:	20 feet
Approximate Volume to Remediate:	23,000 cubic yards
Contaminated Media:	groundwater & saturated soil

Predominant Contaminants:

<u>Contaminant</u>	<u>Maximum Groundwater Concentration (ppb)</u>
toluene	118,000
xylenes	2,510
ethylbenzene	503
benzene	471
phenol	133

(continued)

V. GOALS FOR THE REMEDIAL ACTIONS

The remedial alternative proposed for the site by the Department was developed in accordance with the New York State Environmental Conservation Law (ECL) and is consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC Section 9601, et. seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The criteria used in evaluating the potential remedial alternatives can be summarized as follows:

1. Compliance with Applicable or Relevant and Appropriate New York State Standards, Criteria and Guidelines (SCGs)--SCGs are divided into the categories of chemical-specific (e.g. groundwater standards), action-specific (e.g. design of a landfill), and location-specific (e.g. protection of wetlands).
2. Protection of Human Health and the Environment--This criterion is an overall and final evaluation of the health and environmental impacts to assess whether each alternative is protective. This is based upon a composite of factors assessed under other criteria, especially short/long-term effectiveness and compliance with SCGs.
3. Short-term Impacts and Effectiveness--The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment is evaluated. The length of time needed to achieve the remedial objectives is estimated and compared with other alternatives.
4. Long-term Effectiveness and Permanence--If wastes or residuals will remain at the site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude and nature of the risk presented by the remaining wastes; 2) the adequacy of the controls intended to limit the risk to protective levels; and 3) the reliability of these controls.
5. Reduction of Toxicity, Mobility, and Volume--Department policy is to give preference to alternatives that permanently and significantly reduce the toxicity, mobility, and volume of the wastes at the site. This includes assessing the fate of the residues generated from treating the wastes at the site.
6. Implementability--The technical and administrative feasibility of implementing the alternative is evaluated. Technically, this includes the difficulties associated with the construction and operation of the alternative, the reliability of the technology, and the ability to effectively monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining special permits, rights-of-way for construction, etc.
7. Cost--Capital and operation and maintenance costs are estimated for the alternatives and compared on a present worth basis. Although cost is the last criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, lower cost can be used as the basis for final selection.

Discharge of Treated Groundwater:

3. Discharge to Glen Cove Creek--Once collected groundwater is treated to acceptable levels, it could be discharged to Glen Cove Creek under an appropriate discharge approval from the Department.
4. Discharge to POTW--Dependent upon approval from the local municipality, treated groundwater could be discharged into the local sanitary sewer system for additional treatment in the local Publicly Owned Treatment Works (POTW).
5. Recharge Groundwater--If a groundwater pump-and-treat system were selected as the remedial alternative for the site, recharging treated groundwater into the disposal area would shorten the time needed to complete the cleanup. Reinjecting treated groundwater into the treatment area would help to flush contaminants from the soils and allow a higher rate of groundwater withdrawal. Care would be needed to ensure that recharge would not enhance the potential for contaminant migration out of the disposal area.

Groundwater Treatment:

6. Carbon Adsorption--The use of activated carbon to treat contaminated groundwater is common. The contaminants present at the site are amenable to removal by this method. Adequate supplies are readily available.
7. Air Stripping--This technology is also commonly employed and found to be effective in removing volatile contaminants from groundwater. A countercurrent air stripping tower can be designed based upon existing information about the site. The results of a pilot test would be used to confirm the design and determine the need for additional water treatment or for treatment of the vapors discharged from the process.
8. UV Light Enhanced Oxidation--Although not as common as activated carbon treatment or air stripping, the treatment of groundwater by chemical oxidation enhanced by ultraviolet (UV) light passed screening as a feasible alternative. The oxidant hydrogen peroxide is photolyzed (split by light) by ultraviolet light into hydroxyl radicals which react to degrade the contaminants.
9. Vacuum Extraction--Volatile contaminants in unsaturated soils can be removed by extracting, under vacuum, contaminant laden vapors in the pore spaces of the soil. A series of vertical extraction wells (screened pipe) are inserted into the contaminated soil and connected to pumps capable of pulling the vapors out of the soil. These vapors are then treated as described below. The technique can also be applied to contaminated soils below the water table by first lowering the water table to expose the soils and then perform the vacuum extraction.

Vapor Treatment:

10. Vapor Phase Carbon Adsorption--Contaminated vapors from the treatment of groundwater or soil can be treated by being passed through containers of activated carbon, similar to water treatment.

6. Vapor Incineration--Contaminated vapors may also be treated by high temperature (2,000° F) combustion in a vapor incineration unit. To obtain the required temperature, the fuel value of the vapors is supplemented by the injection of natural gas. As with catalytic oxidation, the presence of halogenated compounds may result in the production of acid gases.
7. Vapor Flaring--Vapor flaring is a combustion process that relies primarily upon the fuel value of the vapor to maintain a flame. At this site, the fuel value of the vapors would not likely be adequate to sustain a flare.

B. Evaluation of the Alternatives:

Remediation of the Columbia site entails addressing contaminated groundwater; soils above the water table (unsaturated); soils below the water table (saturated); treatment residuals (e.g. off-gases from air stripping); and monitoring. The feasible remedial technologies described above can be distributed into categories as follows:

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A. Groundwater Collection</p> <ol style="list-style-type: none"> 1. Recovery Wells 2. Recovery Trenches 3. Vacuum Extraction Wells | <p>B. Groundwater Treatment:</p> <ol style="list-style-type: none"> 1. Activated Carbon 2. Air Stripping 3. UV Light/Chemical Oxidation |
| <p>C. Soil Treatment:</p> <ol style="list-style-type: none"> 1. Vacuum Extraction 2. Groundwater Flushing | <p>D. Vapor Treatment:</p> <ol style="list-style-type: none"> 1. Activated Carbon 2. Catalytic Oxidation 3. Incineration |

Different combinations of these technologies were grouped into nine remedial alternatives and evaluated in the feasibility study. Department policy (Technical and Administrative Guidance Memorandum #4030: "Selection of Remedial Actions at Inactive Hazardous Waste Sites") provides a method of scoring the extent to which a proposed remedial alternative complies with the remedial goals stated above in Section V. Table 7 presents the results of that comparison for each of the remedial alternatives. Some of the scoring contains subjective considerations and should not be interpreted in absolute terms.

The results of the scoring show that, except for the No-Action alternative, the final scores were relatively close with Alternative VI (Dual Phase Vacuum Extraction) receiving the highest score. A closer inspection shows that Alternative VI would have received a significantly higher score than the others if the cost wasn't so much higher than the others.

In all cases, the evaluation of the No-Action alternative is carried through to the end of the analysis for comparison purposes. At this site, the No-Action alternative is not acceptable since soil and groundwater would remain contaminated at levels that present a significant threat to the environment. Since the cost of the No-Action alternative is so much lower than the others, the cost for the next lowest cost alternative was used as the basis for comparing the viable alternatives. This prevents a skewing of the results.

FIGURES

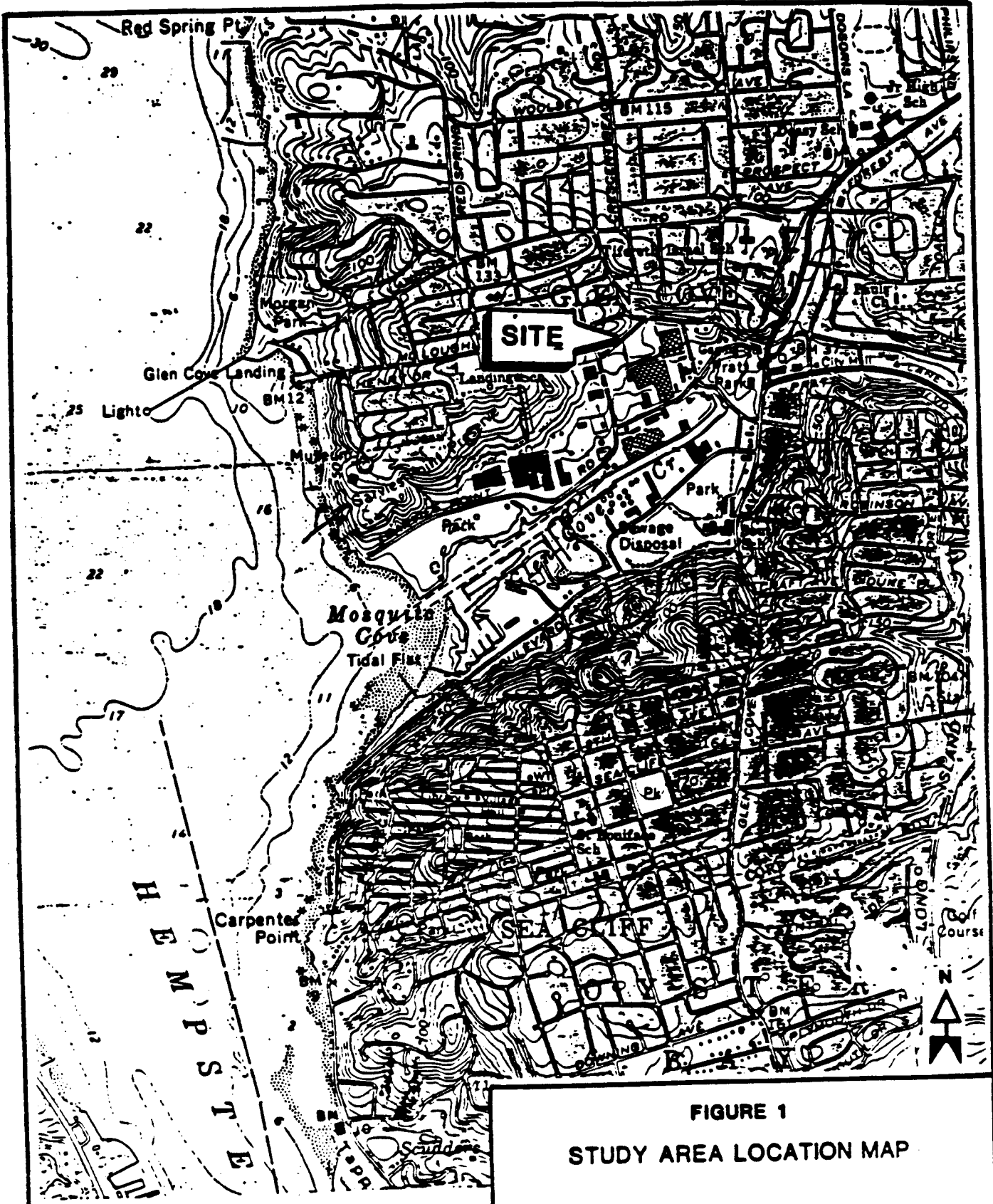


FIGURE 1
STUDY AREA LOCATION MAP

SCALE: 1000 0 1000 (FT)

FRED C. HART ASSOCIATES, INC.

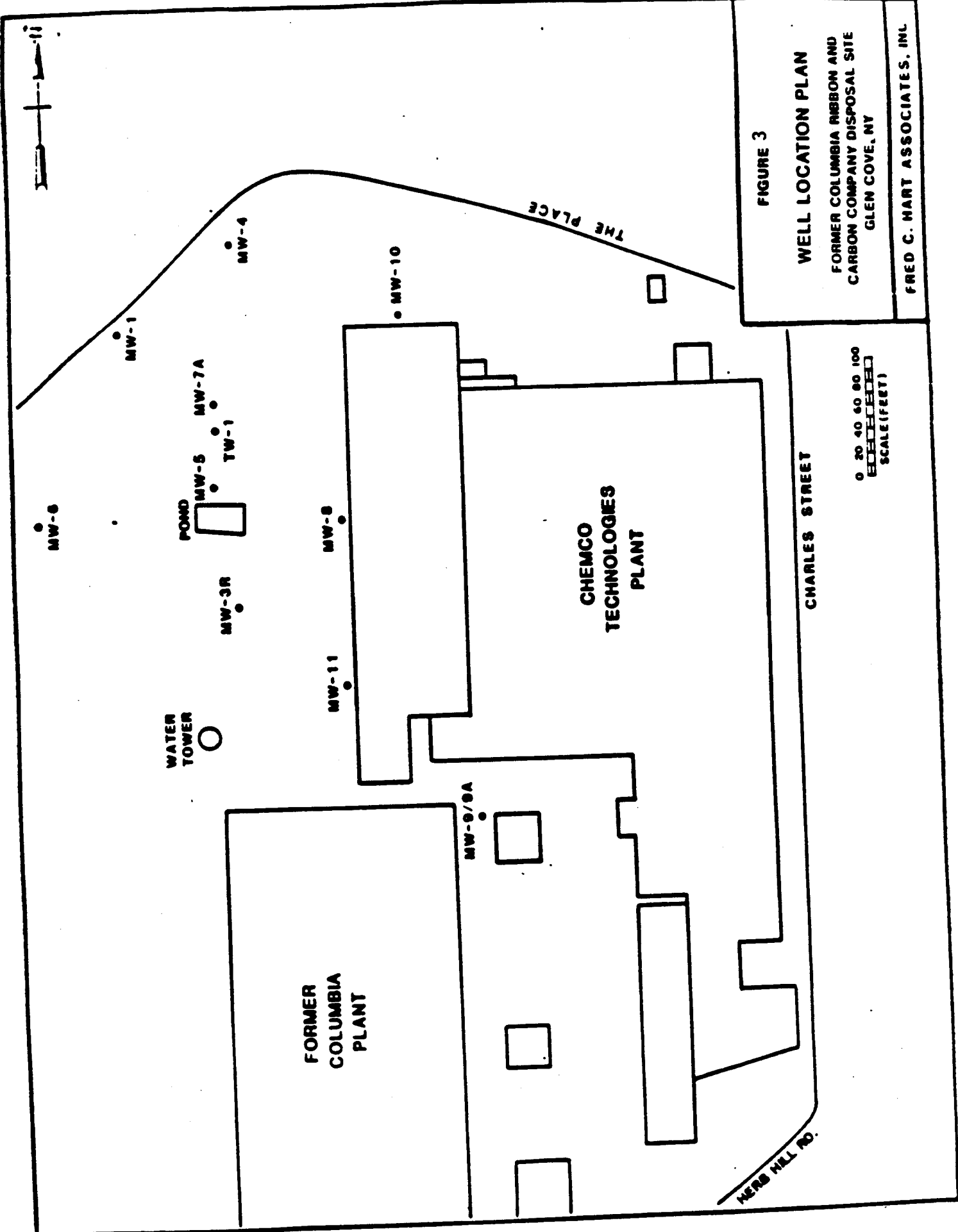


FIGURE 3

WELL LOCATION PLAN

FORMER COLUMBIA RIBBON AND
CARBON COMPANY DISPOSAL SITE
GLEN COVE, NY

FRED C. HART ASSOCIATES, INC.

CHARLES STREET

0 20 40 60 80 100
SCALE (FEET)

HERB HILL RD.

THE PLACE

FORMER
COLUMBIA
PLANT

CHEMCO
TECHNOLOGIES
PLANT

WATER
TOWER

POND

MW-6

MW-1

MW-3R

MW-5

MW-7A

TW-1

MW-8

MW-11

MW-10

MW-9/9A

TABLES

TABLE 1

ORGANIC AND INORGANIC CONSTITUENTS
DETECTED IN SOIL SAMPLES FROM TEST PITS
AT THE FORMER COLUMBIA RIBBON AND CARBON COMPANY
DISPOSAL SITE, GLEN COVE, NY
December 1983

<u>Volatile Organic Priority Pollutants¹</u>	<u>Concentration Range (ug/kg)</u>
Chloroform	<10 - 199
Toluene	<10 - 2,150
Trichloroethene	ND ² - 14
Ethylbenzene	ND - 6,364
Tetrachloroethene	ND - 950
Benzene	ND - 758
Methylene Chloride	ND - <100
Acrolein	ND - <100
1,1,1-Trichloroethane	ND - 5,269
1,1-Dichloroethane	ND - 852
Trans.-1,2-Dichloroethene	ND - 296
p,m,o-Xylenes ³	ND - 22,005
<u>Inorganics (Total)</u>	
Arsenic	663 - 6,763
Beryllium	ND - 510
Cadmium	210 - 385
Chromium	683 - 22,320
Copper	5,710 - 13,490
Lead	ND - 4,030
Mercury	50 - 154
Nickel	996 - 7,010
Zinc	11,150 - 30,310
pH	4.91 - 7.09

NOTES:

1. Additional non-priority pollutant volatile organics were identified through an analytical library search. Approximately 26 volatile organic compounds were identified with concentrations ranging from ND to > 4000 ug/kg. Quantification beyond this range was not possible. The specific organics which were identified are summarized in the April 1984 report.
2. ND is non-detect.
3. Although p,m,o-Xylenes are not priority pollutants it is incorporated into this table for comparison with the benzene and toluene levels.

TABLE 2
(CONTINUED)

SUMMARY OF ORGANIC AND INORGANIC CONSTITUENTS
DETECTED IN GROUNDWATER SAMPLES FROM MONITORING WELLS
AT THE
FORMER COLUMBIA RIBBON AND CARBON COMPANY DISPOSAL SITE
GLEN COVE, NEW YORK

FEBRUARY 1984

<u>Parameters (mg/l) ³</u>	<u>MW-1</u>	<u>MW-4</u>	<u>MW-5</u>	<u>MW-6</u>
Antimony	<0.1	<0.1	<0.1	<0.1
Arsenic	0.005	0.009	0.034	0.004
Beryllium	<0.003	<0.003	<0.003	<0.003
Cadmium	<0.003	<0.003	<0.003	<0.003
Chromium	<0.010	<0.010	<0.010	<0.010
Copper	0.079	0.051	<0.010	<0.010
Lead	0.048	<0.025	<0.025	<0.025
Mercury	0.0001	<0.0001	<0.0001	<0.0001
Nickel	0.041	<0.020	<0.020	<0.020
Silver	<0.001	<0.001	<0.001	<0.001
Selenium	<0.006	<0.006	<0.006	<0.006
Thallium	<0.050	<0.050	<0.050	<0.050
Zinc	0.170	0.060	0.061	0.010
Cyanide	<0.020	<0.020	<0.020	<0.020
Total Phenols	0.012	0.133	0.000567	<0.005

NOTES:

1. < for organics indicates the compounds were present but below the method detection limit.
2. ND is Non-Detect.
3. < for inorganics indicates the parameter was below the method detection limit.

TABLE 4

**POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS
FOR GROUNDWATER
FORMER COLUMBIA RIBBON AND CARBON COMPANY DISPOSAL SITE
GLEN COVE, NEW YORK
(Concentrations in ug/l except where noted)**

<u>Parameter</u>	<u>Concentration Range¹</u>	<u>NYS Class GA Standard²</u>	<u>NYS Sanitary Code³ Subpart 5-1</u>	<u>Federal SDWA MCL^{4 6}</u>	<u>RfD mg/kg/day⁷</u>	<u>Drinking Water Concentration Based on RfD</u>
Benzene	ND-471	ND ⁴	5	5(F)	-	-
Chloroethane	ND-34	NA ⁵	5	NA	NA	-
1,1-dichloroethane	ND-120	NA	5	NA	0.1(b)	3,500
1,2-dichloroethane	ND-24	NA	5	5(F)	-	-
1,1-dichloroethene	ND-2	NA	5	7(F)	-	315
1,2-dichloroethene (Cis/trans)	ND-30	NA	5	70(Cis)(P) 100(trans)(P)	0.020(b)	700
Ethylbenzene	ND-503	NA	5	700(P)	0.1(b)	3,500
Tetrachloroethene	ND-30	NA	5	5(P)	0.01(b)	350
Toluene	ND-118,000	NA	5	2,000(P)	0.30(a)	10,500
Trichloroethene	ND-30	10	5	5(F)	-	-
Xylenes	ND-2,510	NA	5 (M+P+O ⁸)	10,000(P)	2.00	70,000
Phenol	ND-133	1	NA	NA	0.60(a)	21,000
Arsenic	5-34	25	50	50(F)	-	-
Lead	ND-48	25	50	50(F) ⁹	-	-

Notes:

- 1 - Range of concentrations of various parameters from monitoring data over three samplings except for phenol, arsenic and lead
 - 2 - New York State standards for Class GA groundwaters
 - 3 - New York State Sanitary Code Subpart 5-1, Public Water Supplies.
 - 4 - ND is non-detected, applicable value of 2 to 5 ug/l as reasonable detection limit.
 - 5 - NA - Not available or not applicable.
 - 6 - F=Final; P=Proposed; from 54 Fed. Reg. 22061, May 22, 1989. (Safe Drinking Water Act)
 - 7 - Reference Dose calculations based on:
 - (a) IRIS Database
 - (b) EPA Health Effects Assessment Summary Tables, Fourth Quarter, FY 1989.
 - 8 - A concentration of 5 ppb is applied to each isomer of xylene
 - 9 - Although the SDWA standard for lead is currently 50 ug/l, there is a proposed standard of 20 ug/l currently under review.
- NA - Not Available

TABLE 6
RESULTS OF REMEDIAL ACTION TECHNOLOGY SCREENING

<u>Technology</u>	<u>Screening Result</u>
Groundwater Extraction	
- Recovery Wells	Passed
- Subsurface Lateral Drains (<u>Recovery Trenches</u>)	<u>Passed</u>
Discharge Options	
- Discharge to Glen Cove Creek	Passed
- Discharge to POTW	Passed
- Recharge Groundwater	Passed
On-site Groundwater Treatment	
- Carbon Adsorption	Passed
- Air Stripping	Passed
- Existing Aeration Tank	Excluded
- Ultraviolet Light Chemical Oxidation	Passed
In-situ Biological Treatment	Excluded
Air Injection/Vapor Extraction	Excluded
<u>Vacuum Extraction (Unsaturated and Saturated Soils)</u>	Passed
Groundwater Containment	<u>Excluded</u>
Monitoring	Passed
Vapor Emission Abatement	
- Vapor Phase Carbon Adsorption	Passed
- Catalytic Conversion	Excluded
- Vapor Incineration	Excluded
- Vapor Flaring	Excluded

EXHIBITS

**EXHIBIT A
ADMINISTRATIVE RECORD
COLUMBIA RIBBON AND CARBON MANUFACTURING COMPANY SITE
AKA POWERS CHEMCO SITE (#130028)**

- A. "Remedial Investigation and Feasibility Study: Former Columbia Ribbon and Carbon Company Disposal Site; Glen Cove, New York," prepared by Fred C. Hart Associates, Inc.; February 1991.
- B. "Response to NYSDEC comments on the Former Columbia Ribbon Company Waste Disposal Site RI/FS," prepared by Fred C. Hart Associates, Inc.; September 14, 1989.
- C. "Remedial Investigation/Feasibility Study work plan for the Former Columbia Ribbon and Carbon Waste Disposal Site," prepared by Fred C. Hart Associates, Inc.; August 1987
- D. "Supplemental Hydrogeologic Investigation of the former Columbia Ribbon and Carbon Company Waste Disposal Site," prepared by Fred C. Hart Associates, Inc.; October 1986.
- E. "As-Built: Initial Remedial Action: Former Columbia Carbon and Ribbon Site," drawing date January 30, 1985, prepared by Fred C. Hart Associates; attached to letter from David R. Case, Esq. to Michael J. Tone, Esq., dated February 7, 1985.
- F. "Former Columbia Site Initial Remedial Program--Description of Excavation," prepared by Fred C. Hart Associates, Inc., dated December 21, 1984; attached to letter from David R. Case, Esq. to Michael J. Tone, Esq., dated December 21, 1984.
- G. "Engineer's Certification Report: Removal of Drums and Contaminated Soils from the Former Columbia Ribbon and Carbon Co. Site; Glen Cove, NY," prepared by Fred C. Hart Associates, Inc.; September 1984.
- H. "Investigation and Hydrogeologic Assessment of the Former Columbia Ribbon and Carbon Company Waste Disposal Site," prepared by Fred C. Hart Associates, Inc.; April 1984.
- I. Responsiveness Summary--RI/FS (to be inserted after conclusion of public comment period)
- J. "Citizen Participation Plan--Columbia Ribbon and Carbon Manufacturing Site--A.K.A. Powers Chemco Site," prepared by the New York State Department of Environmental Conservation, January 1991.
- K. Public Notice Documents (to be inserted).
- L. Transcript of Public Meeting (to be inserted)
- M. Order on Consent, "In the matter of a Remedial Investigation/ Feasibility Study of an Inactive Hazardous Waste Disposal Site caused by the Disposal of Hazardous and Industrial Wastes by

**EXHIBIT B
PROJECT CHRONOLOGY
COLUMBIA RIBBON AND CARBON MANUFACTURING SITE
A.K.A. POWERS CHEMCO SITE (#130028)**

- 1979 Powers Chemco purchases parking lot from Columbia. Columbia becomes bankrupt (date uncertain).
- 1983 Powers Chemco discovers subsurface contamination.
- 11/30/83 First field investigation begins.
- 4/84 Report: "Investigation and Hydrogeologic Assessment of the Former Columbia Ribbon and Carbon Company Waste Disposal Site."
- 6/8/84 First Order on Consent; for removal action.
- 9/28/84 Report: "Engineers Certification Report: Removal of Drums and Contaminated Soils from the Former Columbia Ribbon and Carbon Co. Site."
- 1/16/86 Second Order on Consent; for second field investigation.
- 11/86 Report: "Supplemental Hydrogeologic Investigation of the Former Columbia Ribbon and Carbon Company Waste Disposal Site."
- 4/4/88 Third Order on Consent; for Remedial Investigation/Feasibility Study (RI/FS),
- 9/88 Submittal of first draft of RI/FS Report.
- 5/30/89 Department disapproves first draft of RI/FS Report.
- 3/5/90 Submittal of second draft of RI/FS Report.
- 5/9/90 Department disapproves second draft of RI/FS Report.
- 2/1/91 Submittal of third draft of RI/FS Report.

ANALYTICAL DATA AVAILABLE:

Air- Surface Water- Groundwater-X Soil-X Sediment-

CONTRAVENTION OF STANDARDS:

Groundwater-X Drinking Water-X Surface Water- Air-

LEGAL ACTION:

TYPE.: Consent Order State- X Federal-
 STATUS: Negotiation in Progress- Order Signed- X

REMEDIAL ACTION:

Proposed- Under design- In Progress-X Completed-
 NATURE OF ACTION: RI-FS underway.

GEOTECHNICAL INFORMATION:

SOIL TYPE: sand & gravel with possible clay lenses
 GROUNDWATER DEPTH: 3 - 10 feet

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Soil and groundwater contamination confirmed. The majority of the contamination is limited to the original disposal area.

ASSESSMENT OF HEALTH PROBLEMS:

Volatile organic contamination of the on-site shallow aquifer has been documented with downgradient monitoring wells exhibiting levels of contaminants which exceed groundwater standards. No contaminants have been detected in public water supply wells one half mile from the site. There are 20 homes along Place Street, 40 meters north of the site, which could potentially be affected by vapors and/or basement seepage. Although the homes are considered upgradient of the site, the northern most monitoring well (MW-4) exhibited 70 ppm toluene. Groundwater/gas seepage into Powers' lower building is possible. Glen Cove Creek, a possible recipient of contaminated groundwater and surface runoff, is about 300 meters from the site. Supplemental investigation is necessary to address these issues. The remedial alternative will contain the contaminated groundwater by pumping and treat the water by packed tower aeration.