PHASE I ENVIRONMENTAL SITE ASSESSMENT

WITCO BROOKLYN
633, 688, AND 700 COURT STREET
BROOKLYN, KINGS COUNTY, NEW YORK

Fluor Daniel GTI, Inc. Project 87896025

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LIST OF ACRONYMS

ACM	asbestos-containing material
AOC	area of concern
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
bbl	barrels
BOD	biological oxygen demand
COC	chemical of concern
DBTO	dibutyl tin oxoisomaleate
EDR	Environmental Data Resources, Inc.
ESA	Environmental Site Assessment
MSDS	material safety data sheet
msl	mean sea level
NYCRR	New York Code of Rules and Regulations
NYDEC	New York Department of Environmental Conservation
NYCDEP	New York City Department of Environmental Protection
PCBs	polychlorinated biphenyls
SMR	self monitoring report
SPCC	Spill Prevention Control and Countermeasure
SVOCs	semivolatile organic compounds
TNO	trineophenyl tin oxide
TPH	total petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	underground storage tank
VOCs	volatile organic compounds

Note: See Table 5 for acronyms used in Federal/state database search.

EXECUTIVE SUMMARY

Fluor Daniel GTI, Inc., on behalf of Witco Corporation (Witco), conducted a Phase I Environmental Site Assessment at the Witco Brooklyn property located at 633, 688, and 700 Court Street, Brooklyn (Kings County), New York. The purpose of this assessment was to:

Identify and document the current and historical environmental conditions of the site;

Determine the presence of substances which indicate an existing, past or potential adverse impact to the air, soil, groundwater, or surface waters at the site; and,

Identify documented potential environmental impacts from adjacent and surrounding properties.

The Phase I assessment was performed using selected elements of the American Society for Testing and Materials Standard Practices for Environmental Site Assessments (E 1527-94 and E 1528-93) and professional judgment.

Site Description

The plant occupies two (2) parcels at the intersection of Court Street and Halleck Street in Brooklyn: approximately one-half (0.5) acre at the northeast corner (633 Court Street) and approximately five (5) acres at the southwest corner (688 and 700 Court Street). The northeast parcel is developed with two (2) buildings which were formerly used for plant operations, a product testing laboratory and administrative offices. The current operating plant, laboratory and offices are located at the southwest parcel.

General structures at 633 Court Street include two, 2-story, brick buildings. The plant at 700 Court Street contains 19 buildings, five (5) tank farms and a wastewater pretreatment system.

The Brooklyn plant is located in an industrial area. Adjacent industrial businesses include Brooklyn Union Gas, Spentonbush Red Star, Hess and Import/Export Trucking. A recreational park is located immediately north of and adjacent to the plant.

In the late 1940s, Argus Chemical Corporation (subsequently purchased by Witco) constructed and operated the Brooklyn plant at 633 Court Street. Initial operations included producing aluminum pastes, metallic-organic soaps and salts, barium stearates, epoxy plasticizers and phosphites. In the late 1950s, aluminum paste and barium stearates

manufacturing activities were terminated and the plant operations were moved to 688 Court Street, a former lumber yard. The laboratory and offices remained at 633 Court Street until about 1990 when they were moved across to 700 Court Street with the operating plant. The buildings at 633 Court Street have been closed since the early 1990s to all activities other than storage of miscellaneous items (old production and laboratory equipment, dated administrative files, product testing samples, etc.).

The Brooklyn plant currently produces metallic-organic soaps and salts, phosphites and epoxy plasticizers. During the 1980s, trineophenyl tin oxide was manufactured at the Witco Taft plant and sent to the Brooklyn plant for purification. Purification activities ceased in the early 1990s.

Areas of Concern

Based on observations made during the site visit, Witco-supplied information, information obtained from interviews, file reviews, chain-of-title reports, aerial photographs, government database searches, and professional judgment, the following areas of environmental concern have been identified:

633 COURT STREET

AOC-1A	Former Tar Felt Paper Manufacturing Area
AOC-1B	Former Aluminum Paste Manufacturing Area
AOC-1C	Former Organo-Metallic Soaps and Salts Manufacturing Area
AOC-1D	Underground Storage Tanks
AOC-1E	Boiler Room (former hot oil system)
AOC-2	Groundwater underlying 633 Court Street

688 AND 700 COURT STREET

AOC-3	Tank Farm 1
AOC-4	Tank Farm 2
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AOC-17	Former Burn Area West of Building 18
AOC-18	Groundwater beneath 688 and 700 Court Street

633, 688, AND 700 COURT STREET

AOC-19	Lead-Containing Paints
AOC-20	Asbestos-Containing Material

The areas identified above are associated with current and past operations at the plant.

Chemicals of Concern

Chemicals of concern associated with the areas identified above include volatile organic compounds, semivolatile organic compounds, metals, organic tins, phthalates, phenols, lead-containing paints, and asbestos. Associations of chemical suites to specific areas are presented in Section 7.0.

Conclusions

Based on the findings of this assessment, further evaluation of potential environmental impacts is warranted. Soil sampling at the areas of concern shall be conducted to assess potential contamination. Additionally, groundwater samples will be collected to determine if the groundwater beneath the site has been impacted and/or off-site contaminant sources have migrated to beneath the site.

1.0 INTRODUCTION

Fluor Daniel GTI, Inc., on behalf of Witco Corporation (Witco), conducted a Phase I Environmental Site Assessment (ESA) for the Witco Brooklyn property located at 633, 688, and 700 Court Street, Brooklyn (Kings County), New York (Figure 1). This Phase I ESA was performed using selected elements of the American Society for Testing and Materials (ASTM) Standard Practices for Environmental Site Assessments (E 1527-94 and E 1528-93) and professional judgment.

1.1 Project Objective and Scope of Work

The purpose of the Brooklyn plant Phase I ESA was to:

- Identify and document the current and historical environmental conditions of the site;
- Determine the presence of substances which indicate an existing, past or potential adverse impact to the air, soil, groundwater, or surface waters at the site; and,
- Identify documented potential environmental impacts from adjacent and surrounding properties.

The Phase I ESA was accomplished through the completion of the following tasks:

- Review of plant files, material safety data sheets (MSDSs), historical aerial photographs, Sanborn Fire Insurance Maps, and other available historical and current data;
- Review of environmental databases and files obtained from federal, state, and local regulatory agencies;
- Interviews with current plant personnel and local government agency representatives;
- Visual inspection of the Brooklyn plant, including photographing conditions and noting adjacent property use and conditions.

The property inspection checklist that was completed during the site visit is contained in Appendix A and photographs taken during the visit are presented in Appendix B.

1.2 Site Location and Description

Witco Corporation owns approximately 5.3 acres of land (referred to as the Brooklyn plant) located at the intersection of Court Street and Halleck Street. The Brooklyn plant occupies two (2) distinct parcels: approximately one-half (0.5) acre at the northeast corner and approximately five (5) acres at the southwest corner. The northeast parcel is located at 633 Court Street and is developed with two (2) buildings. These were formerly used for plant operations, a product testing laboratory and administrative offices (Figure 2). The current operating plant, laboratory, and offices are at the southwest parcel which occupies 688 and 700 Court Street (Figure 3).

The Brooklyn plant is located in an industrial area. Adjacent industrial businesses include Brooklyn Union Gas, Spertonbush Red Star, Hess, and Import/Export Trucking. A recreational park is located immediately north of and adjacent to the plant.

1.3 Physical Setting

The Brooklyn plant is located in an industrial area as depicted on the United States Geological Survey (USGS) Jersey City, New Jersey-New York Quadrangle, 7.5 Minute, Topographic Map (Figure 1). The topography at and around the plant is relatively flat with an elevation of about ten (10) feet above mean sea level (MSL). The nearest body of water is the Gowanus Canal which is less than 500 feet south of the site.

1.4 Regional Geology, Lithology and Hydrogeology

Regional geology and lithology are of little direct importance at the plant site. The land underlying the plant site was formed by the filling of marsh and waterfront areas in the late 1800's - early 1900's.

The direction of groundwater flow and depth to groundwater are not known at this time. This will be determined during the Phase II ESA.

1.5 Site Structures and Features

General structures at 633 Court Street include two, 2-story brick buildings. The plant at 688 and 700 Court Street contains 19 buildings, six (6) tank farms and a wastewater pretreatment

system. Discussions of the wastewater pretreatment system and tanks contained within the tank farms are presented in Section 5.0.

Plant development began in the late 1940s at 633 Court Street. In the late 1950s, the southwest parcel at 688 Court Street was acquired and developed to accommodate the plant operations. The laboratory and offices remained at 633 Court Street until 1990 when they were moved across to 700 Court Street with the operating plant. The buildings at 633 Court Street have been closed since the early 1990s to all activities other than storage of miscellaneous items (old production and laboratory equipment, dated administrative files, product testing samples, etc.). The year of construction and operations for the buildings are presented in Table 1.

Concrete and asphalt pavement is present throughout the plant. Concrete dikes were installed around areas which could be involved in spills in 1987 (e.g., tank farms, chemical/waste storage areas, etc.).

1.6 Utilities

- Natural gas is supplied via underground pipeline by Brooklyn Union Gas.
- Telephone service is supplied via overhead lines by Bell Atlantic NYNEX.
- Electricity is provided by Consolidated Edison Company.
- Process and drinking water are supplied by the City of New York.

1.7 Site Operations

The Brooklyn Plant comprises numerous buildings that were used to house historical operations as well as current operations. In general, the buildings fall into two categories: those that were built prior to 1940 and those that were built in the 1959-61 timeframe. The majority of buildings and process areas fall into the latter category, as described in Table 1.

1.7.1 Historical Operations

- The Brooklyn site has been operated since about 1947.

- Initial operations were at the 633 Court Street building, but were moved to 688 Court Street in the 1959-60 period.
- Production operations at 633 Court Street were discontinued in the late 1950s. It was then used only for administration and laboratory space; it is now only used for storage.
- In 1968, the plant was expanded with the addition of Building 19.
- In 1986, the building and land at 700 Court Street was purchased and is now occupied by the laboratory and main offices for the site.

1.7.2 Current Operations

The current production processes at the Brooklyn plant are of four (4) basic types:

- solids production;
- liquids production;
- phosphite production;
- specially solids and solid phosphites.

A discussion of each process is presented below and summarized in Table 2. Various raw materials used in production are listed in Appendix C.

Figure 2 presents the site as it currently exists.

Solids Production in Builidng No. 16

- Metal oxides or hydroxides are combined with various acids to produce plastic stabilizers.
- Barium stearate is the current major product. However some barium laurate, barium benzoate, and barium A-10, as well as various metallic stearates, laurates, maleates, and benzoates are produced.

- The fusion reactors are also sometimes used to blend calcium stearate and zinc stearate with epoxidized soybean oil.

Liquid Production in Buildings 11 and 12

- Metal oxides and hydroxides are reacted with various acids to produce zinc octoate, calcium zinc oleate, potassium oleate, and barium nonyl phenate. Dibutyl tin oxoisomaleate (DBTO) is purchased for use in manufacturing.

- Depending on the desired product, the reactors will also be charged with certain raw materials that are not consumed in the reaction.

- Examples of these include di-iso-octyl phthalate, tripropylene glycol, and diethylene glycol/mono butyl ether.

Phosphite Production in Building 7 and Building No. 7 Extension

- Phosphorus trichloride is reacted with phenol to produce triphenyl phosphite. This intermediate product is then transesterfied with any of a number of alcohols.

Semi-Works Unit in Building No. 19

- The Semi-Works unit is used for small production runs of a variety of chemicals including specialty tin solids and solid phosphites.

The operational units noted above are supported by the following areas:

- Building 13 which houses the tote bin cleaning operations and wastewater pretreatment
- Six (6) tank farm areas
- piping shop
- raw material and product warehouses
- numerous general storage areas

Historic production at the Brooklyn plant (on both sides of Court Street) was basically the same as the processes currently ongoing at the facility. The metal oxides included cadmium

and lead compounds, but those were discontinued about four (4) and ten (10) years ago, respectively. In the 1950s, aluminum paste was produced in a process on the roof of 633 Court Street; this production ceased in the late 1950s.

During the 1980s, trineophenyl tin oxide (TNO) was manufactured at the Witco Taft plant and sent to the Brooklyn plant for purification. TNO purification activities occurred in Building 19. Crude TNO was received at the Brooklyn plant in 55 gallon drums. The crude was poured into a reactor and mixed with hexane to remove toluene. Small quantities [approximately three (3) drums per week] were burned in the boiler room while larger quantities were packaged in drums and sent to Dupont for disposal. The purified crude was re-drummed and shipped back to the Taft plant. Purification activities at the Brooklyn plant ceased in the early 1990s.

2.0 PAST SITE OWNERSHIP

The past ownership and site development history for the Brooklyn plant were determined through examination of chain-of-title documentation, aerial photographs and Sanborn maps. The following sections summarize the findings.

2.1 Land Ownership History

The Brooklyn plant consists of three (3) properties that were purchased separately and combined over time:

- the first property was that at 633 Court Street;
- Later, most of the 7th block of Court street was acquired;
- Finally, the 700 Court Street property was acquired.

All properties making up the Brooklyn site are currently deeded to Argus Chemical Corporation of Delaware. Argus was purchased by Witco in the mid 1960s.

The chain-of-title information reviewed for this Section are presented in Appendix D. Legal descriptions of each of the component properties of the Brooklyn site are presented in Exhibit A of Appendix D.

2.2 Historical Aerial Photographs

Historical aerial photographs of the plant and surrounding area were obtained from National Aerial Resources and from the plant. The photographs from the plant files did not have definite dates. However, discussions with plant personnel and comparison to the Fire Insurance Maps (see Section 2.3) placed these two (2) photographs at about 1966-67 and 1981-85. The photographs from National Aerial Resources were for the years 1953, 1959-60, 1976, and 1990. A summary of the information obtained from review of these photographs is contained below.

Because of the long-term paved nature of the plant site, no AOCs were identified from the aerial photography review. Soil discoloration and ground disturbance were not applicable features that could be determined. The aerial review presented a useful assessment of building and external equipment changes at the site over time.

Copies of the aerial photographs are presented in Appendix E.

2.2.1 1953

- The 633 Court Street had a building on the north end. The south end appeared to have been under construction or to still have had remnants of the production facilities of former occupants of the parcel.
- The site was depicted prior to development of the 688/700 Court Street parcel.
  - The 688 Court Street parcel was covered by a lumber yard. Of the current buildings, Buildings 1, 2, and 3 can be identified. Also, a long shed was southwest of what is now the main office building.
  - The 700 Court Street parcel contained what later became the main office building.
- A lumber yard occupied the current Brooklyn Union Gas parcel.

2.2.2 1959

- At the 633 Court Street parcel, a building had been constructed on the south end. Another roofed structure was on the top of that building.
- The 688 Court Street parcel was under construction. The lumber yard was gone and two (2) tanks were in Tank Farm No. 1.
- The 700 Court Street property appeared unchanged from the 1953 photograph.

2.2.3 1966 to 1967

- The site appeared with all current buildings except Building 19.
- The roofed structure atop the 633 Court Street building was gone and two (2) tanks were present on the roof.
- The lumber yard was still present at the current Brooklyn Union Gas site.

2.2.4 1976

The most significant differences between the 1976 photograph and the 1966-67 photograph were:

- Building 19 and its associated piping had been added
- The roof of Building 3 was missing
- Some storage of what appeared to be drums and totes was occuring on the open pads around the piping building
- A shed next to the northeast warehouse had been replaced by a parking area
- Materials were being stored against the inside of the northeast wall just outside Building 16
- Two (2) tanks atop the 633 Court Street property were no longer present.
- The Waterfront Lumber Company on the opposite side of Court Street was gone and had been replaced by the current Brooklyn Union Gas building.

2.2.5 1981 to 1985

The 1981-85 aerial photograph presented the plant very much as it exists today. All the current buildings were visible, though certain tanks were different. The most significant differences between the 1981-85 photograph and the 1976 photograph were as follows:

- The shed southwest of the current main office building had been replaced by a tank farm
- The southwest wall of Building 3 was missing
- Numerous drums were stored on the open pads around the piping building
- New tanks had been erected:west of Building 7 Extension and between Buildings 12 and 13.

- A large debris/trash pile appeared just north of the 633 Court Street parcel. According to plant personnel, large piles were located in this area throughout the late 1970s and early 1980s. These debris/trash piles were neither owned or placed there by Witco.

2.2.6 1990

The aerial photograph for 1990 revealed few new features in comparison to the 1981-85 photograph.

- The only difference noted in the plant area was the addition of tanks between Buildings 12 and 13.
- In the neighboring areas, the building and debris pile which were north of the 633 Court Street property have been replaced by two (2) fenced storage yards. The material stored in the yards was not readily identifiable.
- In comparison to the 1976 aerial photo, the 1990 photo revealed that considerable construction work occurred during the interval at the Hess terminal to the south of the site.

2.3 Historical Sanborn Drawings

Twelve Sanborn Fire Insurance Drawings were obtained for the Brooklyn plant dated 1886, 1904, 1915, 1939, 1950, 1977, 1980, 1991, 1992, 1993, 1995, and 1996 (Appendix F).

The details of these drawings are presented in Table 4.

- The 1886 drawing presented an area very different from the current site. The Clinton-Court Street parcel, where the main plant is currently located, was indicated on the 1886 map as being under water. This agrees with statements by plant personnel that the plant is constructed atop fill material.
- Argus Chemical Corporation became an occupant of the site between the 1950 and 1977 drawings.
- On the 1977 drawing, most of the buildings on the Clinton-Court Street parcel were indicated as being constructed with asbestos siding.

- A construction date of 1969 was indicated for Building 19.

- Fire proof construction was indicated in portions of the 633 Court Street parcel, which agreed with warning signs for asbestos-containing material (ACM) on doors in the building on that parcel.

- Dates for construction or the addition of fireproofing at the 633 Court Street parcel were indicated on the maps as 1951 to 1954.

- The fire insurance drawings provided no specific information about the chemicals or processes in the Argus/Witco plant.

- The facilities were largely unchanged in maps beyond 1977. The only exception was that approximately 19 additional tanks, at various locations around the plant, were shown in the 1995 and 1996 drawings that were not shown on the earlier maps. Despite these tank changes, the Argus/Witco buildings appeared unchanged on all drawings from 1977 to 1996.

2.4 Historical Plot Plans

Plant personnel provided three (3) historical plot plans. Two (2) of those plot plans cover the 633 Court Street property and the other covers the 688/700 Court Street property.

- The 633 Court Street plans were from the early 1920s and presented the layout of the Barrett Manufacturing Company, which occupied the entire block now containing Witco's 633 Court Street building.

  - The 633 Court Street portion was occupied by a Pitch Shed, Stills, Oil House, D.H. House and Laboratory.

  - The Pitch Shed occupied most of the area and contained several tanks and coolers - the tanks total 1500 barrels (bbl) of DH Tar.

  - The rest of the block contained a small paint shop, a machine shop/pipe shop, boiler house, coal storage yard, blacksmith shop, tank room, saturating room, and a main building with a tar well underneath the main floor (23,750 bbl capacity).

- Sewers associated with the Barrett facility were identified as being of wood box and brick construction as well as cast iron.

- The 688 and 700 Court Street plan was from the year 1958 and showed the area prior to any construction of the production plant.

  - Area 1 (a small, two story brick office building), Area 2 (a storage warehouse), and Building 3 (a one story brick building that now has no roof and no southeast wall) existed at the time of the drawing.

  - Three (3) features -- a frame and metal shed adjacent to the storage warehouse, a two story brick structure now known as Area 23, and a one story concrete block structure and attached shed now known as Area 20 -- match items on the 1966-67 aerial photograph that were missing from the 1981-85 aerial photograph.

Copies of these plot plans are presented in Appendix G.

3.0 ADJACENT PROPERTY INFORMATION

A tour of the surrounding properties was conducted January 5-9, 1998, to identify the adjacent property uses and identify potential conditions that may present an adverse environmental impact to the Brooklyn site. The tour was conducted from public rights-of-way and did not include entry onto private properties. The surrounding area is comprised of industrial businesses and one (1) recreational park. A discussion of the tour is presented below.

3.1 North

Property north of the former laboratory and administrative buildings (633 Court Street) contains a rubbish area and remnants of a brick building.

Property north of the Brooklyn plant (688 and 700 Court Street) and east of 633 Court Street includes a city-owned recreational park and soccer field. No environmental impact is expected from this property.

3.2 South

Property directly south of the Brooklyn plant at 688 and 700 Court Street includes an office building and parking lot for Amerada Hess Corporation.

The main plant of the Amerada Hess Corporation is present across Bryant Street. From the roadway, aboveground tanks were observed within gravel berms. This site is immedialtey south of the Brooklyn plant.

3.3 East

Property east of the 633 Court Street parcel includes a red brick building. It is reported that this building is being converted into single family apartments. Business offices were also noted to be present in the building.

Property directly east of the Brooklyn plant (688 and 700 Court Street) and south of the former laboratory and administrative building (633 Court Street) includes the Brooklyn Union Gas Company located at 651 Court Street. The Gas Company has office space and a parking lot for their utility vehicles. A black tarry substance was observed seeping through

the asphalt in their parking lot and the sidewalks outside of their fenceline. This site is adjacent to the Brooklyn plant (688 and 700 Court Street) and immediately south of the 633 Court Street property.

The Spentonbush Red Star Company plant, located at 671 Court Street, is immediately southeast of the Brooklyn plant. Operations at this facility include maintenance of ship propellers.

3.4 West

Properties to the west and southwest of the Brooklyn plant (688 and 700 Court Street) include the former Aid Export Trucking Company (once a gasoline storage facility) and Old New York Port Authority Terminal, respectively. From the right-of-way, both properties looked to be abandoned. The Trucking Company contained concrete barriers blocking the enterances. It was reported that truck maintanance activities may have occurred at this facility. Properties west and southwest of the plant are directly on the Gowanus Canal.

4.0 REGULATORY DATABASE REVIEW

Fluor Daniel GTI, Inc. contracted Environmental Data Resource, Inc. (EDR) to supplement the site visit and documents review by summarizing sites listed in federal and state environmental databases for properties within an ASTM standard radius of one-quarter (0.25) mile to one (1) mile of the Brooklyn site. The EDR report contained the total number of sites or occurrences identified by the database search.

The listing of a site on any of the government databases was not conclusive of an existing environmental concern for the Brooklyn plant. Distance to the site, geology, and groundwater flow gradient are the factors that determine the importance of a listed site to the soil and groundwater quality on the Brooklyn property. If it is determined that one or more of the listed sites could impact the Brooklyn plant, additional data will be collected and evaluated during the Phase II ESA.

Each site with the potential to impact the Brooklyn plant is identified in the following subsections.

Table 5 summarizes the Federal and state database search.

Appendix H contains the database search conducted for the site.

4.1 Identification and Location of Listed Sites

The Brooklyn plant (listed in EDR report as Witco Corporation at 700 Court Street and Argus Division Witco Chemical Corporation at 688 Court Street) was identified in a total of six (6) databases. A detailed description of the Brooklyn plant and other sites listed in the government database search is presented below. The terms topographically upgradient, downgradient, and side gradient normally refer to the physical location of a site with respect to the surface elevation of the site of interest. However, since this entire area is located on made-land (i.e., filled-in marsh), typical topographic observations are not applicable.

Because of very close proximity to the tidal influence of Gowanus Canal, general assumptions of shallow groundwater flow direction following surface topography likely do not apply.

The site-specific geology and hydrogeology (direction of groundwater flow) will be determined during the Phase II ESA.

4.1.1 Brooklyn Plant

The Brooklyn plant was identified in three (3) state databases: UST, CBS UST, and CBS AST. According to documentation available in the plant files, five (5) underground storage tanks (USTs) are currently in-service. In 1993, these USTs were installed to replace the original USTs. Upon removal, these tanks were reported by plant personnel to be in good condition. An additional five (5) were removed or closed in-place in 1990 (see Section 5.12.2). Fourteen chemical bulk storage aboveground storage tanks (ASTs) are reported as being registered through the NYDEC.

The Brooklyn plant was identified in the following three (3) federal databases:

- RCRIS-LQG
- FINDS
- TRIS

Listing in the RCRIS-LQG database classifies the site as a large quantity generator of hazardous waste (more than 1,000 kilograms per month). The other database listings are the result of filing routine reports of environmental compliance activities with USEPA.

4.1.2 Adjacent Sites

Two (2) adjacent sites were identified in the EDR report as being found in one or more of the above listed databases: Redhook Satellite Station and Amerada Hess Corporation.

The Redhook Satellite Station (currently occupied by the Brooklyn Union Gas Company) is east of the Brooklyn plant and is located at 651 Court Street. This site is listed in the UST database as having five (5) USTs. Three (3) USTs are reported as closed and two (2) are reported as being in-service. This site is adjacent to the 688 and 700 Court Street property and to the 633 Court Street property. This site may have a negative impact on the Brooklyn plant.

The Amerada Hess Corporation is directly south of and adjacent to the 688 Court Street property. It is located at 722 Court Street. This site is listed in RCRIS-LQG, MOSF UST, and FINDS databases. Six (6) USTs are reported to be in-service while 11 are reported as being closed and removed.

4.1.3 Sites Between One-Eighth and One-Quarter Mile of the Brooklyn Plant

Eight (8) sites within one-eighth (0.125) to one-quarter (0.25) mile were identified in the database search: Hamilton Avenue Incinerator, Brooklyn T.S., N. Vaccaro Inc., Street/Lorraine Street., Engine 279/Ladder 131, Street Associates, Truck Sales, and Woolsey Marine Ind. Inc. All eight (8) sites are located peripherally to the plant or across the Gowanus Canal. They are not expected to have adverse environmental impacts on the Brooklyn plant.

4.1.4 Sites Between One-Quarter and One-Half Mile of the Brooklyn Plant

Twenty-one sites within one-quarter (0.25) to one-half (0.5) mile were identified in at least one (1) database within the search report (Appendix H). All 21 sites are located peripherally to the plant or across the Gowanus Canal. They are not expected to have adverse environmental impacts on the Brooklyn plant.

4.1.5 Orphan Sites

In the EDR report, sites that cannot be mapped because of incomplete addresses are labeled orphan sites. This labeling has no correlation to CERCLA abandoned or unused CERCLA sites, rather, it is used for purposes of location mapping. The orphan sites listed in the EDR report (Appendix H) are not likely to have any adverse environmental impacts on the Brooklyn plant because of their distances from the site.

4.2 Government Agency Interviews

Representatives from local government agencies were interviewed by telephone. Information requested included knowledge about tank removals, hazardous material releases, and permit violations. The agencies and/or representatives that were interviewed and their responses are provided below.

- Ms. Linda Gamble, New York City Department of Environmental Protection (NYCDEP), Bureau of Air Resources, stated that the Brooklyn plant has 21 operating permits. No violations are noted in the agency's files; however, Permit No. PA039682R expired on September 17, 1997 and will require an inspection before the permit will be renewed. Witco has been notified of the inspection.

- Mr. Pravin Patel, NYCDEP, Bureau of Clean Water, confirmed that the Brooklyn plant is operating Wastewater Discharge Permit No. 96-P764-1. Mr. Patel indicated that there were past violations on the permit for exceeding cadmium discharge limits. However, he thought these were brought into compliance after installation of the wastewater treatment system.

5.0 SITE RECONNAISSANCE AND CHARACTERIZATION

The purpose of the site reconnaissance was to obtain site information through personnel interviews and file reviews, and to inspect the property for visible signs or indications of environmental conditions (currently or past) that present a potential adverse impact to the property. An inspection was conducted during January 5 through 9, 1998, which consisted of a walk-through of the operating plant, personnel interviews, and a file review.

The property inspection checklist that was completed during the initial site visit is presented in Appendix A.

Photographs made during the reconnaissance are presented in Appendix B.

The following sections discuss the findings of the site reconnaissance.

An AOC number is presented in parenthesis where a concern is raised based on the visual and documented information obtained during the site reconnaissance.

A detailed disucssion of the AOCs is presented in Section 7.0.

5.1 Hazardous Wastes and Nonhazardous Wastes

Hazardous wastes and nonhazardous waste management practices were identified during the site reconnaissance at the Brooklyn plant. A discussion of findings is provided below.

5.1.1 Hazardous Wastes

Hazardous wastes generated at the Brooklyn plant are a result of several production processes and laboratory testing. Hazardous wastes are placed in drums or totes and stored in a designated hazardous storage area located immediately east of the Pipe Shop (Building 18). The hazardous waste storage area is an exterior area with concrete flooring and curbing enclosed within a chain link fence (AOC-16). The concrete flooring and curbing was installed in 1987. No hazardous wastes are stored for more than 90 days. At the time of the site visit, no signs of staining from leaks or spills were observed.

The types of hazardous wastes currently produced at the Brooklyn plant include:

- fatty acid soaps (stearates and laurates) and filter cake containing barium and cadmium (D004, D005, D006, D008);
- spent flammable solvents (D001);
- still bottoms from waste solvent recycle distillation (D001);
- spent phenol/decyl choride/ mineral spirit solvent (D001); and
- acidic waste water (D002).

Plant records from the 1989 through 1994 also show that the plant was disposing of the following wastes:

- spent sulfuric acid/phenol sulfuric acid (D002);
- process wastewater containing toluene and hexane (D001);
- lab packs (D001, D002, D003, F005, D004);
- spent phenol/decyl chloride solvent with toluene (F005);
- spent toluene (F005); and
- spent activated carbon containing phenol (U188).

5.1.2 Nonhazardous Wastes

No wastes are disposed of on-site. The sludge generated from the wastewater treatment system and off-specification materials are sent offsite for disposal (see Section 5.7). Nonhazardous materials that are disposed offsite include empty containers (e.g., glass jars, fiberglass totes, drums) and bulk packaging materials (e.g., bags, boxes, etc.), nonhazardous construction debris, general office trash, etc.

As described by personnel during interviews, on-site disposal of waste was not practiced at the site during Witco's or Argus' operations. No visible signs of waste disposal were observed during the site visit.

5.2 Air Emissions

The Brooklyn plant has operating emission sources and air pollution control equipment in accordance with applicable requirements and provisions of the New York City Air Pollution Control Code. Currently, the plant operates under 21 air installation permits issued by the NYCDEP Bureau of Air Resources. A list of permits, processes, and dates of expiration is presented in Table 6. Based on an inquiry to the Bureau of Air Resources, Permit No. PA039682R expired on September 17, 1997. Renewal of this permit is pending an inspection. A notice has been sent to Witco to schedule an inspection.

5.3 Asbestos

An asbestos survey was conducted at the Brooklyn plant in June and July 1988 by Charles M. Shapiro and Sons, PC (Shapiro 1988). The survey included the collection of bulk samples and air testing.

The asbestos survey at 633 Court Street identified asbestos fibers in all four (4) bulk samples collected from pipe and duct insulation and ceiling material. Twenty-four air samples were collected. Asbestos fibers were detected in four (4) of the air samples.

Asbestos was detected in 41 of 49 bulk samples collected from pipe and tank insulation samples at 688 Court Street. Fifty-three air samples were collected. Asbestos fibers were not detected in any of the air samples.

A summary of the sample locations, number of samples and sampling results is presented in Table 7.

Prior to demolition activities performed at the Brooklyn plant, asbestos abatement and/or management should be performed (AOC-20).

5.4 Radon

No radon testing has been performed at the Brooklyn plant. However, 51 radon testing records in the Brooklyn site zip code (11231) were provided by EDR. The results for the study are summarized below.

USEPA Action Level:	4.0	picoCuries per liter (pCi/L)
Living Area		
Average Concentration:	0.750	pCi/L
Concentration Ranges:	0 to 4.0	pCi/L - 100 percent
	4.0 to 20.0	pCi/L - 0 percent
	>20	pCi/L - 0 percent
Basement Area		
Average Concentration:	1.370	pCi/L
Concentration Ranges:	0 to 4.0	pCi/L - 88 percent
	4.0 to 20.0	pCi/L - 10 percent
	>20	pCi/L - 2 percent

5.5 Wastewater and Stormwater Treatment System

The Brooklyn plant currently discharges all water (both pretreated wastewater and stormwater) to the New York City sewage system in accordance with the discharge limitations, monitoring requirements, and other conditions set forth in Wastewater Discharge Permit No. 96-P764-1. Prior to entering into this wastewater discharge permit in January 1996, industrial wastewater was discharged in accordance with Permit No. 93-P764-1 (effective October 31, 1993) and a Commissioner's Order and Directive (effective September 12, 1990). Prior to that, the wastewater discharge was governed by the Sewer Use Regulations of the City of New York Department of Environmental Protection which incorporated General Pretreatment Regulations (40 CFR Part 403) and Categorical Pretreatment Standards for the Organic Chemicals, Plastics and Synthetic Fibers Point Source Category (40 CFR Part 414).

5.5.1 Current Treatment System and Practices

Wastewater generated within the Brooklyn plant can be categorized as the following types:

- Routine stormwater goes to the equalization tank prior to discharge to the City sewer system.
- Stormwater from the hazardous waste area goes to Building 13 for pretreatment prior to discharge to the City sewer system.
- Wastewater from cleaning of buildings and reactors goes to Building 13 for pretreatment prior to discharge to City sewer system.
- Acidic water from cleaning of buildings and reactors in the phosphite area goes to tanks in Area 21 for neutralization prior to discharge to City sewer system.
- Basic water from the boiler room goes to tanks in Area 21 for neutralization prior to discharge to City sewer system.
- Wastewater samples from the laboratory are transferred to the wastewater pretreatment unit in Building 13.
- Stormwater from questionable areas (e.g., TF-3) and cooling water spillage is tested to determine the need for neutralization; filtered and neutralized in the area of origination as needed; and, sent to the equalization tank prior to discharge to City sewer system.

The wastewater pretreatment system in Building 13 consists of sulfide precipitation units, treated wastewater storage, and filtration. Effluent from that system is transferred to the equalization tank. The precipitation unit was installed in late 1991.

Water sent to the equalization tank (T-7019) is filtered prior to entering the tank and filtered again when removed from the tank. The water is sampled and the flow is measured prior to discharge to the sewer. Pretreated wastewater discharged to the sewer is treated at the Red Hook Publicly Owned Treatment Works operated by the New York City Department of Environmental Protection (NYCDEP). The average wastewater flow rate, as presented in the site's Self Monitoring Reports (SMRs), is presented below:

SMR Report Date	Average Wastewater Flow (gal/day)
2/15/91	89,206 *
8/15/91	108,900 *
2/15/92	61,749 *
8/15/92	53,440
2/15/93	58,570
8/15/93	54,263
2/15/94	40,819
8/15/94	56,965
2/15/95	59,190
8/15/95	42,850
2/15/96	41,628
8/15/96	28,555
2/15/97	57,813
8/15/97	37,284

* Note: During the report periods for these flows, the site was discharging to the sewer from two points. One of these discharge points was sealed before the reporting period covered by the 8/15/92 SMR.

5.5.2 Former Treatment System and Practices

Former wastewater discharge practices were similar to the current wastewater discharge practices with the following exceptions:

- Cadmium in wastewater: In 1988, the plant received a notice of violation caused by cadmium exceedences in wastewater discharges to the sewer system. Steps to bring the cadmium into compliance included:
  - Installation of a tote bin cleaning station in Building 13;
  - Installation of a sump to collect spillage from Reactor No. 9 (R-1007 in Building 12) which contained cadmium;

  - Installation of cartridge filters downstream of the wastewater collection pit in Building 16; and

  - A Lancy unit was also installed, first in Building 13 and later moved to Area 10 (the parking lot), for treatment of heavy metal-containing wastewater.

- Zinc in wastewater: During the 1988-89 cadmium issue, the NYCDEP also indicated that zinc, while within discharge limits, was believed to be high in relation to the plant's flow.

- Biological Oxygen Demand (BOD) in wastewater: During the 1988-89 cadmium issue, BOD had also been identified as an exceedence, but was apparently not the subject of a violation.

- Toluene in wastewater: In 1991, there were concerns about toluene contamination in discharges to the sewer. This was addressed by ceasing the TNO purification process (and moving the process to Taft, Louisiana); terminating the practice of sewering the water layer from drums of contaminated TNO; and, disconnecting the drainline from the LR868 process to the city sewer line (LR868 wastewater is collected in drums and disposed offsite). The LR868 solvent was replaced by cumene in 1992-93, which is now treated and discharged to the City Sewer System

Cadmium treatment was added in response to the cadmium issue in the late 1980s. Equalization treatment was added in 1991.

Curbing and building gutters were installed as part of the original construction of the buildings and tank farms, thus minimizing (though not completely preventing) the opportunity for cleaning waters and tank overflows to go directly to the City's combined sewer system. This system is used to manage stormwater runoff from the plant.

The drainline from the pretreatment system in Building 13 enters a drainline that goes to the sewer system at Court Street. Because of the age of the line from Building 13, there may have been leakage of wastewater from the line. This potential has been identified as AOC-7A.

5.6 Spill Prevention Control and Countermeasure Plan

The Brooklyn plant is operating under a Spill Prevention Control and Countermeasure (SPCC) Plan that meets the requirements of 40 CFR 112. Additionally, the plant has an Emergency Response and Contingency Plan.

5.7 Off-Site Solid Waste Management

The Brooklyn plant does not dispose of any wastes on the site. The off-site waste management facilities and transporters used by the plant are:

- Plant Trash:

  Disposal site: Basin Haulage, Inc.
  P.O. Box 790058
  Middle Village, NY 11379

- Nonhazardous Off-Spec Materials and Sludge:

  Disposal site: CWM Chemical Services, Inc.
  1550 Balmer Road
  Model City, NY 14107
  EPA No. NYD049836679

  Facility Owner/Operator: Same as above

  Transporter: HAZMAT Environmental Group, Inc.
  EPA No. NYD980769947

- Hazardous Waste:

  Disposal site: Republic Environmental Systems, Inc.
  2869 Sandstone Drive
  Hatfield, PA 19440
  EPA No. PAD085690592

  Facility Owner/Operator: Same as above

  Transporter: Horwith Trucks
  EPA No. PAD14674878

5.8 Buried Waste

According to plant personnel, burial of materials on the site was not practiced by Witco or Argus. During the site visit, there were no visible signs of buried waste on either portion of the site.

Plant personnel reported a former burn area west of Building 18. Wood and cardboard were reportedly burned; however, the exact contents burned were not known or documented (AOC-17). No burning activities have occurred for more than ten (10) years.

5.9 Production Water Wells

Four (4) water wells were installed at the Brooklyn plant in the late 1970s. These wells were used to supply water for the production process. Use of these wells was terminated in the late 1980s when it was more cost effective to purchase water provided by the City of New York.

Only one (1) well was observed during the site visit. This well is located inside the southeast corner of Building 14. The remaining three (3) wells were reportedly located on the southwest corner of Building 16; the west side of Building 7 Extension; and, the southeast corner of Building 3. According to plant personnel, these wells were abandoned before they were covered with concrete. No records or documentation were available for either the well installation (construction, depth, etc.) or abandonment activities.

5.10 Polychlorinated Biphenyls

Two (2) pad-mounted dry transformers (located in Buildings 16 and 19) are used at the Brooklyn plant. According to plant personnel, no polychlorinated biphenyl (PCB)-containing oil transformers have been used on the site. Pole-mounted transformers owned by Consolidated Edison Company are present on city right-of-way property (i.e., sidewalks).

PCB-containing oils were reported to have been used in the hot oil systems at 633 and 688 Court Street.

- One (1) hot oil system was located in the boiler room at 633 Court Street (AOC-1E)
- Three (3) hot oil systems were located at 688 Court Street:
  - on the south side of Building 14 (AOC-5),

- along the west side (about halfway between the middle and the north end) of Building 13 (AOC-7),
- on the west side of Building 16 (AOC-6A).

The use of PCB-containing oils ceased in the 1980s per corporate direction requiring the removal of all PCB-containing oils from all plants.

5.11 Pesticides and Herbicides

During the purification process of TNO, the Brooklyn plant was registered with USEPA as a pesticide manufacturing facility under USEPA Establishment No. 033683NY001. The active ingredient reported to USEPA for this process was trineophenyl tin oxide, an organic tin pesticide (AOC-13). In 1992, purification process was transferred to the Taft plant. In June 1993, the USEPA Establishment Number was cancelled (Witco 1993; Witco 1996).

Since no landscaping is present at the site, no pesticides or herbicides have been applied for weed control.

5.12 Aboveground and Underground Storage Tanks

The property assessment included a visual survey of ASTs. Five (5) USTs are currently used at the site.

5.12.1 Aboveground Tanks

Just over 100 ASTs were observed on the Brooklyn site. ASTs that are currently in use contain fuel, raw materials, intermediate products, final products, and wastes. Eight (8) of the tanks are listed as spare tanks. The ASTs range in size from 250 to 20,000 gallons and are constructed of stainless steel, carbon steel, aluminum, or fiber reinforced plastic. The ASTs are set directly on or above concrete pavement or pads. Cracks and erosion were noted on the concrete and pads in several areas around the plant. All tanks outside buildings were in areas of secondary containment (e.g., concrete dikes). Table 8 presents a listing of ASTs at the plant, including reactor vessels.

5.12.2 Underground Tanks

Four (4) USTs were installed in 1956 at 633 Court Street for use in production activities. According to a tank registration form, the tank capacity and contents were as follows:

T-1	3,000 gallons	#6 Fuel Oil
T-2	4,000 gallons	Soybean Oil
T-3	1,500 gallons	#4 Fuel Oil
T-4	1,500 gallons	#2 Fuel Oil

The locations of these tanks could not be identified by tank number, but general UST locations were: one (1) UST located in the mail room, two (2) USTs located in the southeast portion, south of the stationery room, and one (1) UST located southeast of the freight elevator (Figure 2).

Witco ceased use of these tanks in approximately 1965. On November 25, 1987, Witco notified the New York State Department of Environmental Conservation (NYDEC) that tanks T-3 and T-4 would be pumped, cleaned, and filled with sand (Witco 1987). However, the follow-up letter to this notification only mentions the closure of tank T-3 (Witco 1989). There was no documentation indicating whether samples had been collected during closure activities to determine possible impacts to underlying soil. Additionally, no documentation could be identified regarding the closure and/or removal of tank T-4 as well as T-1 and T-2 (AOC-1D); however, the EDR database report indicates that tanks T-1, T-3, and T-4 were closed before April 1, 1991 (Appendix H). An inquiry made to the NYDEC/UST Division reported that tanks T-1, T-3, and T-4 are listed in their database as closed; however, no reports of sampling are indicated in the database (NYDEC 1998).

A total of eight (8) USTs were formerly present at 688 Court Street. According to the plant files, the tank capacity and contents were as follows:

T-7009	7,600 gallons	#6 Fuel Oil
T-5016	4,000 gallons	Xylene
T-1008	8,700 gallons	Mineral Spirits
F-201	6,000 gallons	Hexane
F-202	6,000 gallons	Hexane
F-203	6,000 gallons	Isopropanol

F-204	6,000 gallons	Isopropanol
F-205	7,500 gallons	Mineral Spirits

Tanks T-7009, T-5016, T-1008 were installed in 1960. Witco ceased use of these tanks in the mid 1980s. In December 1990, tanks T-7009, T-5016, and T-1008 were closed in-place by emptying, purging, and filling with concrete. No documentation was identified indicating whether samples were collected during closure activities to determine potential impacts from the former USTs (AOC-4). These tanks are located in the western portion of Tank Farm 2.

Tanks F-201 through F-205 were installed in 1970. In May 1993, these tanks were removed and replaced with double-walled, carbon-steel tanks equipped with leak detection and overfill protection systems. No documentation was identified indicating whether samples were collected during removal activities to determine potential impacts from the former USTs (AOC-15). Currently, the contents of these tanks include isopropanol, cumene, and methyl benzoate. Table 8 contains the tank inventory for the Brooklyn plant.

5.13 Lead-Containing Paints

Interviews with plant personnel indicated that no lead-containing paints have been used in the past ten (10) years. No documentation of current or earlier uses were identified in the plant files. Because of the age of construction of the plant, a lead-containing paint survey should be conducted at the plant prior to demolition (AOC-19).

5.14 Permits

Below is a list of environmental regulatory permits and registrations issued to the Brooklyn plant.

Permit	Permit No.	Agency	Expiration
Air Permits	(see Table 9)	NYCDEP - Bureau of Air	Between 1999 through 2000
Industrial Wastewater Discharge Permit	96-P764-1	NYCDEP - Bureau of Clean Water	January 9, 2001
B&W Boiler	CA312173H	NYCDEP - Bureau of Air	March 30, 1999
Cleaver Brooks Boiler	CA080078H	NYCDEP - Bureau of Air	December 31, 1999
Nebraska Boiler	CA169992M	NYCDEP - Bureau of Air	July 28, 1999

6.0 REGULATORY CLOSURE OVERVIEW

6.1 Closure Requirements

The 90 day hazardous waste accumulation area must be closed according to the Closure Plan prepared under Title 6 of the New York Code of Rules and Regulations (NYCRR) (6NYCRR383).

Since the Brooklyn plant is located in Kings County and stores hazardous waste for less than 90 days, the plant is exempt from a portion of the closure requirements for Hazardous Waste Management Facilities. The following requirements are applicable to the hazardous waste storage area [6NYCRR 373-1.1(d)(1)(iv)]:

- Closure performance standard
- Closure plan; amendment to plan
- Disposal or decontamination of equipment, structures and solids
- Certification of closure and survey plot

There are no specific regulations governing the closure of the remainder of the plant; however, it will be closed in a manner that is protective of human health and the environment.

6.2 Clean-up Objectives

Although no specific clean-up standards are applicable to the Brooklyn plant, the recommended soil clean-up objectives provided in the NYDEC Division of Hazardous Waste Remediation Technical and Administrative Guidance Memorandum: Determination of Soil Clean-up Objectives and Cleanup Levels will be used as a screening tool for ensuring the closure is protective of human health and the environment.

The clean-up objectives were developed to guide the restoration of inactive hazardous waste sites. A copy of the memorandum which includes tables of soil cleanup objectives is included in Appendix I.

7.0 AREAS OF CONCERN

Based on the observations made during the site visit, information supplied by the plant, personnel interviews, file reviews, chain-of-title report, aerial photos, government database data, and professional judgment, 20 AOCs have been identified at the Brooklyn plant that warrant further investigation. The AOCs are associated with current and past plant operations.

AOC-1 has been divided into five (5) sub-units (AOC-1A through AOC-1E) because of specific associations with operational history.

The AOCs are identified and summarized in Table 9. They are depicted schematically in Figure 4.

8.0 CONCLUSIONS

A Phase II ESA Work Plan will be developed that will specify media to be sampled; methods and procedures to be used; numbers of samples; specific chemical parameter coverage and other methods and guidelines that will be used.

A Phase II ESA for both soil and groundwater is warranted for the following AOCs:

633 COURT STREET

AOC-1A	Former Tar Felt Paper Manufacturing Area
AOC-1B	Former Aluminum Paste Manufacturing Area
AOC-1C	Former Organo-Metallic Soaps and Salts Manufacturing Area
AOC-1D	Underground Storage Tanks
AOC-1E	Boiler Room (former hot oil system)
AOC-2	Groundwater underlying 633 Court Street

688 AND 700 COURT STREET

AOC-3	Tank Farm 1
AOC-4	Tank Farm 2
AOC-5	Boiler Room at Building 14 (former hot oil system)
AOC-6	Building 16 - Solids Production
AOC-6A	Former Hot Oil System in Building 16
AOC-7	Building 13 - Totes Cleaning, Wastewater Pretreatment System, and Former Hot Oil System
AOC-7A	Wastewater Effluent Line from Building 13 to the Discharge Point at Court Street
AOC-8	Tank Farm Between Buildings 12 and 13
AOC-9	Buildings 11 and 12 (Liquid Production and Blending Area)
AOC-10	Buildings 7 and 7 Extension (Liquid Production and Phosphite Production)
AOC-11	Area 22 - Neutralization Area
AOC-12	Tank Farm 5
AOC-13	Building 19 and Tank 1001 Area
AOC-14	Area 24 - Tank Farm
AOC-15	Former USTs at Tank Farm 4
AOC-16	Hazardous Waste Storage Area

AOC-17 Former Burn Area West of Building 18
AOC-18 Groundwater beneath 688 and 700 Court Street

Additionally, the following AOCs should be included in the Phase II ESA for demolition planning.

AOC-19 Lead-Containing Paint
AOC-20 Asbestos-Containing Material

Based on the findings and conclusions of this Phase I ESA, further evaluation of potential environmental impacts from the identified AOCs will be conducted in a Phase II ESA. The Phase II ESA will assess whether releases have occurred from current and historical plant operations. If releases have occurred, the nature and extent of contamination will be determined. Additionally, the potential for impacts from off-site sources will be evaluated.

9.0 REFERENCES

New York Department of Conservation (NYDEC). 1998. Record of telephone conversation between Representative of NYDEC, UST Division and Joann P. Ornelas of Fluor Daniel GTI regarding the closure status of underground storage tanks at the Witco Brooklyn Plant. January 28.

Shapiro, Elliot. 1988. Series of letters to Gaspar Quartararo of Argus Chemical Division regarding the findings of the Asbestos Survey. June 22 through August 1.

Witco Corporation (Witco). 1996. Pesticide Report (EPA Form 3540-16) to U.S. EPA Region I (Boston, MA), Pesticide Section (CAA), reporting that production of pesticides has not occurred at the plant since 1992 when the process was transferred to the Taft, Louisiana plant; no production of pesticides is anticipated in the future. June 27.

Witco Corporation (Witco). 1993. Letter to U.S. EPA Region II (Edison, NJ), Pesticide and Toxic Substances Division cancelling EPA Establishment No. 033683NY001. June 28.

Witco Corporation (Witco). 1989. Letter to New York State Department of Environmental Conservation informing them that tank T-3 has been closed in-place. December 26, 1989.

Witco Corporation (Witco). 1987. Letter to New York State Department of Environmental Conservation informing them that tanks T-3 and T-4 would be closed in-place. November 25, 1987.

TABLE 1
BUILDING CONSTRUCTION AND OPERATIONS
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Building/ Area No.	Building/Area Name	Operations	Year Built	Construction of Building Interior	Construction of Building Exterior
1	Office	Electrical material storage	pre-1939	concrete floor	concrete block
2	Warehouse	Raw material storage on 1st level. 2nd level unused.	pre-1939	concrete floor	Two story warehouse: 1st story: concrete block 2nd Story: Corrugated metal
3	Tool Storage		pre-1939	concrete floor	
4	Storage	Raised concrete floor	1959-61	concrete floor	--
5	Drumming Station		1959-61	concrete floor	
6	Storage		1959-61	concrete floor	
7	Production		1959-61	concrete floor	
7 Ext.	Phosphite Production	Production of Phenol- and Nonylphenol-based phosphites.	1959-61	concrete floor	
8	Tank Farm No. 1	Storage of various raw materials including stearic acid, isooctanol, nonylphenol, and Drapex 6.8.	1959-61	concrete pavement and dikes	--
9	Tank Farm No. 2	Storage of fuel (#6 fuel oil) and various raw materials including DEG MBE, tridecanol, 2-EH acid, process oil, and OMS	1959-61	concrete pavement and dikes	--
10	Parking Area			asphalt pavement	--
11	Liquid Production	Production process: Mainly for reaction of metal oxides and hydroxides with various acids to produce zinc octoate, calcium zinc oleate, potassium oleate, barium nonyl phenate, and dibutyl tin oxo-iso-maleate (DBTO).	1959-61	concrete and asphalt	

TABLE 1 (Continued)
BUILDING CONSTRUCTION AND OPERATIONS
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Building/ Area No.	Building/Area Name	Operations	Year Built	Construction of Building Interior	Construction of Building Exterior
12	Blending Area		1959	concrete floor	--
13	Totes Cleaning Area	Tote Cleaning; Wastewater treatment	1959	concrete floor	
14	Boiler Room	Two boilers	1959-61	concrete floor	concrete block
14A	Boiler Room	One boiler		concrete floor	concrete block
15	Production Storage		1959-61	concrete floor	
16	Solids Production	Production of organo-metallic soaps which are used in plastics production.	1960	Includes small office, bathroom, and storage room. Concrete floor Scale at northern end for weighing 18-wheel trucks. Scale pit is 4-5' deep	1st level: concrete block walls Upper levels: Cemestos panels
17	Shipping and Warehouse		1959-61	concrete floor	1st Level: concrete block walls Upper Levels: Cemestos panels
18	Pipe Shop	Pipe maintance; machining and grinding	1959-61	asphalt	Corrugated metal walls
19	Semi-works Plant	Small production runs of varous products, including Mark 2112, Mark 2255, and LR868 (DBM)	1969		
20	Cooling Area	Cooling tower	pre-1985		
21	Tank Farm No. 3	HCl Storage	1959-61	concrete pavement and dikes	--
22	Neutralization Area	Acid neutralization operations	1959-61		--

TABLE 1 (Continued)
BUILDING CONSTRUCTION AND OPERATIONS
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Building/ Area No.	Building/Area Name	Operations	Year Built	Construction of Building Interior	Construction of Building Exterior
23	Tank Farm No.5	Storage of sulfuric acid, 20% caustic solution, waste water from B-19, decyl chloride, various products (MARK 366, MARK TPP, MARK 366, MARK 1178, MARK 1178B, MARK TPP), phenol bottoms from #8, and chemical wastes. Separate curbed area for phosphorus trichloride storage tank (T-213)	pre-1985	concrete pavement and dikes	--
24	Tank Farm No. 4	USTs for storage of IPA, cumene, and methyl benzoate ASTs for sulfuric acid and chemical waste [Mark DBM residues and Mark 2112 residues] Other materials are stored in this area in tote bins: isopropanol, methyl benzoate, cumene, distilled methanol		concrete pavement and dikes	--
	Area between Buildings 12 and 13	Tank farm for storage of various materials, mainly products, including wastewater, BAM, liquid CO2, and Marks 517,570, 4716, 4781A, 4782A, and 4795R.		concrete pavement and dikes	--
	Storage area between Tank Farm 1 and Building 16 (against northeast wall)	Storage of propane cylinders, concrete floor cleaner in plastic cubes, sodium perchlorate drums, and actafoam drums		concrete pavement and dikes	--
	Drum Storage Area	Storage of drums and tote bins of raw materials, intermediate products, and finished products		concrete pavement	--

TABLE 1 (Continued)
BUILDING CONSTRUCTION AND OPERATIONS
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Building/ Area No.	Building/Area Name	Operations	Year Built	Construction of Building Interior	Construction of Building Exterior
	QC Holding Area	Fenced storage area holding below spec product and product awaiting results of quality control testing		concrete pavement	chain-link fencing
	Hazardous Waste Area	Fenced and curbed Storage of hazardous wastes awaiting shipment plus storage of demolitioned tanks.		concrete pavement	chain-link fencing
	Area between Buildings 16 and 17	Truck entrance to plant Empty metal tote bins for methanol waste Dry ice cylinders		asphalt and concrete pavement	--
	700 Court Street Offices	Main plant offices and laboratory	pre-1939; remodeled in 1990s		Brick and concrete block
	633 Court Street	Currently used for storage of production quality control samples; general storage. A variety of chemicals are stored there in small quantities: Therminol 55, motor oil, antifreeze/coolant, "Smooth-kote", and ground silica. This building housed all production activities prior to1959.	1951-54	concrete flooring	brick

-- means no building structure.

TABLE 2
PRODUCTION AND TREATMENT PROCESSES
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Unit	Process	Major Equipment	Chemicals Used
Liquid Production (Blds 11, 12, and 7)	Metal oxides and hydroxides are reacted with various acids to produce zinc octoate, calcium zinc oleate, potassium oleate, barium nonyl phenate, and dibutyl tin oxo-iso-maleate (DBTO) Depending on the desired product, the reactors will also be charged with certain raw materials that are not consumed in the reaction. Examples of these include di-iso-octyl phthalate, tripropylene glycol, and di-ethylene glycol/mono butyl ether. Products from the reactors are further processed in either of two blenders.	Reactors 9 and 10 Two Blenders	Acids 2-ethyl hexoic acid (a.k.a. 905) neodeconoic acid oleic acid (a.k.a. tall oil acid) nonylphenol Bases calcium hydroxide zinc oxide potassium hydroxide dibutyl tin oxide barium hydroxide cadmium oxide (past) lead oxide (past) Other ingredients/additives di-iso-octyl phthalate tripropylene glycol odorless mineral spirits diethylene glycol/monobutyl ether (DEG MBE) maleic anhydride iso-octanol
Solids Production in Building No. 16	Barium hydroxide is combined with various acids to produce mainly barium stearate, but also some barium laurate, barium benzoate, and barium A-10 acid. Various acids (Lauric, bonzoic, toluic, maleaic) are reacted with metal oxides or hydroxides to form various metallic stearates, laurates, maleates, and benzoates. Reaction products from these reactors are further processed in any of four blenders. The fusion reactors are also sometimes used to blend calcium stearate and zinc stearate in expoxcitized soybean oil.	One precipitation reactor Two fusion reactors Four blenders	Acids stearic acid benzoic acid lauric acid A-10 acid toluic acid maleic acid Bases zinc oxide dibutyl tin oxide magnesium hydroxide barium hydroxide titanium dioxide cadmium oxide (past) lead oxide (past) Other ingredients/additives calcium stearate zinc stearate epoxidized soybean oil

TABLE 2 (Continued)
PRODUCTION AND TREATMENT PROCESSES
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Unit	Process	Major Equipment	Chemicals Used
Phosphite Production in Building 7 and Building No. 7 Extension	The main process within Phosphite Production is the reacting of phosphorus trichloride with phenol in Reactors 6, 7 and 12. This produces triphenyl phosphite which is reacted with alcohols in the presence of a potassium carbonate catalyst in the transesterfication reactor (#8). Several differenct chloride compounds are wastes from a filtration step in the processing. Reactor #12 is also used for two other products: • Tri-nonyl phenyl phospate is produced from phosphorus trichloride and nonyl phenol. Epoxidized soybean oil is also added to this product. No waste is produced during this reaction. • 2,4-di-t-butyl phenyl phosphite is produced from phosphorus trichloride and 2,4-di-t-butyl phenol. in the presence of a catalyst (DMF). The catalyst is filtered out and disposed.	Reactors 6, 7, and 12 Transesterificaton Reactor	<u>Reactor Feeds</u> phosphorus trichloride phenol nonyl phenol 2,4 di t butyl phenol decyl alcohol 2 ethyl hexyl alcohol iso octyl alcohol di-propyleneglycol (DPG) <u>Other ingredients, additives, or catalysts</u> proprietory ingredients epoxidized soybean oil <u>Wastes</u> decyl chloride 2 ethyl hexyl chloride iso octyl chloride dichloropropane potassium carbonate catalyst DMF catalyst off-spec phenol
Semi-works Unit in Building No. 19	The Semi-works Unit is currently used for small production runs of Mark 2112, Mark 2255, and LR868 (DBM). Past production has included TNO (1970-1987), Seenox 412-S (1988-1990), and OBBO (a single run in 1993).		<u>Mark 2112</u> <u>Mark 2255</u> methanol mercapto propionic acid (MPA) DBTO. Methanol/MPA mixture (95/9) recovered by distillation. Residuals from distillation process are drummed and disposed as hazardous waste. <u>LR868 (DBM)</u> <u>TNO:</u> Crude TNO product THF-hexane toluene Byproducts: Wastewater and toluene that were disposed offsite

TABLE 2 (Continued)
PRODUCTION AND TREATMENT PROCESSES
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Unit	Process	Major Equipment	Chemicals Used
Semi-works Unit in Building No. 19 (continued)			Seenox 412-S lauryl mercaptan isopropanol 20% NaOH acrylic acid sulfuric acid sodium sulfate mono PE PTSA hypophoshorous acid Off-spec isopropanol is drummed for disposal; sodium sulfate and some water is sent to sewer trench/pit for further processing and disposal. OBBO nonyl phenol barium monohydrate carbon dioxide
Processes at 633 Court Street	Historic processes at the 633 Court Street property were reported to be largely the same as the current processes. Once exception was aluminum paste, which was produced for about 8 years and then discontinued. This process was not moved across to the Clinton-Court Street facilities when the rest of the production operations were relocated in the early 1960s.	Aluminum Paste: 500 gallon mixer located on the roof of 633 Court Street	Aluminum Paste: pigment-grade aluminum particles di-octyl phthlate (DOP)

TABLE 3
SUMMARY OF CHAIN-OF-TITLE INFORMATION
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Buyer	Seller	Transaction Date
633 COURT STREET[1]		
Argus Chemical Corporation, DE	Argus Chemical Corporation, NY	February 1, 1966
Argus Chemical Corporation	Argus Chemical Laboratory	June 1, 1964
Argus Chemical Laboratory	Thomas Duzee Realty	October 9, 1950
Thomas Duzee Realty	E.K. Doran	October 2, 1950
688 COURT STREET[2]		
Argus Chemical Corporation, DE	Argus Chemical Corporation, NY	February 1, 1966
Argus Chemical Corporation	Argus Chemical Laboratory	June 1, 1964
Argus Chemical Laboratory	McKenna Lumber Company	February 21, 1958
McKenna Lumber Company	J.F. and E.L. McKenna	January 31, 1949
700 COURT STREET		
Argus Chemical Corporation, DE	C.T. O'Neil	May 12, 1986
C.T. O'Neil	V.M. Gesel Bracht O'Neil	March 24, 1958
T.A. O'Neil	Marine Canvas Supply Corporation	May 1951
Marine Canvas Supply Corporation	Dorothy W. Earle	August 1930

1. includes 627 Court Street
2. includes 708 and 712 Court Street, and 735 Clinton Street

TABLE 4
SUMMARY OF FIRE INSURANCE MAPS
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Map Year	Occupants of Clinton-Court Street Parcel (where main body of plant is currently located)	Neighboring Properties	Occupants of 633 Court Street Parcel	Neighboring Properties
1886	Indicated as being "under water." This agrees with statements by some Witco site personnel that the plant is largely constructed atop fill material.	Northwest (across Clinton Street): No occupant indicated. Partially "under water." Northeast (across Halleck Street): Only partially on map. No occupant indicated. "Under water." Southeast (across Court Street): Mica Roofing Company on Halleck Street half of the block (Labelled components include Chemical Works, Manufacturing Pitch, Stills, Pitch Storage, Iron Tanks Tap Oil, Oil Tank Pump Underground) Southwest (across Bryant Street): A machine shop is at the far end of the block. No other occupants indicated. Area is partially "under water."	Only partially shown on map; no occupant is indicated.	Northwest (across Court Street): Only partially on map; no occupant indicated. Northeast (across Sigourney Street): Not shown on map. Southeast (across Smith Street): Not shown on map. Southwest (across Halleck Street): Mica Roofing Company
1904	No longer indicated as being under water. Milliken Brothers Iron Works on the southwestern half of the parcel; the northeastern half is still empty.	Northwest (across Clinton Street): Milliken Brothers Iron Works, which extended across Clinton Street. Northeast (across Halleck Street): No occupant indicated Southeast (across Court Street): No occupant indicated. Southwest (across Bryant Street): Not shown on map.	Barrett Manufacturing Company. Components include tar tanks, storage and filling tanks, and stills within the area now occupied by the Witco plant.	Northwest (across Court Street): No occupant indicated. Northeast (across Sigourney Street): James McLaren Stone Contractor. Southeast (adjacent structures in same block): Barrett Manufacturing Company, since it occupies the entire block. Components include oil and asphalt tanks. Southwest (across Halleck Street): No occupant indicated.

TABLE 4 (Continued)
SUMMARY OF FIRE INSURANCE MAPS
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Map Year	Occupants of Clinton-Court Street Parcel (where main body of plant is currently located)	Neighboring Properties	Occupants of 633 Court Street Parcel	Neighboring Properties
1915	Milliken Brothers Iron Works are gone. There are no identified occupants on the parcel. A few improvements are shown near the Bryant/Court Street corner.	Northwest (across Clinton Street): The Texas Company Oil Plant A City Dumping Platform Northeast (across Halleck Street): No occupant indicated Southeast (across Court Street): No occupant indicated, but some minor improvements (e.g. sheds) are shown. Southwest (across Bryant Street): Not shown on map.	Barrett Manufacturing Company Tar Felt Paper. Components include stills, tar tanks, pitch kettles, and an oil pump within the area now occupied by the Witco plant.	Northwest (across Court Street): No occupant indicated. Northeast (across Sigourney Street): James McLaren Stone Contractor. Southeast (adjacent structures in same block): Barrett Manufacturing Company, since it occupies the entire block. Southwest (across Halleck Street): No occupant indicated.
1939	In area currently occupied by Witco: John F. McKenna Inc. Lumber Yard; Marine Canvas Supply Corporation; John Menton, Boiler Maker In area currently occupied by HESS parking: The Howland Mutual Lumber Company, Inc; a garage.	Northwest (across Clinton Street): The Texas Company (includes three storage tanks) Lumber piles (includes a transformer room) Northeast (across Halleck Street): Nothing indicated. Southeast (across Court Street): John F. McKenna Inc. Lumber Yard Waterfront Lumber Company Robinson Dock Southwest (across Bryant Street): Not shown on map	Barrett Company Tar Felt Paper. About half the area now occupied by the Witco plant was indicated as unused. Some stills and pitch kettles are indicated.	Northwest (across Court Street): Nothing indicated. Northeast (across Sigourney Street): James McLaren & Sons, Stone Contractors Southeast (adjacent structures in the same block): Barrett Company Tar Felt Paper - storage Southwest (across Halleck Street): John F. McKenna Inc. Lumber Yard

TABLE 4 (Continued)
SUMMARY OF FIRE INSURANCE MAPS
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Map Year	Occupants of Clinton-Court Street Parcel (where main body of plant is currently located)	Neighboring Properties	Occupants of 633 Court Street Parcel	Neighboring Properties
1950	In area currently occupied by Witco: John F. McKenna Inc. Lumber Yard; Marine Canvas Supply Corporation In area currently occupied by HESS parking: The Howland Mutual Lumber Company, Inc; a garage	Northwest (across Clinton Street): The Texas Company (includes three storage tanks) Brooklyn Water Front Terminal Corporation Northeast (across Halleck Street): Nothing indicated. Southeast (across Court Street): Waterfront Lumber Company Ira S. Bushey & Sons, Inc. Southwest (across Bryant Street): Not shown on map	Doran Manganese Bronze Company, Inc, Foundry & Machine Shop	Northwest (across Court Street): Nothing indicated. Northeast (across Sigourney Street): Doran Manganese Bronze Company, Inc. Southeast (adjacent structures in the same block): W.T.Howald, Machine Designer Southwest (across Halleck Street): Waterfront Lumber Company
1977	In area currently occupied by Witco: Argus Chemical Corporation. In area currently occupied by HESS parking: Kehoe Transportation Company and Ira S. Bushey & Sons (garage & storage)	Northwest (across Clinton Street): AID Export Trucking Continental Terminals Inc. Northeast (across Halleck Street): Red Hook Recreational Area Southeast (across Court Street): New York Telephone Company Work Center Ira S. Bushey & Sons, Inc. (NYC Dept of Sanitation Garage) Southwest (across Bryant Street): Not shown on map	Argus Chemical Corporation (Metalic Soap Mf'g)	Northwest (across Court Street): Red Hook Recreational Area Northeast (across Sigourney Street): Occupant not clearly identified; perhaps Pittston Stevedoring Southeast (adjacent structures in the same block): W.T.Howald, Machine Designer Southwest (across Halleck Street): New York Telephone Co. Work Center

TABLE 4 (Continued)
SUMMARY OF FIRE INSURANCE MAPS
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Map Year	Occupants of Clinton-Court Street Parcel (where main body of plant is currently located)	Neighboring Properties	Occupants of 633 Court Street Parcel	Neighboring Properties
1980	In area currently occupied by Witco: Argus Chemical Corporation. In area currently occupied by HESS parking: Kehoe Transportation Company and Ira S. Bushey & Sons (garage & storage)	Northwest (across Clinton Street): AID Export Trucking Continental Terminals Inc. Northeast (across Halleck Street): Red Hook Recreational Area Southeast (across Court Street): Brooklyn Union Gas Work Center Ira S. Bushey & Sons, Inc. (NYC Dept of Sanitation Garage) Southwest (across Bryant Street): Not shown on map	Argus Chemical Corporation (Metalic Soap Mf'g)	Northwest (across Court Street): Red Hook Recreational Area Northeast (across Sigourney Street): Occupant not clearly identified; perhaps Pittston Stevedoring Southeast (adjacent structures in the same block): W.T.Howald, Machine Designer Southwest (across Halleck Street): Brooklyn Union Gas Work Center
1991	In area currently occupied by Witco: Argus Chemical Corporation. In area currently occupied by HESS parking: Ira S. Bushey & Sons (garage & storage).	Northwest (across Clinton Street): American Stevedoring Ltd, Import-Export Trucking Continental Terminals Inc. Northeast (across Halleck Street): Red Hook Recreational Area Southeast (across Court Street): Brooklyn Union Gas Work Center Spentonbush Red Star Southwest (across Bryant Street): Not shown on map	Argus Chemical Corporation (Metalic Soap Mf'g)	Northwest (across Court Street): Red Hook Recreational Area Northeast (across Sigourney Street): No occupant identified, though the southern portion of that block is occupied by Ace Demolition Inc. Southeast (adjacent structures in the same block): W.T.Howald, Machine Designer Southwest (across Halleck Street): Brooklyn Union Gas Work Center
1992	Same as 1991	Same as 1991	Same as 1991	Same as 1991
1993	Same as 1992	Same as 1992	Same as 1992	Same as 1992

TABLE 4 (Continued)
SUMMARY OF FIRE INSURANCE MAPS
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Map Year	Occupants of Clinton-Court Street Parcel (where main body of plant is currently located)	Neighboring Properties	Occupants of 633 Court Street Parcel	Neighboring Properties
1995	The name Witco has now replaced Argus Chemical Corporation in this parcel. Several additional tanks are also shown. In area currently occupied by HESS parking: Ira S. Bushey & Sons (garage & storage).	Same as 1993	Same as 1993	Same as 1993
1996	Same as 1995	Same as 1995	Same as 1995	Same as 1995

TABLE 5
SUMMARY OF FEDERAL AND STATE DATABASE SEARCH
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Database	Description	Search Distance	Total Plotted
NPL	National Priority List - sites identified for priority cleanup under the Superfund Act (CERCLA)	1 mile	0
RCRIS-TSD	Resource Conservation and Recovery Information System - sites which generate, transport, store, treat and/ or dispose of hazardous waste defined under RCRA	1 mile	1
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System - data about potentially hazardous waste sites that have been reported to USEPA by states, municipalities, private companies and private persons pursuant to Section 103 of CERCLA	½ mile	1
CERC-NFRAP	CERCLIS No Further Remedial Action Planned - sites removed from CERCLIS because no contamination was found, contamination was removed without the need to be placed on NPL, or the contamination was not serious enough to require Federal Action or NPL consideration.	TP	0
CORRACTS	Corrective Action Report - hazardous waste sites that have RCRA corrective action activities	1 mile	2
RCRIS-SQG	RCRIS-Small Quantity Generators - sites which generate less than 1,000 kilograms per month of hazardous waste as defined under RCRA	¼ mile	1
RCRIS-LQG	RCRIS-Large Quantity Generators - sites which generate more than 1,000 kilograms per month of hazardous waste as defined under RCRA	¼ mile	3
HMIRS	Hazardous Materials Information Reporting System - hazardous materials spill incidents reported to Department of Transportation	TP	0
PADS	PCB Activity Database System - identifies generators, transporters, commercial storers and/or brokers and disposers of PCBs	TP	0
ERNS	Emergency Response Notification System - reported releases of oil and hazardous substances	TP	0

(continued on next page)

TABLE 5 (Continued)
SUMMARY OF FEDERAL AND STATE DATABASE SEARCH
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Database	Description	Search Distance	Total Plotted
TRIS	Toxic Chemical Release Inventory System - identifies facilities that emit toxic chemicals of reportable quantities under SARA Title III to the air, water, and land	TP	0
NPL Liens	Federal Superfund Liens - liens filed against properties after notification to the owner of potential liability by USEPA for remedial action expenditure recovery	TP	0
TSCA	Toxic Substances Control Act - identifies manufactures and importers of chemical substances listed on the TSCA Chemical Inventory List	TP	0
MLTS	Material Licensing Tracking System - sites that use radioactive materials requiring licensing by the Nuclear Regulatory Commission	TP	0
ROD	Records of Decision - documents which contain technical and health information associated with a permanent remedy at an NPL site	1 mile	0
CONSENT	Consent Decrees - legal settlements that establish responsibility and cleanup at NPL sites	1 mile	0
Coal Gas	Inventory of sites that have manufactured coal gas	1 mile	0
State Hazardous Waste	Potentially hazardous waste sites listed on State list	1 mile	0
State Landfill	Inventory of solid waste disposal facilities or landfills	½ mile	3
LUST	Leaking Underground Storage Tanks - inventory of LUST incidents as reported TNRCC Leaking Petroleum Storage Tank Database	½ mile	23
UST	Underground Storage Tanks - USTs registered under Subtitle 1 of RCRA	¼ mile	4
CBS UST	Chemical Bulk Storage Underground Storage Tanks	¼ mile	0
CBS AST	Chemical Bulk Storage Aboveground Storage Tanks	¼ mile	0
MOSF UST	Major On-Site Facility Underground Storage Tanks	¼ mile	13
MOSF AST	Major On-Site Facility Aboveground Storage Tanks	¼ mile	1

TP - Target Property

TABLE 6
NYCDEP AIR INSTALLATION PERMITS
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Installation Permit No.	Process/Equipment	Expiration Date
PA194872H	Pneumatic conveying of fatty acid soaps	April 7, 1999
PA194772K	Weighing hopper for fatty acid soaps	April 7, 1999
PA194672N	Drying fatty acid soaps: rotary dryer and granty separator	April 7, 1999
PA194272Y	Storage and batch tanks	April 24, 1999
PA194172R	Production of triphenyl phosphite: reactor #7	April 24, 1999
PA194072J	Vacuum drying: kettle reactor #12	April 24, 1999
PA040082L	Half soap reactor tank	November 21, 2000
PA039982Z	Mfg. of industrial chemicals: drum filling station with crusher	September 17, 2000
PA039882L	Mfg. of industrial chemicals: blending of stearate, silicate, and carbonante	September 17, 2000
PA039782Y	Mfg. of industrial chemicals: blending cone and drum filling station	September 17, 2000
PA039682R	Mfg. of industrial chemicals: blending cone and drum filling station	September 17, 1997*
PA040182Z	Fusion soap reactor tank	November 21, 2000
PA083289Z	Production of triphenyl phosphites	September 25, 1999
PA024090L	Raw material blending cone #2	June 5, 1999
PA024190Z	Mfg. of industrial chemicals: reactor tank and 7 high X8	June 5, 1999
PA039582J	Mfg. of industrial chemicals: tote/tilt bin station	September 17, 2000
PA040282X	Scrubber unit on reactor tank	February 11, 1999
PA195372X	Grinding and blending of fatty acid soaps	April 7, 1999
PA195272Z	Venting of hydrogen chloride gas from reactor	April 7, 1999
PA195172L	Grinding of fatty acid soaps	April 7, 1999
PA195072Y	Mfg. of vinyl stabilizer: process reactor	April 7, 1999

*Renewal to extend permit to September 17, 2000 is pending inspection by the NYDEP Bureau of Air.

TABLE 7
RESULTS OF 1988 ASBESTOS SURVEY
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Location	Sample Type	Quantity	Results
633 Court Street			
Boiler room pipe and duct insulation, pipe insulation outside pipe room, ceiling material.	bulk	4	Polarized light microscope examination (PLME) observed asbestos fibers in all 4 bulk samples.
Various	air	24	Four samples contained asbestos fiber concentrations at detection limit of 0.00457 fibers/cc of air sampled(1)
688 Court Street			
Building 1- pipe insulation	bulk	3	PLME observed asbestos fibers in all 3 bulk samples.
	air	12	None of the samples contained asbestos fibers.
Building 7 - pipe insulation	bulk	3	PLME observed asbestos fibers in 2 of 3 bulk samples.
	air	3	None of the samples contained asbestos fibers.
Building 7E - pipe insulation	bulk	3	PLME observed asbestos fibers in 1 of 3 bulk samples.
	air	3	None of the samples contained asbestos fibers.
Building 11 - pipe insulation	bulk	2	PLME observed asbestos fibers in both bulk samples.
	air	3	None of the samples contained asbestos fibers.
Building 12 - pipe and tank insluation	bulk	3	PLME observed asbestos fibers in 1 of 3 bulk samples.
	air	3	None of the samples contained asbestos fibers.
Building 13 - pipe and tank insulation	bulk	17	PLME observed asbestos fibers in 16 of the bulk samples.
	air	6	None of the samples contained asbestos fibers.
Building 14 - pipe insulation	bulk	4	PLME observed asbestos fibers in 3 of 4 bulk samples.
	air	3	None of the samples contained asbestos fibers.
Building 15	air	3	None of the samples contained asbestos fibers.
Building 16 - pipe and tank insluation	bulk	5	PLME observed asbestos fibers in 4 of 5 bulk samples.
	air	5	None of the samples contained asbestos fibers.
Building 17	air	5	None of the samples contained asbestos fibers.
Building 18	air	3	None of the samples contained asbestos fibers.
Building 19 - pipe and tank insulation	bulk	4	PLME observed asbestos fibers in all 4 bulk samples.
	air	4	None of the samples contained asbestos fibers
Tank Farms - T206, T4018, T6027 (2 samples), and T6020	bulk	5	PLME observed asbestos fibers in all 5 bulk samples.

(1) 0.00457 fibers /cc is approximately 2.3% of the OSHA permissible limit and thus is within the acceptable range.

Source: Shapiro 1988.

TABLE 8
STORAGE TANK INVENTORY AT THE BROOKLYN PLANT
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Product	Location	Vessel	Year Built	Tank Type	End Type	Diameter (inches)	Length (inches)	Nominal Capacity (gal)	End Volume (gal)	Constr. Mat'l
200 GLS Reactor	B-11	R-8206		V	D	40	48	200	15	
Phosphites Filter Feed Tank [New Filter Tank]	B-11	T-4059	1996	V	C	108	122	5000		SS
1500 Gals Mix Tank	B-12	R-1003		V	C	76	74	1500		
4000 Gals Mix Tank	B-12	R-1005		V	C	108	110	4000	178	
Reactor #9	B-12	R-1007		V	D	90	66	2200		
#9 Soap Kettle	B-12	T-1013		V	D	48	36	300	15	
EQ-11-15	B-12	T-1019	1959	V	C	76	170	3300	63	SS
DPP	B-12	T-1020	1959	V	C	76	170	3300	63	SS
PZn	B-12	T-1021	1959	V	C	76	170	3300	63	SS
Ba Octoate	B-12	T-1022	1959	V	C	76	170	3300	63	SS
KJB-4-36	B-12	T-1023	1959	V	C	76	170	3300	63	SS
Zn Oct Sol	B-12	T-1024	1959	V	C	76	170	3300	63	SS
OBB	B-12	T-1026	1965	V	C	76	170	3300	63	SS
LR-868-25	B-12	T-1027	1965	V	C	76	170	3300	63	SS
LZ-2116	B-12	T-1031	1986	V	C	77	188	3300	69	SS
BCO	B-12	T-1032	1986	V	C	77	188	3300	69	SS
MARK 570	B-12*	T-1033	1986	V	C	115	144	6500	142	SS
MARK 517	B-12*	T-1034	1986	V	C	115	144	6500	142	SS
Waste Water	B-12*	T-208	1982	V	F	120	152	8090		Furan
Waste Water	B-12*	T-7017		F	D	138	216	13000		

TABLE 8 (Continued)
STORAGE TANK INVENTORY AT THE BROOKLYN PLANT
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Product	Location	Vessel	Year Built	Tank Type	End Type	Diameter (inches)	Length (inches)	Nominal Capacity (gal)	End Volume (gal)	Constr. Mat'l
MARK 4716	B-12*	T-7018		C	D	126	188	9500	378	
Liquid CO2	B-12*									
Liquid Waste	B-13	R-1002		V	C	78	70	1500	110	
Sewer Decanter	B-13	T-4027		V	C	94	96	3000	100	SS
Waste Water	B-13	T-4044	1987	V	F	120	240	12000		Furan
Waste Blend Tank #1	B-13	T-5000	1967	V	D	78	70	1500	110	SS
Spare Tank [Waste Water]	B-13	T-5008	1959	V	D	77	70	1500	108	SS
Treated Water	B-13	T-7018B	1994	C	D	126	188	9500	378	CS
Waste Treatment	B-13	T-7020		V	F	124	96	5000		
Waste Treatment	B-13	T-7021		V	F	124	96	5000		
Waste Blend Tank II	B-13*	R-6002		V	D	96	93	3500		
Chemical Storage #3	B-13*	T-1028	1983	V	C	115	145	6500	282	SS
Chemical Storage #4	B-13*	T-1029	1983	V	C	115	145	6500	282	SS
MARK 4795R	B-13*	T-1037		V	F	138	216	13000		SS
MARK 4781A	B-13*	T-1039		V	F	138	158	10000		SS
Spare Tank	B-13*	T-1042A	1995	V	D	72	384	6700	87	SS
Spare Tank	B-13*	T-1042B	1995	V	D	72	384	6700	87	SS
MARKSTAT AL-26 [spare tank]	B-13*	T-1042C	1995	V	D	72	384	6700	87	SS
Spare Tank	B-13*	T-1042D	1995	V	D	72	384	6700	87	SS
MARK 4782A	B-13*	T-6025	1968	V	D	132	180	12000	529	Alum

TABLE 8 (Continued)
STORAGE TANK INVENTORY AT THE BROOKLYN PLANT
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Product	Location	Vessel	Year Built	Tank Type	End Type	Diameter (inches)	Length (inches)	Nominal Capacity (gal)	End Volume (gal)	Constr. Mat'l
Chemical Storage #2	B-13*	T-6026	1968	V	D	132	180	12000	529	Alum
BAM	B-13*	T-6027	1982	V	D	129	180	10400	281	SS
Non-toxic blender	B-16	A-102		H	F				206	
750 GLS Non-Toxic Reactor	B-16	D-101A		V	D	60	60	750	50	
Cone #1	B-16	R-3001		V	C			150		
Cone #2	B-16	R-3002		V	C			150		
Precipitation Reactor	B-16	R-3003		V	C	76	96	1900		
Half Soap Reactor	B-16	R-3008		V	C	43	48	300		
Stearic Melter	B-16	R-3009		V	C	43	48	300		
#5 Reactor	B-16	R-3016		V	D	66	65	1100		
150 Cu.Ft. Blender	B-16	R-3017						150		
Disolvent Tank	B-16	R-3019		V	D	88	96	2500	159	
SS Hopper Scale	B-16	T-3001	1960	V	C	96	24	1500		SS
400 Gal Fatty Acid Scale	B-16	T-3006B		V	D	48	60	400	25	SS
Reactor	B-19	D-101		V	D	50	72	1000	50	
Reactor	B-19	D-102		V	D	96	110	3500	205	
Crystalization Reactor	B-19	D-103		V	D	72	68	1250		
Monel Reactor	B-19	D-104		V	D	41	29	150		
Solvent Cleaning	B-19	D-105		V	D	108	110	4000	178	
Receiver	B-19	F-101	1969	V	D	35	48	200	10	G/L

TABLE 8 (Continued)
STORAGE TANK INVENTORY AT THE BROOKLYN PLANT
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Product	Location	Vessel	Year Built	Tank Type	End Type	Diameter (inches)	Length (inches)	Nominal Capacity (gal)	End Volume (gal)	Constr. Mat'l
Solvent Receiver	B-19	F-103	1969	V	D	66	78	1000	66	SS
Caustic Tank	B-19	F-105B	1987	V	F	48	60	470	0	SS
Solvent Wash	B-19	F-109	1969	V	D	36	48	200	11	SS
Solvent Cleaning	B-19	F-110	1969	V	D	90	108	3000	167	SS
Flaker Scale Tank	B-19	F-113	1994	H	D	42	144	700		SS
Refrigerated Water	B-19	F-207	1969	V	F	84	84	2000		CS
Storage Tank Waste Water	B-19	T-4056	1990	V	F	120	240	11700	0	CS
#8 Phosphite Reactor	B-7	R-103		V	D	125	120	7000	711	
Filter Feed Tank (Old #8)	B-7	R-4004		V	D	96	121	4000	206	
#10 Reactor	B-7	R-6004		V	D	96	122	4000	206	
#8 Phenol Receiver	B-7	T-103	1982	V	D	83	83	2000	133	SS
#12 Reactor	B-7 ext.	R-104A		V	D	78	84	2000		
Reactor #6 TPP	B-7 ext.	R-4002		V	D	78	84	2000		
Reactor #7 TPP	B-7 ext.	R-4003		V	D	78	84	2000		
Phenol #7 Receiver	B-7 Ext.	T-4013		V	D	66	60	1000	122	G/L
MARK 517	B-7 Ext.	T-4031		V	D	126	216	11000	465	
MARK 570 RUNDOWN	B-7 Ext.	T-4032		V	D	126	216	11000	465	
Phenol 12. Receiver	B-7 Ext.	T-4041		V	D	66	69	1000	122	G/L
Phenol Weight Tank	B-7 Ext.	T-4047	1988	V	C	70	96	1500	67	SS
PC13 Batch Tank	B-7 Ext.	T-4048	1988	V	D	48	72	600	26	SS

TABLE 8 (Continued)
STORAGE TANK INVENTORY AT THE BROOKLYN PLANT
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Product	Location	Vessel	Year Built	Tank Type	End Type	Diameter (inches)	Length (inches)	Nominal Capacity (gal)	End Volume (gal)	Constr. Mat'l
PC13 Batch Tank	B-7 Ext.	T-4054C	1992	V	D	36	54	250		SS
Phenol	B-7 Ext.	T-6016		V	F	138	216	14000		
Equalization Tank	Parking Lot	T-7019		F	D	126	378	20000		
2 Ethyl Hexanol	TF-1	T-1038		V	F	120	216	10000		Alum
Stearic Acid 7018	TF-1	T-3004		V	F	188	188	15000		SS
Spare Tank	TF-1	T-3005	1960	V	F	96	168	5000		SS
Drapex 6.8	TF-1	T-3007		V	F	138	240	15500		SS
Isooctanol	TF-1	T-4017		V	F	96	159	5000		
BANPH	TF-1	T-4018		V	F	114	139	5400		
Drapex 4.4	TF-1	T-4030		V	D	132	180	12000	529	Alum
Stearic Acid 9018	TF-1	T-6017		V	F	138	216	14000		
Nonylphenol	TF-1	T-6018		V	F	138	216	14000		
Tall Oil	TF-1	T-6019		V	F	138	216	14000		
Drapex 6.8 - Taft	TF-1	T-6020		V	F	138	216	14000		
Drapex 6.8 - Taft	TF-1	T-6021		V	F	138	177	13000		
Isodecanol	TF-1	T-6022		V	F	138	216	14000		
12-15 Alcohol	TF-1	T-6023		V	F	138	216	14000		
2-EH Acid	TF-2	T-1002	1960	V	F	96	188	5000		SS
Process Oil	TF-2	T-1004	1960	V	F	96	188	5000		Alum

TABLE 8 (Continued)
STORAGE TANK INVENTORY AT THE BROOKLYN PLANT
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Product	Location	Vessel	Year Built	Tank Type	End Type	Diameter (inches)	Length (inches)	Nominal Capacity (gal)	End Volume (gal)	Constr. Mat'l
Process Oil	TF-2	T-1005	1960	V	F	96	188	5000		Alum
Tridecanol	TF-2	T-1006		V	F	96	188	5000		
DEG MBE	TF-2	T-1007		V	F	96	188	5000		
OMS	TF-2	T-1036	1990	H	D	96	241	8000		CS
Spare Tank [2-Ethyl Hexanoic Acid]	TF-2	T-1040	1993	V	D	96	192	6000		SS
D.P.G	TF-2	T-1041		V	F	84	216	5200		SS
Spare Tank	TF-2	T-4043	1987	V	F	120	240	12000		Furan
#6 Fuel Oil	TF-2	T-7015	1990	H	D	96	241	8000		CS
Tank on Wheels Waste H2O	TF-3	T-1015		V	C	72	84	1000	55	
Phenol Bottoms	TF-3	T-4006		H	D	101	130	5000	0	G/L
Sulfuric Acid Unit	TF-3	T-4035		V	D	60	78	1000	51	
HCl Storage Tank #6	TF-3	T-4043B		V	F	120	240	12000	0	
HCl Storage Tank #5	TF-3	T-4044B	1995	V	F	120	240	12000		FRP
HCl Storage Tank #3	TF-3	T-4052	1989	V	F	120	170	8000		Furan
HCl Storage Tank #2	TF-3	T-4053	1990	V	F	120	163	8000		Furan
2.4 TDB Phenol [2.4 DTB Phenol]	TF-3	T-6007	1959	H	D	101	130	5000		G/L
After Condenser Jet H2O	TF-3	T-7011	1987	V	D	66	66	1000	67	CS
Jet Condensate Storage	TF-3	T-8701	1988	V	F	96	132	4000		Furan
Neutralizer HCl	TF-3	T-8702	1988	V	F	96	156	4800		Furan

TABLE 8 (Continued)
STORAGE TANK INVENTORY AT THE BROOKLYN PLANT
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Product	Location	Vessel	Year Built	Tank Type	End Type	Diameter (inches)	Length (inches)	Nominal Capacity (gal)	End Volume (gal)	Constr. Mat'l
I.P.A.	TF-4	F-201	1993	H	D	72	228	4000		CS
I.P.A	TF-4	F-202	1993	H	D	72	228	4000		CS
Cumene	TF-4	F-203	1993	H	D	72	228	4000		CS
Methyl Benzoate	TF-4	F-204	1993	H	D	72	228	4000		CS
Storage Tank	TF-4	F-205	1993	H	D	72	228	4000		CS
Chemical Waste [Mark DBM residues]	TF-4	F-208	1983	V	C	141	145	6500	282	SS
Chemical Waste [Mark 2112 residues]	TF-4	F-209	1985	V	C	114	144	6500	124	SS
Recovery Weight Tank	TF-4	T-4001		V	C	78	120	2500	55	SS
Sulfuric Acid Storage Tank	TF-4	T-4060	1995	H	D	96	186			CS
Waste Water from 19	TF-5	B-0879		V	D	144	144	10600	823	
MARK 366	TF-5	T-202	1982	V	FB-CT	144	216	15000		SS
MARK TPP	TF-5	T-203	1982	V	FB-CT	144	216	15000		SS
MARK 366	TF-5	T-204	1982	V	FB-CT	144	216	15000		SS
MARK 1178	TF-5	T-205A	1982	V	FB-CT	144	216	15000		SS
MARK TPP (EXXON)	TF-5	T-205B	1982	V	FB-CT	144	216	15000		SS
MARK 1178B	TF-5	T-205C	1982	V	FB-CT	144	216	15000		SS
Phenol Bottom from #8	TF-5	T-206	1982	V	CT-CB	129	180	10400	271	SS
MARK TPP	TF-5	T-207	1982	V	CT-CB	129	180	10400	271	SS
PC13 Storage	TF-5	T-213	1982	H	D	113	211	10000		CS
Decyl Chloride Storage	TF-5	T-4034		H	D	100	128	5000		G/L

TABLE 8 (Continued)
STORAGE TANK INVENTORY AT THE BROOKLYN PLANT
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN, KINGS COUNTY, NEW YORK
MARCH 1998

Product	Location	Vessel	Year Built	Tank Type	End Type	Diameter (inches)	Length (inches)	Nominal Capacity (gal)	End Volume (gal)	Constr. Mat'l
Sulfuric Waste Tank	TF-5	T-4049	1989	H	D	102	126	5000		G/L
20% Caustic Solution	TF-5	T-4050	1989	V	F	144	204	14000		CS
Inoperative Tank	TF-5	T-4055		H	D	102	174	6000		
Chemical Waste	TF-5	T-5015		H	D	72	156	3000		
Chemical Waste	TF-5	T-6001		H	D	105	177	7700		
Bulk Decanter Storage	TF-5	T-7005	1985	V	C	115	144	6500	124	SS
Waste Water from B-19	TF-5	T-7014			V	F	126	204	10000	
HCl Storage #4		T-208B	1995	V	F	120	152	8090		FRP
HCl Storage Tank #1		T-4042	1981	V	F	120	152	8000		Furan
#2 Oil for CDO		T-7012		H	D					

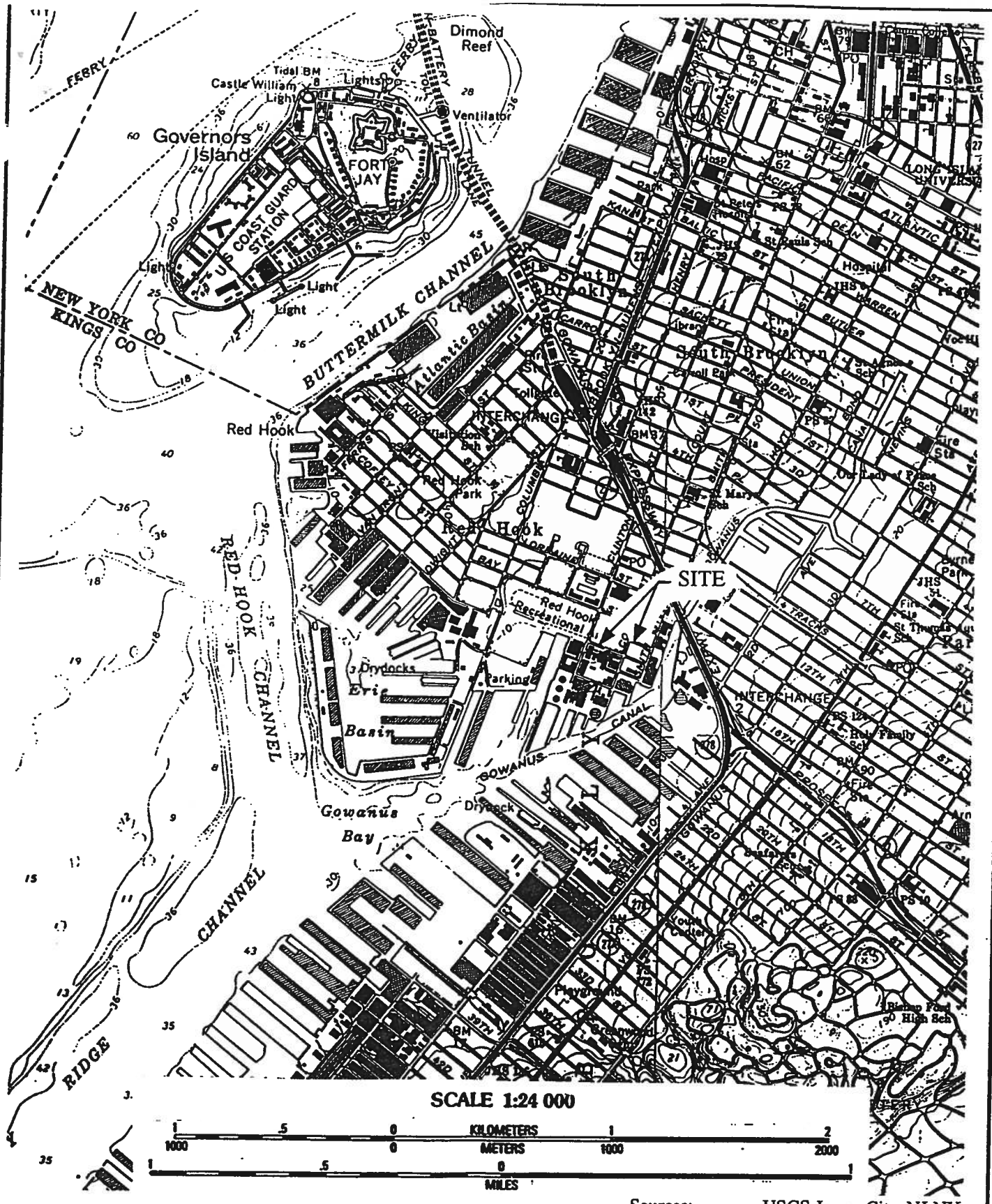
NOTES

Type: V = Vertical
H = Horizontal

End: D = Domed
F = Flat
C = Conical
FB-CT = Flat bottom, conical top
CT-CB = Conical top, conical bottom

Location: B = Building
TF = Tank Farm
B-12* = Area between Buildings 12 and 13

Construction Material: SS = Stainless steel
CS = Carbon steel
Alum = Aluminum
FRP = fiberglass-reinforced plastic
G/L = glass-lined



Sources: USGS Jersey City, NJ-NY
USGS Brooklyn, NY

Witco Brooklyn Site
633, 688 and 700 Court Street
Brooklyn, NY

FIGURE 1

SITE LOCATION MAP

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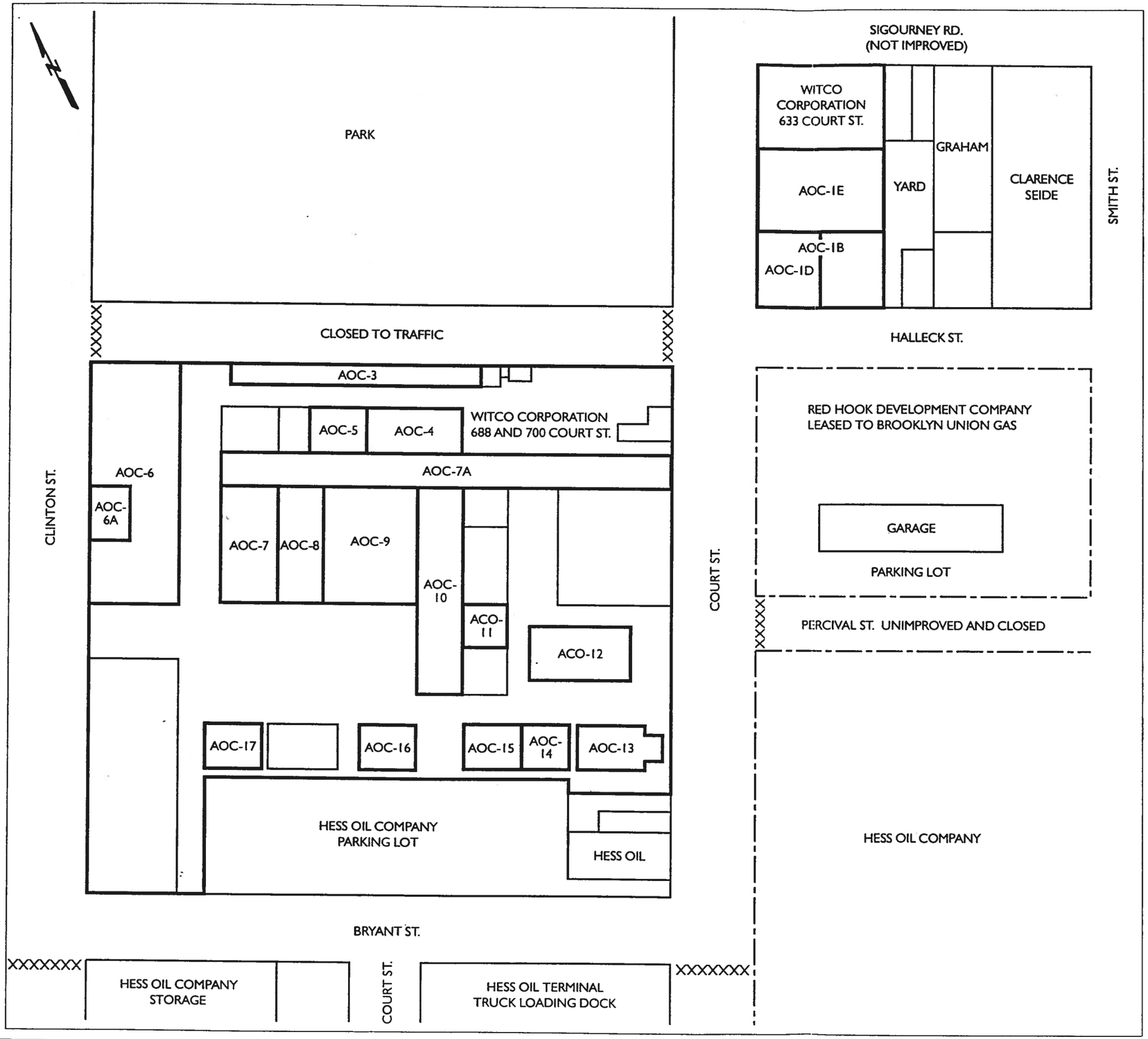
TABLE 9 (Continued)
SUMMARY OF AREAS OF CONCERN
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN PLANT
MARCH 1998

AOC Number	AOC Title	Location	Process Description	Selection Rationale	COCs
AOC-7A	Wastewater Effluent Line from Building 13 to the Discharge Point at Court Street	Extends from Building 13 to discharge point at Court Street	Effluent line in operation prior to initiation of wastewater pretreatment about 1991.	Potential release during system operation	VOCs, SVOCs, metals (Ba, Cd, Pb, Zn)
AOC-8	Tank Farm between Buildings 12 and 13	Northeastern portion of the plant	Tank farm for wastewaters and various Liquid Production products in operation since start of production activities	Potential release during storage	VOCs, SVOCs, metals (Ba, Cd, Pb, Zn)
AOC-9	Buildings 11 and 12 (Liquid Production and Blending Area)	Central portion of the plant, adjacent to Building 11	Production and blending of liquids since about 1960.	Potential release during process operations	Metals (Ba, Cd, Pb, Zn)
AOC-10	Buildings 7 and 7 Extension (Liquid Production and Phosphite Production)	Northern central portion of the plant	Phthalic anhydride manufacturing during most of the 1960s.	Potential release during process operations	Phenols, metals (Cd, Pb)
AOC-11	Area 22 - Neutralization Area	Central portion of the plant, east of Building 7 Extension	Tank farm operational since start of production activities.	Potential release during storage	Phenols
AOC-12	Tank Farm 5	Eastern portion of the plant	Tank Farm operational since about 1960.	Potential release during storage	Phenols
AOC-13	Building 19 and Tank 1001 Area	Southeast corner of the plant.	Manufacturing of plasticizers from 1968 until early 1990s. Purification activities for trineophyl tin oxide until early 1990s.	Potential release during process operations	trineophyl tin oxide, toluene, xylene, cumene
AOC-14	Area 24 - Tank Farm	Southwest portion of the plant, adjacent to Building 19	Tank farm containing chemical waste from Building 19.	Potential release during storage	trineophyl tin oxide, toluene, xylene, cumene
AOC-15	Former USTs at Tank Farm 4	Southeast portion of the plant	Five stainless steel underground storage tanks installed in 1970. Replaced with double-walled, carbon steel tanks in 1993.	Potential release during storage	Mineral spirits
AOC-16	Hazardous Waste Storage Area	Southern portion of the plant	Hazardous wastes stored in drums or totes pending transportation to a disposal facility. Dikes and concrete pavement installed in 1987.	Potential release during storage prior to installation of dikes and concrete pavement	VOCs, SVOCs, metals (Ba, Cd, Pb, Zn)
AOC-17	Former Burn Area West of Building 18	West of Building 18	Wood and cardboard reportedly burned	Former burning site; complete inventory of items burned not known	SVOCs, metals (Ba, Cd, Pb, Zn)
AOC-18	Groundwater beneath 688 and 700 Court Street			• Potential release from site activities • Potential off-site sources migrating toward site	VOCs, SVOCs, ammonia, nitrates, nitrites, metals (Al, Ba, Cd, Cr, Co, Cu, Fe, Mg, Pb, Hg, Ni, Ag, Zn)
			633, 688 and 700 Court Street		
AOC-19	Lead-Containing Paints	Plant-wide (potentially)	Painted equipment and infrastructure	Potential use of lead-based paints	Pb
AOC-20	Asbestos-Containing Material	Dispersed Plant-wide	Used for insulation, in tile and building materials	Asbestos survey	Asbestos

TABLE 9
SUMMARY OF AREAS OF CONCERN
PHASE I ENVIRONMENTAL SITE ASSESSMENT
BROOKLYN PLANT
MARCH 1998

AOC Number	AOC Title	Location	Process Description	Selection Rationale	COCs
			633 Court Street		
AOC-1A	Former Tar Felt Paper Manufacturing Area	Entire 633 Court Street parcel	Tar felt paper manufacturing from approximately 1900 to 1940s.	Potential releases during process operations	VOCs, SVOCs, metals (As, Ba, Cr, Pb)
AOC-1B	Former Aluminum Paste Manufacturing Area	Southern portion of the 633 Court Street building	Aluminum paste manufacturing from late 1940s until late 1950s.	Potential releases of aluminum particles and dioctylphthalates during manufacturing and handling activities	PAHs, metals (Al)
AOC-1C	Former Organo-Metallic Soaps and Salts Manufacturing Area	Entire 633 Court Street parcel	Organo-metallic soaps and salts manufacturing from early 1950s until late 1950s.	Potential releases during process operations	Dibutyltin, tributyltin, metals (Ba, Cd, Pb, Zn)
AOC-1D	Underground Storage Tanks	Western portion of the 633 Court Street building	Four underground storage tanks installed in 1956. Closure status unknown	Potential releases during storage	TPH
AOC-1E	Boiler Room (former hot oil system)	Central portion of the 633 Court Street building	PCB-containing oils used in systems prior to mid-1980s.	Potential releases during system operation	PCBs
AOC-2	Groundwater underlying 633 Court Street			• Potential releases from previous activities • Potential impact from off-site source migration	VOCs, SVOCs, dibutyltin, tributyltin, PCBs and metals (Al, Ba, Pb, Zn)
			688 and 700 Court Street		
AOC-3	Tank Farm 1	Northern portion of the plant	Tank farm used since 1960 to house both aboveground and underground storage tanks.	Potential releases during storage	Xylenes, mineral spirits, TPH
AOC-4	Tank Farm 2	Northern portion of the plant	Tank farm used since 1960	Potential releases during storage	Xylenes, mineral spirits, isopropanol, TPH
AOC-5	Boiler Room at Building 14 (former hot oil system)	Northern portion of the plant	PCB-containing oils used in system prior to mid-1980s. Toluene burned in the boiler.	Potential releases during system operation	Toluene, PCBs
AOC-6	Building 16 - Solids Production	Northwest corner of the plant	Barium, calcium and zinc soaps produced since about 1960. Cadmium and lead also used until late 1980s to early 1990s.	Potential releases during process operations	Metals (Ba, Cd, Pb, Zn)
AOC-6A	Former Hot Oil System in Building 16	West side of Building 16	PCB-containing oils used in system prior to mid-1980s.	Potential releases during system operation	PCBs, metals (Ba, Cd, Pb, Zn)
AOC-7	Building 13 - Totes Cleaning, Wastewater Pretreatment System, and Former Hot Oil System	Northwestern portion of the plant, east of Building 16	Cleaning of product storage containers since early 1960s. Wastewater pretreatment system operational since 1991. A hot oil system using PCB-containing oil operated until early 1980s.	• Concrete flooring cracked and showed signs of erosion • Potential contamination from the washout, wastewater treatment and waste handling activities could have occurred through cracks in concrete • Potential releases during hot oil system operation	VOCs, SVOCs, metals (Ba, Cd, Pb, Zn), PCBs



AOC Number	AOC Title
633 Court Street	
AOC-1A	Former Tar Felt Paper Manufacturing Area (covers entire parcel)
AOC-1B	Former Aluminum Paste Manufacturing Area
AOC-1C	Former Organo-Metallic Soaps and Salts Manufacturing Area (covers entire parcel)
AOC-1D	Underground Storage Tanks
AOC-1E	Boiler Room (former hot oil system)
AOC-2	Groundwater underlying 633 Court Street (covers entire parcel)
688 and 700 Court Street	
AOC-3	Tank Farm 1
AOC-4	Tank Farm 2
AOC-5	Boiler Room and Building 14 (former hot oil system)
AOC-6	Building 16 - Solids Production
AOC-6A	Former Hot Oil System in Building 16
AOC-7	Building 13 - Totes Cleaning, Wastewater Pretreatment System, and Former Hot Oil System
AOC-7A	Wastewater Effluent Line from Building 13 to the Discharge Point at Court Street
AOC-8	Tank Farm between Buildings 12 and 13
AOC-9	Buildings 11 and 12 (Liquid Production and Blending Area)
AOC-10	Buildings 7 and 7 Extension (Liquid Production and Phosphite Production)
AOC-11	Area 22 - Neutralization Area
AOC-12	Tank Farm 5
AOC-13	Building 19 and Tank 1001 Area
AOC-14	Area 24 - Tank Farm
AOC-15	Former Underground Storage Tanks at Tank Farm 4
AOC-16	Hazardous Waste Storage Area
AOC-17	Former Burn Area West of Building 18
AOC-18	Groundwater beneath 688 and 700 Court Street (covers entire parcel)
633, 688 and 700 Court Street	
AOC-19	Lead-Containing Paints (potentially plant-wide)
AOC-20	Asbestos-Containing Material (potentially plant-wide)

Source:

Maps Provided by Client:

- "Area Map." Dwg No. 130-4-PLT, December 9, 1996.
- "1997 Inventory." Dwg No. 130-INVENTORY-1997, August 14, 1997.

One Witco Alliance Greenville, SC		
Areas of Concern Brooklyn, New York		
Scale: NTS	Drawn by: L.M.	Checked by: M.M.
Job No: 87896025	Date: 3-11-98	Figure No: 3

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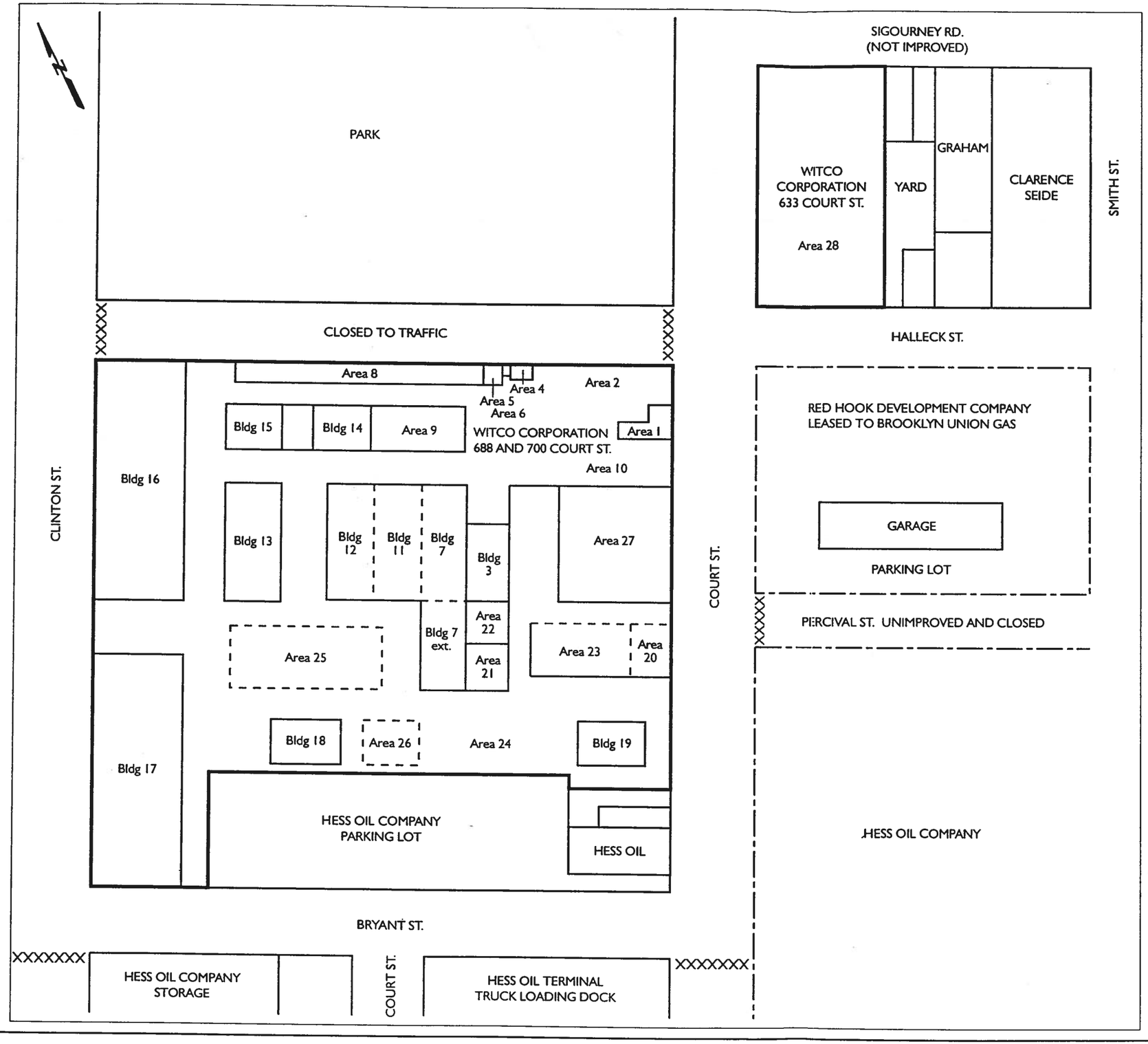

Building & Area Numbers			
Number	**Description**	**Number**	**Description**
1	Office	15	Production Storage
2	Warehouse	16	Solids Production
3	Tool Storage	17	Shipping and Warehouse
4	Storage	18	Pipe Shop
5	Drumming Station	19	Semi-works Plant
6	Storage	20	Cooling Area
7	Production	21	Tank Farm No. 3
7 ext.	Phosphite Production	22	Neutralization Area
8	Tank Farm No. 1	23	Tank Farm No. 5
9	Tank Farm No. 2	24	Tank Farm No. 4
10	Parking Area	25	Drum Storage Area
11	Liquid Production	26	Hazardous Waste Storage
12	Blending Area	27	Offices
13	Totes Cleaning Area	28	Storage
14	Boiler Room		

Source:

Maps Provided by Client:

- "Area Map." Dwg No. 130-4-PLT, December 9, 1996.
- "1997 Inventory." Dwg No. 130-INVENTORY-1997, August 14, 1997.

One Witco Alliance
Greenville, SC

Site Layout
Brooklyn, New York

Scale: NTS	Drawn by: L.M.	Checked by: M.M.
Job No: 87896025	Date: 3-9-98	Figure No: 2

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