Report

Surface Water Interim Remedial Measure Engineering Certification Report

Chicago Pneumatic Tool Company
Frankfort, New York

April 1995

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

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1.0 - Introduction

1.1 General

The report has been prepared to document the construction activities for an Interim Remedial Measure (IRM) to address volatile organic compounds (VOCs) in the surface water discharge from the Chicago Pneumatic Tool Company Site (the CP Site) in Frankfort, New York (see Figure 1 for site location map). In a July 1994 Remedial Investigation (RI) Report, Blasland, Bouck & Lee, Inc. (BB&L) presented the results of RI activities performed at the CP Site from November 1993 to April 1994. The results of these RI activities and previous site investigations identified elevated concentrations of VOCs, principally trichloroethene (TCE) and 1,2-dichloroethene (1,2-DCE), in selected areas at the Site. Additionally, elevated concentrations of VOCs, specifically TCE, cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), and vinyl chloride (VC), have been detected in surface water from the oil skimmer pond overflow that discharges through State Pollutant Discharge Elimination System (SPDES)-permitted Outfall 003 and a clay pipe that discharges to a surface water ditch along Bleecker Street. A Feasibility Study (FS) is underway to select an overall site remediation program. The IRM covered by this report addresses the discharge of VOCs to surface water and consists of pumping water from the oil skimmer pond and the clay pipe to a low-profile air stripper for treatment and discharge to a new SPDES-permitted outfall designated Outfall 03A (see Figure 2 for process flow diagram). The locations of these facilities are shown on the partial site plan on Figure 3.

1.2 Site Background

The CP Site is located in the town of Frankfort, Herkimer County, approximately one mile east of the City of Utica, New York, and 0.5 miles south of the Mohawk River. The CP Site is situated on a 77-acre lot in an industrial setting, which is bound to the north by Bleecker Street, to the south by wooded and agricultural

land, to the west by an unnamed creek that drains a wooded area, and to the east by a property fence line bordering Industrial Park Drive. During the 1930s and early 1940s, the CP Site was occupied by an amusement park and baseball field. The amusement park was located in an area to the south of the current manufacturing building. The former baseball field is thought to be located near the southeast portion of the manufacturing building, and the flagpole for the former baseball field still stands at the CP Site.

The manufacturing building was constructed in 1948 and has since been used as a pneumatic tool manufacturing facility. A circa 1948-49 aerial photograph of the CP Site shows the manufacturing building, foundry, and power plant. In this time period, railroad tracks ran along the south and east side of the building, and a spur originated behind the power plant building and connected to another spur near the existing oil skimmer pond. Drainage ditches were evident along the entire southern edges of both spurs. During the early 1970s, a connecting warehouse was constructed to the east of the existing manufacturing building.

Waste oils were discharged into three unlined separation ponds located in the southern portion of the CP Site from 1966 through 1978. Waste oil from a metal chip handling facility was collected in an underground steel holding tank located within a pump house adjacent to the former chip handling area. Waste oil and water were then pumped to the first of the three separation ponds. The water and oil were allowed to discharge to the next pond in series, then ultimately to the drainage ditch located on the east side of the site. Each pond provided a degree of oil/water separation. When the ponds became filled with oil, the oil was pumped off and either disposed of off-site or burned as fuel in the power plant.

In 1979, this practice was discontinued, and the New York State Department of Environmental Conservation (NYSDEC) granted CP permission to close the three separation ponds. The waste oils were removed from the ponds and disposed of off-site, and the ponds were backfilled. The steel holding tank and pump house were also dismantled. A new oil skimmer pond was constructed near the southeast corner of the manufacturing building to intercept any spillage from the metal chip handling area.

Metal chips from the manufacturing process continued to be stored in a chip chute located along the south side of the manufacturing building until this system was eliminated in 1991. The spent chips were centrifuged prior to storage in the chip chute and removal off-site for recycling; however, some oil remained attached to the chips. Occasionally, this oil drained from the former chip chute and was discharged to the drainage ditch that drains to the oil skimmer pond. A similar drainage ditch receives surface water runoff from the area north of the former separation pond area. A rope-type oil skimmer removes oil from the surface of the oil skimmer pond. Prior to the changes discussed below, water from the oil skimmer pond overflowed through four overflow pipes to a diversion structure where it discharged to a drainage ditch that runs along the east side of the CP Site. In addition to the former oil skimmer pond overflow, this drainage ditch receives discharges from roof drains from a portion of the manufacturing building, floor drains inside of the warehouse to the east of the manufacturing building and a trench drain located east of the warehouse exterior loading docks. These four streams combine together and discharge through a SPDES-permitted discharge designated as Outfall 003 (SPDES Permit Number NY-0108537).

Over the last nine years, there have been a number of CP Site investigations that ultimately resulted in identification of the oil skimmer pond and a clay pipe that discharged into a drainage ditch along Bleecker Street as sources of VOCs in the surface water at the CP Site. One result of these investigations was the recommendation to complete an IRM to address VOCs discharging from the oil skimmer pond and the clay pipe along Bleecker Street.

On October 13, 1994, BB&L submitted an Engineering Report and Contract Drawings to the NYSDEC that showed the proposed surface water IRM and included the installation of two manhole pump stations; underground gravity drainage pipelines from the oil skimmer pond and clay pipe to the manhole pump stations; transfer pipelines from the manholes to a low-profile air stripper located within the southeast corner of the original CP manufacturing building; and an underground effluent discharge pipeline. An Application for a Permit to Construct or Certificate to Operate a Process, Exhaust or Ventilation System and a SPDES Permit Modification Application were also submitted to NYSDEC on October 13, 1994.

A conference call was held on October 26, 1994 between NYSDEC and BB&L to discuss NYSDEC's comments and questions on the surface water IRM. BB&L's responses to those comments and questions were presented in a letter to NYSDEC dated December 7, 1994.

On November 14, 1994, NYSDEC issued Certificate to Operate Number 6-2126-00004100049-0 for the air emission from the low-profile air stripper. On November 28, 1994, NYSDEC issued CP a modification to their existing SPDES permit for a new SPDES-permitted outfall designated as Outfall 03A for the treated water discharge from the low-profile air stripper.

Construction of the surface water IRM began on January 16, 1995 and was substantially completed on February 24, 1995. System start-up occurred from February 27, 1995 to March 2, 1995 when the system was placed in full operation. The project will be completed in May 1995 with the final restoration of ground surfaces.

2.0 - Interim Remedial Measure Basis of Design

2.1 General

The design for the IRM is based upon the existing site data and considers the following three design and operating conditions:

1. High flow operating condition;
2. Normal operating condition; and
3. Long-term average operations.

The design of the air stripper system is governed by flow rate, concentration of the influent and SPDES-permitted effluent concentrations. The high flow operating condition represents the maximum design condition while the normal operating condition represents typical design conditions. Both the high flow and normal operating conditions were used as a basis for sizing the air stripper and to evaluate the short-term (hourly) potential air emission impacts. The long-term average operations was used to evaluate the long-term (annual) potential air emission impacts. The basis of design for each of these three conditions is provided in Table 1. Further details regarding the development of flow rates and VOC influent concentrations at each operating condition can be found in the Surface Water Interim Remedial Measure Engineering Report (BB&L, October 1994). The SPDES-permitted effluent concentration of 0.01 milligrams per liter (mg/l) for TCE, VC, cis-1,2-DCE and trans-1,2-DCE at Outfall 03A was established in the modified SPDES permit dated November 28, 1994 issued to CP by NYSDEC.

2.2 System Design

The surface water IRM system design is described below. A process flow schematic showing the major system components is included in Figure 2 and the location of these facilities is shown on Figure 3. The major system components are also listed in Table 2.

2.2.1 Process Description

The IRM treatment system and all equipment controls are located in the southeast corner of the existing CP manufacturing building. The treatment process involves air stripping VOCs from influent water using a low-profile air stripper. The low-profile air stripper treats influent pumped from two manholes that collect water from the oil skimmer pond and the clay pipe that formerly discharged into the drainage ditch along Bleecker Street. From the low-profile air stripper, treated water discharges by gravity to a drainage ditch located upstream of Outfall 003. The area around the low-profile air stripper is contained by a 6-inch curb and which drains into a trench drain/sump. A sump pump transfers any collected water to the inlet of the low-profile air stripper.

The low-profile air stripper is designed to treat the high flow and normal operating conditions described in Table 1. Off-gas from the low-profile air stripper is discharged to the atmosphere through a 12-inch diameter, 26 foot high discharge stack.

An 8-inch diameter pipe is installed to allow water to flow by gravity from the oil skimmer pond, into a manhole designated as Pumping Manhole No. 1. Two submersible pumps are installed in the manhole and operate on a lead/lag/alternate sequence via level controls. Each of the two pumps are capable of pumping the normal operating flow of 65 gallons per minute (gpm) and meet the high flow operating conditions of 130 gpm with both pumps running. During normal operating conditions (i.e., 65 gpm), the manhole pumps provide 100% installed backup capacity.

Water from the clay pipe flows by gravity via an 8-inch diameter pipe into a manhole designated as Pumping Manhole No. 2. Two submersible pumps are installed in the manhole and operate on a lead/lag/alternate sequence via level controls. Each of the two pumps are capable of pumping the normal operating flow of 10 gpm and meet the high flow operating condition of 20 gpm with both pumps running. During normal operating conditions (i.e., 10 gpm), the manhole pumps provide 100% installed backup capacity.

2.2.2 Process Alarms

The IRM treatment system has an alarm system that will activate an auto-dialer which notifies the CP Security Office (manned continuously) of certain alarm conditions. These alarm conditions include:

- High, High Level (indicating failure of both pumps) or Low, Low Level (indicating failure of a pump(s) to shut off) at Pumping Manhole No. 1;

- High, High Level (indicating failure of both pumps) or Low, Low Level (indicating failure of a pump(s) to shut off) at Pumping Manhole No. 2; and

- High, High Level in the air stripper (indicating a blockage of the discharge line) and loss of air flow to the air stripper (indicating blower failure).

Loss of air flow to the air stripper is a critical operating condition and shuts down all influent pumps to the air stripper. Should this condition occur, an operator will be required to investigate the problem and manually restart the blower and influent pumps. The remaining alarm conditions allow the treatment system to remain operational, but provide notification of an abnormal operating condition. When notified of an alarm condition, the CP security personnel have been instructed to notify the appropriate CP operating personnel who have been trained to respond to alarm conditions.

2.2.3 Additional Process Features

The total volume of water treated is measured by flow meters that provide instantaneous and totalizing flow readings. These flow meters are located on air stripper influent pipeline from the Pumping Manhole No. 1, Pumping Manhole No. 2, and the treatment area floor sump pump. Sample taps are provided on all three influent lines and the effluent pipeline.

2.2.4 Future Potential Process Upgrades

The IRM treatment system has been designed with additional treatment capacity that could be utilized for upgrading flow from the oil skimmer pond or clay pipe discharge and/or other future remedial activities at the CP Site (if necessary). The following design features have been incorporated into the design to accommodate these future process upgrades:

- The air stripper has been designed to operate at a conservative inlet water temperature of 38°F and a conservative inlet air temperature of 50°F. Operating at temperatures greater than these will enhance air stripper performance.

- The maximum hydraulic capacity of the air stripper is 250 gpm while the current maximum operating flow rate is 150 gpm. Therefore, the air stripper is hydraulically capable of treating an additional 100 gpm of flow.

- An additional flow of 100 gpm at the high flow operating design concentration of 1.9 mg/l for TCE, 0.34 mg/l for cis-1,2-DCE, 0.1 for trans-1,2-DCE, and 0.02 mg/l for VC can be added to the treatment system influent and the SPDES-permitted concentration of 0.01 mg/l would still be met for all four parameters.

- The flow from the two existing pumping manholes can be increased by 50% by merely upgrading the submersible pumps.

- The air stripper effluent pipeline has been sized at 8-inch diameter to accommodate a discharge of 250 gpm.

- The transfer line inside the manufacturing building from the clay pipe has been sized at 3-inch diameter to accommodate additional influent streams from the north side of the CP Site (if necessary).

3.1 General

BBL Environmental Services, Inc. (BBLES) was retained as the General Contractor for construction and start-up of the surface water IRM which consisted of the following major components:

- Pumping Manhole No.1 to collect and transfer water from the oil skimmer pond;
- Pumping Manhole No. 2 to collect and transfer water from the 12-inch diameter clay pipe near Bleecker Street;
- Double-walled High-Density Polyethylene (HDPE) underground influent transfer pipelines from each pumping manhole to the CP manufacturing building;
- Single-walled polyvinyl chloride (PVC) aboveground transfer pipelines within the CP manufacturing building to the low-profile air stripper;
- A 24-foot by 24-foot treatment area with a sump and sump pump;
- Low-profile air stripper;
- Single-walled HDPE underground effluent pipe;
- Associated valves, sample points and flow meters;
- Associated electrical conduit, wiring and controls; and
- Associated alarms and auto-dialer.

During the course of construction, BBLES employed several subcontractors. The names of the subcontracted firms and the work element each performed are described below.

Subcontractor	Work Element
BB&L	Engineering support and construction observation
LaBarge Bros. Co., Inc.	Pumping manholes, process piping, air stripper installation, and treatment area
Syracuse Merit Electric, Inc.	Electrical conduit, wiring, controls, and alarms
Sentinel Security & Communications, Inc.	Door alarm and fire alarm pull station

Construction of the surface water IRM began on January 16, 1995 and was substantially completed on February 24, 1995. Start-up occurred from February 27, 1995 to March 2, 1995, when the system was placed in full operation. The following subsections describe the construction and installation of the surface water IRM including the pumping manholes and double-containment influent pipelines, treatment system area, air stripper system, and effluent pipeline. An Engineer's Certification Statement is presented in Appendix A and Record Drawings showing the as-built surface water IRM are included in Appendix B.

3.2 Pumping Manhole No. 1 and Influent Pipeline

As shown on Figure 3, Pumping Manhole No. 1 is located approximately 35 feet north of the oil skinner pond. Pumping Manhole No. 1 consists of a 4-foot diameter, 12-foot deep concrete manhole that contains two submersible pumps and level controls. The pumps are connected to a 4-inch diameter High Density Polyethylene (HDPE) pipeline within an 8-inch double-containment pipeline which extends to the treatment system area within the southeast corner of the CP manufacturing building. After entering the building, the double-containment pipeline ends and connects to a 4-inch diameter PVC pipeline that terminates at the inlet of the low-profile air stripper. The flow from Pumping Manhole No. 1 is measured by a totalizing flow meter that reads out on a panel on the east wall of the treatment system area. The total operating time of each submersible pump is also recorded on elapsed time meters located in the Pumping Manhole No. 1 control panel, which is also located on the east wall. The Pumping Manhole No. 1 control panel also contains a main panel breaker switch, hand/off/auto switches for each of the two submersible pumps, low level alarm light, high level alarm light, and high level alarm reset switch. The submersible pumps are

controlled by five float-type level control and alarm switches that are supported from a weighted chain in the manhole. These five floats and their corresponding control/alarm elevations are described below.

Control/Alarm Description	Distance from Bottom of Manhole (feet)
High Level Alarm	5.0
Lag Pump Start	4.5
Lead Pump Start	4.0
Pumps Stop	2.0
Low Level Alarm	1.5

3.3 Pumping Manhole No. 2 and Influent Pipeline

As shown on Figure 3, Pumping Manhole No. 2 is located approximately 240 feet north of the east end of the CP manufacturing building. Pumping Manhole No. 2 consists of a 4-foot diameter, 12-foot deep concrete manhole that contains two submersible pumps and level controls. The pumps are connected to a 1½-inch diameter HDPE pipeline within a 3-inch diameter double-containment pipeline that extends to the northeast corner of the CP manufacturing building. After entering the CP building, the double-containment pipeline ends and connects to a 3-inch diameter PVC pipeline that runs overhead through the CP building for approximately 380 linear feet to the treatment system area where it terminates at the inlet of the low-profile air stripper. The flow from Pumping Manhole No. 2 is measured by a totalizing flow meter that reads out on a panel on the east wall of the treatment system area. The total operating time of each submersible pump is also recorded on elapsed time meters located in the Pumping Manhole No. 2 control panel, which is also located on the east wall. The Pumping Manhole No. 2 control panel also contains a main panel breaker switch, hand/off/auto switches for each of the two submersible pumps, low level alarm light, high level alarm light, and high level alarm reset switch. The submersible pumps are controlled by five float-type level control and alarm switches which are supported off a weighted chain in the manhole. These five floats and their corresponding control/alarm elevations are described below.

Control/Alarm Description	Distance from Bottom of Manhole (feet)
High Level Alarm	3.5
Lag Pump ON	3.0
Lead Pump ON	2.5
Pumps OFF	1.5
Low Level Alarm	1.0

3.4 Treatment System Area

The treatment system area is located in the southeast corner of the CP manufacturing building. The treatment system area consists of a 24-foot by 24-foot concrete floor that slopes toward a grate covered concrete trench. The trench is sloped to drain to a concrete collection sump in the southwest corner of the treatment system area. The trench and sump collects any water from the floor of the treatment system area and pumps it through the low-profile air stripper. The flow from the sump pump is measured by a totalizing flow meter that reads out on a panel on the east wall of the treatment system area. A door, located on the east wall of the treatment system area, provides access to the effluent pipeline and oil skimmer pond area.

3.5 Air Stripper System and Effluent Pipeline

The air stripper system is located within the treatment system area. The system consist of a low-profile air stripper unit, an air stripper system control panel and an auto-dialer. The system is designed to remove VOCs from the influent water from Pumping Manhole No. 1, Pumping Manhole No. 2, and the sump pump. The removal of VOCs is accomplished by blowing a counter-current flow of air up through the air stripper. Influent water enters the top of the air stripper and flows down through four baffled trays. Air is blown into the sump section of the air stripper and travels up through hundreds of 3/16-inch diameter holes causing a turbulent interaction with the water. The VOCs are stripped from the water and are carried out through a 12-inch diameter exhaust stack. The treated water flows to the sump section of the air stripper and

discharges by gravity through an 8-inch HDPE effluent pipeline to a drainage ditch that discharges though SPDES-permitted Outfall 003. The discharge from the low-profile air stripper is designated as SPDES-permitted Outfall 03A.

The air stripper control panel, located on the east wall of the treatment system area, contains the air stripper blower hand/off/auto switch and alarm light/reset buttons for the following alarm conditions:

- Pumping Manhole No. 1 - High or low level
- Pumping Manhole No. 2 - High or low level
- Air Stripper - High level or low air pressure

The air stripper control panel is interfaced with an auto-dialer also located on the east wall of the treatment system area. In the event of an alarm condition, the auto-dialer is programmed to place a telephone call to the CP security office (manned continuously) at extension 2800 and deliver one or more of the following messages:

- "Alert Condition One Exists" which means an alarm condition at Pumping Manhole No. 1
- "Alert Condition Two Exists" which means an alarm condition at Pumping Manhole No. 2
- "Alert Condition Three Exists" which means an alarm condition at air stripper

The auto-dialer will repeat the telephone call to the security office until the alarm condition is acknowledged by a return telephone call. The CP security personnel will then notify the appropriate CP operating personnel who have been trained to respond to alarm conditions.

TABLE 1

CHICAGO PNEUMATIC TOOL COMPANY
FRANKFORT, NEW YORK

SURFACE WATER INTERIM REMEDIAL MEASURE
BASIS OF DESIGN

Parameter	Concentration (mg/l)			SPDES-Permitted Effluent Concentration (mg/l)
	Oil Skimmer Pond	Clay Pipe	Treatment System Influent	
High Flow Operating Conditions				
Flow (gpm)	130	20	150	NL
Trichloroethylene	1.0	7.6	1.9	<0.010
cis-1,2-Dichloroethylene	0.32	0.5	0.34	<0.010
trans-1,2-Dichloroethylene	<0.04	0.5	0.1	<0.010
Vinyl chloride	0.026	<0.01	0.02	<0.010
Normal Operating Conditions				
Flow (gpm)	65	10	75	NL
Trichloroethylene	4.4	15.2	5.8	<0.010
cis-1,2-Dichloroethylene	2.2	1.0	2.0	<0.010
trans-1,2-Dichloroethylene	<0.04	1.0	0.2	<0.010
Vinyl chloride	0.07	<0.01	0.06	<0.010
Long-Term Average Operations				
Flow (gpm)	23	2	25	NL
Trichloroethylene	0.28	7.6	0.87	<0.010
cis-1,2-Dichloroethylene	0.09	0.5	0.12	<0.010
trans-1,2-Dichloroethylene	0.01	0.5	0.05	<0.010
Vinyl chloride	0.01	<0.01	0.01	<0.010

Notes:

1. gpm = gallons per minute.
2. mg/l = milligrams per liter.
3. NL = no limit but continuously recorded.

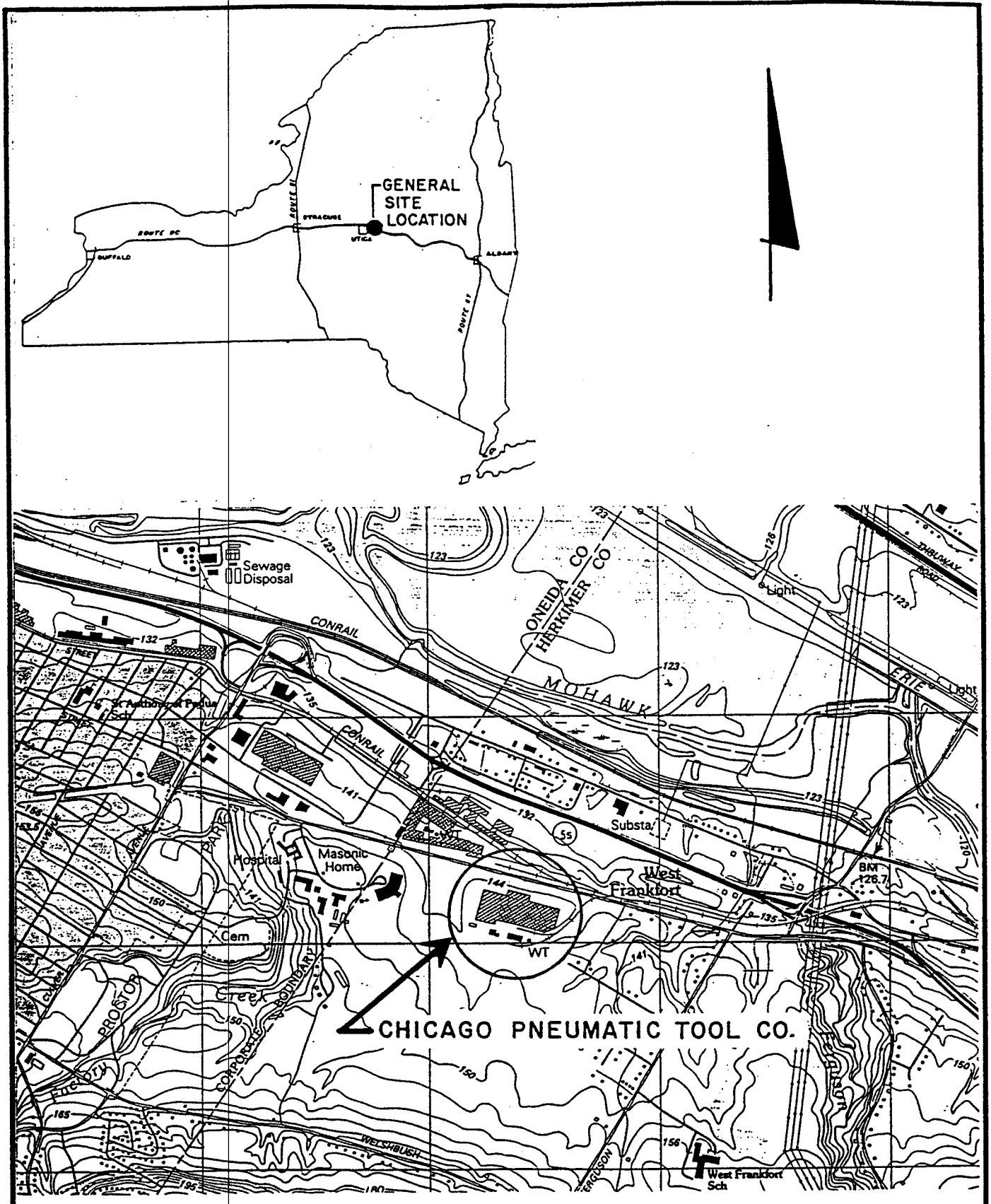
TABLE 2

CHICAGO PNEUMATIC TOOL COMPANY
FRANKFORT, NEW YORK

SURFACE WATER INTERIM REMEDIAL MEASURE
TREATMENT SYSTEM EQUIPMENT SUMMARY

Quantity	Description	Specifications
1	Low-Profile Air Stripper	Shallow Tray Model 31241 with one 20 HP blower capable of providing 1,800 cubic feet per minute of air at 32 inches of water column and 4 stainless steel trays. Air to water ratio at design water flow rate of 150 gallons per minute (gpm) is 90:1.
2	Pumping Manhole No. 1 Pumps	Myers Model ME75 capable of 65 gpm at 28 feet of head.
2	Pumping Manhole No. 2 Pumps	Myers Model ME50 capable of 10 gpm at 43 feet of head.
1	Sump Pump	Grundfos Model BOSS 200 capable of 5 gpm at 18 feet of head.
3	Flow Meters	Signet analog flow meter which displays flow rate and totalized flow volume.

FIGURE 1



SCALE

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SITE LOCATION MAP

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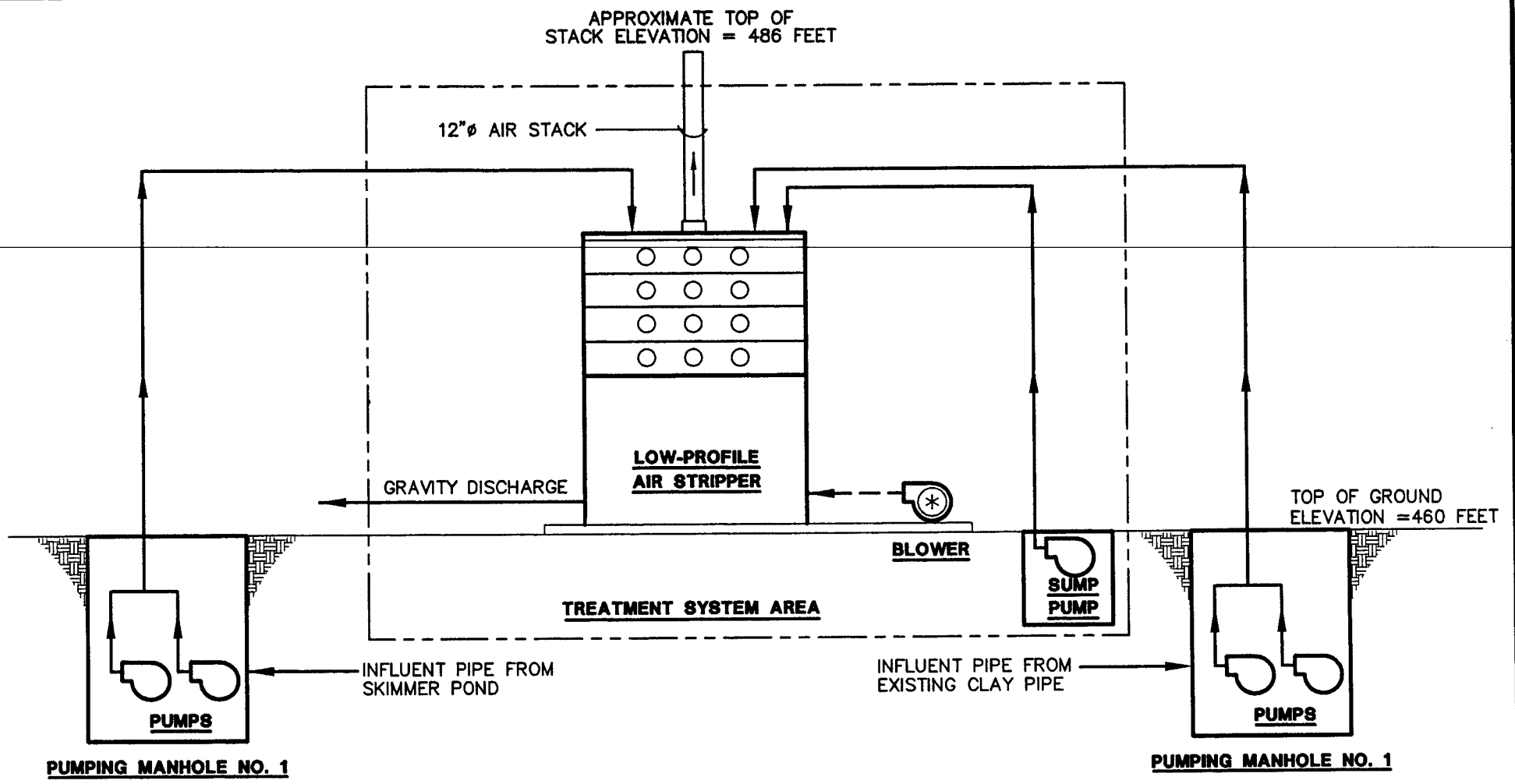
BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS



LEGEND

——— GROUND–WATER FLOW

– – – AIR FLOW

BLASLAND, BOUCK & LEE, INC.

ENGINEERS & SCIENTISTS

CHICAGO PNEUMATIC TOOL COMPANY
FRANKFORT, NEW YORK

SURFACE WATER INTERIM REMEADIAL MEASURE

PROCESS FLOW DIAGRAM | FIGURE **2**

OPTIONAL L: OR X:
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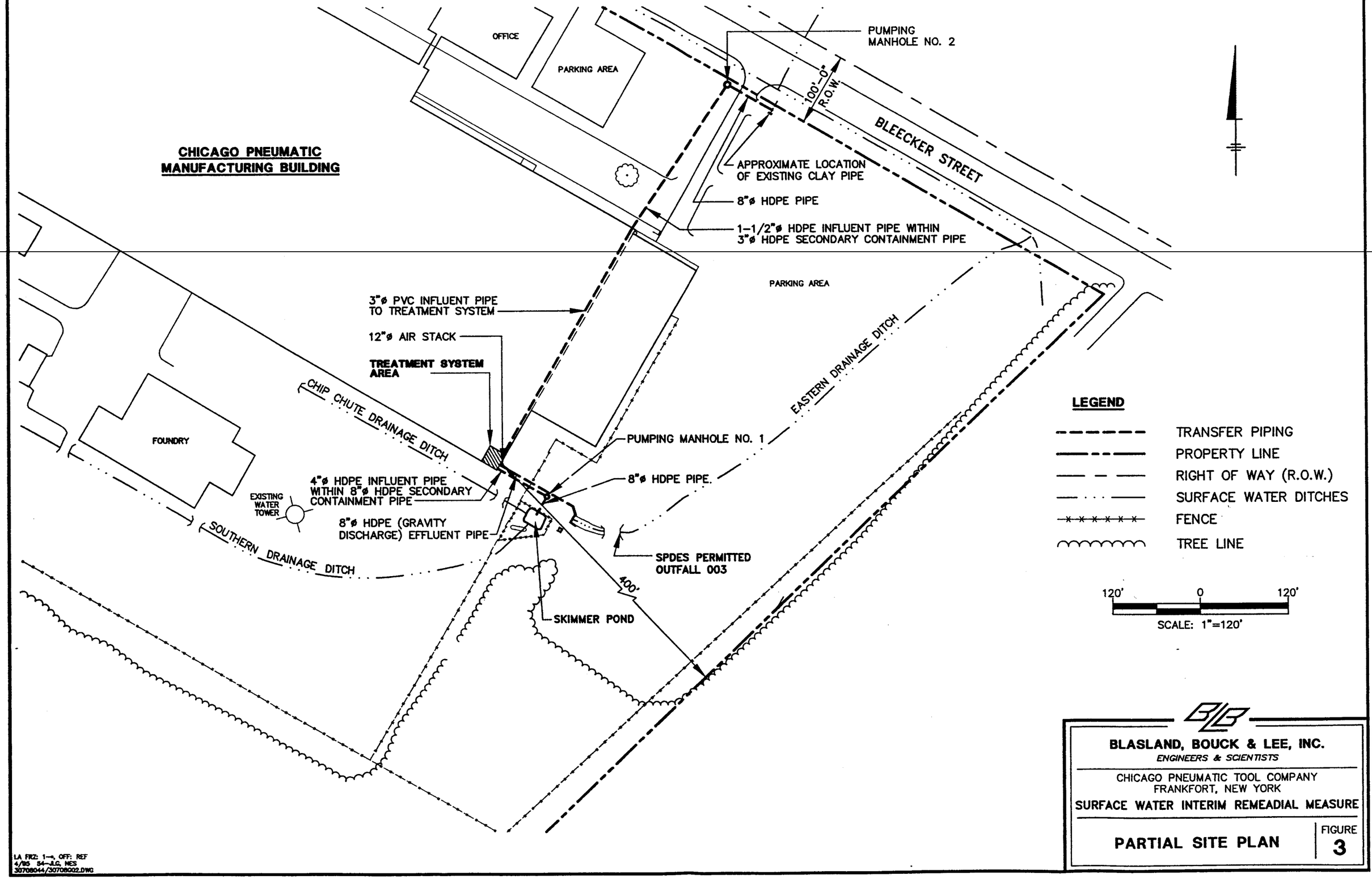

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BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

CHICAGO PNEUMATIC TOOL COMPANY
FRANKFORT, NEW YORK

SURFACE WATER INTERIM REMEADIAL MEASURE

PARTIAL SITE PLAN

FIGURE
3

Appendix A

Engineer's Certification Statement

ENGINEER'S CERTIFICATION

Site:	Chicago Pneumatic Tool Company	**Engineer:**	Blasland, Bouck & Lee, Inc.
oject:	Surface Water Interim Remedial Measure	**Engineer Project #:**	0480.48021
		Contractor:	BBL Environmental Services, Inc.

I hereby certify, as a Professional Engineer registered in the State of New York, that, based on our continuous observations of the subject contract, the work of this contract has been completed in general conformance with the Surface Water Interim Remedial Measure Engineering Report and the ontract Drawings, both dated October 1994 and a letter to the New York State Department of Environmental Conservation (NYSDEC) dated December 1994 in which specific NYSDEC concerns were addressed.

STATE OF NEW YORK
EDWARD R. LYNCH
087526
LICENSED PROFESSIONAL ENGINEER

y: Edward R Lynch

Edward R. Lynch, PE.
Executive Vice President
Blasland, Bouck & Lee, Inc.

Date: 4/17/95

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Appendix B

Record Drawings