McLaren Hart

ENVIRONMENTAL ENGINEERING CORPORATION

December 23, 1992

Mr. Paul R. Counterman, P.E., Director
Bureau of Hazardous Waste Facility Management
Division of Hazardous Substances Regulations
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

RE: *RCRA Facility Assessment Report*
Al Tech, Dunkirk, New York, Plant
McLaren/Hart Project No. AL379-02

Dear Mr. Counterman:

Enclosed please find two copies of the RCRA Facility Assessment Report of the AL Tech Specialty Steel facility located in Dunkirk, New York. If you have any questions regarding the Assessment Report, please contact me at (518) 869-6192 at McLaren/Hart's Albany office.

Sincerely,

McLAREN/HART ENVIRONMENTAL ENGINEERING CORPORATION

John A. Crounse, P.E.
Senior Engineer

JAC:mw
enclosures
cc: C. Van Guilder - NYSDEC
J. Reidy - USEPA
E. Diehl - Al Tech
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D. Zurakowski - Al Tech

28 Madison Avenue Extension, Albany, NY 12203 (518) 869-6192 FAX (518) 869-3971

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RCRA FACILITY ASSESSMENT REPORT

Property:

AL TECH SPECIALTY STEEL
DUNKIRK, NEW YORK

Prepared for:

AL TECH SPECIALTY STEEL
WILLOWBROOK AVENUE
DUNKIRK, NEW YORK 14048

Prepared by:

MCLAREN/HART ENVIRONMENTAL ENGINEERING CORPORATION
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DECEMBER 23, 1992

MCLAREN/HART PROJECT Nº 14-0000379-002-003

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ENVIRONMENTAL ENGINEERING CORPORATION

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1.0 INTRODUCTION

The AL Tech Specialty Steel Facility located in Dunkirk, New York consists of four (4) separate manufacturing complexes. These manufacturing facilities include the Brigham Road Plant (BRP), the Howard Avenue Plant (HAP), the Bar Finishing and Storage (BFS) Plant and the Lucas Avenue Plant (LAP). These complexes manufacture stainless steel bar, rod and wire.

McLaren/Hart Environmental Engineering Corporation (McLaren/Hart) was retained as AL Tech's consultant to perform a Resource Conservation and Recovery Act (RCRA) Facility Assessment including a Description of Current Conditions Report (DCCR) in accordance with the RCRA Corrective Action Program. The main program objective is to identify and implement remediation of Solid Waste Management Units (SWMUs) which pose an unacceptable risk to human health or the environment. The RCRA Corrective Action Program was mandated in 1984 by the Hazardous and Solid Waste Amendments to RCRA which authorized the United States Environmental Protection Agency (EPA) to enforce corrective action requirements on all permittees. This corrective program will be completed pursuant to a consent order to ensure all EPA and New York State Department of Environmental Conservation (NYSDEC) requirements are met. AL Tech is taking the unique step of developing an RCRA Corrective Action Program that utilizes a "manufacturing process orientation"; both historical and current. By this method, the corrective action investigation and implementation has the highest probability of identifying, characterizing, and remedying those areas of greatest concern.

In preparation for the RCRA Facility Assessment (RFA), a DCCR was required to provide background information on the AL Tech facility. The DCCR, which provides greater detail on historical and current plant processes, types of wastes generated, and site layout/facility features (*i.e.*, drawings), should be referred to where clarifications are required.

The following sections of this RFA report provide a description of the physical/environmental setting, a brief summary of the current plant processes and site history, and identification of SWMUs and other areas of concern (AOCs) that may or may not pose an unacceptable risk to human health and/or the environment, including recommended general plans for further evaluation of the units/areas of concern. These recommendations will be used to guide the RCRA Facility Investigation (RFI) and future corrective measures that will be employed to eliminate the potential risks to human health or environment present at the facility.

II

2.0 PHYSICAL SETTING

2.1 Site Boundaries, Adjacent Property Owners and Land Use

The AL Tech facility is located in the southwest portion of the City of Dunkirk, Chautauqua County, New York. Figure 2-1 is a site location map illustrating the facility's property boundaries. The subject property, approximately ninety acres in area, is bordered to the north by Lucas Avenue; to the west by Brigham Road; to the south by Willowbrook Avenue; and to the east by open fields, private residences, and municipal buildings. A small rectangular parcel along Willowbrook Avenue, formerly owned by Allegheny International, Inc., is currently owned and operated by Special Metals, Inc. Figure 2-2 shows the AL Tech property boundary and adjacent properties. The property surrounding the site consists primarily of residential areas, open fields and light industry. The areas north, east and south of the site are zoned residential. The property to the west is zoned light industrial, however, the current primary land use is residential.

Other notable land features located on and/or adjacent to the subject property include a spur of the Norfolk Western and Penn Central railroads and tributaries of Crooked Brook. The railroad is oriented east to west in the northern portion of the subject property. The eastern branch of Crooked Brook flows to the northwest and comes to within approximately one tenth of a mile from the eastern property boundary. The western branch also flows to the northwest and intersects a small portion of the southwest corner of the property.

2.2 Topography

The site is located on the coastal reaches of Lake Erie within the Erie-Ontario Lowlands physiographic province (Surficial Geologic Map of New York, Niagara Sheet: Cadwell, 1988). The topography of the Erie-Ontario Lowlands province consists of flatlands with vestiges of drainage patterns formed by post glacial waters from the Appalachian Uplands to the southeast. The maximum elevation in the vicinity of the site occurs along the Portage Escarpment to the south and southeast. Elevations along the escarpment range up to 1,600 feet above mean sea level. Elevations from the escarpment sharply decline to the north and northwest then level out toward Lake Erie. Land surface elevations vary across the site ranging from approximately 620 feet to 640 feet above mean sea level.

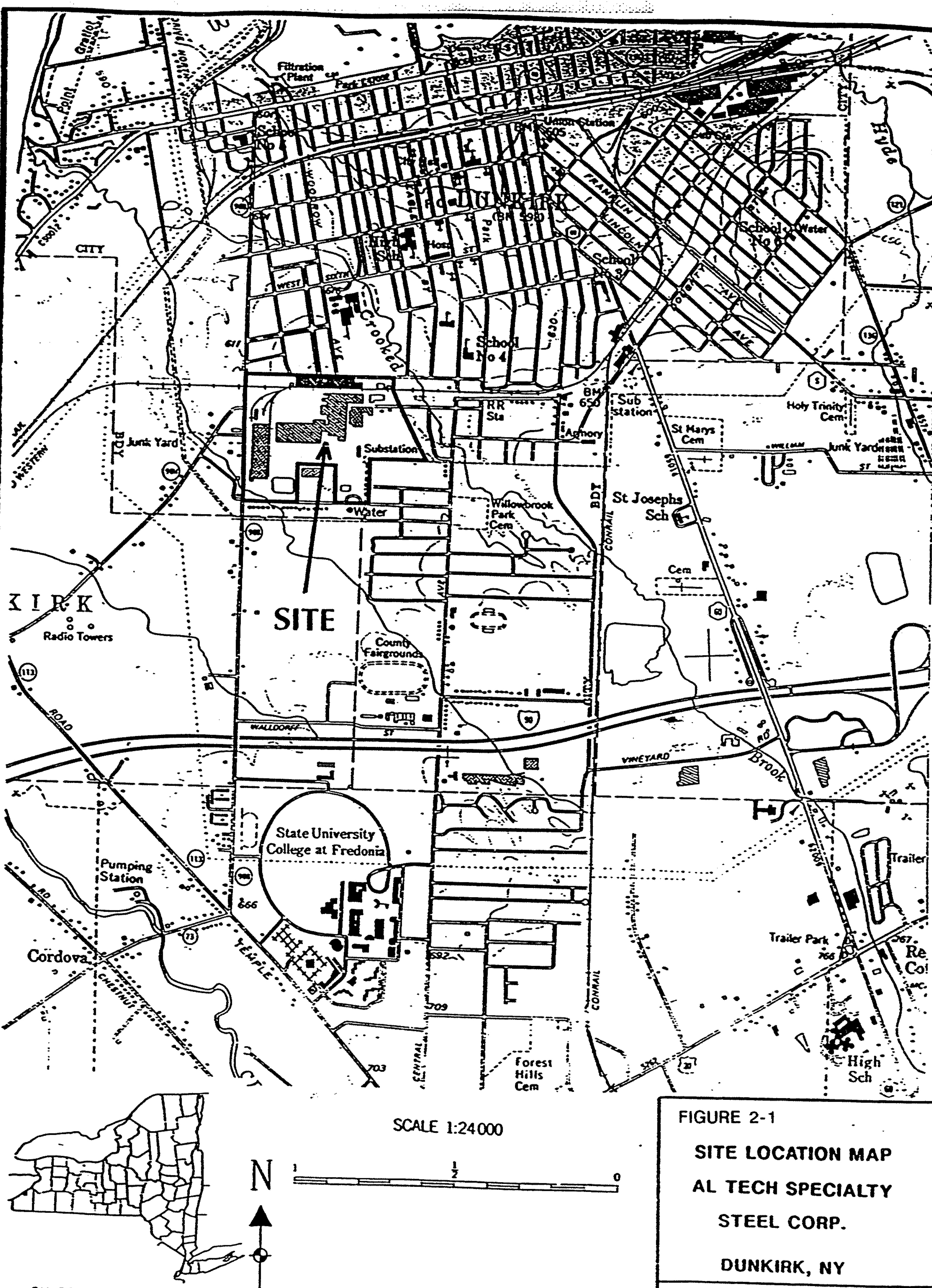


FIGURE 2-1

SITE LOCATION MAP

AL TECH SPECIALTY STEEL CORP.

DUNKIRK, NY

McLAREN/HART

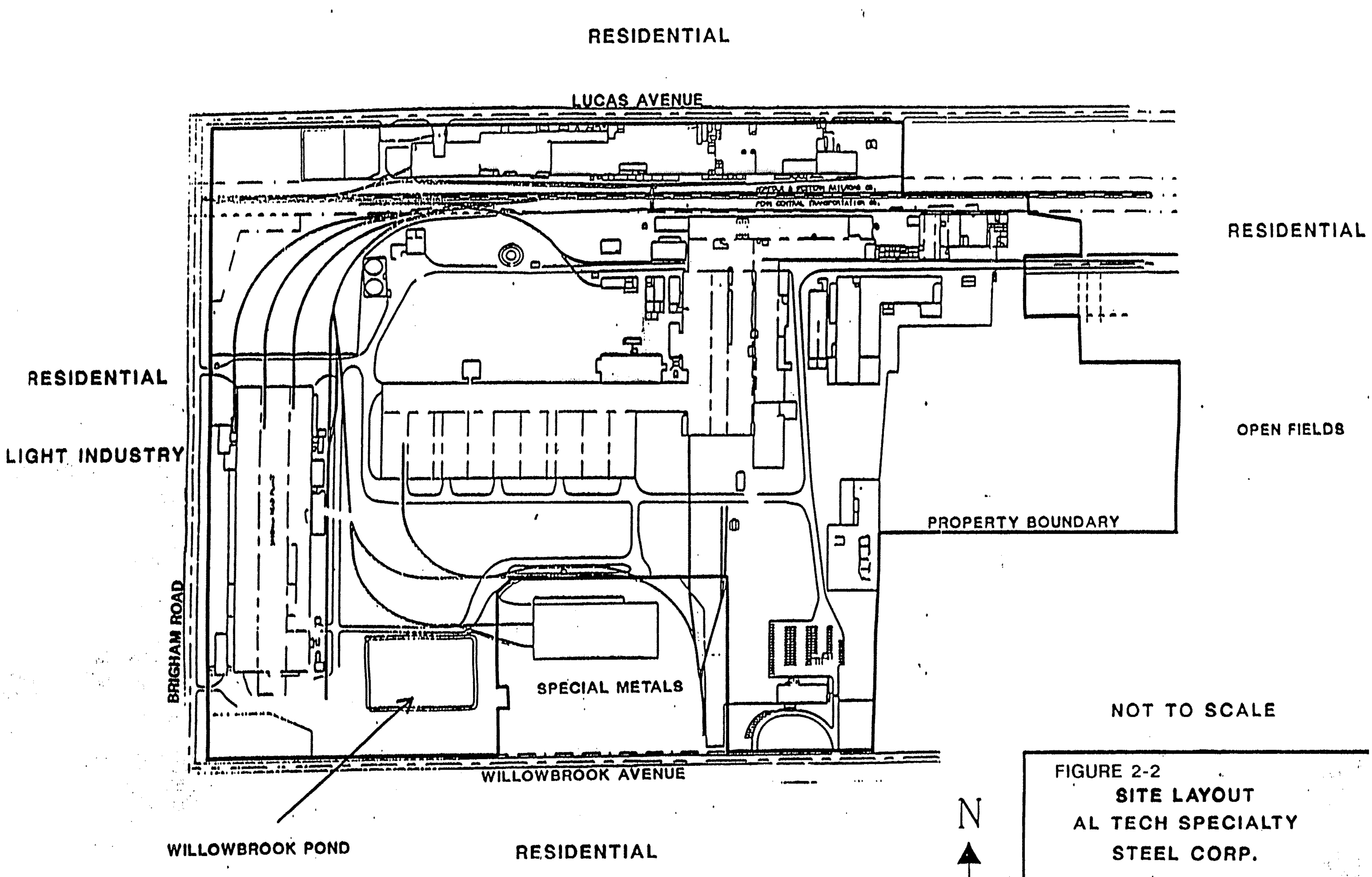


FIGURE 2-2
SITE LAYOUT
AL TECH SPECIALTY
STEEL CORP.
DUNKIRK, NY
McLAREN/HART

2.3 Surface Water

As depicted on Figure 2-1, the primary waterway on the site is a tributary branch of Crooked Brook. The stream flows to the northwest and is conveyed across the southwest corner of the site by two buried, 36-inch diameter, tiled culverts. Crooked Brook is a gaining stream; that is, the water table discharges to the stream. The ten year flood level of 627.5 feet above mean sea level for Crooked Brook in the vicinity of Howard and Central Avenues indicates flooding will have an insignificant impact on the AL Tech site. Surface drainage on-site is controlled through open trench drainage or through storm sewer systems installed throughout the site. There are two major surface water drainage pathways from the site. There is a 36-inch diameter line that leads to Crooked Brook from the southwest corner of BRP. A second discharge is through a 24-inch diameter buried pipeline that originates in the open area south of HAP and extends northward under HAP and LAP complexes to the city system north of Lucas Avenue. Willowbrook Pond, a 1.65 acre man-made body of water on-site, used for contact and non-contact water discharge, overflows into the Dunkirk City sewer system. No other waterways are present on the subject property. There are no NYSDEC regulated wetlands in the immediate vicinity of the AL Tech facility.

2.4 Geology

Unconsolidated deposits in the vicinity of the site are described as glacial sediments consisting of lacustrine silt and clay (Cadwell, 1988). These sediments were deposited by the advancing Wisconsin glacier and within pro-glacial lakes and are generally laminated and calcareous. These surficial deposits are classified on the Chautauqua County Soils Map as the Niagara Silt Loam Unit. Materials of this type, especially clays, may contain large amounts of water, however, the water is contained primarily within the structure of the clay. These sediments are fairly impermeable and restrict the infiltration and transmission of groundwater.

Overburden in various areas on-site has been logged via subsurface investigations conducted over the years. Two such study areas are located north of BFS and surrounding the 100,000 gallon fuel oil tank (Empire Soils, 1967). The overburden in the two areas consists of: surficial fill (varies in existence and depth) overlying a layer of compact silt, fine sand, and embedded gravel and clay, which overlies bedrock (weathered at times); and surficial till (varies in existence and depth) overlying a layer of silty clay embedded with gravel and shale fragments (occasional), which overlies bedrock (weathered at times), respectively.

A third study area is located around a former equalization pond to the east of the wastewater treatment plant (URS, 1986). This area was characterized as having several feet of fill material overlying a very thin layer of clayey-silt atop a layer of brittle glacial till. This till is comprised of sandy-silty-clay with occasional cobbles and black shale gravel.

A fourth study area is located in the area surrounding Willowbrook Pond (E&E, 1988). The lithology in this area is similar to that previously described for the other areas with the exception of the absence of fill material.

Based on the Geologic Map of New York, Niagara Sheet, 1970, the bedrock in the vicinity of the site is classified as the Dunkirk, South Wales and Gowanda members of the Upper Devonian Canadaway group of shales. The Canadaway group actually consists of seven members including Dunkirk, South Wales, Gowanda, Laona, Westfield, Shumla and Northeast in ascending order and is approximately 700-1200 feet in thickness (Tesmer, 1963).

The Dunkirk, South Wales and Gowanda members are described below in more detail since they are the units mapped in the immediate vicinity of the subject property (Rikard and Fisher, 1970).

- Dunkirk Shale:

  The Dunkirk shale is typically a forty foot thick unit of massive medium gray to gray black shale. This unit was deposited between the Hanover shale of the Java group and the South Wales shale. The Dunkirk shale is a fairly constant unit but thins to the east. This unit can be encountered on-site at a depth of approximately 10 to 15 feet below grade (E & E, 1988; URS, 1986; Empire Soils, 1967).

- South Wales Shale:

  The South Wales shale is typically a sixty to eighty foot thick unit consisting of medium light gray to medium dark gray shale with some interbedded dark gray shale and light gray siltstone. The majority of this unit is thin-bedded and overlain by glacial deposits.

■ Gowanda Shale:

The Gowanda shale varies between 120 and 230 feet in thickness and contains a prominent band of dark gray shale between five and fifteen feet thick at the base. The remainder of the unit is medium light gray to medium gray shale with some gray arenaceous (quartz containing) shale, dark gray shale and some light gray siltstone.

Bedrock on-site is described as fissile dark gray to black finely laminated shale. Empire Soils logs also noted the presence of some limestone although none has been mapped in the area (Fisher, Rikard, 1970).

Regional structural geology reveals a gentle dip to the south of approximately 20-50 feet per mile. There are no major faults in the region although minor folds in incompetent beds may occasionally show faults with displacement rarely exceeding a few inches (Tesmer, 1963).

A review of the Code of Federal Regulations identifies a number of political jurisdictions on EPA 40 CFR Part 264, Appendix VI as having a potential seismic risk due to the proximity to faults showing displacement in Holocene time. The subject property is not located within any of the listed political jurisdictions and is not prone to frequent destructive seismic activity.

2.5 Groundwater

Due presumably to a city ordinance prohibiting groundwater usage, no information concerning bedrock aquifers in the vicinity of the subject property is available. The shales that underlie the subject property likely are low water-bearing units since the groundwater movement in shales occurs primarily along bedding planes, faults, and joints known as secondary porosity. "A discontinuous fracture zone at the bedrock surface acts as a single water-bearing zone, and is in hydraulic contact with the lower layers of the glacial till. This zone is suspected to be under slight pressure, as the overlying dense till materials are relatively impervious". The shallow groundwater flow pattern, generally appears to flow in a northerly direction (URS, 1986).

One exception to this occurs in the vicinity of Willowbrook Pond. Since the pond is unlined and groundwater is fairly shallow, a mounding effect could exist resulting in radial flow outward from the pond (E&E, 1988).

2.5.1 Groundwater Use

The AL Tech Dunkirk facility uses city water for all facility purposes. According to the Department of Health in the City of Dunkirk, a town ordinance exists requiring all residences and industries within Dunkirk to use city water. In addition, the city water has historically been obtained from Lake Erie for potable use subsequent to treatment in compliance with public water supply system regulations. The Department of Health had no information concerning groundwater quality within the city since all water use is city supplied.

Several active groundwater monitoring wells are located on-site to monitor groundwater quality beneath AL Tech's property.

Figure 2-3 shows the location of all known groundwater withdrawal (water supply) wells within a 3-mile radius of the AL Tech facility. These wells are summarized as follows:

Location	No. of Wells	Treatment System
McClenathan Mobile Home Park	5	Chlorination
Farmlands Mobile Home Park	1	Chlorination
Time Machine	1	Chlorination, charcoal filter
Astro Lanes	1	Chlorination
Wendy's	1	None (water tested annually)
Aldrich's Dairy	1	None (water tested annually)
Sullivan's Drive-In	1	Chlorination, charcoal filter

NOTE: Well information from URS, 1985

As indicated in Frimpter, 1974, there is little available groundwater within a 3-mile radius of the AL Tech facility. Aquifers in the region consist of glacial till, bedrock, and small deposits of sand and gravel yielding 0.1 to 20 gpm. Groundwater along the Lake Erie Plain is considered to be too mineralized for domestic use. Shallow bedrock wells of less than

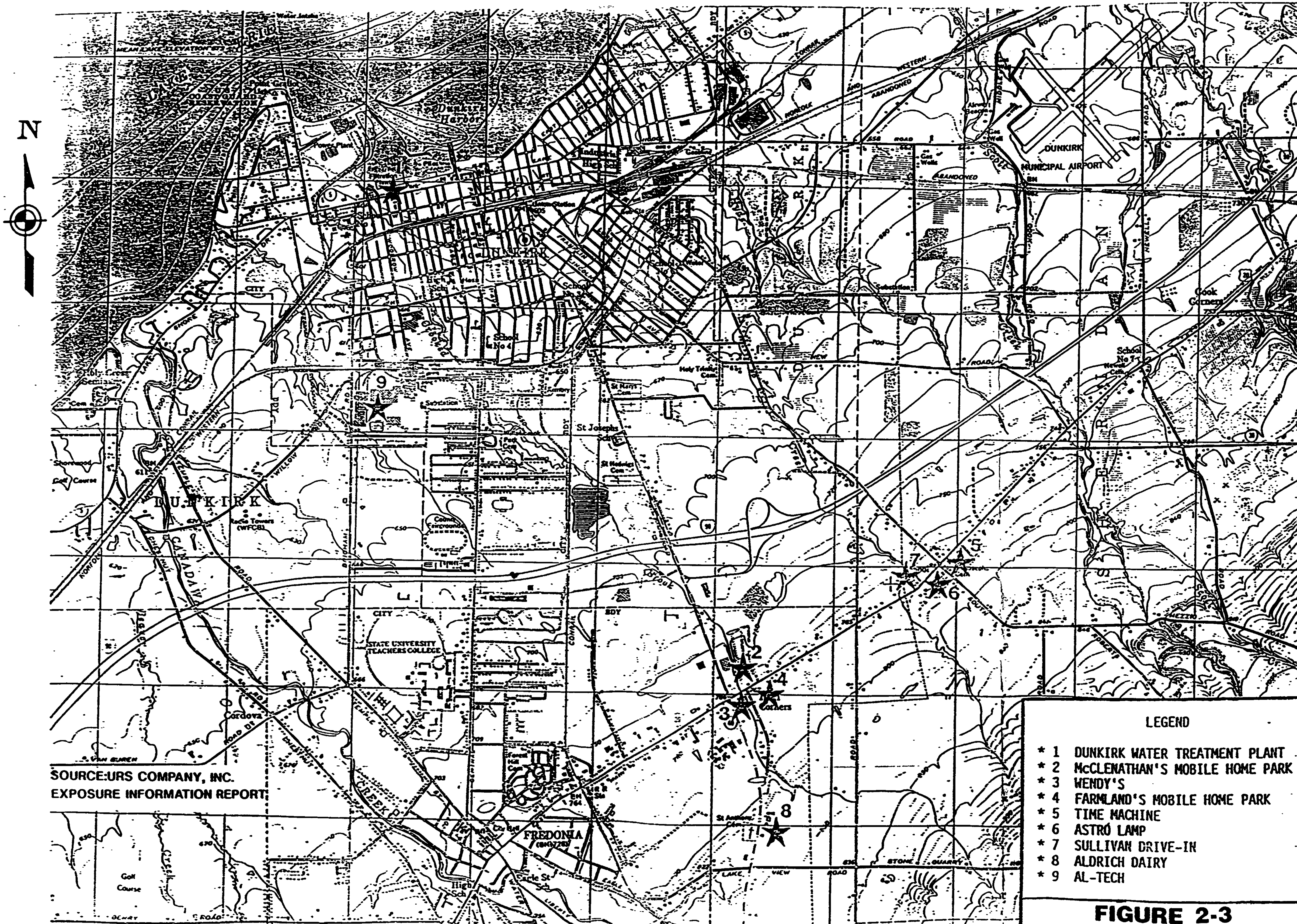

N
DUNKIRK
Dunkirk Harbor
DUNKIRK MUNICIPAL AIRPORT
Cook Corners
STATE UNIVERSITY TEACHERS COLLEGE
FREDONIA
CANADAWAY
Cordova
SOURCE:URS COMPANY, INC.
EXPOSURE INFORMATION REPORT
LEGEND
* 1 DUNKIRK WATER TREATMENT PLANT
* 2 McCLENATHAN'S MOBILE HOME PARK
* 3 WENDY'S
* 4 FARMLAND'S MOBILE HOME PARK
* 5 TIME MACHINE
* 6 ASTRO LAMP
* 7 SULLIVAN DRIVE-IN
* 8 ALDRICH DAIRY
* 9 AL-TECH

FIGURE 2-3

approximately 50 feet in depth may provide water satisfactory for domestic use, but wells deeper than 50 feet usually yield salt water. Regional groundwater circulation from the nearby Allegheny Plateau area to the lower Lake Erie Plain is considered to be negligible.

2.6 Meteorology

The entire facility is subject to precipitation (rainfall and snowfall) and acid rain of the Allegheny River Basin. Data collected from the Fredonia, New York Weather Station is summarized as follows for the period of 1951-1980.

1. Snowfall[1] (in inches) (for 30-year period)

Month	Average Norms (inches)
November	11
December	20
January	20
February	14
March	10
April	2

[1] Source: Northeast Climate Center, Ithaca, New York

2. Temperature[2] (ambient - °F) (for 30-year period)

	Monthly Norms		
Month	Maximum	Minimum	
January	32.5	18.4	30-Yr. Max. Ave.
February	33.9	18.1	57.8°F
March	43.1	26.1	
April	56.3	36.7	30-Yr. Min. Ave.
May	67.6	46.5	40.2°F
June	77.2	56.6	
July	81.1	61.1	
August	79.3	60.2	
September	77.4	54.2	
October	62.7	44.3	
November	49.2	35.3	
December	37.5	24.7	

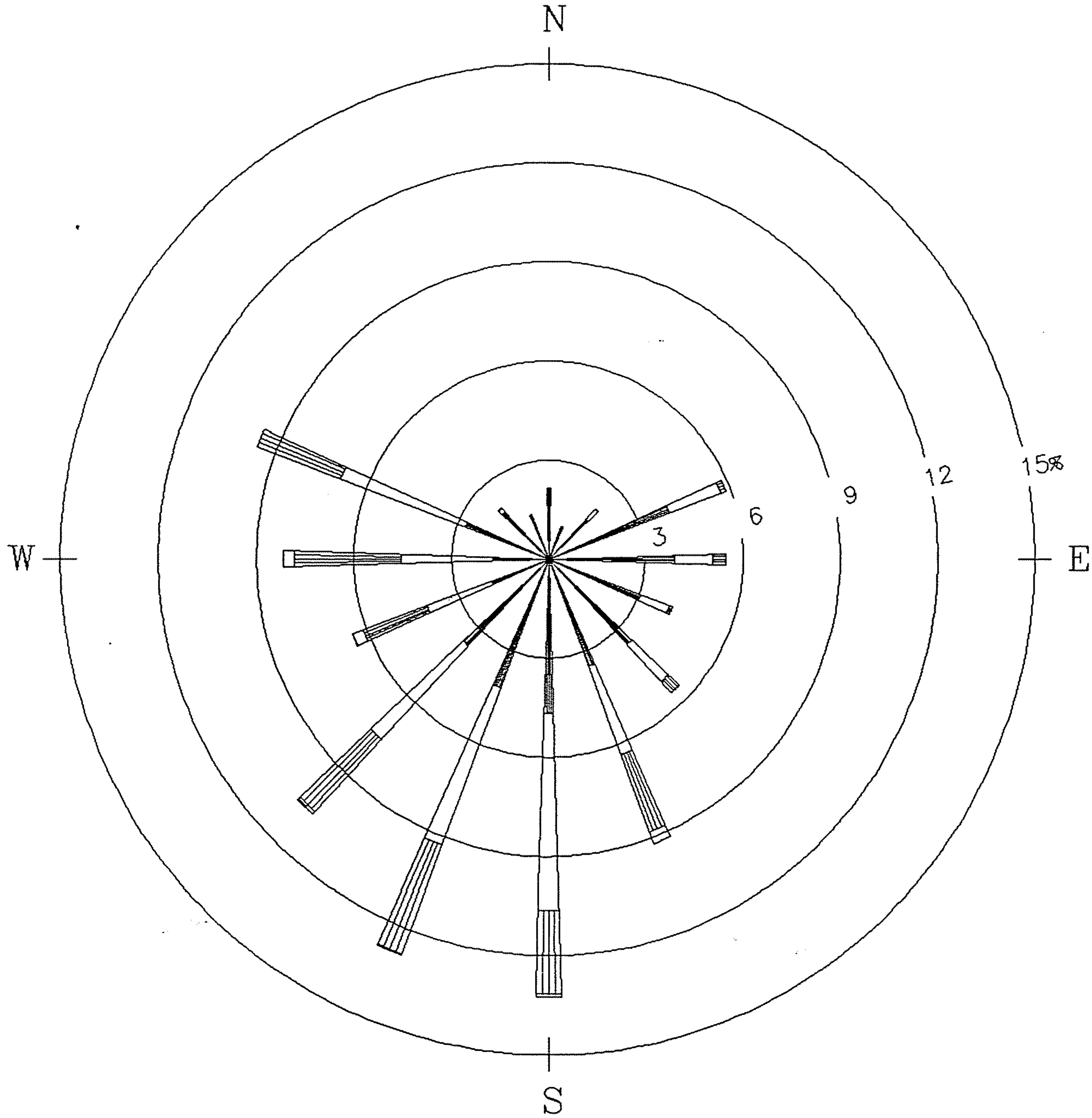
3. Precipitation (in inches)

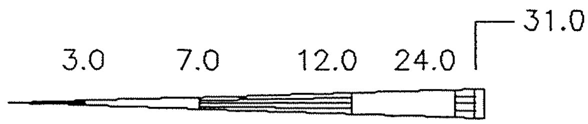
Month	Monthly Average	
January	2.54	
February	1.85	
March	2.58	Average Annual
April	3.19	Precipitation: 37.99"
May	2.92	
June	3.36	
July	2.97	
August	3.80	
September	4.39	
October	3.67	
November	3.71	
December	3.31	

1. Elevation =760'MSL
   Latitude =42°25'N
   Longitude =79°18'W

[2] NOAA Publication: Climatology of the United States No. 81, "Monthly Normals of Temperature, Precipitation, and Heating/Cooling Days for the Period of 1951-1980."

The data provided above was collected at the U.S. Weather Service Station located at 42°25'N Latitude; 79°18'W Longitude. Additionally, windrose figures are provided in Figures 2-4 and 2-5.





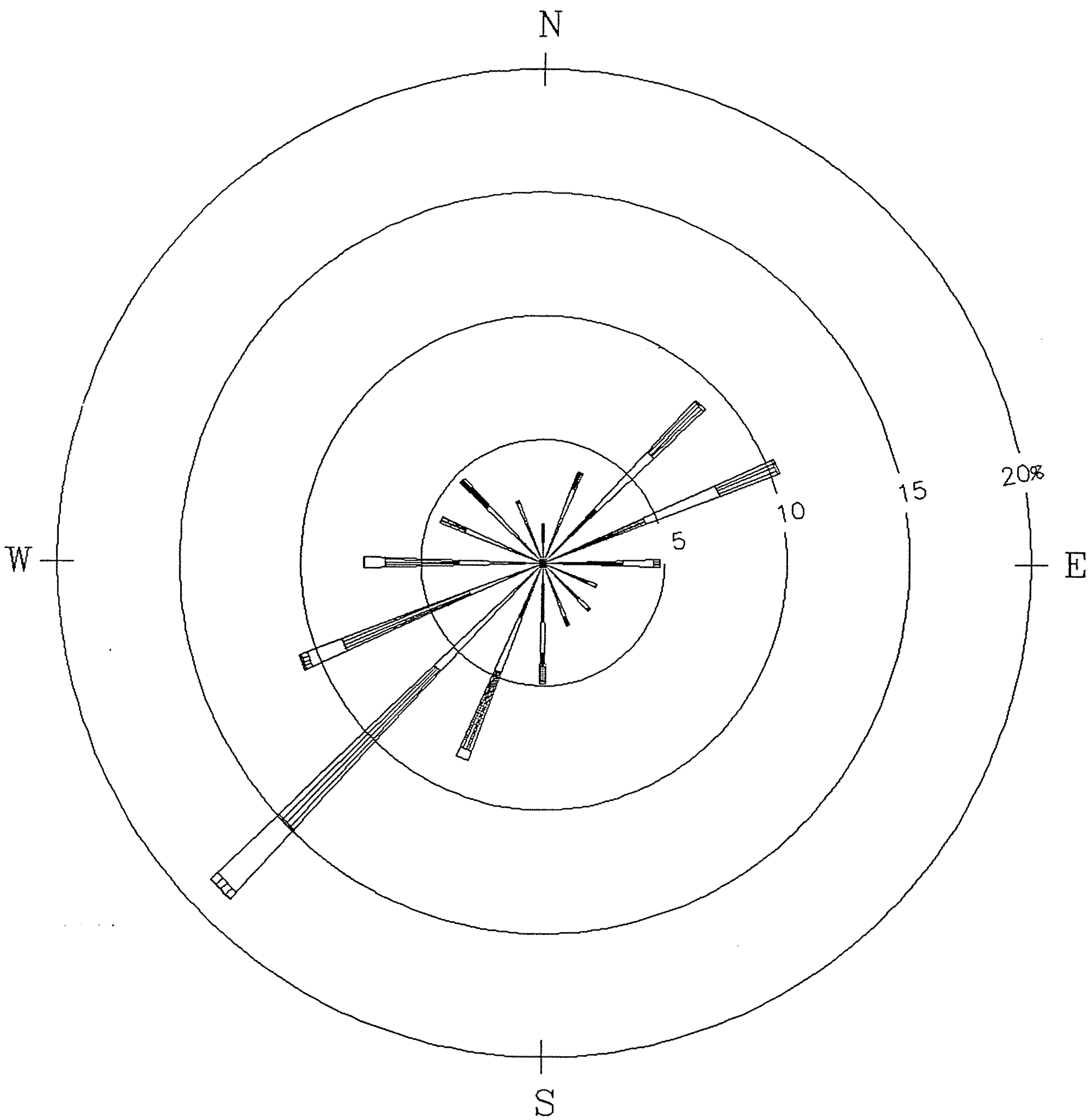
WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

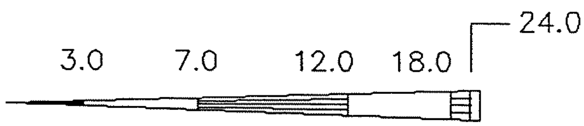
NOTES:
DIAGRAM OF THE FREQUENCY OF OCCURRENCE FOR EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE – WIND IS BLOWING FROM THE NORTH 2.2 PERCENT OF THE TIME.

FIGURE 2–4
WINDROSE

JAMESTOWN, NY
PERIOD: 1992

Bowman
Environmental
Engineering





WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

NOTES:
DIAGRAM OF THE FREQUENCY OF OCCURRENCE FOR EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE – WIND IS BLOWING FROM THE NORTH 1.6 PERCENT OF THE TIME.

FIGURE 2-5
WINDROSE

BUFFALO, NY
PERIOD:

Bowman
Environmental
Engineering

III

3.0 CURRENT PLANT PROCESS DESCRIPTIONS (1970-PRESENT)

The AL Tech Specialty Steel Facility in Dunkirk, New York currently manufactures stainless steel rod, wire and bars, generally of less than 3-inch diameter, from 4-1/2 inch and smaller square steel billets. The current processes performed at the facility can be grouped under two categories: hot finishing and cold finishing. The hot finishing operations include billet conditioning, hot rolling and annealing. The cold finishing operations include cutting, grinding, drawing, pickling, and shaping.

The Dunkirk facility consists of four (4) separate manufacturing complexes; Brigham Road Plant (BRP), Howard Avenue Plant (HAP), Bar Finishing and Storage (BFS) Plant, and Lucas Avenue Plant (LAP). The facility also has a Wastewater Treatment Plant (WTP) for industrial wastewater generated at the facility. The processes that occur in each plant are presented in the following sections. Emphasis will be given to process materials which could potentially present an environmental concern.

3.1 Brigham Road Plant/Bar and Rod Mill

The Brigham Road Plant (BRP) converts 4-1/2 inch stainless steel square billets into coil or bar stock. The coil or bar stock produced can be sent directly to the customer or to the other Dunkirk complexes for further processing. The processes include billet grinding, cutting, hot rolling, annealing and pickling.

The automatic billet grinding operation conditions the billet materials for the BRP mill throughout the facility. The operation grinds off surface defects with abrasive (aluminum oxide with a silica binder) grinding wheels. The billets are also cut to length with abrasive cut-off saws.

Wastes generated in the grinding and cutting operations include scrap stainless steel grindings and cuttings, grinding wheel grit, and limited machine hydraulic oils via inadvertent hydraulic system loss. The machine hydraulic oil used is DTE-24 manufactured by Mobil.

The Bar and Rod Mill normally converts the billets into hot roll coil product and supplies bar product for further processing in BFS or HAP. In this process the billets are heated, hot rolled to the required diameter, then either cooled, cut and stored for further use, or coiled, banded, and sent to the coil annealing furnace.

Wastes generated in the Bar and Rod rolling process include contact cooling water, mill scale, grease and hydraulic oils. The grease and hydraulic oils used in the rolling mill equipment are principally petroleum based materials and water/glycol solution. The rolling mill contact cooling water is recirculated from a reservoir (generally referred to as the "shark-pit") located beneath the floor of the rolling mill. Overflow from the shark-pit is gravity fed to a pump house which pumps the water to Willowbrook Pond. Floating oil and mill scale from the shark-pit is removed periodically by a waste hauler and disposed off-site. High metallic solids from the shark-pit are sent off-site to a metal reclamation facility.

The coil material from the Bar and Rod Mill is annealed to provide more uniform material properties. The annealing processes consist of heating in the anneal furnaces and slow cooling. Waste generated in coil annealing is limited to quenching processes cooling water. The cooling water, potentially containing metal oxides of metals contained within the alloys, is discharged to Willowbrook Pond.

The former BRP pickling process (discontinued March 1991) chemically removed metal oxide scale from the surface of the coiled metal product by immersing the coils in a series of dip tanks. The coil pickling process is now conducted at the BFS pickling facility.

The pickling solution tanks included a caustic (sodium hydroxide) bath, water quench tank, sulfuric acid dip tanks, hydrofluoric/nitric dip tank and water rinse tank. Wastes generated included acid vapor and steam (potentially containing metal particulates) which were exhausted out of the building through permitted air emissions stacks; waste pickling liquors (containing acids and metals) which were pumped to the WTP; pickling tank sludges which were flushed to the WTP; sludges from the pickle house spill collection trenches which were managed as hazardous waste; and filtered metals solids and backwash water from the hydrofluoric/nitric acid purification unit.

BRP manufacturing processes support areas include the boiler room, metallurgical (MET) lab annex, roll turning, maintenance, battery service, pipe fitters, wire turning and lime coat areas. Since each of these areas may contain specific hazardous substances, a brief description of each is provided.

The BRP boiler used to provide steam for heating the former pickle process tanks. The boiler recovered waste heat from the mill reheat furnace exhaust stack. Chemicals in the area are typical for boilers and include salt, ion-exchange resin, sludge dispersants and corrosion and scale inhibitors.

The MET Lab Annex provides testing of materials for metallurgical properties. Testing consists of stress measurements, etching and alloy property testing. Materials used in the annex include etching acids (muriatic, nitric and phosphoric) and liquid nitrogen. The Kevec beryllium/cadmium testing apparatus also includes americium 241 and cadmium 109 radiation sources for measuring alloy constituents. A portable X-MET Testing apparatus has a cadmium 109 radiation source.

The roll turning provides routine reconditioning for the rolling mill rolls. The mill rolls are placed in a lathe which shaves off the metal to produce a smooth recontoured surface. Materials used in the roll turning operations include lube greases and oils and water soluble cutting coolants.

The BRP maintenance area is typical of similar maintenance areas throughout the Dunkirk facility. These areas are used to perform machine repairs, welding, electrical work and other maintenance tasks. Typically these areas store small quantities of greases, oils and solvents.

The BRP battery service area is also typical of similar areas throughout the facility. These areas are used to recharge lead-acid batteries from fork lifts. The battery charging stations currently have secondary containment. These areas also store small quantities of sulfuric acid.

The pipe fitters area is used to perform miscellaneous pipe repairs throughout the plant. Most of the pipe is welded or threaded type. Soldering operations are also occasionally performed.

Off-specification coil product from the rolling operation is salvaged via processing. The material is fed through pinch rollers into a rotary cutting head to peel off seams or surface defects. The cutting operation uses a water soluble coolant. The material is then fed to a dry rotary belt sander for further polishing. The material is then recoiled and stored for later use.

The BRP lime coat is currently not in operation. The lime coat operation would be used prior to cold finishing of coils and is similar to the LAP lime coat operation described later in this report.

3.2 Howard Avenue Plant (HAP)

The Howard Avenue Plant (HAP) produces bars, rounds and miscellaneous shapes directly from billets or from bars produced in the BRP mill. The HAP processes consist of the primary hot finishing operations of rolling, annealing and reconditioning of billets via grinding. The bars, rounds and shapes are sent to the BFS plant for further cold finishing.

Manual grinding is performed prior to rolling to remove surface defects from the billets. The waste by-products include steel grindings, grinding wheel grit and machine lubricating oils.

The HAP has three (3) rolling mills which produce specific shapes (*e.g.*, round and hexagonal bars, flats, squares). Wastes generated during the hot finish processes include contact cooling water, mill scale, grease and hydraulic oils. The contact cooling water contains scale and incidental oils and grease lost from the process equipment. The cooling water is discharged to a scale pit located to the south of the BFS plant and eventually to the site's oil/ water separator. The reheating furnace fuel is natural gas.

The HAP annealing furnaces process bar and coil product from the BRP and HAP rolling mills. No particular waste products are generated by the heat treatment. The furnaces are fueled with natural gas. The annealed bars from the HAP are sent to the BFS plant for pickling and cold finishing.

The HAP support and storage areas include the paint shop, machine shop, battery service areas, "dust bowl" storage area and waste transfer area.

The paint shop provides maintenance painting services for the entire Dunkirk facility. The area is used to store various paints, stains, varnishes, thinners and solvents for later use at various locations throughout the facility.

The HAP spent and virgin material accumulation area is an area used to temporarily accumulate small quantities of spent and virgin materials in 55-gallon drums or 20 cu.yd. roll-offs pending use or off-site disposal or reclamation. The materials accumulated in this area have included coolants, oils, solvents (chlorinated and non-chlorinated), thinners, paints, acids, caustics, and potentially electroplating waste.

The machine shop and battery service areas perform similar functions as previously described for the BRP and are therefore not described in this section.

3.3 Bar Finishing and Shipping (BFS) Complex

Cold finishing processes conducted at the BFS complex include drawing, straightening, turning, grinding and cutting. These processes are performed on bar or coiled material from the HAP and BRP to produce the facility's final products. These processes and the associated wastes generated are discussed briefly below.

The bar pickling process is similar to the former BRP coil pickling process. The main differences are that the BFS pickling process:

- pickles bar material rather than coil,
- includes an oxalate and degreasing operation,
- BRP is a free spray system.

The oxalate and degreasing processes will be described in this section. The pickle process previously described in the BRP discussion applies to the BFS pickle house as well.

The oxalate tank contains oxalic acid in water with a toner (sodium thiosulfate). Oxalate crystals, which deposit on the immersed bar stock, increase lubrication during the cold drawing process.

Greases, oils, soaps and lubricants that do not react with acid and are detrimental to the annealing process are removed in the degreasing tank. The tank contains an alkaline cleaner comprised of sodium hydroxide, complex phosphates, chelating agents and/or surfactants.

The waste streams generated by the BFS bar pickling process are also similar to the former BRP coil pickling process (*i.e.,* acid vapor, steam, pickle liquor, metal sludges). However, the BFS air exhaust is equipped with scrubbers for the acid tanks emissions. The scrubbers are countercurrent packed media towers. Contaminated scrubbing water from the bottom of the scrubber is drained to the reclaim water pit which discharges via continuous blow down overflow to the WTP. The reclaim water pit also serves as a reservoir for department drain water, acid rinse tank overflow and caustic rinse tank overflow.

Spent sulfuric acid is used in the WTP to reduce hexavalent chromium. The BFS pickle process also has an acid regeneration unit for the hydrofluoric/nitric and nitric acid tanks, similar to the former BRP unit.

Drawing operations consist of feeding bar or coil stock through a die to obtain a desired shape (*e.g.,* round, hexagonal, square or bar). Wastes generated in the drawing operations include soap, oils and coolants and hydraulic oils. Soap (calcium stearate) and oils are used to lubricate the surfaces between the die and the product. Coolants are used in the bar straightening/burnishing operations.

Both round and shaped bar product require straightening after certain drawing and annealing operations. The straightening processes use water based coolants.

The bar turning and centerless grinding processes are performed to reduce bars or rounds to close tolerance diameters and surface finish. The turning and grinding operations generate metal shavings, grinding wheel grit and waste coolants. The metal shavings, which contain trace amounts of coolant from both operations, are collected in roll-off dumpsters. When these dumpsters are full they are rolled outside and dumped near the southeast corner of the BFS complex pending off-site disposal at a metal reclamation facility. The centerless grinders use coolants which are recirculated in coolant troughs to a central reservoir for filtering and returned to the equipment. Recirculation piping is located beneath the facility floor.

Prior to packing and shipping, finished product is cut to length. The saws generate metal shavings and abrasive grit.

The support and miscellaneous operations located within the BFS complex include a maintenance area, a battery service area and a boiler room. A mobile equipment repair garage is located to the north of the BFS complex.

The boiler area is used to generate steam primarily for heating the pickling process tanks. The boiler is fueled by natural gas. Chemicals in this area are typical for boilers and include salt, ion-exchange resin, sludge dispersants and corrosion and scale inhibitors.

Vehicles and lift trucks are serviced in the mobile equipment repair garage. The area is typical of service garages and stores various motor oils, lube oils, antifreeze, greases and small quantities of miscellaneous solvents.

The maintenance and battery service areas are similar to the BRP area (refer to Section 3.1.)

3.4 Lucas Avenue Plant (LAP)

The Lucas Avenue Plant (LAP) produces wire from the BRP coil stock material. The main operation consists of cold drawing coil to produce small diameter wire. Ancillary operations at the LAP include lime coating, pickling and bright annealing.

The pickling operations at the LAP are not currently used. The east and west pickle rooms were last used in February 1972 and June 1989, respectively. The material produced at the LAP is currently sent to the BFS complex for pickling.

The lime coat process provides lubrication for the cold drawing process. The coil stock is dipped in a tank of lime slurry, dried and sent to the cold drawing process. The only materials used in this process is lime and water.

Wire drawing reduces the diameter of the coil stock by pulling the coil stock through a die. Wastes generated in this cold drawing process include the lime coat lubricant, machine coolants, and soaps and greases. The waste lime from the lime coating operation, is discharged to a trough leading to the west pickle room sump. This sump is pumped directly to the WTP for treatment and disposal.

In the bright annealing process, wire is fed through an annealing furnace and heated to reduce the hardness of the wire while leaving an oxide free surface. The furnace is electrically heated with a shielding atmosphere of hydrogen provided via gas cylinders. The wire exits the furnace, is cooled, fed through a media to assist containment of the shielding atmosphere, coated with drawing lubricant, and coiled. The materials used/generated in the bright anneal process include hydrogen, coating lubricant, and non-contact cooling water. The non-contact cooling water is discharged to the local sanitary sewer.

Support and miscellaneous functions located within the LAP includes a maintenance area, a battery service area and a boiler area. The functions performed in these areas are similar to those previously discussed.

3.5 Industrial Wastewater Treatment Plant (WTP)

The wastewater treatment plant (WTP) pretreats the wastewater generated throughout the facility prior to discharging to the municipal sanitary sewer system. The wastewaters consist of cooling water, rinse water and waste pickle liquors. Pretreatment of wastewaters is required to remove solids and chromium from the wastewater.

The treatment plant consists of a grit chamber, equalization tanks, chromium reduction system, reacidification tank, neutralization tank, clarifier, reclaim water tank and sludge thickener.

The grit chamber consists of baffles to facilitate separation of solids. Large particulate matter is settled in the grit chamber and removed manually every few months. The sludge collected is either put in sludge roll-off boxes or pumped to WTP equalization tanks.

The equalization tanks provide a homogenized wastewater feed to the treatment process. Two (2) 250,000-gallon tanks provide up to a four-day retention period. The wastewater flows via gravity from the grit chamber to a waste sump. The wastewater is then pumped from the sump into one of the equalization tanks until the tank contains approximately 225,000 gallons. After the nitrate-nitrogen loading has been determined (due to local POTW limitations), the wastewater is fed to the chromium reduction system.

The chromate reduction system reduces hexavalent chromium to trivalent chromium under acidic conditions. The pH is adjusted to 2.0 or less by adding spent sulfuric acid from the BFS pickling process to the chromium reduction tanks. In addition, sulfur dioxide ($S0_2$), a reducing agent, is added through oxidation reduction potential (ORP) controlled sulfonators.

The reacidification tank continuously mixes the reduced chromium effluent with recycled sludge from the clarifier in order to improve the sludge precipitation characteristics, and help neutralize the acidic wastewater (with residual lime in the sludge).

Lime is added at the neutralization tank to neutralize the acidic wastewater and convert trivalent chromium and other metals into hydroxide precipitates.

Insoluble metal hydroxides and other solids are removed from the wastewater in the clarifier. Incoming wastewater from the neutralization tank is contacted with freshly settled sludge in the reaction chamber of the clarifier. Lime and a coagulant aid (polymer) can be added to the clarifier to provide better flocculation. The precipitated solids are moved continuously by a scraper to a center sump. The solids are then pumped to the sludge thickener.

Clarifier overflow enters the reclaimed water tank, discharges to an outfall monitoring area, and subsequently discharges to the municipal sanitary sewer system.

Sludge from the clarifier is thickened and filtered prior to disposal off-site. The sludge thickener operates essentially as a gravity sedimentation process whereby solids settle to the bottom. The settled sludge is raked out by a radial scrapper into a central collection sump and pumped to a plate and frame filter press. The water overflow from the thickener returns to the clarifier.

The water filtrate from the press is returned to the equalization tanks. Solids are removed from the filter fabric of the plate and frame filter press periodically and collected in 20 cubic yard containers. The solids are stored inside the building, pending shipment off-site to a metal reclamation facility.

IV

4.0 PROCESS HISTORY

This section presents a brief summary of the historical development of the facility and its industrial processes.

Steel manufacturing began at the current AL Tech site by Atlas Crucible Steel Company in 1908. The principle product was tool steels in the form of bar, wire and rod. Alloying elements used to manufacture such high carbon steel products would have included chromium. The current HAP site is suspected of being the location of original site development, although the LAP was added soon after in 1909.

More efficient and higher quality electric arc furnaces replaced crucible melting circa 1921. With this change of production, the company name was altered to Atlas Alloy Steel Company in 1925. Melting capacity and production (hot and cold finishing) greatly increased during this period.

In 1929 Atlas Alloy Steel merged with Ludlum Steel Company of Watervliet, New York. In 1938 Ludlum Steel merged with Allegheny Steel Company of Pittsburgh, to form Allegheny Ludlum Steel Company. The BRP facility, an armor steel production facility operated in conjunction with the federal government, was purchased and incorporated into the main Allegheny Ludlum facility site in 1948. Adaptations to the BRP led to the production of more chemically resistant (*i.e.*, stainless) steel. The BFS facility was constructed in 1968.

The facility's current name, AL Tech Specialty Steel Corporation was adopted in 1976.

The primary manufacturing processes discussed in Section 3--melting, hot finishing and cold finishing--have been present on-site since the facility's inception, although technical advances have modified the way these basic processes have historically been performed. Changes in processes inherently alter the type and quantity of wastes generated. Originally, melting was conducted in alumina-clay crucibles that were staged in large fire brick pit furnaces. The outbreak of World War I caused a cut off of the African crucible clay supply, and forced conversion to carbon crucibles. Ash, coke and coal residuals were waste products of this procedure. Due to poorer material properties, the new crucibles required the use of a coal gas shield to protect the crucibles from oxidizing atmospheres. Electric arc furnaces (EAF), which use an electric current to melt the metal, replaced crucible melting in the 1920s. EAF dust generated by this process contained chromium and other alloy metal residuals. Melting was discontinued at the facility in 1961.

Hot finishing processes--annealing, forging, rolling and grinding--have remained fairly consistent throughout the site's history. While types and sizes of machinery and overall capacities have varied, the raw materials and waste products remained similar over time. One notable exception was the incorporation of exotic metal alloys in hot finished products, such as titanium and molybdenum, in the 1950s. These additions increase the range of metal contaminants that may be found in waste disposal streams.

Cold finishing operations--pickling, annealing, drawing, grinding, and straightening--were also fairly consistent throughout the site's history. Notable variations include; the addition of nitric and hydrofluoric acids to the pickling process in the late 1940s to accommodate finishing of stainless steels; the addition of quench oils and water soluble coolants in the 1920s; and the addition, after 1940, of halogenated solvent vapor degreasing stations. These stations were used to prepare coil to be electroplated with a copper precoat, prior to drawing down to very fine diameter wire.

Generally, waste categories associated with AL Tech's steel manufacturing on-site have remained largely similar over time. The wastes include slag, clay crucibles and components, refractories (brick), furnace dust, metal fines and raw material spillage (ores, base metals, coal and lime) from melting operations; metal-containing mill scale, metal fines, grinding dust, refractories, salt and metal salt complexes, sand, borax, hydraulic oils, greases and coolants from hot finishing operations; and pickling wastes (acids and metal salts and sludges), metal fines, grinding swarf (oil laden metal fines and abrasive grit), refractories, and spillage of raw materials (soaps, greases, lubricants, acids) from cold finishing operations.

Waste management practices have included the use of melting and hot finishing by-products, such as slag, refractories and dusts; on-site landfilling, especially in the facility's early development years; off-site landfilling (the flat-lying topography of the site provides no likely area for extensive on-site landfilling); and use of grinding swarf in road surfacing. Residual materials from spillage of wastes are suspected to be present on-site especially in disposal staging areas located to the south and west of the melting facility (HAP). Liquid wastes were commonly discharged into local streams and tributaries. Connection to the city sewer occurred in 1969. Pre-treatment of the wastewaters commenced in 1975 with the construction of the WTP, and in 1976 with construction of the oil/water separator.

Historical development of fuel sources potentially impacts the site's environmental status as spillage and/or leakage from fuel storage areas may have occurred. Initially, coal was the primary source of energy for the facility's boilers and furnaces, although fuel oil is suspected to have been available on a limited basis. Electricity was also available on a limited basis. Fuel oil gained predominance over coal in the 1920s with the installation of a 720,000 gallon storage tank. An increased demand for electric power with use of the EAFs resulted in the installation of a commercial power sub-station on-site in 1920. Coal and fuel oil use declined as adequate supplies of natural gas became available in the 1960s.

V

5.0 SOLID WASTE MANAGEMENT UNITS & AREAS OF CONCERN

There are 24 solid waste management units (SWMUs) and 11 Areas of Concern (AOCs) at the AL Tech facility in Dunkirk, New York. The SWMUs and AOCs are listed in Tables 5-1 and 5-2 and are located on Figures 5-1 and 5-2, respectively. The following sections describe these SWMUs and AOCs and provide recommendations as to whether further study is needed to assess the potential risks posed by these SWMUs and AOCs to the environment or human health.

5.1 Former Lime Disposal Area (SWMU No. 1)

Lime from previous melting operations is suspected to have been disposed beneath the flooring of the HAP adjacent to the "hot top room". This area presently contains the bar annealing furnaces. The volume of the waste and depth of disposal is unknown; however, the lime has hydrated over time and, resulting in a 50 square foot section of the floor and the annealing furnace foundation being raised. The main concern associated with the lime is pH effects on groundwater. Based on the aerial extent of floor heaving, the largest concentration or accumulation of this material appears to be in the aforementioned 50 square foot area. Since the entire disposal area is presumably covered by the HAP structure, infiltration of precipitation into the former lime disposal area should be non-existent.

An elevated groundwater pH could result from the deposition of large quantities of lime if precipitation infiltrated into and percolated through the lime, or if groundwater existed within the lime deposit. An elevated groundwater pH could alter biological and chemical processes within the affected hydrologic regime. Natural processes such as mineral weathering and dilution would tend to reverse the elevated pH condition (*i.e.*, return to natural or background pH). Given the potential risks and environmental conditions on-site, it appears that little impact to the environment can be expected from this lime deposit. Since no users of groundwater are present in the vicinity of AL Tech, no health risks to humans are suspected. To evaluate potential pH effects to the site groundwater from the lime deposit, pH measurements should be obtained from groundwater samples taken in association with investigations of other SWMUs and AOCs, and the data evaluated in relation to this SWMU. This SWMU is located directly beneath the active annealing furnaces in HAP and is inaccessible.

Table 5-1

SWMU INVENTORY
Al Tech Specialty Steel
Dunkirk, New York Facility

SWMU ID N°	Identification	Number of Locations	Material Handled/ Suspected Contaminants	Description (Period of Operation)
1.	Former Lime Disposal Area	1	Lime, slag	Lime (calcium and magnesium oxide). (1908-1920)
2A/ 2B/ 2C.	*Crucible Disposal Areas (CAMU A)	2	Crucibles, melted steel, metal salts, mill scale, grinding dust/heavy metals.	Crucibles from melt operations disposed in area and covered with soil. (1908-1921)
3.	*Former Lucas Avenue West Pickle Facility (CAMU B)	1	Caustic, nitric acid, sulfuric acid, hydrofluoric acid, lime/chromium, nickel	Abandoned wire pickling operation consisting of 15 process vats, 2 waste acid pits, an acid neutralizing pit and 2 acid storage tanks. (1921-1989)
4.	*Brigham Road Plant Pickle Facility (CAMU C)	1	Same as above	Previous bar and coil pickling operation consisting of 8 process tanks, a waste acid pit and 2 acid storage tanks. Also included an abandoned acid neutralization plant consisting of mixing tanks and lime storage area. (1948-1991)
5.	*Bar Finishing and Storage Pickle Facility (CAMU C)	1	Same as above plus oxalic acid and sodium thiosulfate	Current bar pickling operation consisting of 10 process tanks, a waste acid tank and 2 acid storage tanks. (1969-present)

* Denotes CAMU

Table 5-1 (continued)

SWMU INVENTORY
Al Tech Specialty Steel
Dunkirk, New York Facility

SWMU ID N°	Identification	Number of Locations	Material Handled/ Suspected Contaminants	Description (Period of Operation)
6.	*Former Lucas Avenue East Pickle Facility (CAMU D)	1	Caustic, nitric acid, sulfuric acid, lime, hydrofluoric acid/ chromium, nickel and trichloroethane	Abandoned fine wire pickling operation. Process and product storage tanks have been removed. Wastewater, acid and neutralization pits were abandoned and filled to grade. (1935-1972)
7.	*Former Grinding Room Pickling Process (CAMU E)	1	Nitric acid, sulfuric acid, lime/chromium, nickel	Abandoned grinding department pickling process which consisted of four tanks and a neutralization pit. (1950-1965)
°	*Former Barium Chloride Bath (CAMU B)	1	Barium chloride, metal salts/heavy metals	Abandoned molten barium chloride annealing tank in LAP. (1960-1988)
9.	Grinding Dust Transfer Pile	1	Grinding wheel grit metal grindings, oil and soap/metals, oils	Temporary outdoor storage area for grinding dust from the BFS plant. (1948-present)
10.	*Former Waste Acid Surface Impoundments (CAMU E)	2	Nitric acid, sulfuric acid, hydrofluoric acid, lime, and heavy metals	Abandoned earthen surface impoundments previously used to store waste acid from pickling processes. (1950-1965)
11.	*Former Plating Operations (CAMU D)	5	Copper, lead, cyanide, and trichloroethane	Abandoned copper and lead coating and electroless copper plating operations. (1909-1984)
12.	Willowbrook Pond	1	Cooling water, process water, condensate, storm-water runoff, ground-water/heavy metals and PCBs	Recirculation reservoir for cooling and process waters. (1952-present)

Denotes CAMU

Table 5-1 (continued)

SWMU INVENTORY
Al Tech Specialty Steel
Dunkirk, New York Facility

SWMU ID N°	Identification	Number of Locations	Material Handled/ Suspected Contaminants	Description (Period of Operation)
13.	Closed Surface Impoundment	1	Caustic, sulfuric acid, nitric acid, hydrofluoric acid, barium chloride, chromium, nickel	RCRA pickle liquor surface Impoundment which was given an "clean closure" in 1989. (1967-1988)
14.	Current Industrial Wastewater Treatment Plant	1	Pickle liquor wastes, sulfuric acid, sulfur dioxide, lime, metal hydroxide sludge/ heavy metals	Current wastewater treatment plant consisting of chromium reduction, lime neutralization and metal hydroxide precipitation processes. The WTP has 6 process tanks, 2 sulfonators, lime storage and dilution tanks and a waste acid pit. (1975-present)
15.	*Former Lucas Avenue Acid Neutralization Plant (CAMU B)	1	Lime	Abandoned neutralizing plant used to neutralize waste acids from the LAP east and west pickle facility. Neutralizing plant consisted of 2 aboveground steel tanks for water storage and lime mixing. Lime slurry was provided by underground piping to both the LAP east and west acid neutralizing tanks. (1940-1975)
16.	API Oil/Water separator	1	Lubricating and hydraulic oils, mill scale/heavy metals and oil	Concrete 100,000 gallon tank for separating floating oil from HAP and BFS plant process and cooling waters. (1976-present)

*Denotes CAMU

Table 5-1 (continued)
SWMU INVENTORY
Al Tech Specialty Steel
Dunkirk, New York Facility

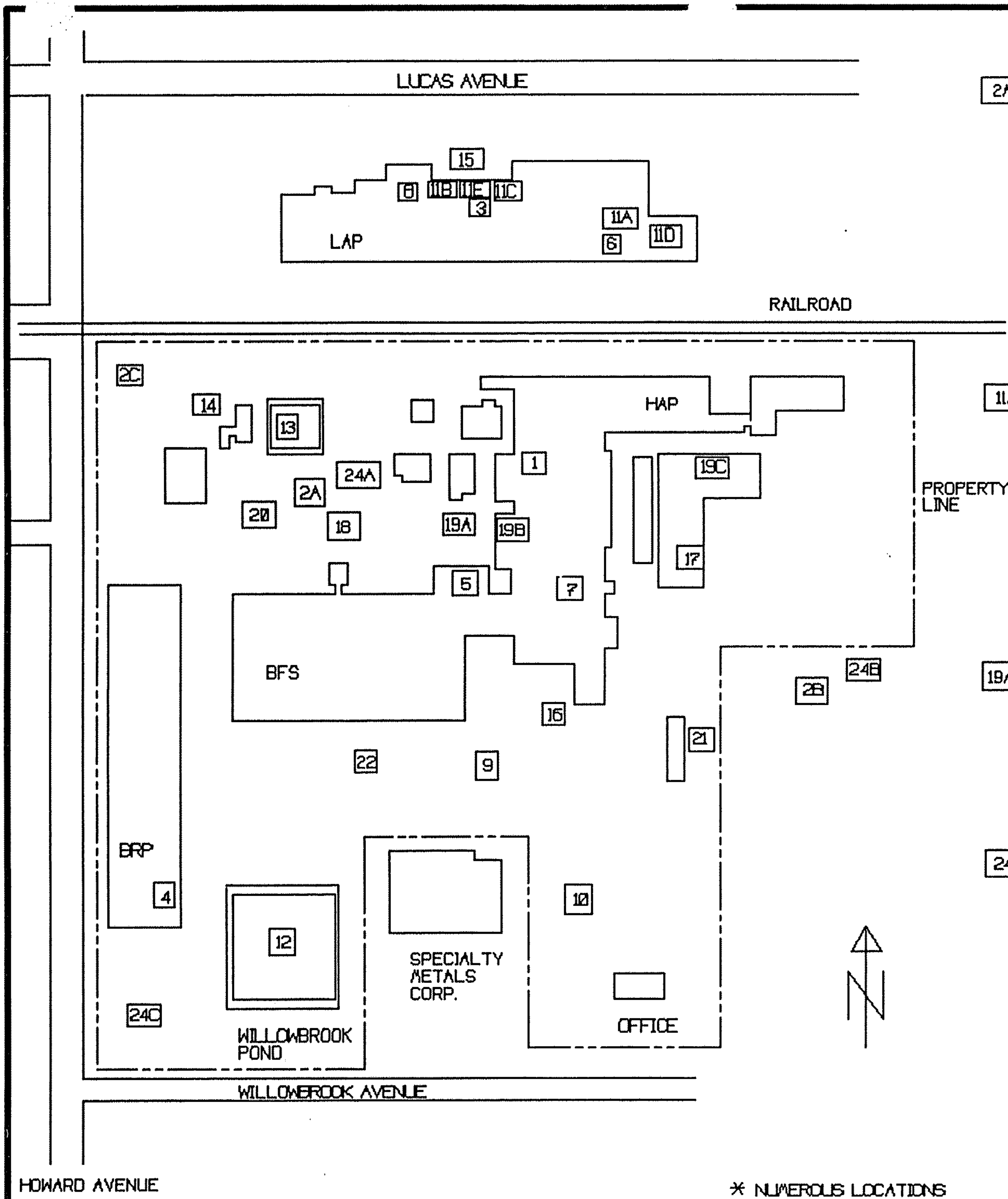
SWMU ID N°	Identification	Number of Locations	Material Handled/ Suspected Contaminants	Description (Period of Operation)
17.	Former Trichloroethane (TCA) Container Storage Area	1	TCA, oils, solvents, paints, thinners	Temporary 55-gallon container storage area for various wastes awaiting off-site disposal. (1960-1980)
18.	Former Waste Pile	1	Grinding wheels scrap metal, shavings and pile, general refuse/heavy metals, coal, and oils	Abandoned outdoor waste storage Trash and contaminated soils have been removed. (1940-1967)
19.	*Waste Container Accumulation Areas (CAMU F)	3	Acids	Three temporary staging areas for primarily corrosive wastes/ products. (1970-present)
	Shark Pit Residual Material	1	Metal oxides, oil, oily sludges, PCBs	Roll-off container for temporary storage of oils & sludge from process areas. (1940-present)
21.	Waste Asbestos Accumulation Area	1	Asbestos	Previous storage area from asbestos removal operations. (1975-1978)
22.	Grinding Swarf Storage Area	1	Grinding wheels, scrap metal/heavy metals	Waste grinding swarf was previously on the ground. Currently stored in roll-off transport boxes. (1969-present)
23.	Process Sewers	**	Contact, non-contact cooling water/oils, heavy metals	Pipelines used to convey waste waters to Willowbrook Pond, oil/water separator and waste water treatment plant. (1978-present)
24.	*Waste Disposal Facilities (CAMU G)	3	Grinding swarf refractories slag, crucibles/heavy metals	On-site fill areas used for solid waste disposal. (1908-1970)

* Denotes CAMU
** Numerous locations around site.

Table 5-2

AOC INVENTORY
AL Tech Specialty Steel
Dunkirk, New York Facility

AOC ID No.	Identification	Suspected Contaminants	Description (Period of Operation)
1	Transformers	PCBs, oils	Releases from the various units facility-wide. (1920-present)
2	Process Pits and Cooling Towers	Coolants, oils, metals, soap, PCBs, pesticides	Potential releases from the units facility-wide. (1908-present)
3	Scrap Steel Storage Areas	Oils, Metals	Scrap steel from finishing operations and purchased scrap for melting operations stored outdoors atop soil. (1908-present)
4	Coal Storage Area	Aromatics	Abandoned coal pile formerly used for the coal fired boilers. (1908-1968)
5	Oiled Roads	PCBs, aromatic and halogenated compounds	Oil was laid on roads as a means of dust control. (1940-1968)
6	Crooked Brook	Coolants oils, metals metal silts	Early Period process and later period surface water. (1908-present)
7	Heat Treating	Sodium chloride, metal salts/heavy metals	Abandoned molten salt heat treating process (1935-1966)
8	Lucas Avenue Oil Tank	Drawing Oil	12,000 gallon underground tank for supplying LAP drawing machines. (1940-1982)
9	Battery Storage Area	Lead-acid batteries	Storage and recharging stations for forklift lead-acid batteries. (1970-present)
10	Coal Gasification Plant	Coal derivatives Cyanide	Coal gasification plant generated shielding gas for carbon crucible melting. (1916-1920)
11	Former Aboveground Fuel Oil Tank	Fuel Oil	Storage tank used to store #2 fuel oil used in plant operations. (1967-1985).

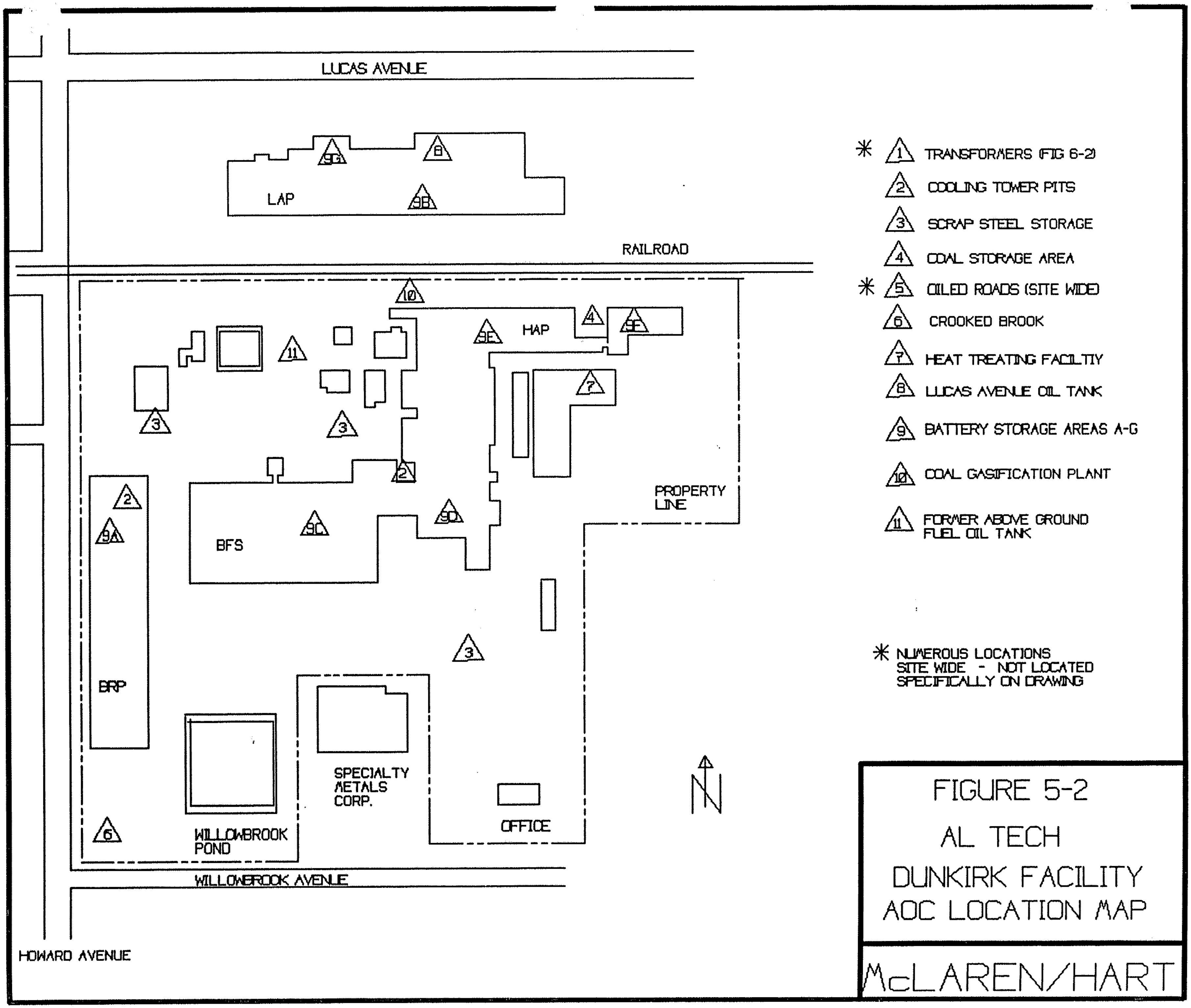


1A	FORMER LIME DISPOSAL
2A - 2C	FORMER CARBON CRUCIBLE DISPOSAL
3	FORMER LAP WEST PICKLE ROOM
4	FORMER BRP PICKLE FACILITY
5	BFS PICKLE FACILITY
6	FORMER LAP EAST PICKLE ROOM
7	FORMER GRINDING DEPT PICKLE PROCESS
8	FORMER BARIUM CHLORIDE BATH
9	GRINDING DUST TRANSFER PILE
10	FORMER WASTE ACID IMPOUNDMENTS
11A - 11E	FORMER PLATING OPERATIONS
12	WILLOWBROOK POND
13	CLOSED RCRA SURFACE IMPOUNDMENT
14	CURRENT WASTEWATER TREATMENT
15	FORMER LAP ACID NEUTRALIZATION PLANT
16	API OIL/WATER SEPARATOR
17	FORMER TCA CONTAINER STORAGE
18	FORMER WASTE PILE
19A - 19C	WASTE CONTAINER STORAGE AREAS
20	SHARK PIT MATERIALS LOADING RAMP
21	WASTE ASBESTOS ACCUMULATION AREA
22	GRINDING SWARF STORAGE AREA
* 23	PROCESS SEWERS
24A - 24C	FORMER WASTE DISPOSAL AREAS

* NUMEROUS LOCATIONS SITE WIDE - NOT LOCATED SPECIFICALLY ON DRAWING

FIGURE 5-1
AL TECH
DUNKIRK FACILITY
SWMU LOCATION MAP

McLAREN/HART



LUCAS AVENUE
LAP
RAILROAD
HAP
BFS
BRP
PROPERTY LINE
SPECIALTY METALS CORP.
OFFICE
WILLOWBROOK POND
WILLOWBROOK AVENUE
HOWARD AVENUE
N
* 1 TRANSFORMERS (FIG 6-2)
2 COOLING TOWER PITS
3 SCRAP STEEL STORAGE
4 COAL STORAGE AREA
* 5 OILED ROADS (SITE WIDE)
6 CROOKED BROOK
7 HEAT TREATING FACILTIY
8 LUCAS AVENUE OIL TANK
9 BATTERY STORAGE AREAS A-G
10 COAL GASIFICATION PLANT
11 FORMER ABOVE GROUND FUEL OIL TANK
* NUMEROUS LOCATIONS SITE WIDE - NOT LOCATED SPECIFICALLY ON DRAWING
FIGURE 5-2
AL TECH
DUNKIRK FACILITY
AOC LOCATION MAP
McLAREN/HART

5.2 Crucible Disposal Areas (SWMU Nos 2A and 2B)

Crucibles, used to contain molten metal charges, are suspected to have been buried outdoors in the area just west and northwest of the old hot top building (SWMU 2A). During construction of the BFS Plant, debris (*e.g.*, refractory brick), was reportedly removed and placed in the area east of the electrical substation (SWMU 2B). The crucibles were made of high alumina clay or carbon. Possible contaminants of concern in these areas are residual heavy metal, which could have been in the crucibles. The threat to the environment should be minimal since the volume of heavy metals is presumably low. In addition, the heavy metals were most likely in an alloy form; therefore, they would be essentially immobile.

This SWMU lacks significant potential human health and environmental risks. No further study or action is recommended.

5.3 Lucas Avenue West Pickle Facility (SWMU No. 3)

The Lucas Avenue West Pickle Facility ceased operating in June 1989. The process was similar to the BFS Pickling Facility, and consisted of caustic soap cleaning; sulfuric, nitric, and nitric-hydrofluoric pickling tanks; molten salt cleaning; and barium chloride annealing. The LAP West Pickle Room contains 15 vats inside the building, and two acid storage tanks and two waste acid pits outside the building. The vats are constructed of lined steel and are partially below grade in lined concrete pits. The waste acid pits are underground concrete structures lined with acid brick. The waste acid trenches and pits still contain products; no secondary containment is provided for the trenches and pits.

Prior to 1974 the rinse water from the LAP West Pickle Facility was discharged to a trench for collection in a sump. The rinsewater was then gravity fed to the City's sanitary sewer system. Waste acid was discharged to a separate acid trench for collection in the waste acid pit. The waste acid was then sent to the acid neutralizing pit where lime was added prior to being discharged to the sanitary sewer system. After 1975, the rinse water and waste acid was sent to the facility's WTP prior to being discharged to the city's sewer system.

Historical records indicate that leaks and spills occurred at the LAP West Pickle Facility. During a visual inspection of the facility, stained soils were noted, and crystallized metal salts were present on several tanks and support structures. Sub-surface investigations performed by

HART in 1989 confirmed the presence of heavy metals (*i.e.*, chromium, nickel, lead, and zinc) in soils at the LAP West Pickle Facility.

The Hart investigations in 1989 included groundwater monitoring. The analyses indicated that metals have not entered the groundwater in the vicinity of the LAP West Pickle Facility; therefore, exposure should be limited to direct contact with soil or waste material.

Visual and analytical information currently available indicates that SWMU No. 3 may pose a sufficient risk to the quality of the environment; therefore, further investigation is warranted. Resampling of existing monitoring wells and analysis of heavy metals is recommended to confirm that no impact to groundwater has occurred. Since this SWMU is located inside LAP, access to this SWMU is limited.

5.4 Former Brigham Road Plant Pickle Facility (SWMU No. 4)

The former BRP Pickle Facility consisted of several process tanks. The tanks are constructed of lined steel and are partially below grade in acid brick lined concrete pits with a bituminous coating. An overhead crane was used to dip steel products undergoing treatment into the process tanks. Process tanks included one 10,000-gallon caustic tank, one 8,000-gallon water quench tank, two 8,000-gallon sulfuric acid tanks, one 8,000-gallon nitric/hydrofluoric acid tank, one 12,000-gallon nitric-nitric/hydrofluoric combination tank, and one 7,500-gallon water rinse tank. Supply (*i.e.*, virgin) acids were stored in three (two sulfuric and one nitric) lined, aboveground carbon steel 12,000-gallon tanks located outside the building.

Waste solid residuals (*i.e.*, sludges) that deposited around the process tanks were periodically removed, containerized, and disposed off-site as hazardous waste. Spent pickling liquids and rinse waters were discharged from the process tanks into an in-ground accumulation pit located outside the BRP Pickle Facility. The 14,000-gallon accumulation pit is constructed of concrete and lined with bitumen coated acid brick. Spent pickling liquid and rinse waters were transferred from the accumulation pit to the WTP for treatment (see SWMU No. 14) before being discharged to the City's sanitary sewer system.

Prior to construction of the WTP in 1975, spent pickling liquids and rinse water from the pickling process were neutralized in an adjacent building located southeast of the BRP Pickle Facility. Acid neutralization consisted of adding lime to the acidic wastewater in two wooden mixing tanks. The neutralized wastewater was then sent to the City's sanitary sewer system and/ or Crooked Brook.

Spent hydrofluoric/nitric and nitric acids were recycled using an "ECO-TEC" acid regeneration unit. This unit features filtration and ionic resin adsorption of acid. Waste metal salts and filter blowdown fluids were discharged to the WTP.

Product, previously dipped into a 925° F kolene caustic bath, was quenched in a water spray. Steam clouds were generated during quenching and subsequent condensation of these steam clouds caused deposition of metal oxides on the surfaces of equipment, floors, and walls. These powdery depositions were periodically scraped up, containerized, and disposed as hazardous waste due to high concentrations of chromium and nickel.

Air emissions from the pickling process were generally acid fumes, but also included steam generated during water quenching operations. The steam generated potentially contained chromium and nickel, though air emissions testing has failed to confirm this concern. The air emissions from the BRP Pickling Facility were withdrawn by an exhaust system and discharged through an active permitted source through stacks located outside the eastern wall of the facility.

Historical records indicate that leaks and spills have occurred at the BRP Pickle Facility. Visual inspection indicates metal salts deposition on the process tanks and the walls of the facility. In addition, metal salt crystals were present on soils outside the building, apparently caused by the stack emissions. The 1989 Hart investigation confirmed elevated levels of chromium and nickel in soils at 5-7 feet and 12-16 feet depths in the vicinity of the waste acid pit. Groundwater samples collected during this investigation from two exploratory monitoring wells indicated that heavy metals have not affected groundwater.

The source of soil contamination in the vicinity of the BRP Pickle Facility appears to be leakage from the in-ground process and accumulation tanks. The extent of metal contamination has not been thoroughly defined. A remediation project was completed after the March 1991 spill incident. Grossly contaminated soils were excavated and sent off-site to a permittted, secure land burial facility. Laboratory analysis of soil indicates that SWMU No. 4 may pose a significant risk to the quality of the environment, and additional investigation may be required to assess the integrity of the pickling process pit, acid storage tanks, and all associated underground piping. The investigation may include additional soil sampling, resampling of the groundwater, and installation of additional monitoring wells. Analysis should include pH and heavy metals.

5.5 Bar Finishing and Storage Pickle Room (SWMU No. 5)

The Bar Finishing and Storage (BFS) Pickle Room consists of a caustic degreasing tank (10,000 gallons), a Kolene tank (6,000 gallons), a caustic spray quench tank (6,000 gallons), two sulfuric acid tanks (6,000 gallons each), an acid spray rinse tank (16,000 gallons), nitric/hydrofluoric tank (6,000 gallon), a nitric acid tank (6,000 gallons), a hot water rinse tank (6,000 gallons), and an oxalic acid tank (6,000 gallons). These process tanks are below grade, within a concrete containment area, constructed of steel, and lined with acid resistant material. The virgin nitric and spent nitric materials are stored in two 13,000-gallon, steel, aboveground tanks located outside the building. Spent nitric acid is regenerated in an "ECO-TEC" acid purification unit similar to the one in BRP. Spent sulfuric acid from the BFS Pickle Room is stored in an aboveground 12,000-gallon steel tank located outside the building. The spent sulfuric acid in this tank is discharged to the WTP for beneficial reuse in acidifying wastewater in the chromium reduction process.

The BFS Pickle Room generates waste streams similar to the former BRP Pickle Facility, including waste acids, pickle liquor, wastewater, solids (K062), and air emissions. Wastewater from the process is collected in the reclaim water pit prior to being discharged to the WTP. The reclaim water pit also supplies water to the caustic rinse tank and the air scrubbers. The air scrubbers, used to remove acid fumes from the pickling process exhaust, are counter current packed media towers. Contaminated water from the scrubbers is recirculated to the reclaim water pit.

Historical records indicate that leaks and spills have occurred at the BFS Pickle Room. Visual inspection of the facility indicates similar contamination on the walls and structures as was observed in the former BRP Pickle Facility and former LAP West Pickle Facility, but to a much lesser extent. No soil or groundwater investigations in the vicinity of the BFS Pickle Room have been conducted.

Metals contamination was found in soils adjacent to other pickling facilities at the site. The air scrubbers and lack of underground process pits outside the building reduce the potential for releases; however, the below-grade process pits inside the BFS Pickle Room and the associated transfer piping present potential sources of contamination that cannot be visually inspected. An investigation of the soils, both surface and at depth, and groundwater in the vicinity of this SWMU is recommended to better evaluate the potential sources of health and environmental risks. This is an active facility and is virtually inaccessible. Analysis should include pH and heavy metals.

5.6 Former Lucas Avenue East Pickle Facility (SWMU No. 6)

The former LAP East Pickle Facility was used to pickle fine wire product prior to being abandoned in July 1972. The pickling process was similar to the former LAP West Pickle Facility process and consisted of degreasing, hydride bath, sulfuric, nitric and nitric/hydrofluoric acid baths, and rinse tanks. The former LAP East Pickle Facility had a neutralizing pit, two waste acid pits and a wastewater pit located outside the building. The pits were concrete and lined with acid brick. At one point, the former LAP East Pickle Facility included a vapor degreasing unit which used trichloroethane (TCA). The degreasing unit, process tanks, and acid storage tanks have all been removed from this area. The wastewater, acid, and neutralization pits were abandoned and filled to grade.

Historical records are not available to indicate whether any releases have occurred at the LAP East Pickle Facility. However, based on the historical records of similar pickling facilities, it is possible that releases occurred in this area. A visual inspection of the facility indicated a green coating on the walls similar to the depositions observed in the other pickling facilities at Dunkirk. The 1989 Hart investigation confirmed the presence of heavy metals in soils at a depth between 5 and 7 feet, just south of the waste acid pits. The 1989 investigation also indicated that groundwater in the former LAP East Pickle Facility area is contaminated with TCA and degeneration products of TCA, presumably from the vapor degreasing process. Heavy metals were not detected in the groundwater samples.

Further investigation of the soils and groundwater near the LAP East Pickle Facility should be considered. Additional sampling activities are needed to better evaluate the level and extent of the soil and groundwater contamination. Any further study conducted should consider other potential contaminant sources (*i.e.*, process pits, transfer piping, material spillage). Groundwater contamination could affect the off-site environment and should be further assessed by additional sampling of the existing monitoring well(s) and the installation and sampling of an additional well(s) down gradient of this SWMU. Analysis should include pH, heavy metals, and 1,1,1-trichloroethane.

5.7 Former Grinding Room Pickling Process (SWMU No. 7)

The Grinding Room Pickling Process was previously located in the Howard Avenue Plant (HAP). This pickling process consisted of four (4) 900-gallon, steel, aboveground tanks lined with acid brick, and the Grinding Room pit. The tanks contained nitric acid, sulfuric acid (two tanks), and rinse water. The Grinding Room pit was used to neutralize the acidic waste overflow from the pickling process by addition of a lime slurry. The Grinding Room pit was approximately 4' x 5' x 7' deep, constructed of concrete, and lined with acid brick.

Historical records are not available to indicate whether any leaks or spills occurred at the HAP Grinding Room pickling area. However, it is likely that spills did occur, based on historical records from similar processes at Dunkirk. No soil or groundwater investigations in the vicinity of this SWMU have been conducted.

Further study of the soils and groundwater is recommended in order to properly assess the potential health and environmental risks associated with this SWMU. The investigation should focus on possible releases from the neutralization pit, underground piping, and suspect waste disposal areas (SWMU No. 10). Analysis should include pH and heavy metals.

5.8 Barium Chloride Bath (SWMU No. 8)

The barium chloride bath is located in the far western portion of the LAP, adjacent to the West Pickle Room. The barium chloride bath is an aboveground, 280-gallon, steel tank which was previously used to anneal wire product. The bath was electrically heated and the wire product was submerged in hot salt. The process has not been used since 1988, but the tank is still in place.

The waste generated from the barium chloride bath consisted mainly of metal salts. These metal salts are believed to have been accumulated in 55-gallon drums pending off-site disposal. The most likely storage area for these drums was adjacent to the bath process area.

Historical records are not available to indicate whether spills or leaks occurred at the barium chloride bath process area. A white crystalline material (most likely due to evaporation and crystallization of the barium chloride) was observed on the floor, and on the top and inside of the barium chloride bath. Use of this material was limited in small area, and the barium chloride bath is located indoors, on a substantially intact concrete floor.

No environmental or health risks have been attributed to this SWMU. The investigation conducted for the former LAP West Pickle Facility would determine the impact on the environment by this SWMU.

5.9 Grinding Dust Transfer Pile (SWMU No. 9)

The Grinding Dust Transfer Pile is located outdoors, south of the southeastern corner of BFS Plant. The pile is used as a temporary accumulation area, pending off-site reclamation for material from the BRP & BFS plant grinding operations. The grinding operations material consists of grinding wheel grit, metal grindings, incidental lubricating oils, and coolants. These materials are collected in roll-off containers which are periodically removed and dumped at the Grinding Dust Transfer Pile.

The grinding operations materials are accumulated directly on soil and exposed to environmental conditions. No means of preventing material or rainwater runoff from contacting soils in the area is provided. This has possibly resulted in continuous contamination of the soils in this area with oil and coolants. There have been no subsurface investigations in the immediate vicinity of the waste pile. AL Tech is planning to containerize the grinding dust and temporarily store it inside a building commencing the first quarter of 1993.

This SWMU presents potential environmental and health risks. To better evaluate such risks, it is recommended that soil samples be obtained from the surface and at depth, in the immediate vicinity of the pile, and that groundwater samples be collected from monitoring wells installed adjacent to, and down gradient from the pile. Analysis should include heavy metals and oil.

5.10 Former Waste Acid Surface Impoundments (SWMU No. 10)

The two waste acid surface impoundments were located between the main office building and HAP. These unlined earthen surface impoundments had an effective capacity of approximately 100,000 gallons each. The surface impoundments were used to collect waste acid from plant pickling operations between 1950 and the mid-1960s.

The historical records pertaining to these waste acid surface impoundments are very limited. There is no evidence that the impoundment area has ever been investigated. Aerial photos taken circa 1958 depict these impoundments. Since the acid was placed directly on soil, the soils were potentially contaminated with acid and dissolved metals.

The size of the pits and their direct contact with the environment create the potential for a significant environmental risk. Further study is recommended to determine if any impact to the environment has occurred. Soil sampling and groundwater monitoring should be included in the investigation of this SWMU. Analysis should include heavy metals and pH.

5.11 Former Plating Operations (SWMU No. 11)

Plating operations were conducted in the LAP Wire Production Facility. All of the process equipment and tanks associated with these operations have been removed from the facility. These plating operations were used to precoat small diameter wire with lead and copper prior to drawing. Dedicated copper and lead plating operations occurred at the following five locations:

- Fine wire continuous lead coating (SWMU No. 11A), north of LAP East Pickle Room;
- Continuous lead coating for 0.010" to 0.065" wire (SWMU No. 11B), south of LAP West Pickle Room;
- 40,000 # lead coat (SWMU No. 11C), LAP West Pickle Room;
- Copper coating (SWMU No. 11D), east of LAP East Pickle Room, and
- Electroless copper coating (SWMU No. 11E), LAP West Pickle Room.

5.11.1 Lead Coating (SWMU Nos 11A, 11B, 11C)

The lead coating sequence generally consisted of melting lead in a furnace or pot, then drawing the wire through or dipping the wire into the pot to deposit a lead coating. The plating process could also have included fluxing or soap tanks. Fluxing coated the wire with a material that promoted adherence of the coating metal onto the surface of the wire. The fluxing material likely contained a fluoride salt. Soap provided additional lubrication to the coated wire to aid in the drawing process.

No evidence of residuals or contamination resulting from this process were noted during the visual inspection or review of historical documents. Although molten lead used to coat the wire could have spilled on floors adjacent to the pot or lead emissions from these furnaces could have been deposited on adjacent equipment and structures, the material would have been contained within the building, thereby minimizing the potential for a release to the environment.

No environmental release of contaminants from this SWMU is suspected. The investigation conducted for the LAP East Pickle Facility (SWMU No. 6) and LAP West Pickle Facility (SWMU No. 3) would include these SWMUs, and no additional investigation is recommended.

5.11.2 Copper Electroplating Process (SWMU No. 11D)

The Copper Electroplating Process consisted of five (5) aboveground, lined steel tanks containing hydrochloric acid, a water spray rinse, a flash copper coating bath solution, a copper coating bath solution, and a water dip rinse. The electroplating process occurred in the copper coating tanks. The tank contained an aqueous electroplating bath solution of metal salts, alkalies, and various bath control compounds. The wire product was connected to a direct current source, generated by rectifiers adjacent to the process area, and submerged in the copper coating tanks. The wire product acted as an electrode and attracted dissolved copper ions which were deposited as a thin coating on the wire.

The main source of potential contaminants is the electroplating bath solution. The copper coating bath solution likely consisted of copper cyanide, sodium cyanide, sodium carbonate, sodium hydroxide or Rochelle salt. Wastewaters generated from dragout and batch dumping of the process bath solution would have contained these compounds. Treated wastewaters were discharged to the City's sanitary sewer system prior to 1974.

Historical records do not indicate whether spills or leaks occurred in the copper electroplating process area. Through visual inspection of the area, the presence or absence of sub-surface contamination could not be ascertained. The potential contaminants are toxic, and the environmental impact from spills, should they reach the environment, could be significant; however, the potential impact from spills is greatly reduced since spills would have been contained within the building.

No environmental release of contaminants from this SWMU is suspected. The investigation conducted for the LAP East Pickle Facility (SWMU No. 6) would include this SWMU, and no additional investigation is recommended.

5.11.3 Electroless Copper Plating (SWMU No. 11E)

The electroless copper plating process consisted of three (3) aboveground, steel tanks containing polykote, a copper plating bath solution, and a water dip rinse. The actual coating process occurred in the copper plating tank. Electroless plating, as the name implies, does not use an external direct current source. Rather, the process depends on the catalytic reduction of metal ions in an aqueous solution and the subsequent deposition of the ions on the base metal. The process is an autocatalytic process whereby the catalyst is generated from the chemical reaction.

The main constituents of the electroless plating bath solutions are the metal being deposited, a reducing agent, and a complexing or chelating agent. The electroless copper plating bath solution likely contained copper nitrate or copper sulfate, sodium bicarbonate or sodium carbonate, Rochelle salt, sodium hydroxide, and formaldehyde or Versene-T.

Historical records do not indicate whether leaks or spills occurred in this process area. The presence or absence of potential subsurface contamination could not be ascertained during an inspection of the SWMU; however, any potential environmental impact from spills is greatly reduced since the building provides containment.

No environmental release of contaminants from this SWMU is suspected. The investigation conducted for the LAP West Pickle Facility (SWMU No. 3) would include this SWMU, and no additional investigation is recommended.

5.12 Willowbrook Pond (SWMU No. 12)

Willowbrook Pond, a surface impoundment, is the collection and recirculation reservoir for contact and non-contact cooling water from several cooling water systems at the facility. Overflow from Willowbrook Pond is discharged to the City's sanitary sewer system. Willowbrook Pond is an earthen structure approximately 225' x 320' x 10.5' deep with an approximate capacity of 5 million gallons. In 1978 an oil collection system, including an oil rope skimmer and an oil collection trough, was installed to restrict oil from being released into the City's sanitary sewer system.

The waters which are discharged to Willowbrook Pond include contact and non-contact cooling water, steam condensate, and stormwater runoff. The current sources of cooling water include the BRP steel coil quench tanks, the BRP and HAP milling and rolling operations, the

HAP charger boom cooling bosh in the shape mill area, and cooling units for the BFS Plant hydraulic equipment. Cooling waters originate from the HAP round, shape, and mini-mill operations, and are collected in the oil/water separator, located south of the HAP complex. The separator removes solids and oil prior to discharging to Willowbrook Pond.

The contaminants in the cooling waters collected at Willowbrook Pond include mill scale, grease, and hydraulic oils. A study performed in August 1988 by Hazard Evaluations, Inc. indicated trace amounts of oil and grease, nickel, chromium and PCBs in these discharges. In addition, sediments collected from the Special Metals Corporation's sewer main contained PCBs at a concentration of 8 ppm. The PCBs are most likely from PCB containing hydraulic oils previously used at the AL Tech facility.

Sediments and soils from Willowbrook Pond have been sampled. In June 1987, URS Company, Inc. collected nine (9) sediment samples and one shoreline composite sample. Seven (7) of these samples contained Aroclor-1232 greater than 50 ppm with a maximum concentration of 2,100 ppm. A study conducted by Ecology and Environment, Inc. in 1988 included the installation and sampling of eight shallow monitoring wells immediately north and south of the pond in preparation of a remedial work plan for the pond. The samples were analyzed for PCB Aroclors, Nickel, and Chromium; no significantly elevated concentrations of these compounds were noted. HART's 1989 investigation included determining the thickness of sludge and the depth of water in Willowbrook Pond. In addition, sludge samples were collected for analyses. The results indicated an average depth of approximately 9.5 feet of water and 1 foot of sludge. Elevated levels of total chromium, iron, nickel, and PCBs were detected in the sludge. Based on Ecology and Environment, Inc.'s Remedial Work Plan, remediation of the pond was to be performed by O.H. Materials Corporation utilizing a duly permitted mobile infrared incinerator. This work, to date, has not been initiated since the mobile infrared incinerator has not been permitted by NYSDEC.

Willowbrook Pond sediment data confirms that the SWMU could be a significant risk to the environment. Further, resampling of the groundwater in the vicinity of Willowbrook Pond is recommended to reconfirm no impact to the groundwater has occurred from this SWMU. Analysis should include heavy metals, oil content, and PCBs.

5.13 Closed Surface Impoundment (SWMU No. 13)

The Closed Surface Impoundment was a 15,000 square foot (750,000 gallon) earthen containment located just east of the present WTP. The impoundment received hazardous pickle liquor waste (K062) prior to discontinuing operations on November 7, 1988. The pickle liquor wastes consisted of spent sodium hydroxide, spent sulfuric, spent nitric, and spent hydrofluoric acids, barium chloride, and rinse waters. The wastes contained high levels of chromium and nickel.

The impoundment was given a "clean closure" in accordance with RCRA regulations in the spring of 1989. Contaminated soils and sludges were disposed at the Michigan Disposal facility. A certification report documenting the "clean closure" was submitted to NYSDEC in October 1989. To verify "clean closure", AL Tech has successfully completed three years of quarterly post closure monitoring (ending 1992) around the closed surface impoundment.

The closed surface impoundment was a regulated unit, having been closed in accordance with RCRA regulations, and as such requires no further study or action.

5.14 Current Industrial Wastewater Treatment Plant (SWMU No. 14)

The Wastewater Treatment Plant (WTP) was constructed in 1975. Treatment processes include grit removal, flow equalization, chrome reduction, neutralization and metal hydroxide precipitation, settling, and drying.

Some of the treatment process tanks are constructed of reinforced concrete. These tanks are also coated with coal tar epoxy, acid resistant epoxy, or vinylester for corrosion protection.

The wastewater treated at the WTP contains contaminants typical of pickle liquor solutions including caustics, acids, metal scale, and dissolved heavy metals (*i.e.*, chromium and nickel). In addition, the wastewater could contain hydraulic and cooling oils from contact cooling and process waters.

Historical records indicate that spills and leaks have occurred at the WTP. Spills from the grit chamber tank(s) and the lime storage area have occurred. Pipes leading to the treatment plant were damaged during drilling operations of past investigations. As a result of these occurrences, the potential for soil and groundwater contamination exists. No specific subsurface investigations have taken place in this area to date.

Existing information is inadequate to properly assess the potential risks to the environment associated with this SWMU. Additional study of the soil and groundwater conditions in the vicinity is recommended. Potential contaminant sources which could be considered in the SWMU investigation include underground piping, process tanks, and locations where spills have occurred. Analysis should include pH and heavy metals.

5.15 Former Lucas Avenue Acid Neutralization Plant (SWMU No. 15)

The Lucas Avenue Acid Neutralization Plant was located to the southwest of the LAP East Pickle Room. The plant was abandoned circa 1975 and all tanks, except for the collection sump, have been removed. This collection sump is connected directly to the WTP. The Acid Neutralization Plant consisted of a steel water storage tank, a steel lime mixing tank, and a lime storage area. The plant provided lime slurry via a pipeline to both the LAP East and West Pickle Room acid neutralizing tanks. A visual inspection of the facility indicated some residual lime in the immediate area.

The only contaminant of concern at the acid neutralizing plant is lime, since the actual neutralization process occurred at the East and West Pickle Rooms; therefore, the threat to the environment is minimal. There are no historical records regarding spills or leaks in this plant.

The concerns presented by this SWMU are not considered a significant environmental or health risk; therefore, no further study or action is recommended.

5.16 Oil/Water Separator (SWMU No. 16)

The main oil/water separator was constructed in 1976 and is located just southeast of the BFS Plant. The separator is partially aboveground and constructed of reinforced concrete. It is approximately 50' x 20' x 14' deep with a capacity of approximately 100,000 gallons. The wastewater received by the oil/water separator contains mill scale, lubricating oils, hydraulic oils, and greases from the BFS Plant and HAP processes. The separator utilizes baffles and a rope skimmer to remove floating oil from wastewater. The collected oil is temporarily stored in a steel storage tank adjacent to the separator. Wastewater passing through the oil/water separator is discharged to Willowbrook Pond.

Historical records indicate that no reported spills have occurred at the oil/water separator. Soils immediately surrounding the separator are stained with oil attributed to skimming operations. Although there are no stormwater drains in the immediate vicinity of this SWMU, it is conceivable that a large storm incident could convey petroleum contamination from the stained soils to a distant drain. However, the environmental impact associated with this SWMU is likely to be limited to localized soil contamination.

No further study of this SWMU is recommended since the potential environmental impact appears to be localized and minor. It is recommended that any stained soil be scraped up and disposed. During the soil removal, the depth of the staining should be noted and additional corrective action taken if the release is larger (*i.e.,* deeper) than expected.

5.17 Former Trichloroethane Container Storage Area (SWMU No. 17)

The Trichloroethane Container Storage Area was previously located inside the abandoned section of HAP. This area was used as a temporary storage area, pending off-site disposal, for various wastes in 55-gallon drums. The area appears to have old woodblock flooring on top of concrete. In addition to 1,1,1-trichloroethane (TCA), materials stored in this area could have included coolants, cutting oils, solvents, thinners, paints, acids, caustics, and electroplating wastes. This area currently serves as a storage facility for virgin oils and lubricants. Since the 55-gallon drums were stored directly on soil in some places, the potential for spills entering the environment exists. There are no historical records which indicate whether spills or leaks occurred in this area; however, stained soils were evident upon visual inspection of the storage area.

Stained soils provide sufficient evidence to assume that some degree of environmental impact has occurred in relation to this SWMU. It is recommended that samples of the soil in the stained area and surrounding vicinity, on the surface and at depth, be obtained and analyzed for the presence of the potential contaminants listed above. Following stained soil characterization, the affected soils should be excavated and disposed. Groundwater monitoring may also be needed to better evaluate the potential risks to the environment. Analysis should include oil content, TCA, and volatile organics.

5.18 Former Waste Pile (SWMU No. 18)

This waste pile was previously located just north of the BFS Plant. The waste pile, located directly on soil, was used to dispose of grinding wheels, scrap metal, metal shavings, and general refuse. Residual oils and greases from the cold finishing operations were most likely present in the waste disposed at this SWMU. The waste pile was abandoned in the early

1960s. Trash was cleaned out of the area in the mid 1980s, and contaminated soils were removed in 1989. Since contaminated soils have presumably been removed, the threat to the environment should have been minimized. No documentation of any sampling activities is available.

The lack of documented confirmation sampling following the contaminated soil clean up prevents a confident assessment that all potential environmental risks have been eliminated. It is recommended that the soils at this SWMU be evaluated for the presence of residual contamination. Analysis should include oil content, heavy metals, and coal components.

5.19 Waste Container Accumulation Areas (SWMU Nos. 19A, 19B and 19C)

There are several areas throughout the plant where waste containers are stored, some of which appeared to be associated with a particular process and are not considered waste accumulation areas. Most of these areas, with the exception of three (SWMU's 19A, 19B and 19C), are located indoors, on concrete, away from migration pathways which could impact the environment, and thus are not being identified as concerns to be discussed herein.

The three storage areas that have the potential for impacting the environment include SWMU 19A located outdoors near the southeast side of BRP; SWMU 19B, located outdoors, just north of the metallurgical lab; and SWMU 19C, located on the south side of BRP, partially enclosed by an overhang.

SWMU 19A consists of several unprotected virgin acid carboys stored on wooden pallets which lay on soil.

SWMU 19B consists of corrosive containing carboys which, for the most part, appeared empty. These containers were placed outdoors on soil.

SWMU 19C primarily consists of stored corrosives located on a concrete pad, partially protected from the elements by a structural overhang.

The history of storage operations at these locations is unknown. There is no documentation of spills in these areas. Based on the current inventory of stored products, the major concern is associated with the corrosive properties of the materials in the event of a release.

The small quantities that may be present in the "empty" containers minimize the potential environmental impact associated with these SWMUs. Since no releases are indicated by visual inspection and historical records, no environmental impact is suspected. No further study or action is recommended.

5.20 Shark Pit Materials Loading Ramp (SWMU No. 20)

The Shark Pit Materials Loading Ramp is located outside, north of the BFS Plant. A 20 cubic yard steel roll-off container at this ramp is used to store waste from the BFS Plant finishing operations. The waste disposed consists mainly of oily metal grindings. The box is occasionally used to accumulate oils and oily sludges from these operations.

Historical records do not indicate that spills have occurred at the loading ramp. A visual inspection indicated that soils in the area are stained with oil.

Stained soils provide sufficient indication that some degree of environmental impact has occurred with relation to this SWMU. It is recommended that any stained soil be excavated and disposed. Soil characterization sampling will be required prior to disposal. It is recommended that the depth and areal extent of contamination be determined prior to excavation. If warranted by the characterization soil sampling, groundwater monitoring may also be needed to assess whether groundwater has been affected. Analysis should include heavy metals, oil content, and PCBs.

5.21 Waste Asbestos Accumulation Area (SWMU No. 21)

A small waste asbestos storage area, approximately 20 square feet in size, was located east of the electrical substation. Asbestos from removal operations was temporarily stored in this area pending off-site disposal. The material was removed from this area and no visual evidence of any remaining asbestos exists. No sampling is planned to test the area for asbestos fibers.

The asbestos storage area poses no environmental risk; however, it is recommended that one confirmation sample be collected and analyzed to ensure that all asbestos containing materials were removed from this area.

5.22 Grinding Swarf Storage Area (SWMU No. 22)

A small Grinding Swarf Storage Area is located just south of the BFS Facility. Grinding waste, consisting of metals and metal oxides, was previously placed on the ground with no protection from the elements. The material is removed from the site for disposal or reclamation. The waste is currently stored in covered roll-off containers.

Historical records do not indicate any spillage or additional contaminants. Visual inspection indicates stressed vegetation in the immediate area of waste storage activities.

5.23 Process Sewers (SWMU No. 23)

Fluid discharge systems associated with various process units located throughout the facility collectively comprise a SWMU. Most piping systems being considered in this SWMU currently discharge into the WTP constructed in 1975. Prior to construction of the WTP, these piping systems discharged either into the unnamed tributary of Crooked Brook or the city's sanitary sewer system. Portions of these piping systems have been disconnected and remain intact; however, no process wastes are handled in the disconnected systems.

The WTP received wastewaters from:

- Former BRP pickling wastes
- BFS Plant pickling wastes
- Air emission scrubber water from BFS Plant
- LAP wire drawing lime coating
- LAP East Pickle Facility wastes
- LAP West Pickle Facility wastes

Broken and leaking pipes present a potential pathway for dissolved metals, suspended metals, or oils to enter the surrounding soil or groundwater. The concern related to a release of contaminants via this pathway is minimal, due to the overburden soils encountered at the facility. Affected groundwater could mobilize dissolved metals, although the metal dissolution rate is expected to be very slow. Suspended metal particulates are expected to be filtered out by, and trapped in, the soil medium.

There have been reports of line breaks and spills associated with these process sewers. Further investigation of the process sewers is warranted to assess the potential impact of these systems on the environment.

5.24 Waste Disposal Areas (SWMU Nos. 24A, 24B, and 24C)

Information pertaining to waste disposal facility components and appurtenances has been identified through research of past reports and discussions with knowledgeable personnel. These fill/disposal areas have been identified at the AL Tech Dunkirk Facility. The first fill area used for by-product disposal during the Early Period is immediately west of the HAP. The second and third areas, south and west of the HAP, were used as a by-product and waste staging area during the Post-World War I era. These locations have been identified on Figure 5-3.

5.24.1 Early Period Fill Area (SWMU 24A)

Tool steels in the form of bar, rod and wire were manufactured at AL Tech commencing January 1, 1908. Steel melting, hot finishing, and cold finishing processes were utilized during what is identified as the early period (until 1920).

During this period, waste by-products from melting were deposited in the area immediately west of the HAP. This included slag, mold hot tops and bottom plugs, crucibles, refractories and alloy/ferro/metal spillage.

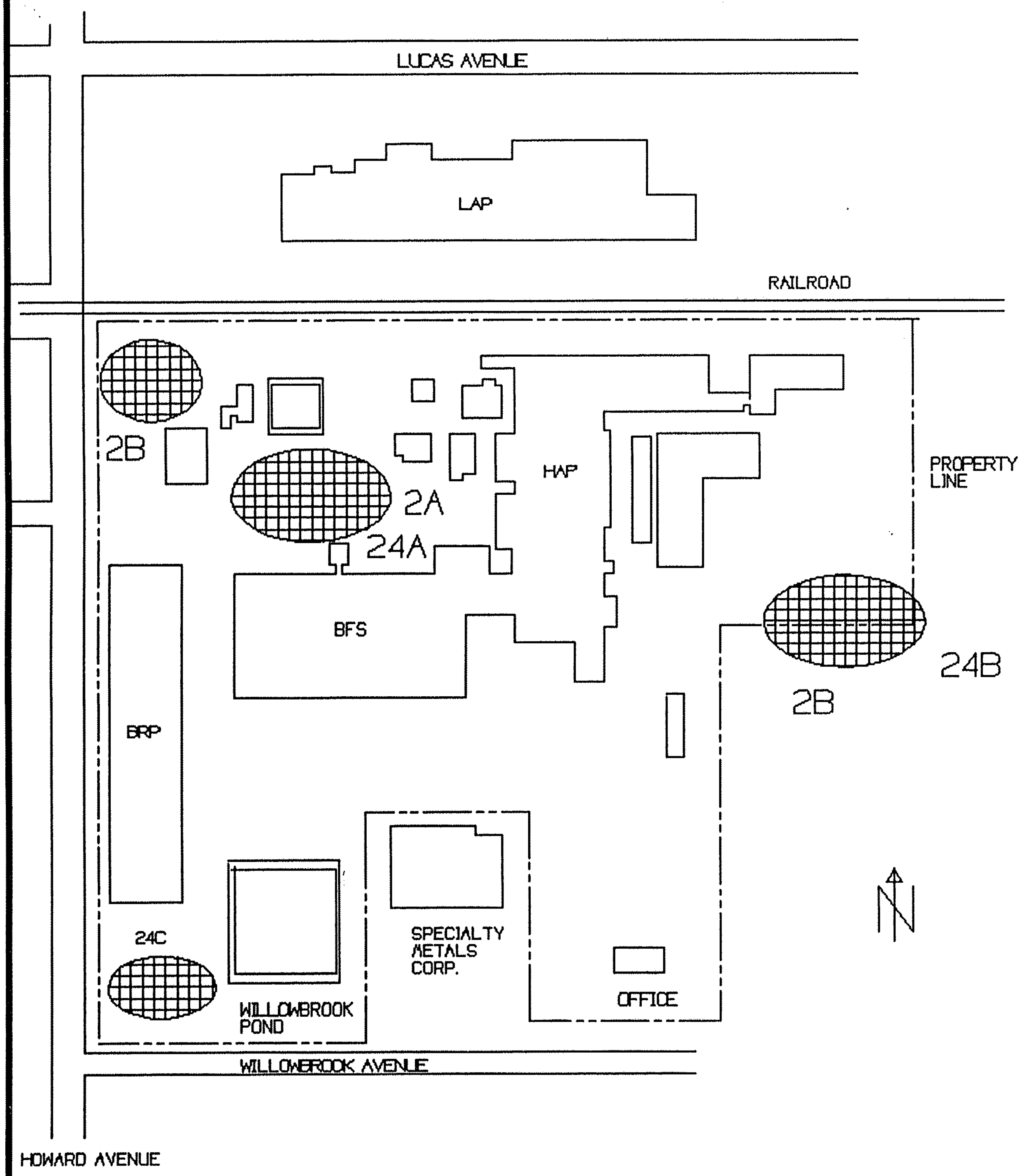


FIGURE 5-3

AL TECH
DUNKIRK FACILITY
LANDFILL AREAS

McLAREN/HART

Hot finishing by-products were deposited in this location. Discarded materials from these operations included mill scale, borate compounds, metal fines, grinding dust, furnace refractories, metal silts, clay, and sand. Grinding dust resulting from ingot conditioning was a favored road topping within the plant. Once this material is exposed to moisture, it fuses into a monolithic mass that is very durable.

Only solid wastes are believed to have been landfilled at this location. Liquid pickling wastes may have been disposed in this area but were most likely discharged to surface water runoff areas (*i.e.*, unnamed tributary of Crooked Brook).

The contaminants of concern associated with this location are primarily heavy metals, both dissolved and particulate. Contaminants such as petroleum products and volatiles are not believed to have been disposed in this area. Transport of dissolved metals that penetrate and reach groundwater would be in a northwesterly direction. There are no known groundwater users present in the immediate vicinity of AL Tech. Stormwater run-off would transport particulate contaminants toward drainage swales and the unnamed tributary to the Crooked Brook. It is recommended that soil samples be obtained from the surface and at depth in the fill area. A groundwater sample should also be collected from a downgradient monitoring well to determine groundwater quality impact, if any, from dissolved metals migration. Analysis should include heavy metals.

5.24.2 Post WWI and WWII Fill Area (SWMUs 24B and 24C)

Significant manufacturing changes were implemented during these periods. Electric furnaces were used to melt steels which increased production rates fourfold, and larger hot finishing process equipment was utilized in the specialty steel manufacturing process.

By-product waste generated from melting operations included metal fines, slag, refractories, arc furnace dust, raw material spillage, and furnace bottoms (possibly lined with chromium-magnasite brick). Most waste material is believed to have been disposed off-site. Residuals of some materials may exist in disposal staging areas south and west of the HAP.

Discarded materials generated from hot finishing operations include mill scale, borate compounds, metal fines, grinding dust, furnace refractories, clay, sand, and metal salt complexes. Like pickling wastes, hot finishing wastes are believed to have been disposed off-site. Residuals may exist in the on-site staging areas discussed. Grinding swarf was likely stored for future melting or placed on roads as a base.

The primary contaminants of concern associated with this location are heavy metals, both dissolved and particulate. Contaminants such as petroleum products and volatiles are not believed to have been deposited in this area. Transport of dissolved metals reaching groundwater would be in a northwesterly direction. There are no known groundwater users present in the immediate vicinity of AL Tech. Stormwater run-off would transport particulate contaminants toward drainage swales and the unnamed tributary to Crooked Brook. It is recommended that soil samples be obtained from the surface and at depth in these fill areas. A groundwater sample should also be collected from a downgradient monitoring well to determine the effects of these SWMUs on groundwater quality, if any, from dissolved metal migration.

5.25 Transformers (AOC No. 1)

AL Tech is currently engaged in a transformer management program that includes the testing of all electrical transformers for the presence of polychlorinated biphenyls (PCBs) in the dielectric fluids. There are several PCB contaminated (50-499 ppm PCB) transformers located at the facility and one transformer containing PCBs at greater than or equal to 500 ppm.

The potential for a release from these transformers exists, although none have been reported. A majority of the transformers are outside on concrete pads and do not have secondary containment. Most of the concrete pads beneath the transformers were stained, however, soil staining and stressed vegetation were not observed. A major release from a transformer could discharge to the soils or into storm drains during inclement weather.

Due to the toxicity associated with PCBs, these transformers present a potentially significant concern. In order to better assess the risks to the environment and human health, further study of the transformers is recommended. The study could include sampling stained areas on transformer pads, soils in the vicinity of the pads, and nearby storm drainage swales nearby. Analysis should include oil content and PCBs.

5.26 Process Pits & Cooling Towers Containing Liquids (AOC No. 2)

There are several process pits and troughs throughout the Dunkirk facility which contain contact cooling water, coolants, and lubricating oils. These fluids are collected in the pits and troughs, and then recirculated These process pits and troughs are generally constructed of concrete and located below grade. Typical examples of pits and troughs at the facility include the BRP Shark Pit, the HAP aboveground cooling bosh in the shape mill area, and the BFS Plant grinding, turning, and straightening cutting oil troughs. The rust furnace cooling tower is included with this area of concern since it is similar in purpose to these process pits.

The exact components contained in these pits and troughs depends on the process. Potential contaminants in contact cooling water include mill scale, oils, and greases. PCBs are a potential contaminant since hydraulic oils containing PCBs were utilized at the AL Tech facility. Potential contaminants in coolant and oil pits and troughs primarily associated with turning, straightening, and grinding operations include oils, pesticides, halogenated compounds, soap, metal grindings, and metal shavings.

Historical records do not indicate whether spills or leaks from these process pits and troughs occurred. A visual inspection of the pits and troughs proved to be inconclusive since the collected liquids are below grade. It is possible that soils, and to a lesser extent groundwater, in the vicinity of these process pits could contain oils and metal compounds; however, no contamination has been identified in the subject process pits and troughs.

Samples from sludges contained in these pits and troughs could assist in evaluating the potential for environmental and health risk. Alternatives for assessing whether leaks have occurred include inspection of the containment unit, soil borings in the vicinity of the pit or trough, and groundwater samples downgradient of the potential release. Equipment located in the pits and troughs will limit access and not permit thorough inspection in many cases. Drilling in the vicinity of the pits and trough inside of buildings may be impractical. Where environmental concerns are identified by initial inspections or sampling, it is recommended that a monitoring well(s) be installed outside the wall of the respective building, hydraulically downgradient of the pit or trough. Analysis will depend on material used in the pit and may include oil content, PCBs, heavy metals, and pesticides.

5.27 Scrap Steel Storage Areas (AOC No. 3)

Scrap steel from current and previous finishing operations and scrap steel purchased for melting operations was stored outdoors at several locations. Known locations of these storage areas include the area between HAP and the main office, the area west of HAP, the area near WTP loading ramp, and the area north of BRP. Scrap steel could have been used in the melting process or reclaimed at a metal reclamation facility. The scrap steel included stainless steel shavings and turnings, raw materials, and alloying elements. Some of the scrap steel shavings and turnings still remain in the abandoned storage areas. Over time this scrap material could have been buried from plant excavation operations. It is believed that these metals were highly immobile, although they could have been leached out of the scrap steel by acidic rain, resulting in soil and groundwater contamination. In addition, trace amounts of cutting oil on the scrap material could have entered the environment.

No significant impact to the environment was noted when the scrap piles were inspected; however, the large areal extent of these piles increases the likelihood that scrap metal contaminants (*i.e.*, oils, lubricants, and metal fines) penetrated and became entrained in surface soils or were transported by surface water runoff, thus causing an impact to the on-site and off-site environment. The potential environmental risks associated with these scrap piles indicates that additional investigation of this AOC is warranted. Soil samples from beneath the existing piles, and groundwater samples from beneath and downgradient of the piles are needed to adequately assess the risk. The soil and groundwater samples should consider all potential contaminants, including oil content and heavy metals. These samples should be analyzed for PCBs, petroleum-based compounds, chlorinated solvents, volatiles, and heavy metals, both dissolved and particulate.

5.28 Coal Storage Area (AOC No. 4)

Coal for the boilers was stored in piles directly on the ground, outside the eastern wall of the old boiler house, located on the northeast end of HAP. Coal has not been stored in this area since the late 1960s when the steam-driven forging hammers, and subsequently the coal-fired boilers, were shut down. Base neutral extractable aromatic hydrocarbon compounds in coal could have infiltrated soils, and contaminated soils or groundwater in this area. Visual inspections indicate that some coal is still present in this area.

No significant environmental or health risk is suggested by this AOC; therefore, no additional study or action is recommended.

5.29 Road Oiling (AOC No. 5)

In the past, the facility used hydraulic oils, lubricating oils, and coolants collected from on-site operations as a means of controlling dust on plant roads; this practice ceased in the late 1960s. The locations of roads at the plant can be correlated to building construction dates and locations. It is believed that the application areas can be reasonably identified.

The exact origin of these waste oils is uncertain; they could have contained PCBs, halogenated compounds, and aromatic compounds. Soil and groundwater contamination potentially exists, with groundwater contamination primarily being associated with the aromatic or halogenated compounds. Migration of contaminants, however, has been minimized since many of the roads were paved.

Sufficient information is not available to assess the environmental and health risks associated with this AOC; therefore, further study is recommended. Since PCBs are toxic, an evaluation of potential contamination should be conducted. Since no particular area or source is suspected, the PCB soil survey should focus on exposed roadways and roadside ditches. Very few sample locations are necessary to obtain representative PCB concentrations since the spraying of road oil is presumed to have been equally distributed across the facility.

The impact of halogenated compounds on the facility's groundwater and surface water can be evaluated in conjunction with groundwater and surface water sampling conducted during other SWMU and AOC investigations. A specific location for sampling is not practical due to the facility-wide application of oils to roadways, and the tendency of these water-soluble compounds to dilute and migrate.

5.30 Crooked Brook (AOC No. 6)

The primary surface water body on the AL Tech site is an unnamed tributary to Crooked Brook which flows through two, buried, 36-inch diameter, tiled culverts, in a northwesterly direction across the southwest portion of the site. The tributary converges with Crooked Brook approximately 1/2 mile northwest of the facility. Crooked Brook flows parallel to, and approximately 1/8 mile east of the facility's eastern property boundary. The brook discharges into Lake Erie, approximately 1 mile northwest of the AL Tech facility, after passing through a residential neighborhood located along the lake's shoreline. Figure 2-1 illustrates the stream's flow pathway in the vicinity of AL Tech's facility. Crooked Brook is considered a gaining stream because it is recharged by groundwater. Crooked Brook is rated Class D by NYSDEC.

Waste disposal and management practices could have introduced contaminants to Crooked Brook via the on-site unnamed tributary. Two storm sewer lines discharge to the tributary; one is a 36-inch line originating near BFS Plant, the second is a 24-inch line originating at BRP (refer to Drawing No. 10). The stormwater collection system could contain contaminants that were noted during previous investigations such as oils, metal fines, and PCBs from SWMU Nos. 13 and 22 and AOC Nos. 1 and 5. In addition, past wastewater disposal operations are suspected to have included direct, untreated discharges to the tributary. It is suspected that wastewater was discharged to the tributary for the Early period (1907 - 1920) and until 1975 when the WTP was constructed. Records indicate that the New York State Department of Health (NYSDOH) notified AL Tech to cease discharging waste to the creek, citing violations of established water-quality standards. Later, improvements made to the discharge system were found to be satisfactory by NYSDOH (1969). A SPDES permit regulated discharges to the creek from the two storm sewer lines from 1974 to 1978.

The past record of discharge to the tributary is sufficient to warrant concern over potential human health and environmental risks posed by this AOC. Surface water and sediment samples should be collected and analyzed for the contaminants that have been discharged, including heavy metals, oils, aromatics, halogenated compounds, and pH.

5.31 Heat Treating (AOC No. 7)

Heat treating operations were conducted in the heat treating room located in the northeast section of the HAP facility. Tool steels up to 1 inch square were heat treated from circa 1935 until operations ceased in the mid-1960s. The equipment used included an air circulated furnace, quenching tanks, and possibly salt baths which are located in the room. All of the tanks utilized are made of steel and recessed in concrete pits.

Historical records are not available to indicate whether any leaks or spills occurred in this area. Spills of quenching liquids, typically oils, potentially occurred inside the facility; these spills would have been contained on the concrete floor. The integrity of the concrete pits is unknown; therefore, petroleum products and salt baths could have been discharged to the surrounding soils around the pits and under the floor. Migration of spilled contaminants would be limited since surface water infiltration is eliminated by the building.

The potential environmental risks from this AOC are minor and likely localized. No further study of this AOC is recommended.

5.32 Lucas Avenue Oil Tank (AOC No. 8)

The Lucas Avenue Oil Tank was used to store lubricating oil for use in the fine wire manufacturing process. The tank is a cast-in-place concrete tank with an approximate storage capacity of 12,000 gallons. The tank is located in the floor, inside the eastern half of LAP. Fine wire production ceased in the early 1980s, and use of the tanks was discontinued. Historical records do not indicate whether spills or leaks occurred from this oil tank. Spillage was not noted during the site inspection; however, subsurface soils may be contaminated if the tank leaked. Oil migration would be minimal since the structure eliminates surface water run-on.

Leaks from the tank may have affected the environment. Further study, including evaluation of the tank contents and the tank's integrity, and evaluation of the surrounding soil for contamination, is recommended to properly assess the potential health and environmental risks associated with this AOC. Analysis should include oil content.

5.33 Battery Storage Areas (AOCs 9A through 9F)

Battery storage areas are located throughout the Dunkirk facility. These areas are used to store and recharge lead-acid batteries used in material handling equipment (*i.e,* trucks). The areas are currently provided with sheet metal secondary containment structures to control acid spills.

The contaminants of concern in the battery storage areas are lead and acid. Records do not indicate whether spills occurred; however, acid residues were visible in some areas. Due to the small volume of acid within each unit, minimal quantities of acid would be spilled. In addition, spills would have been contained within the building, minimizing the impact to the environment.

No environmental impact is suspected from this AOC; therefore, no further action or study is recommended.

5.34 Coal Gasification Facility (AOC No. 10)

A high aluminum clay mined in Africa was used for manufacturing steel melting crucibles. An alternate material was utilized when the outbreak of WWI shut off this supply. Carbon, the alternate material chosen, was the only material capable of withstanding exposure to sustained high temperature operations. The carbon required shielding from oxidizing atmospheres, and a gasification facility was established in 1916 to generate the shielding gas for carbon crucible production. The coal gas generator was a closed retort system that directed the distillation gases (*i.e.,* coal volatiles) to the crucible melting operations.

The by-product wastes generated included ash, coal tar residuals, and coke. The location of the coal gas generator was identified at the extreme west end of HAP, now known as the

Kellogh Building. The location of by-product waste disposal area is unknown, but assumed to be in and around the Kellogh Building. The ash and coal tars would contain base neutral acid extractables and possibly cyanide. All coke generated by this process would have been consumed during melting operations.

There are no known groundwater users in or near the facility. Groundwater near this AOC flows in a northwesterly direction. Surface water run-off potentially effected by this AOC would enter site drainage swales and ultimately discharge to the unnamed tributary of Crooked Brook. Surface and subsurface soils in the immediate area of the Kellogh Building may have been effected by this AOC. Samples of these soils should be collected for analysis of base neutral acid extractables and cyanides.

5.35 Former Aboveground Fuel Oil Tank (AOC No. 11)

A 100,000-gallon, steel tank was installed around 1967, and was used for storing No. 2 fuel oil with a low sulfur content. The tank was installed to support processing operations conducted at BFS Plant. The tank is equipped with clay secondary containment. The secondary containment is capable of holding the entire contents of the storage tank.

In the mid-1980s a pipeline associated with the tank ruptured. The leak occurred within the diked area and was completely contained. The majority of the free liquids were recovered and recovery wells were installed to collect any residual liquids. Monitoring wells were installed to evaluate the releases effect on groundwater.

Due to the relatively impermeable secondary contaminant and substantial recovery of fuel oil, it is believed that the groundwater and soils beneath the tank have not been effected. The monitoring wells installed did not show any signs of contamination. If groundwater was impacted, migration of contaminants would be toward the northwest. There are no known users of groundwater downgradient of the AL Tech facility (see Section 3.5).

No further investigation of this AOC is warranted based on the findings of previous investigations.

VI

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