NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
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25 Years of Excellence

PROJECT DESIGN BASIS

Leica, Inc. Site
Eggert and Sugar Roads
Town of Cheektowaga, Erie County, NY
Site ID Number: 915156

Prepared for

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation, Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

and

Leica Microsystems, Inc.
P.O. Box 123
Buffalo, New York 1420-0123

January 1999

Document Control Number 82A9196

nes

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January 1999

Project Application	Prepared By	Date
3947-100	Mark Cambra	1/25/99

Approvals

Title	Signature	Date
Senior Department Manager		1/25/99

TABLE OF CONTENTS

1 INTRODUCTION

NES, Inc. (NES) has been contracted by Leica Microsystems, Inc., to design the remedial system proposed at the former Leica Optical Site (Site) in Cheektowaga, New York. After delineation of the contaminated area within the Supplemental Area C, NES has initiated the design of the remedial system. The proposed remedial system originally integrated the technologies of dual vacuum extraction, and air injection to simultaneously remediate VOCs from both soil and groundwater in the overburden material. This document summarizes the observations noticed during the additional investigation. In most locations, contamination was isolated to the fill material above and the silty-sand beneath the clay layer. This document therefore describes the difference in the approach to be taken and the layout of the vapor extraction wells.

Also, concurrent with soil and shallow groundwater remediation, NES is designing a bedrock groundwater pump and treat system consistent with conceptual designs approved by NYSDEC to address the contamination present in the bedrock aquifer.

This document provides detailed information as to the well construction and system layout. Upon approval of the Basis of Design and system configuration, NES can size the equipment and design and layout the Soil Vapor Extraction and Air Sparging System. NES can then determine the size of the building to contain the equipment and determine the most appropriate location. NES will also provide details of the bedrock groundwater recovery system consisting of two wells and pumps connected to the air stripper prior to discharge to the sanitary sewer.

2 SITE DESCRIPTION

The site is located in Cheektowaga, New York (Figure 1). Previous site investigations indicate that the subsurface has been contaminated with chlorinated and aromatic hydrocarbons as a result of past operations at the facility. Three separate areas of contamination were identified: the former drum storage area, the northeastern source area, and the southeastern area. These areas are designated Areas A, B, and C, respectively, as shown of Figure 2. Supplemental Area C is adjacent to Area C. The contaminants of concern consist of the chlorinated hydrocarbons: vinyl chloride, 1,1-dichloroethene, 1,2-dichloroethene (cis and trans), 1,1-dichloroethane, 1,2-dichloroethane, trichloroethene, and 1,1,1-trichloroethane and the aromatic hydrocarbons: benzene, toluene, ethyl benzene, and xylenes (BTEX).

3 ADDITIONAL INVESTIGATION SUMMARY

The analytical results, presented in the Additional Investigation Report, prepared by NES, Inc. (latest revision September 1998, "Investigation Report"), indicate that the contaminated soil extends to the west and northeast of the original Area C designation.

Also, as discussed in the Investigation Report, NES discovered that the contamination is not present within the clay layer, but it is isolated within the layers above and beneath the clay. It is apparent that the clay is an aquaclude and has prevented the contamination within the fill layer (mostly xylene) from migrating downward and the contamination within the silty sand layer (mostly chlorinated solvents) from migrating upward. This change in site conditions has caused NES to alter the design strategy of addressing the contaminated material. While the concept for remediating the contamination within the silty sand will remain unchanged, the approach for remediating the fill material will differ from the approach originally planned to address the clay. Since the depth of the

fill material is shallow, ranging from one to six feet, and the permeability of the fill is much greater, horizontal trenches will be utilized in lieu of wells, which were originally planned for the clay material.

4 PROJECT DESIGN BASIS

NES has delineated most of areas of contamination. NES has initiated the final design of the subsurface remediation system. As discussed in previous documents, the subsurface remediation system integrates the technologies of dual vacuum extraction, pneumatic soil fracturing, and air injection to simultaneously remediate VOCs from both soil and groundwater in the overburden material. Concurrent with soil and shallow groundwater remediation, NES is also designing a bedrock groundwater pump and treat system consistent with conceptual designs approved by NYSDEC to address the contamination present in the bedrock aquifer. The major design parameters for the remediation system are discussed below.

4.1 SVE WELL SPACING AND DESIGN

Based on our experience with vacuum extraction in similar soils and the results observed during the pilot study (results presented in the Pilot Study Final Report, December, 1996, prepared by NES, Inc.), a zone of influence of approximately 30 to 40 feet (radius) in both the lower silty-sand interval and the fill interval are anticipated. NES has elected to take a conservative approach and set the well spacing based on a 30 foot on-center distance between wells in the fill layer and also in the silty-sand layer. This approach will provide a reasonable design safety factor and will also allow for the operation of the wells in various configurations, reducing the possibility of no or low flow zones.

Boreholes will be advanced at the 30-foot grid spacing nodes and an extraction well will be placed in each borehole. The well will contain a vertical well screen (approximately 2 feet in length) in the silty-sand interval. An impermeable layer of bentonite will be used to separate the screen interval from the soils above. This design will eliminate the preferential airflow that would occur from the zone of high permeability soils (i.e. the fill layer) if the well was screened over the entire subsurface interval. The horizontal trenches within the fill layer will contain numerous horizontal well screens (approximately 10 feet in length). The horizontal wells will be placed in trenches approximately 3 to 5 feet deep. These horizontal screened wells will be connected to the main header pipe at a spacing of approximately 30 feet. The screened wells will "tee" off the main header pipe. The horizontal pipe will have the first 10 feet as solid pipe starting at each of the vertical wells. Figures 3 and 4 provide a proposed layout of the well locations. Figure 5 provides a detailed drawing of the vapor extraction and air injection wells.

The silty-sand interval below the clay unit will be used as the main dewatering aquifer, since it will yield a larger quantity of groundwater than the clay and fill layers. This larger quantity will produce greater drawdowns and zones of influence for capture of the groundwater plume. Each of these SVE wells in the silty-sand layer will be equipped with vacuum-entrainment, groundwater recovery tubing, which does not require down-hole pumps or controls.

The material unearthed during the installation of the DVE wells will be placed in a bermed, polyethylene-lined area for treatment near the Vapor Extraction building in a location acceptable to Leica. Perforated pipes will be placed horizontally within the material that will be treated using vapor extraction. The material will be covered with polyethylene during the Vapor Extraction/Air Injection treatment process. After the material has been remediated to RAOs, it will be released to Leica for use as fill material on-site or for transport to an off-site disposal facility.

4.2 VACUUM SYSTEM

The vacuum level required to induce airflow in the soils is a function of the permeability of the soil. In order to provide an efficient application of vacuum to the subsurface, two vacuum blowers will be used to separately address the two main subsurface zones (the fill and silty-sand) requiring remediation. Both vacuum units will be positive displacement, rotary blowers with electric motors. The capacities of the blowers have been increased to account for the increased area of contamination. Each system will be capable of producing up to 12 inches of mercury vacuum and approximately 1000 scfm (approximately 60 horsepower blowers).

4.3 AIR INJECTION

This system will consist of injection points, a manifold air injection delivery system and an air compressor. Injection probes will be installed into the silty-sand layer within Areas B and C to assist with VOC transport and dewatering efforts.

Pressures of up to 20 psi are estimated for continuous air injection operations (approximately a 50 horsepower compressor). As shown in Figures 3 and 4, these air injection points will be installed near the end of the horizontal wells near the middle of the 30 foot grid node.

4.4 BEDROCK AQUIFER PUMPING SYSTEM

To address the contaminated bedrock aquifer, two (2) bedrock well pumps will be utilized. The first pump will be placed in existing well MW-16A (as depicted on Figure 3) and a second pump will be placed in a new bedrock well that will be installed approximately 150 to 200 feet west of MW-13A (within the site boundaries) (as depicted on Figure 4). Similar to MW-16A, the new bedrock well will be 6 inches in diameter and extend approximately 40 feet below grade as illustrated on Figure 6.

As discussed in previous documents, the bedrock aquifer pump study performed by CRA entitled, Constant Rate Pumping Test Report, April, 1997, demonstrated that pumping rates between 5.75 and 6.5 gallons per minute (gpm) were sufficient to achieve hydraulic influence 130 feet away from MW-6A and 1200 feet away from MW-16A. These zones of influence and pumping rates presented in the pump study indicate that installing two (2) pneumatic pumps in the locations described above will treat the bedrock aquifer within the areas of contamination.

The pneumatic pumps will each be capable of removing seven (7) to ten (10) gallons per minute of groundwater within the bedrock aquifer. The air injection compressor will power the pneumatic pumps.

4.5 EXTRACTED VAPOR TREATMENT

The most cost effective vapor treatment technology will depend upon the mass of contaminants to be treated. Based on the concentrations of contaminant present, we anticipate that using catalytic oxidation for the first three to four months followed by vapor phase carbon for the remaining duration might provide the most cost effective treatment.

The catalytic oxidation technology thermally destroys the extracted vapors, converting the vapors to carbon dioxide, water vapor and hydrogen chloride. The catalytic system will provide destruction efficiencies up to 99 percent. This technology is typically cost-effective during start-up of sites where a large mass of contaminants is present, and VOC extraction rates are greater than 25 pounds per day.

Four (4) to eight (8) vapor phase carbon canisters will be mobilized to the site after the use of the catalytic oxidizer, with additional carbon brought on site as needed. Each canister will contain 1,000

pounds of carbon and will be capable of treating approximately 100 to 150 pounds of VOCs from the vapor stream.

4.6 GROUNDWATER TREATMENT AND SANITARY SEWER DISCHARGE

We have estimated groundwater discharge rates to be 15-25 gpm; however, due to the heterogeneous soils present at the site, the actual flow quantity may vary. The most effective option for the treatment and disposal of extracted bedrock and shallow groundwater is on-site treatment with an air stripper and subsequent water discharge to the local sanitary sewer. An air stripper will strip the contaminants from the groundwater to an acceptable level for discharge into the sanitary sewer. The air discharge from the air stripper will be treated using activated carbon and monitored prior to discharge into the atmosphere.

The Town of Cheektowaga, the Erie County Sewer District, and the Buffalo Sewer Authority are uncertain about any restrictions that may be placed on the discharge. Additional storage tanks or testing parameters and frequencies may or may not be required.

5 REMEDIAL DESIGN SUBMITTALS

As described in the Order on Consent, Section IV, Paragraph B, dated October 18, 1993, items to be included in the Remedial Design are as follows:

- Construction and Operation of Remediation System;
- Collection, destruction, treatment, and/or disposal of hazardous waste and their degradation products as it relates to soil, groundwater, and air;
- Physical security of the site;
- Health and Safety of site workers, neighbors, and the environment;
- Quality control and quality assurance procedures to be applied during the implementation of the remedial design; and
- Monitoring Effectiveness during implementation.

To ensure the above requirements are addressed, the Remedial Design will consist of the following plans and documents:

- Specifications and Contract Drawings
- Operations, Maintenance and Monitoring Plan
- Contingency Plan
- Quality Assurance Program Plan
- Health and Safety Plan
- Citizen Participation Plan

In addition to these plans and documents, one permit is required; a sanitary sewer discharge permit. NES will apply for these permits and include all pertinent information in this section as part of the Remedial Design.

NES will include an updated proposed time schedule for the implementation of the Remedial Design. The schedule will be utilized during the implementation of the Remedial Design to schedule equipment orders, schedule staff support, and determine if the project is on schedule.

6 SYSTEM OPERATION AND SITE CLOSURE

Upon completion of the subsurface system construction and the three (3) week start-up period, the system will run continuously (excluding periods when undergoing repairs, as required) until the RAOs or other criteria, approved by the NYSDEC, are met.

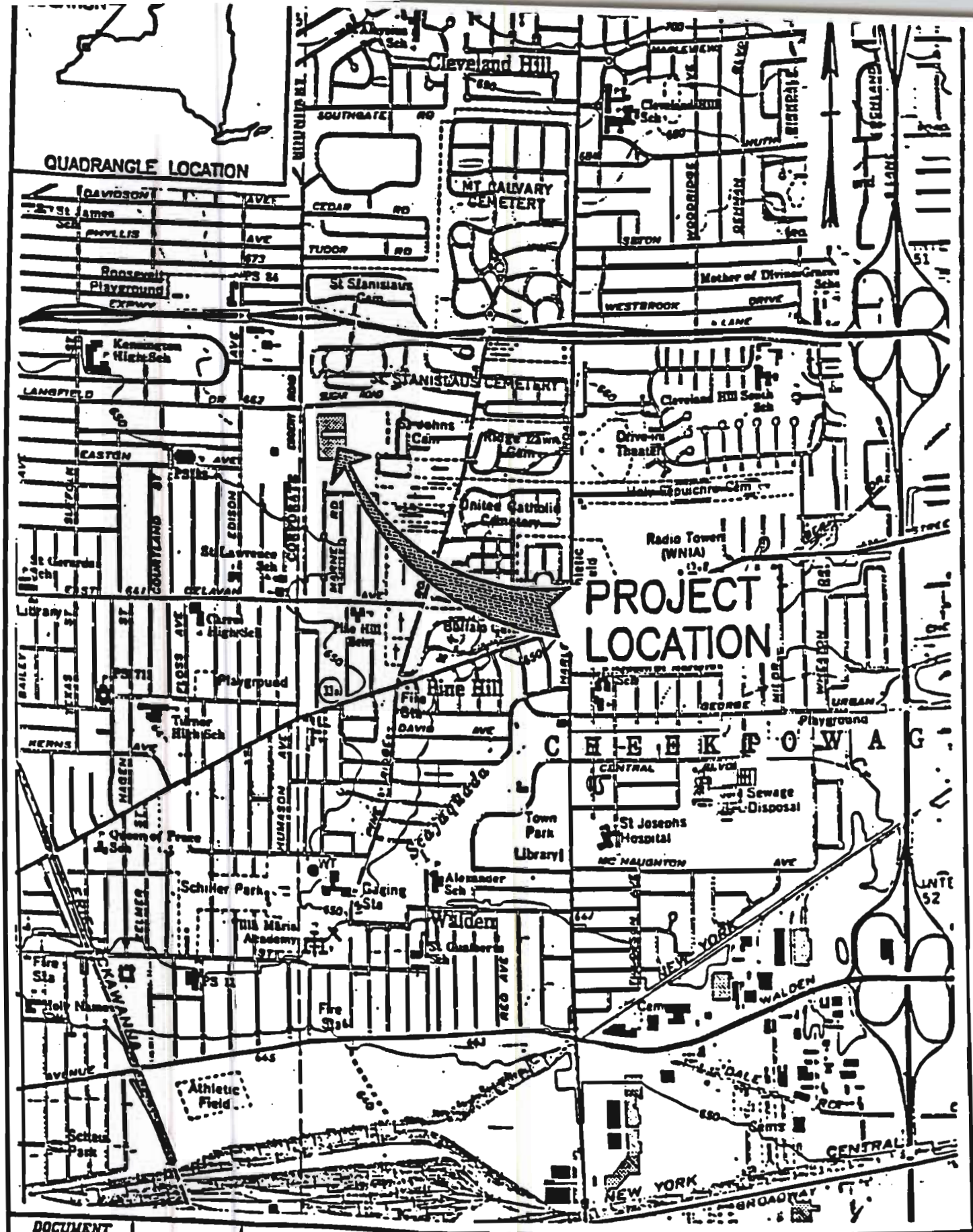
NES is proposing to collect and field analyze air samples from the exhaust of each vapor extraction system during each month of operation. Periodically, air samples will be collected from specific areas and analyzed to determine the effectiveness of the remedial system within a specific area. The data will be used to assess the success of the remedial efforts and identify whether specific areas (e.g., Areas A, B, or C) require additional remediation.

When the analytical data indicate that an area is remediated, soil samples will be collected and analyzed by EPA Method 8240 to ensure a site-wide average less than or equal to the RAOs has been achieved. Once compliance has been verified, the area will be disconnected from the remediation system and considered closed.

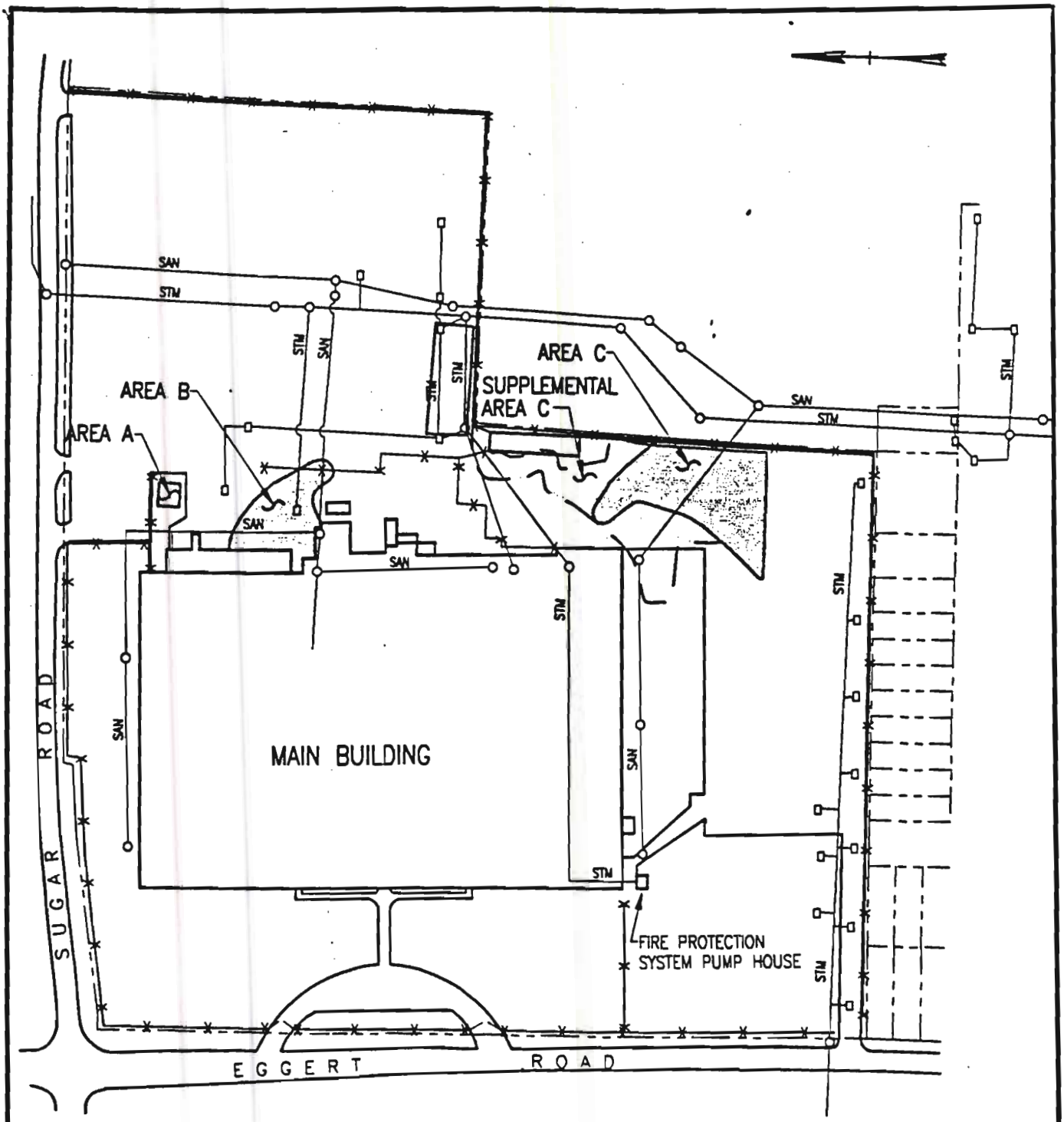
NES anticipates a maximum of approximately 40 to 50 soil samples will be required to demonstrate compliance with the RAOs. Compliance with Remedial Action Objectives (RAO) will be demonstrated when average concentrations of volatile contaminants within each of the three areas of concern are at or below the RAO or approved alternate criteria. A report will be submitted following evaluation of the analytical results.

Following completion of dual vacuum extraction system operations, NES will dismantle and remove all above grade equipment from the Leica, Inc. Site. The extraction well casings will be removed and the boreholes filled with grout. The below grade manifolding will be left in place.

As was noted in previous reports, the bedrock remediation system (a pump and treat system) will need to operate for a longer period of time than the DVE system. Therefore, demobilization activities will not include bedrock wells, related equipment or attached subsurface piping. The bedrock system will continue to operate until the RAOs are achieved within the bedrock aquifer.



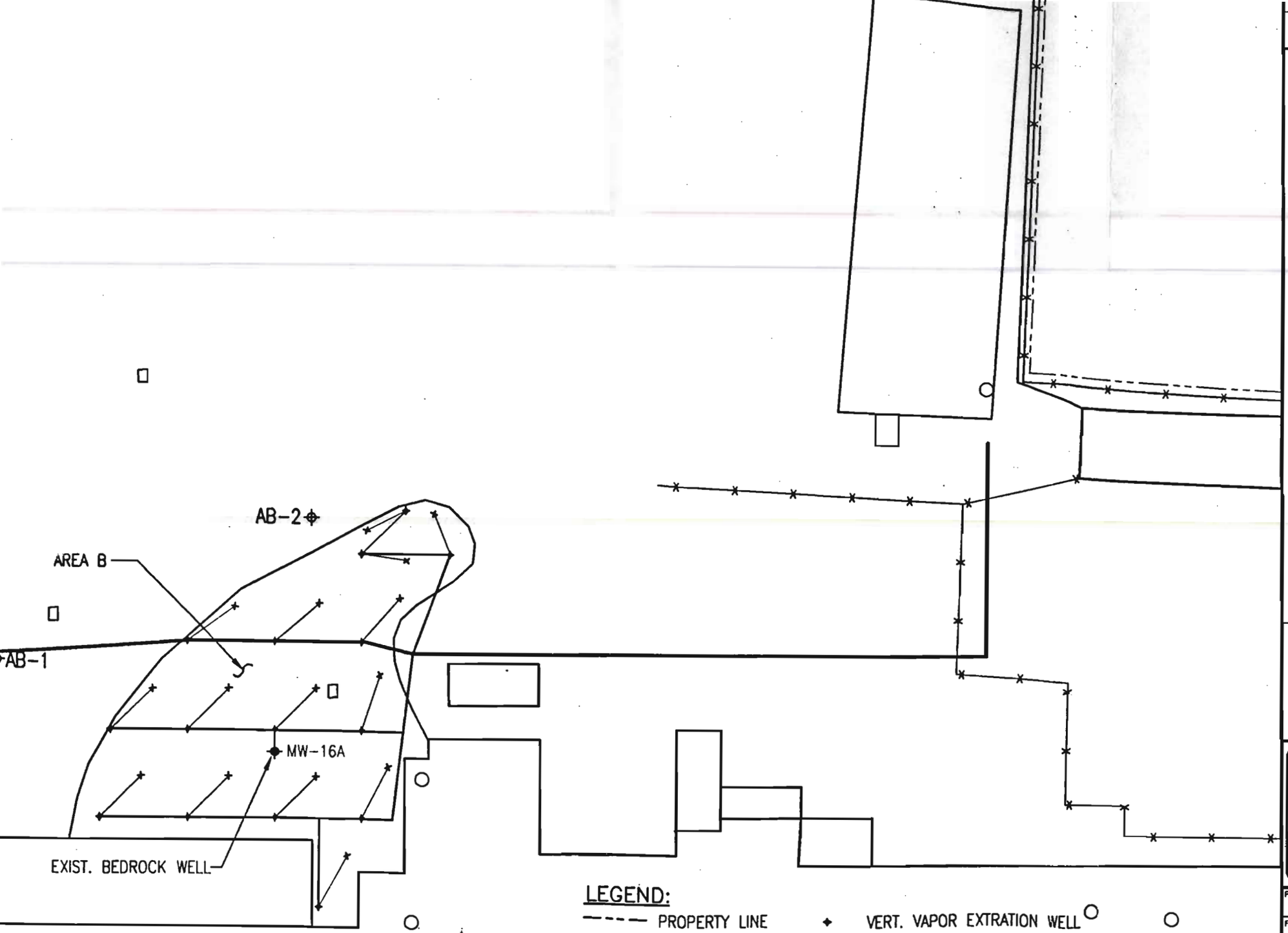
DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	NES NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 798-6000	PROJECT # 3948-100 FILENAME 3948100A SCALE NTS DATE 2/25/98 BY AD CHK FIGURE # 1
REVISION NO.	DRAWING	SITE VICINITY MAP U.S.G.S. QUADRANGLE: BUFFALO, NY NE		



LEGEND:

- PROPERTY LINE
- FENCE
- MANHOLE
- CATCH BASIN
- SAN SANITARY LINE
- STM STORM LINE

DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3948-100 FILENAME: 3948100A SCALE: 1" =200' DATE: 11/5/98 BY: AD CK: MC FIGURE # 2
REVISION NO.	DRAWING	SITE PLAN		



LEGEND:

- PROPERTY LINE
- FENCE
- VERT. VAPOR EXTRATION WELL
- HORIZ. VAPOR EXTRACTION WELL, AIR

LEICA, INC.
EGGERT & SUGAR ROADS
CHEEKTOWAGA, NEW YORK

PROJECT

AREAS A & B – VAPOR EXTRACTION, AIR INJECTION AND BEDROCK RECOVERY LAYOUT

DRAWING

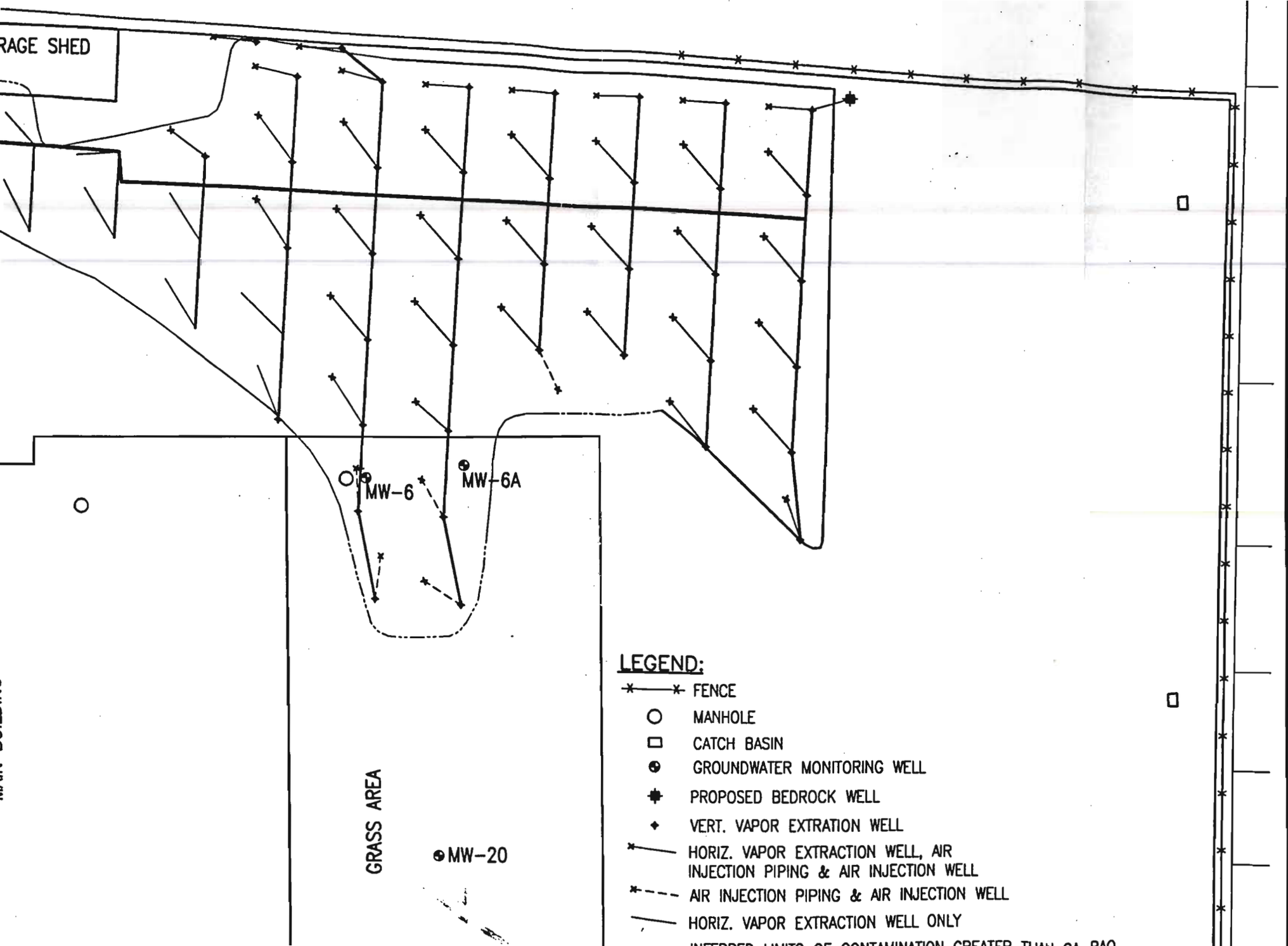
NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
(203) 796-5000

PROJECT NO.: 3948-100

FILE NAME: 3948100A

SCALE:

DATE:



LEICA, INC.
EGGERT & SUGAR ROADS
CHEEKTOWAGA, NEW YORK

PROJECT

DRAWING

AREA C – VAPOR EXTRACTION, AIR INJECTION AND BEDROCK RECOVERY LAYOUT

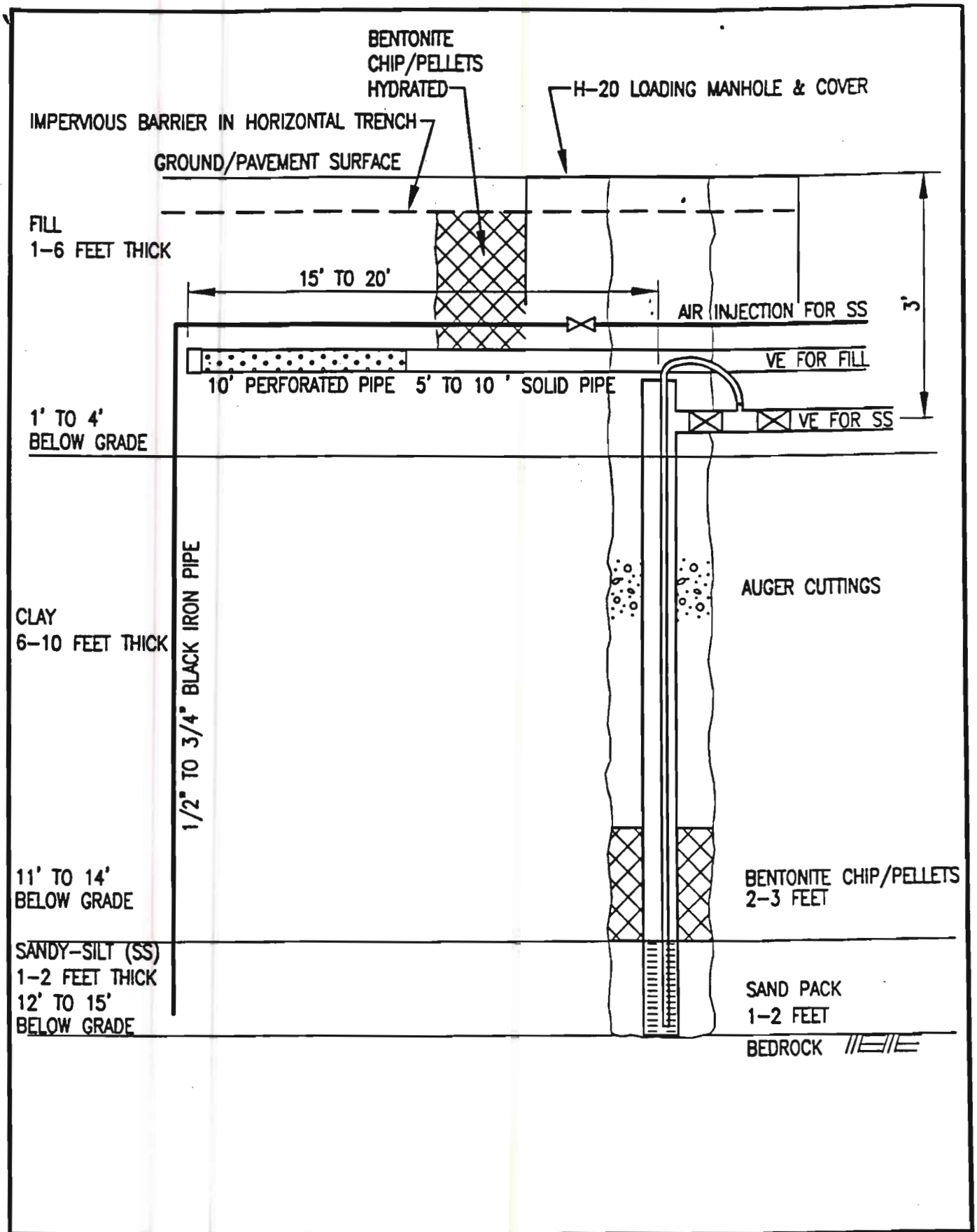
NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
(203) 796-5000

PROJECT NO.: 3948-100

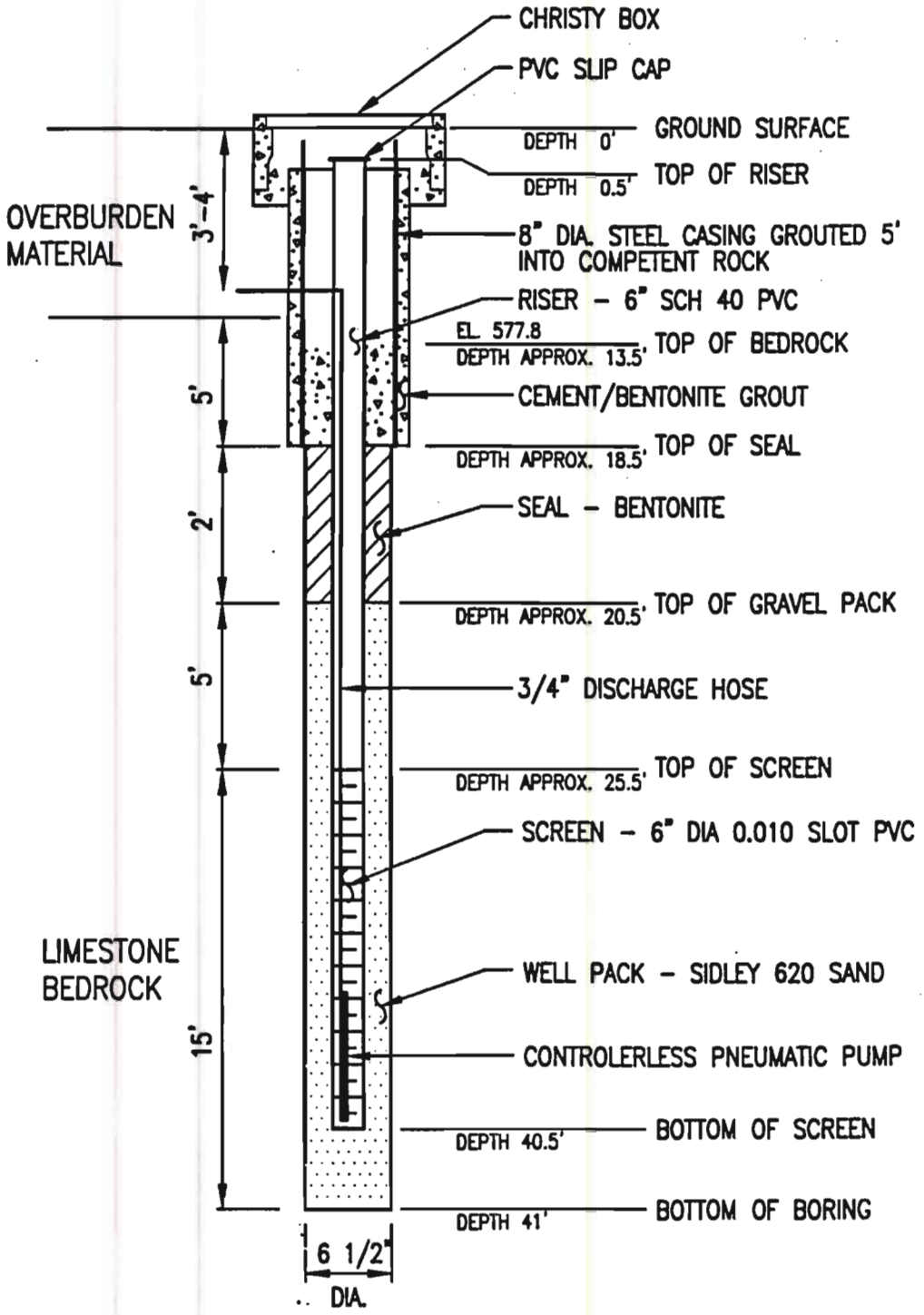
FILE NAME: 3948100A

SCALE: 1" = 40'

DATE: 11/5/98



DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGO, NY	NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100 FILENAME: 3947100A SCALE: NTS DATE: 11/2/98 BY: AD CK:
REVISION NO.	DRAWING	DETAIL DRAWING VAPOR EXTRACTION AND AIR INJECTION WELLS		FIGURE # 5



NOTE:

1. NOT DRAWN TO SCALE
2. SEE BORING LOG FOR DETAILED SOIL DESCRIPTION.

DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NEW YORK	NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3948-100
				FILENAME: 3948100C
REVISION NO.	DRAWING	PROPOSED BEDROCK GROUNDWATER RECOVERY WELL DETAIL		SCALE: NTS DATE: 11/10/98
				BY: AD CK:
				FIGURE # 6

NES, Inc.
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Tele:(203) 798-5000

25 Years of Excellence

CONSTRUCTION AND OPERATION OF REMEDIATION SYSTEM PROJECT DESIGN FINAL SUBMITTAL

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Eggert and Sugar Roads
Town of Cheektowaga, Erie County, NY
Site ID Number: 915156

Prepared for

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Project Application	Prepared By	Date
3947-100	Mark Cambra	3/23/99
Approvals		
Title	**Signature**	**Date**
Senior Department Manager		3/23/99

TABLE OF CONTENTS

1 INTRODUCTION

SCIENTECH NES, Inc. (NES) has been contracted by Leica Microsystems, Inc., to design the remedial system proposed at the former Leica Optical Site (Site) in Cheektowaga, New York. After delineation of the contaminated area within the Supplemental Area C, NES has prepared the design of the remedial system. The proposed remedial system originally integrated the technologies of dual vacuum extraction (DVE), pneumatic fracturing, and air injection to simultaneously remediate VOCs from both soil and groundwater in the overburden material. This document however describes a difference in the approach to be taken and the layout of the vapor extraction wells in response to additional chemical and geological information. This document summarizes the observations noticed during the additional investigation. In most locations, contamination was isolated to the fill material above and the silty-sand beneath the clay layer.

Also, concurrent with soil and shallow groundwater remediation, NES has designed a bedrock groundwater pump and treat system consistent with conceptual designs approved by NYSDEC to address the contamination present in the bedrock aquifer.

This document provides detailed information as to the well construction and system layout. NES has determined the size of the equipment and determined the most appropriate location for the treatment building, which will contain the equipment. NES also provided details of the bedrock groundwater pump and treat system consisting of two wells and pumps connected to the air stripper prior to discharge to the sanitary sewer.

2 SITE DESCRIPTION

The site is located in Cheektowaga, New York (Figure 1). Previous site investigations indicate that the subsurface has been contaminated with chlorinated and aromatic hydrocarbons as a result of past operations at the facility. Three separate areas of contamination were identified: the former drum storage area, the northeastern source area, and the southeastern area. These areas are designated Areas A, B, and C, respectively, as shown of Figure 2. Supplemental Area C is adjacent to Area C. The contaminants of concern consist of the chlorinated hydrocarbons: vinyl chloride, 1,1-dichloroethene, 1,2-dichloroethene (cis and trans), 1,1-dichloroethane, 1,2-dichloroethane, trichloroethene, and 1,1,1-trichloroethane and the aromatic hydrocarbons: benzene, toluene, ethyl benzene, and xylene (BTEX).

3 ADDITIONAL INVESTIGATION SUMMARY

The analytical results, presented in the Additional Investigation Report, prepared by NES, Inc. (latest revision September 1998, "Investigation Report"), indicate that the contaminated soil extends to the west and northeast of the original Area C designation.

Also, as discussed in the Investigation Report, NES discovered that the contamination is not generally present within the clay layer, but it is isolated within the layers above and beneath the clay. It is apparent that the clay is an aquaclude and has prevented the contamination within the fill layer (mostly xylene) from migrating downward and the contamination within the silty sand layer (mostly chlorinated solvents) from migrating upward. This change in site conditions has caused NES to alter the design strategy of addressing the contaminated material. While the concept for remediating the contamination within the silty sand will remain unchanged, the approach for remediating the fill material will differ from the approach originally planned to address the clay. Since the depth of the fill material is shallow, ranging from one to six feet, and

the permeability of the fill much greater, horizontal trenches will be utilized in lieu of wells, which were originally planned for the clay material.

4 PROJECT DESIGN

NES has prepared the final design of the subsurface remediation system. As discussed in previous documents, the subsurface overburden remediation system integrates the technologies of dual vacuum extraction and air injection to simultaneously remediate VOCs from both soil and groundwater in the overburden material. Concurrent with soil and shallow groundwater remediation, NES has also designed a bedrock groundwater pump and treat system consistent with conceptual designs approved by NYSDEC to address the contamination present in the bedrock aquifer. The major design parameters for the remediation system are discussed below.

4.1 WELL SPACING AND DESIGN

Based on our experience with vacuum extraction in similar soils and the results observed during the pilot study (results presented in the Pilot Study Final Report, December, 1996, prepared by NES, Inc.), a zone of influence of approximately 30 to 40 feet (radius) in both the lower silty-sand interval and the fill interval is anticipated. NES has elected to take a conservative approach and set the well spacing based on a 30 foot on-center distance between wells in the fill layer and also in the silty-sand layer. This approach will provide a reasonable design safety factor and also allow for the operation of the DVE wells in various configurations, reducing the possibility of no or low flow zones.

Silty-Sand Layer

Boreholes will be advanced at the 30-foot grid spacing nodes and an extraction well will be placed in each borehole. The well will contain a vertical well screen fully penetrating the silty-sand layer (approximately 2 feet in length). Approximately 2 feet of bentonite will be used to separate the screen interval from the soils above. The remaining borehole will be filled with auger cuttings if PID screening indicates that the material is suitable (<25ppm) or with a Type II cement with 10% bentonite mixture. This design will eliminate the preferential airflow that would occur from the zone of high permeability soils (i.e. the fill layer) if the wells were screened over the entire subsurface interval. Figures 3 and 4 provide a proposed layout of the well locations. Figure 5 provides a detailed drawing of the vapor extraction and air injection wells. Figures 7 – 13 provide detailed drawings for the installation of the subsurface piping.

The silty-sand interval below the clay unit will be used as the main dewatering aquifer, since it will yield a larger quantity of groundwater than the clay and fill layers. This larger quantity will produce greater drawdowns and zones of influence for capture of the groundwater plume. Each of these DVE wells in the silty-sand layer will be equipped with vacuum-entrainment, groundwater recovery tubing, which does not require down-hole pumps or controls.

Fill Layer

The horizontal vapor extraction wells within the fill layer will be approximately 30 feet in length. The horizontal wells will be placed in trenches approximately 2 to 3 feet below ground surface and spaced 30 feet apart. These horizontal wells will be connected to the vapor extraction unit through horizontal manifold piping, which will be installed approximately 3 to 4 feet below grade. Figures 3 and 4 provide a proposed layout of the well locations. Figure 5 provides a detailed drawing of the vapor extraction and air injection wells. Figures 7 – 13 provide detailed drawings for the installation layout of the subsurface piping.

The material unearthed during the installation of the vertical DVE wells will be placed in a bermed, polyethylene-lined area for treatment near the Vapor Extraction building in a location

acceptable to Leica. Perforated pipes will be placed horizontally within the material that will be treated using vapor extraction. The material will be covered with polyethylene during the Vapor Extraction treatment process. After the material has been remediated to RAOs, it will be released to Leica for use as fill material on-site or for transport to an off-site disposal facility. Figure 14 provides a detailed drawing for the location and layout of this bermed area.

Most material unearthed during placement of horizontal extraction wells and manifold pipes will be used to backfill the trench and remediated in that location. Any excess soil will be placed in the lined area and treated as described above.

4.2 VACUUM SYSTEM

The vacuum level required to induce airflow in the soils is a function of the permeability of the soil. In order to provide an efficient application of vacuum to the subsurface, two vacuum blowers will be used to separately address the two main subsurface zones (the fill and silty-sand) requiring remediation. Both vacuum units will be positive displacement, rotary blowers with electric motors. The capacities of the blowers have been increased to account for the increased area of contamination. Each system will be capable of producing up to approximately 1000 standard cubic feet per minute (scfm) at 12 inches of mercury vacuum. This 1000 scfm airflow will produce approximately 15 scfm per well in each of the two layers (fill and silty-sand).

Each of the vacuum extraction systems is equipment with an air water separator, which removes the water within the system. The separated water is pumped to the air stripper for treatment prior to discharge. Figure 13 provides a process flow diagram of the treatment process for the subsurface remediation efforts.

4.3 AIR INJECTION

The air injection system will consist of injection points, a manifolded air delivery system and an air compressor. Injection probes will be installed into the silty-sand layer within Areas B and C to assist with VOC transport and dewatering efforts.

Airflow of 325 cfm at pressures of up to 20 pounds per square inch (psi) is proposed for the continuous air injection operations. As shown in Figure 5, these air injection points will be installed near the middle of the 30 foot grid node. The compressor will produce an airflow of approximately 5 cfm per air injection point in the silty-sand layer.

4.4 BEDROCK GROUNDWATER PUMP AND TREAT SYSTEM

To address the contaminated bedrock aquifer, two (2) bedrock well pumps will be utilized. The first pump will be placed in existing well MW-16A (as depicted on Figure 3) and a second pump will be placed in a new bedrock well that will be installed approximately 150 to 200 feet west of MW-13A within the site boundaries as depicted on Figure 4. Similar to MW-16A, the new bedrock well will be 6 inches in diameter and extend approximately 40 feet below grade as illustrated on Figure 6.

As discussed in previous documents, the bedrock aquifer pump study performed by CRA entitled, Constant Rate Pumping Test Report, April, 1997, demonstrated that pumping rates between 5.75 and 6.5 gallons per minute (gpm) were sufficient to achieve hydraulic influence 130 feet away from MW-6A and 1200 feet away from MW-16A. These zones of influence and pumping rates presented in the pump study indicate that installing two (2) pneumatic pumps in the locations described above will treat the bedrock aquifer within the areas of contamination.

The pneumatic pumps will each be capable of removing seven (7) to ten (10) gallons per minute of groundwater within the bedrock aquifer. The air injection compressor will supply compressed air to the pneumatic pumps.

acceptable to Leica. Perforated pipes will be placed horizontally within the material that will be treated using vapor extraction. The material will be covered with polyethylene during the Vapor Extraction treatment process. After the material has been remediated to RAOs, it will be released to Leica for use as fill material on-site or for transport to an off-site disposal facility. Figure 14 provides a detailed drawing for the location and layout of this bermed area.

Most material unearthed during placement of horizontal extraction wells and manifold pipes will be used to backfill the trench and remediated in that location. Any excess soil will be placed in the lined area and treated as described above.

4.2 VACUUM SYSTEM

The vacuum level required to induce airflow in the soils is a function of the permeability of the soil. In order to provide an efficient application of vacuum to the subsurface, two vacuum blowers will be used to separately address the two main subsurface zones (the fill and silty-sand) requiring remediation. Both vacuum units will be positive displacement, rotary blowers with electric motors. The capacities of the blowers have been increased to account for the increased area of contamination. Each system will be capable of producing up to approximately 1000 standard cubic feet per minute (scfm) at 12 inches of mercury vacuum. This 1000 scfm airflow will produce approximately 15 scfm per well in each of the two layers (fill and silty-sand).

Each of the vacuum extraction systems is equipment with an air water separator, which removes the water within the system. The separated water is pumped to the air stripper for treatment prior to discharge. Figure 15 provides a process flow diagram of the treatment process for the subsurface remediation efforts.

4.3 AIR INJECTION

The air injection system will consist of injection points, a manifolded air delivery system and an air compressor. Injection probes will be installed into the silty-sand layer within Areas B and C to assist with VOC transport and dewatering efforts.

Airflow of 325 cfm at pressures of up to 20 pounds per square inch (psi) is proposed for the continuous air injection operations. As shown in Figure 5, these air injection points will be installed near the middle of the 30 foot grid node. The compressor will produce an airflow of approximately 5 cfm per air injection point in the silty-sand layer.

4.4 BEDROCK GROUNDWATER PUMP AND TREAT SYSTEM

To address the contaminated bedrock aquifer, two (2) bedrock well pumps will be utilized. The first pump will be placed in existing well MW-16A (as depicted on Figure 3) and a second pump will be placed in a new bedrock well that will be installed approximately 150 to 200 feet west of MW-13A within the site boundaries as depicted on Figure 4. Similar to MW-16A, the new bedrock well will be 6 inches in diameter and extend approximately 40 feet below grade as illustrated on Figure 6.

As discussed in previous documents, the bedrock aquifer pump study performed by CRA entitled, Constant Rate Pumping Test Report, April, 1997, demonstrated that pumping rates between 5.75 and 6.5 gallons per minute (gpm) were sufficient to achieve hydraulic influence 130 feet away from MW-6A and 1200 feet away from MW-16A. These zones of influence and pumping rates presented in the pump study indicate that installing two (2) pneumatic pumps in the locations described above will treat the bedrock aquifer within the areas of contamination.

The pneumatic pumps will each be capable of removing seven (7) to ten (10) gallons per minute of groundwater within the bedrock aquifer. The air injection compressor will supply compressed air to the pneumatic pumps.

4.5 EXTRACTED VAPOR TREATMENT

The quantity of contaminants within the subsurface has been estimated using newer analytical data collected during the recent additional investigation in conjunction with other data collected during previous investigations. Assuming a soil density of 2,200 pounds per cubic yard within the overburden material and a porosity of 50% within the bedrock aquifer, the following estimates were calculated:

- 900 pounds of VOCs are present in the fill layer;
- 1,700 pounds of VOCs are present in the silty-sand layer; and
- 460 pounds of VOCs are present in the bedrock.

With these concentrations present within the different layers of the subsurface, NES has scheduled activation of the vacuum extraction and groundwater recovery systems sequentially. Care must be taken to prevent contaminants from being drawn from areas of higher concentration in the silty-sand layer to the deeper bedrock areas. In order to avoid this potential problem, NES proposes to first remove the high level of contaminant present within the subsurface soils and shallow groundwater. After installation, NES has scheduled activation of the extraction system within the silty-sand and fill layers first to remove the heaviest contamination. The vapor stream and groundwater removed will be monitored several times per week to determine when the initial concentrated contamination has been removed. Once the most concentrated contamination has been removed and the extracted vapor concentrations have stabilized, the bedrock aquifer pumping system will be activated. All three vapor streams (vacuum extraction from the fill layer, vacuum extraction from the silty-sand layer, and air-stripping off-gas) will be treated using activated carbon. Remediating the subsurface by this sequence will minimize the potential for cross-contamination into the bedrock aquifer.

Four (4) to six (6) vapor phase carbon canisters will be mobilized to the site with additional carbon brought on site as needed. Each canister will contain 2,000 to 3,000 pounds of carbon and will be capable of treating approximately 300 to 400 pounds of VOCs from the vapor stream. The treatment system will utilize the carbon vessels in three parallel trains with each vapor stream traveling through two vessels prior to discharging to the atmosphere. Each treatment train will contain a primary treatment vessel that will remove the bulk of the contaminants from the air stream and a secondary treatment vessel for polishing and as a backup. The secondary vessel will remove any contaminants that pass the first vessel, therefore minimizing the presence of VOCs escaping into the atmosphere.

Subsequently, when field screening of the vapor stream after the primary vessel indicates that the carbon is saturated, the carbon from the primary vessel will be removed for regeneration, the secondary vessel will then become the primary vessel, and regenerated carbon will be used in the new secondary vessel. The air emissions discharged after treatment by activated carbon will be negligible. Treatment by activated carbon typically provides removal efficiencies in excess of 99%. NES will monitor the air emissions from each of the vapor streams to prevent release of VOCs to the atmosphere above allowable levels.

Figure 16 depicts the location of the system equipment within and around the treatment enclosures.

4.6 GROUNDWATER TREATMENT AND SANITARY SEWER DISCHARGE

We have estimated groundwater discharge rates to be 15-25 gpm; however, due to the heterogeneous soils present at the site, the actual flow quantity may vary. The most effective option for the treatment and disposal of extracted bedrock and shallow groundwater is on-site treatment with an air stripper and subsequent water discharge to the local sanitary sewer. An air

stripper will remove the contaminants from the groundwater to an acceptable level for discharge into the sanitary sewer. The air discharge from the air stripper will be treated using activated carbon and monitored prior to discharge into the atmosphere.

The Town of Cheektowaga and the Buffalo Sewer Authority are uncertain about any restrictions that may be placed on the discharge. Additional storage tanks or testing parameters and frequencies may or may not be required.

NES has proposed discharging the treated groundwater through a 2 or 4 inch PVC pipe to a nearby existing manhole or a proposed manhole installed on the existing 10 inch tile sanitary lateral from the facility. The Town of Cheektowaga has not yet specified the type of tie-in they require at this time. Figure 17 provides a site plan of the proposed sanitary sewer tie in.

5 REMEDIAL DESIGN SUBMITTALS

As described in the Order on Consent, Section IV, Paragraph B, dated October 18, 1993, items to be included in the Remedial Design are as follows:

- Construction and Operation of Remediation System;
- Collection, destruction, treatment, and/or disposal of hazardous waste and their degradation products as it relates to soil, groundwater, and air;
- Physical security of the site;
- Health and Safety of site workers, neighbors, and the environment;
- Quality control and quality assurance procedures to be applied during the implementation of the remedial design; and
- Monitoring Effectiveness during implementation.

To ensure the above requirements are addressed, the Remedial Design will consist of the following plans and documents:

- Construction and Operation of Remediation System Project Design (presented herein)
- Operations, Maintenance and Monitoring Plan (Section 6.0 below)
- Contingency Plan (under separate cover)
- Quality Assurance Program Plan (under separate cover)
- Health and Safety Plan (under separate cover)
- Citizen Participation Plan (under separate cover)

In addition to these plans and documents, one permit is required; a sanitary sewer discharge permit. NES has supplied information and the permit application to the Buffalo Sewer Authority (BSA) for their review and approval on March 12, 1999. The permit application is included as Attachment A.

6 SYSTEM OPERATION, MAINTENANCE, AND MONITORING PLAN

Upon completion of the subsurface system construction and the start-up period, the system will run continuously (excluding periods when undergoing repairs, as required) until the RAOs or other criteria, approved by the NYSDEC, are met. System and equipment maintenance will be performed in accordance with manufacturers' recommendation throughout the duration of the remedial efforts.

NES will monitor the overburden and bedrock remediation systems on a regular basis. System monitoring will occur more frequently during the initial months of operation and less during later stages of the remediation. This allows closer monitoring of the remedial activities during the initial operations, when changes are occurring at a faster rate. During continued operations and monitoring the following tasks will be accomplished:

- Extracted and injected air flows will be measured using pipe velocity meters;
- Extracted vapor and dissolved phase VOC concentrations will be monitored by vapor and head space screening using PIDs;
- Extracted vapor and dissolved phase VOC concentrations will also be analyzed for VOCs of concern;
- Vapor and dissolved phase VOC extraction rates will be calculated;
- Groundwater recovery rates from the extraction wells will be measure with a flow meter; and
- Subsurface vacuum will be measured using vacuum gauges.

NES will field screen air samples from the exhaust of each vapor extraction system during operation. Initially monthly, air samples will be collected from specific areas and analyzed for VOCs of concern to determine the effectiveness of the overburden remedial system within a specific area. The data will be used to assess the success of the remedial efforts and identify whether specific areas (e.g., Areas A, B, or C) require additional remediation. With the information generated from the monitoring activity, the system can be adjusted for more efficient operation. Consideration will be given to utilizing system pulsing methods to address potential occurrences of contaminant rebound.

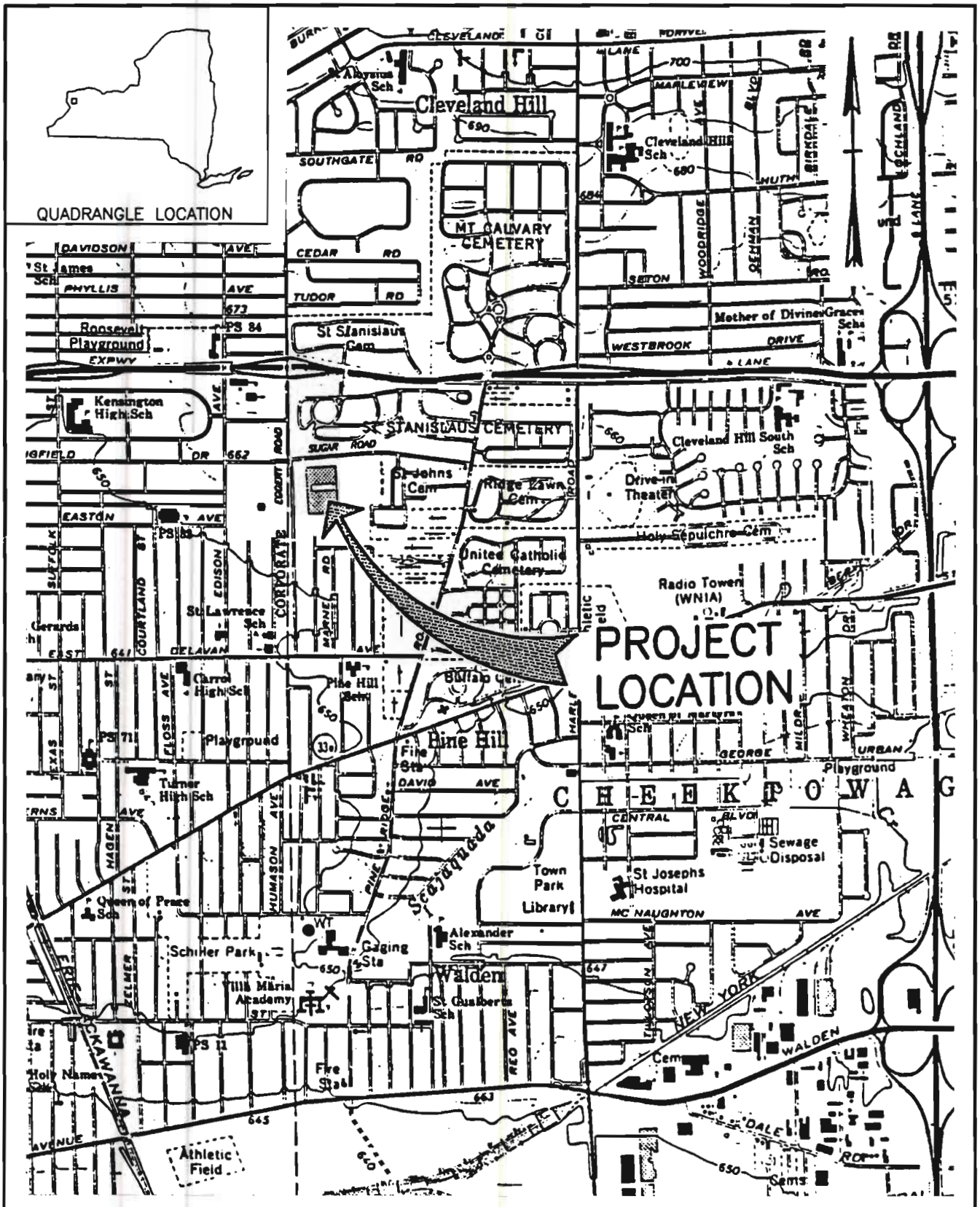
7 SITE CLOSURE

When the system performance monitoring data indicate that recovered VOC concentrations are negligible or as low as reasonably achievable, soil samples will be collected and analyzed by EPA Method 8240 to demonstration a remedial area-wide average less than or equal to the Remedial Action Objectives (RAOs) has been achieved. Once compliance has been verified, the area will be disconnected from the overburden remediation system and considered closed.

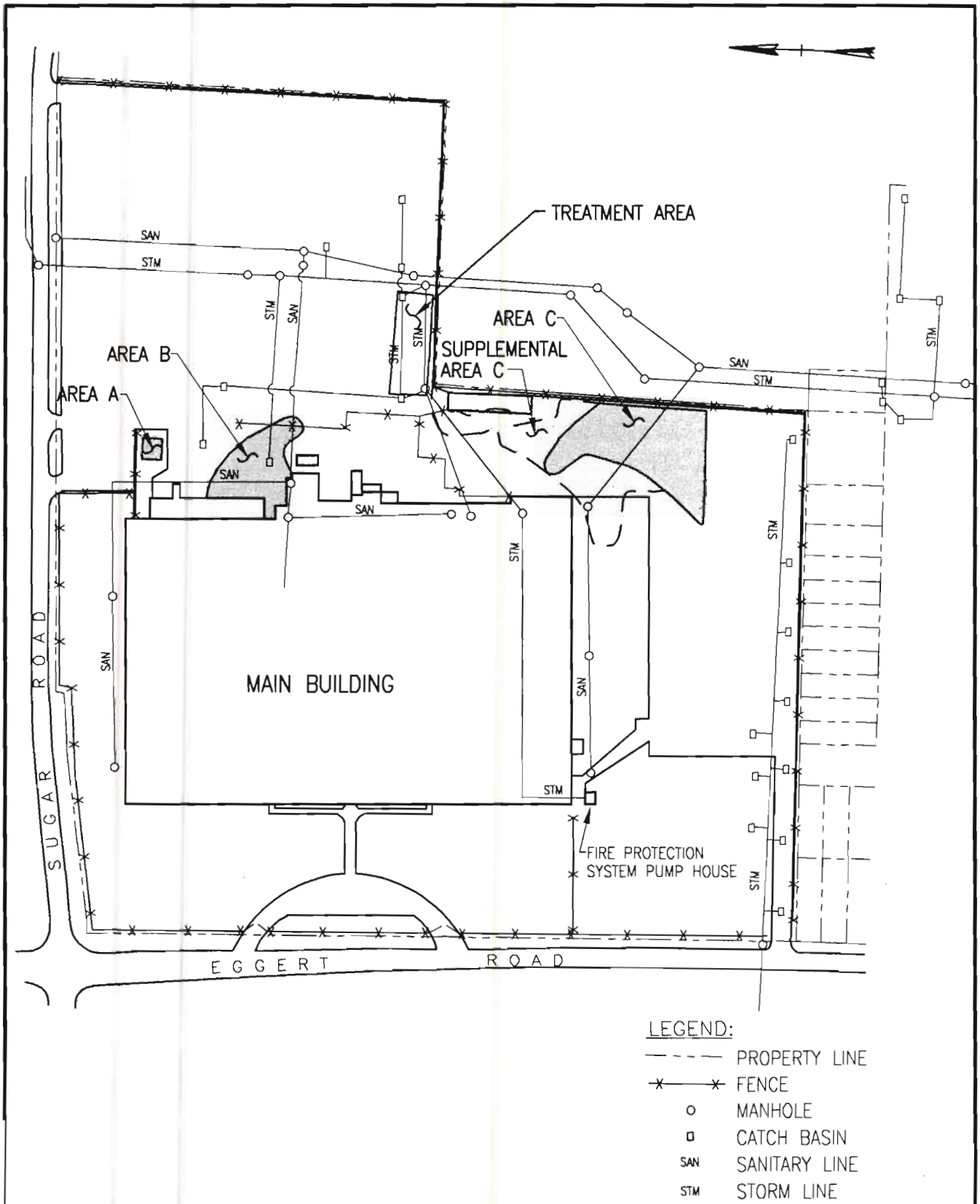
NES anticipates a maximum of approximately 40 to 50 soil samples will be required to demonstrate compliance with the RAOs. Compliance with RAOs will be demonstrated when average concentrations of volatile contaminants within each of the three areas of concern are at or below the RAO or approved alternate criteria. A report will be submitted following evaluation of the analytical results.

Following completion of overburden remediation system operations, NES will dismantle and remove all above grade equipment from the Leica, Inc. Site. The extraction well casings will be removed and the boreholes filled with grout. The below grade manifolding and wells will be left in place and the ends of all piping filled with grout seals.

As was noted in previous reports, the bedrock remediation system (bedrock groundwater removal and treatment) will likely need to operate for a longer period of time than the overburden remediation system. Therefore, demobilization activities will likely not include bedrock wells, related equipment or attached subsurface piping. The bedrock remediation system will continue to operate until the RAOs are achieved within the bedrock aquifer.

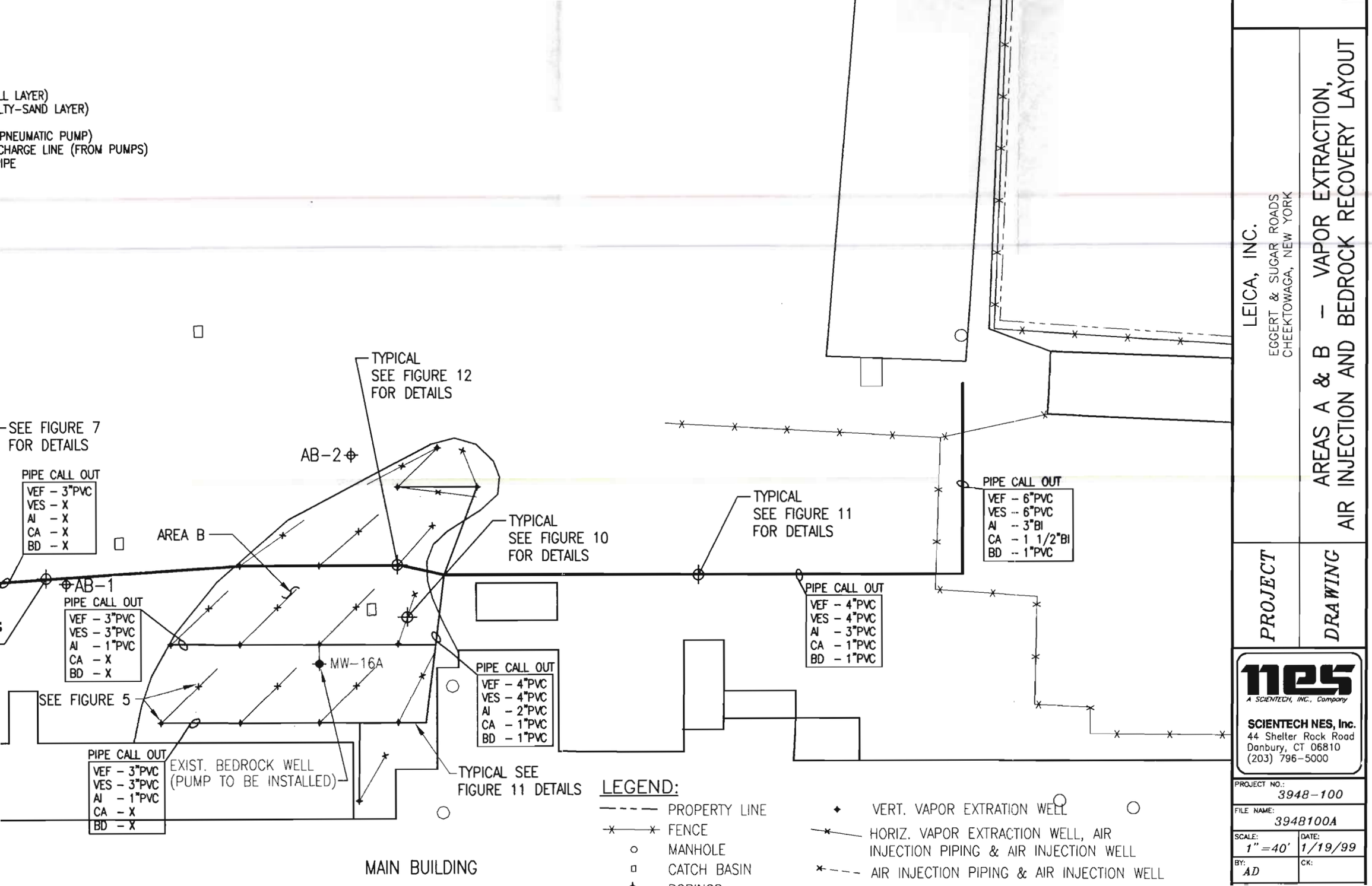


DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	nes A SCIENTECH, INC. Company SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT #: 3948-100 FILENAME: 3948100A SCALE: NTS DATE: 2/25/98 BY: AD CK:
REVISION NO.	DRAWING	SITE VICINITY MAP U.S.G.S. QUADRANGLE; BUFFALO, NY NE		FIGURE # 1



DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	PROJECT # 3948-100 FILENAME: 3948100A SCALE: 1" = 200' DATE: 11/5/98 BY: AD CK: MC FIGURE # 2
REVISION NO.	DRAWING	SITE PLAN	

nes A SCIENTECH, INC., Company
SCIENTECH NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
(203) 796-5000



LEICA, INC.
EGGERT & SUGAR ROADS
CHEEKTOWAGA, NEW YORK

PROJECT

AREAS A & B - VAPOR EXTRACTION, AIR INJECTION AND BEDROCK RECOVERY LAYOUT

DRAWING

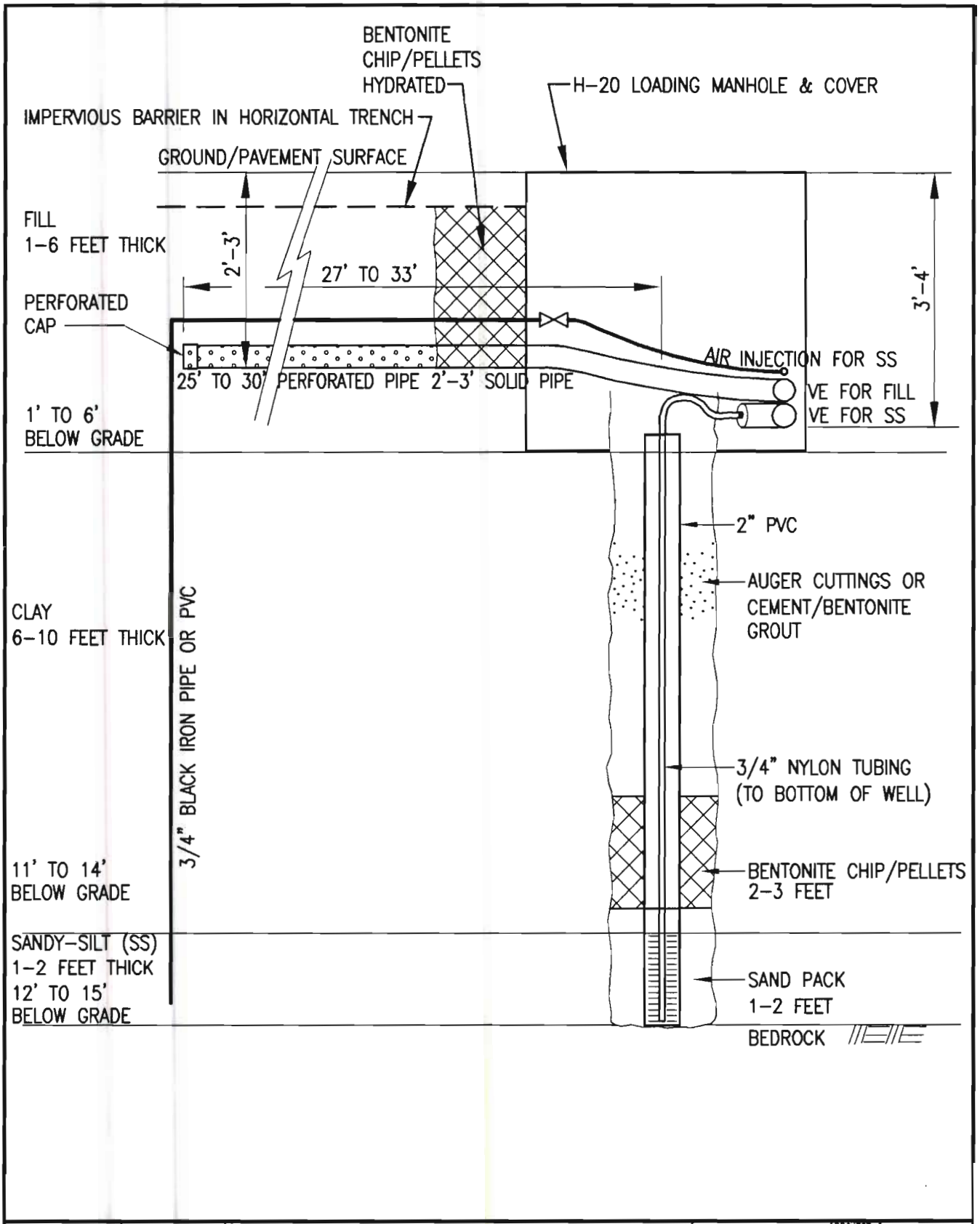
nes
A SCIENTECH, INC., Company
SCIENTECH NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
(203) 796-5000

PROJECT NO.: 3948-100	
FILE NAME: 3948100A	
SCALE: 1"=40'	DATE: 1/19/99
BY: AD	CK:

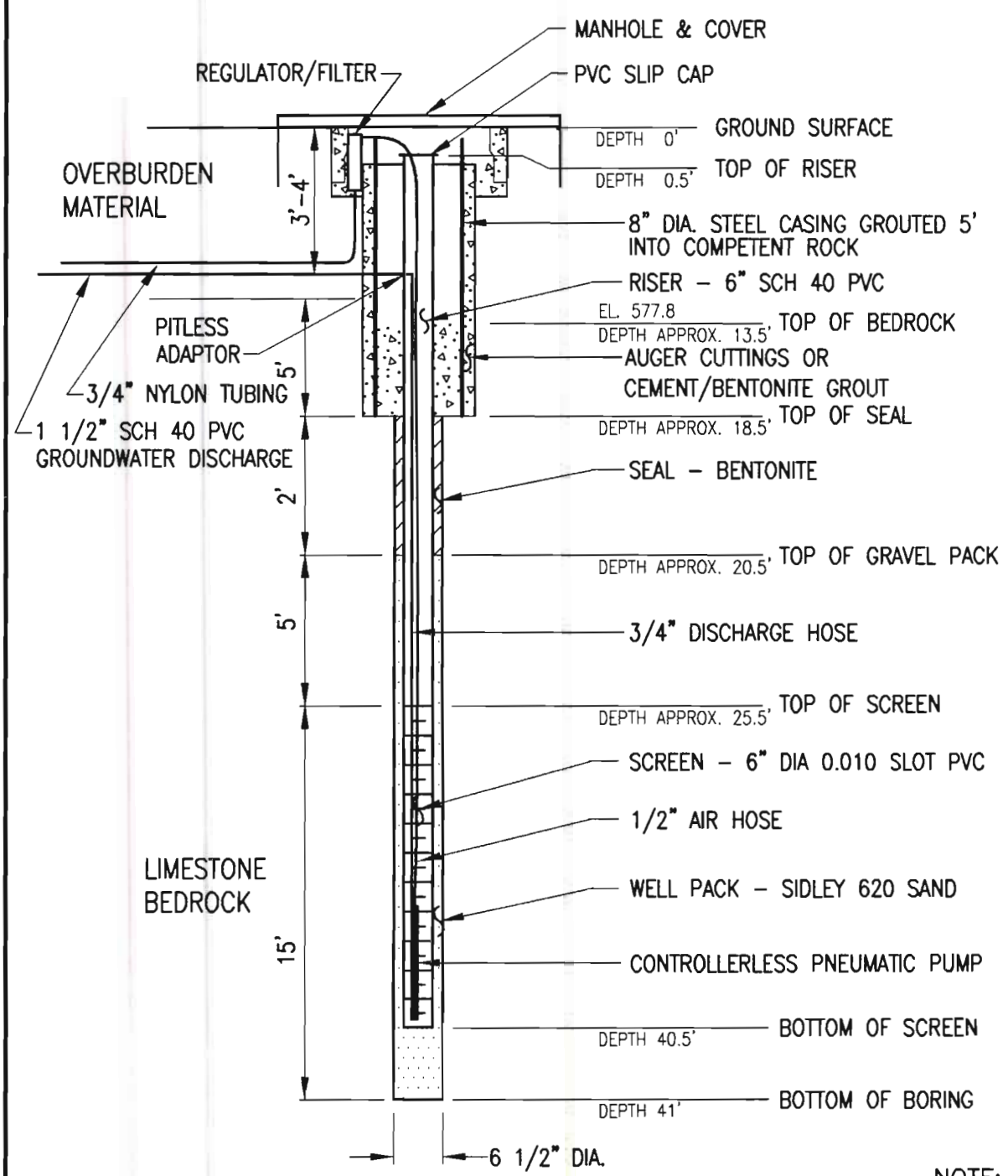
PROJECT	DRAWING
LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	AREA C – VAPOR EXTRACTION, AIR INJECTION AND BEDROCK RECOVERY LAYOUT

SCIENTECH NES, Inc.
A SCIENTECH, INC., Company
44 Shelter Rock Road
Danbury, CT 06810
(203) 796-5000

PROJECT NO.:	FILE NAME:	SCALE:	DATE:	BY:	CK:
3948-100	39481004	1" = 40'	1/19/99	AD	



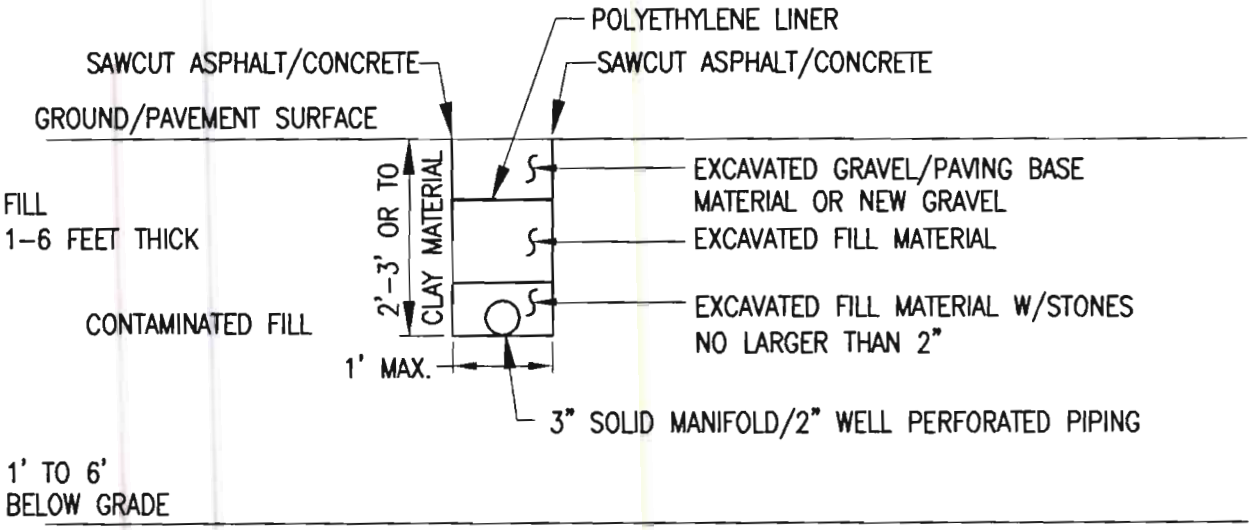
DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100 FILENAME: 3947100A SCALE: NTS DATE: 1/18/99 BY: AD CK:
REVISION NO.	DRAWING	DETAIL DRAWING VAPOR EXTRACTION AND AIR INJECTION WELLS		FIGURE # 5



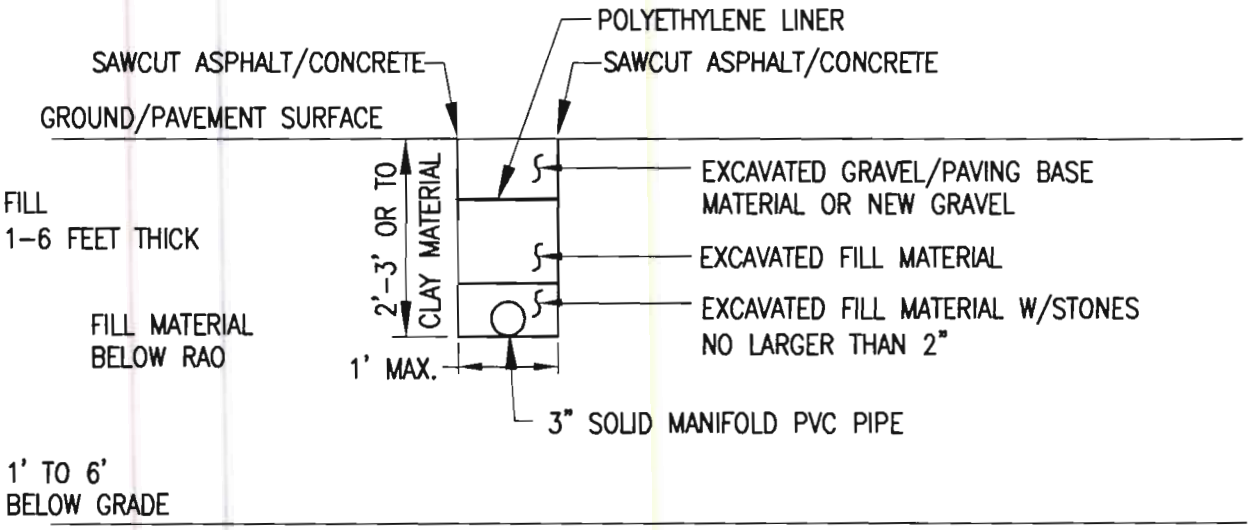
NOTE:

1. NOT DRAWN TO SCALE

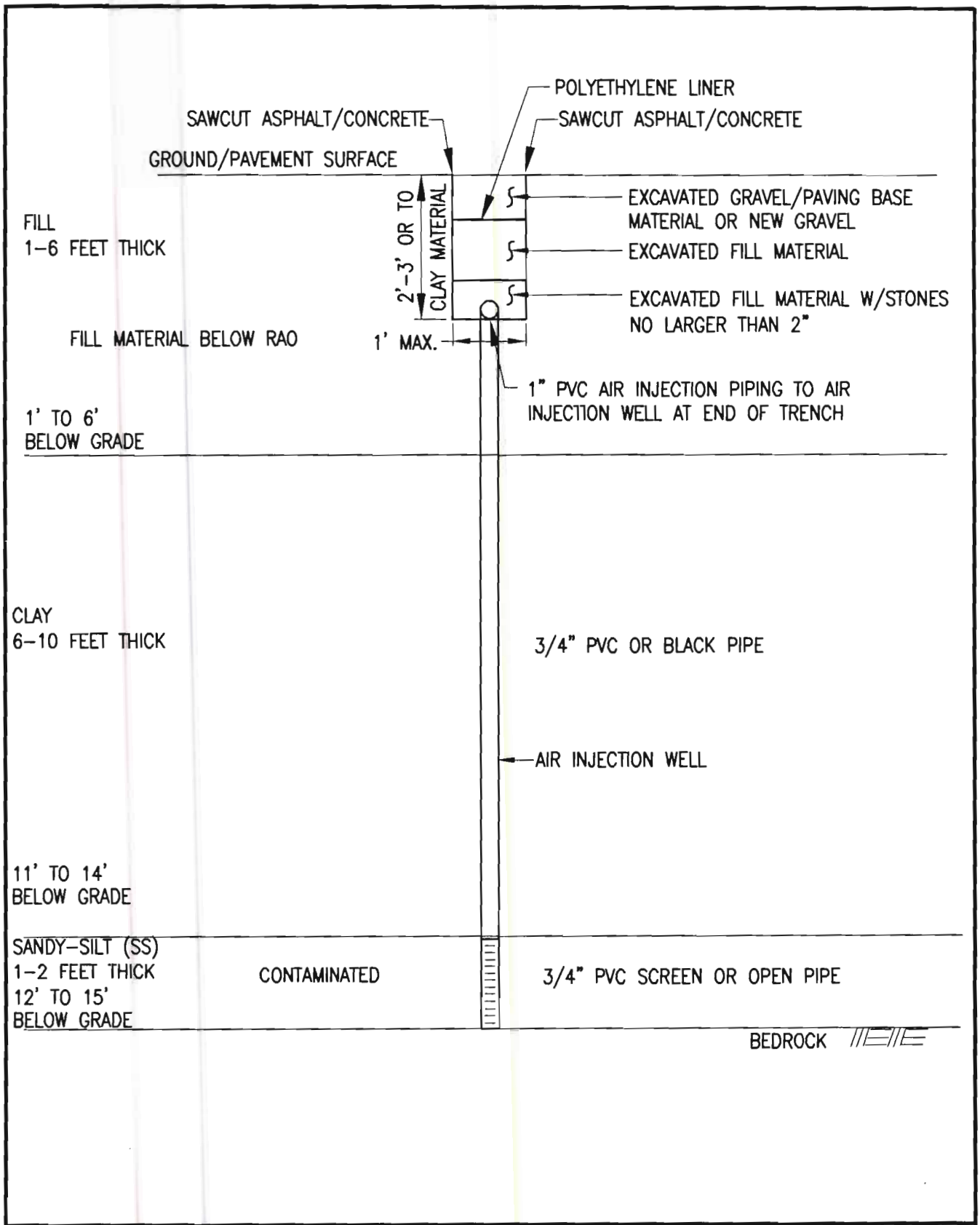
DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NEW YORK	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3948-100
				FILENAME: 3948100C
REVISION NO.	DRAWING	PROPOSED BEDROCK GROUNDWATER RECOVERY WELL DETAIL		SCALE: NTS DATE: 1/18/99
				BY: AD CK:
				FIGURE # 6



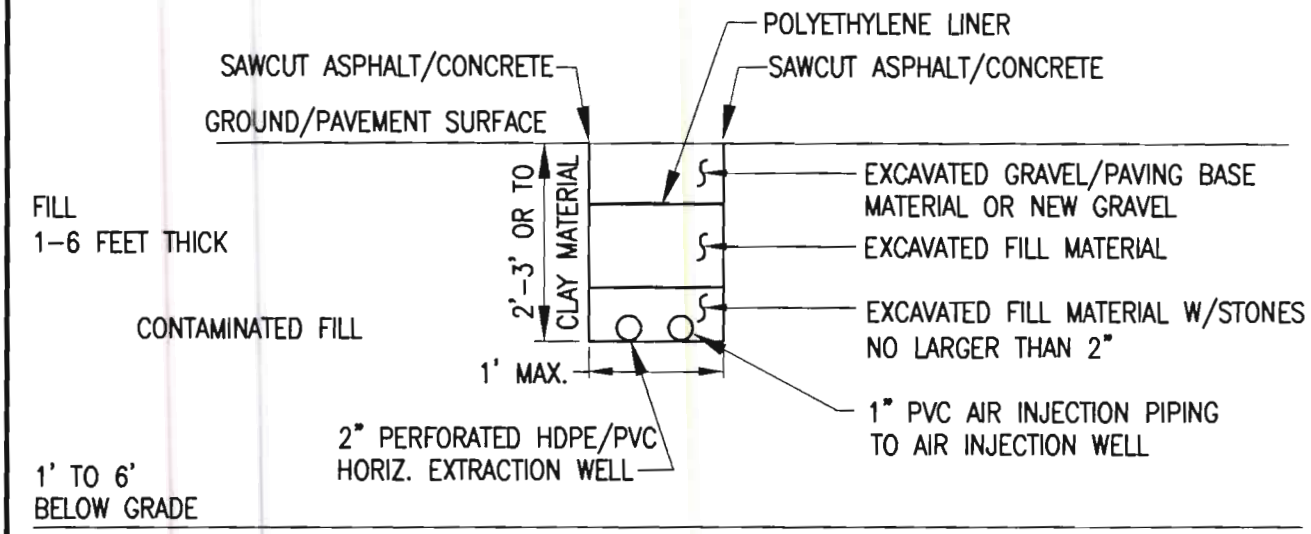
DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100 FILENAME: 3947100A SCALE: NTS DATE: 1/18/99 BY: AD CK:
REVISION NO.	DRAWING	TYPICAL HORIZ. EXTRACTION WELL & MANIFOLD TRENCH FOR AREA WITH CONTAMINATION WITHIN FILL LAYER ONLY - AREA A AND PART OF AREA C		FIGURE # 7



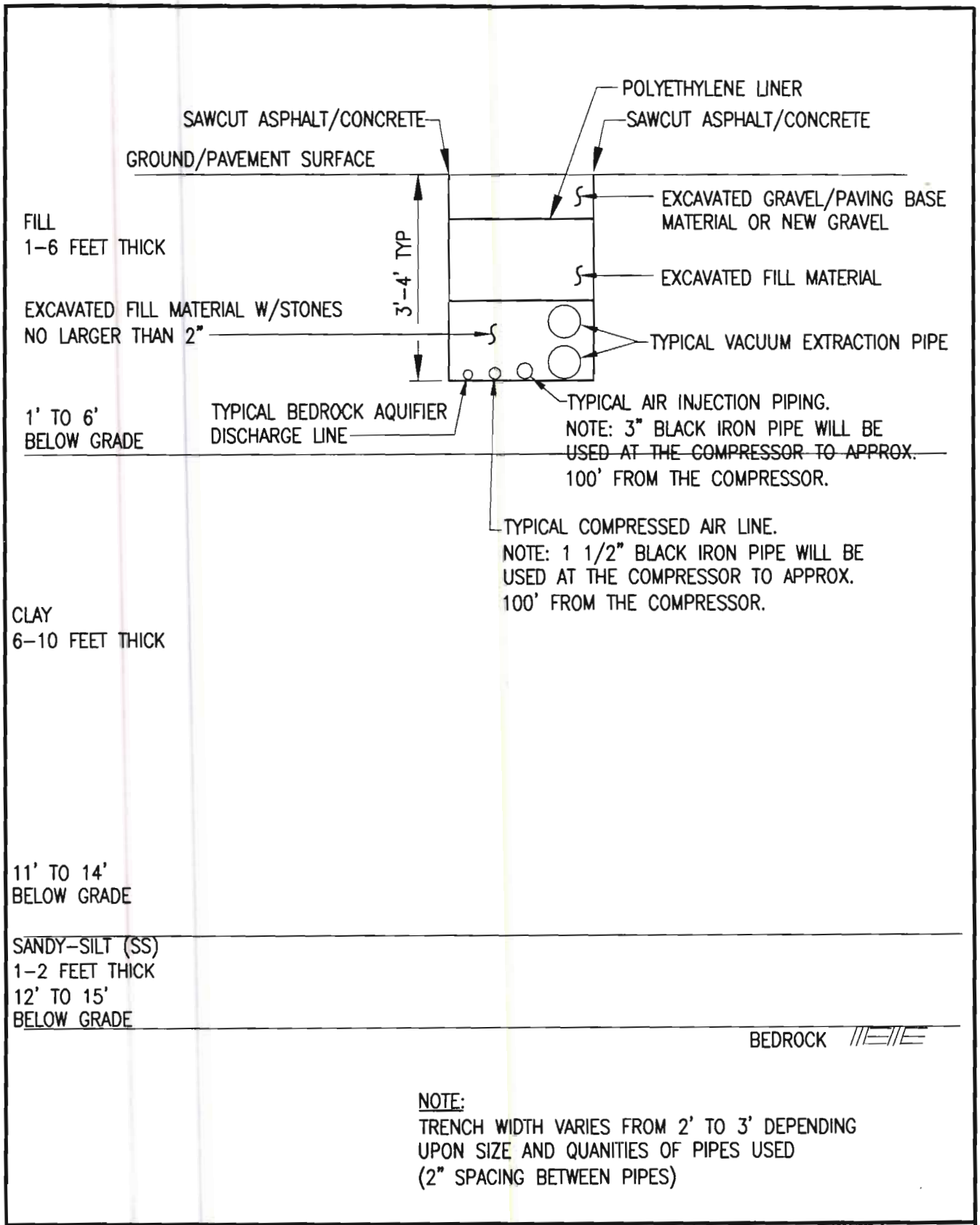
DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100
				FILENAME: 3947100A
				SCALE: NTS DATE: 1/18/99
REVISION NO.	DRAWING	TYPICAL TRENCH BETWEEN AREAS A & B		BY: AD CK:
				FIGURE # 8



DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100 FILENAME: 3947100A SCALE: NTS DATE: 1/18/99 BY: AD CK: FIGURE # 9
REVISION NO.	DRAWING	TYPICAL TRENCH DETAIL AREA W/CONTAMINATION WITHIN SILTY-SAND LAYER ONLY		

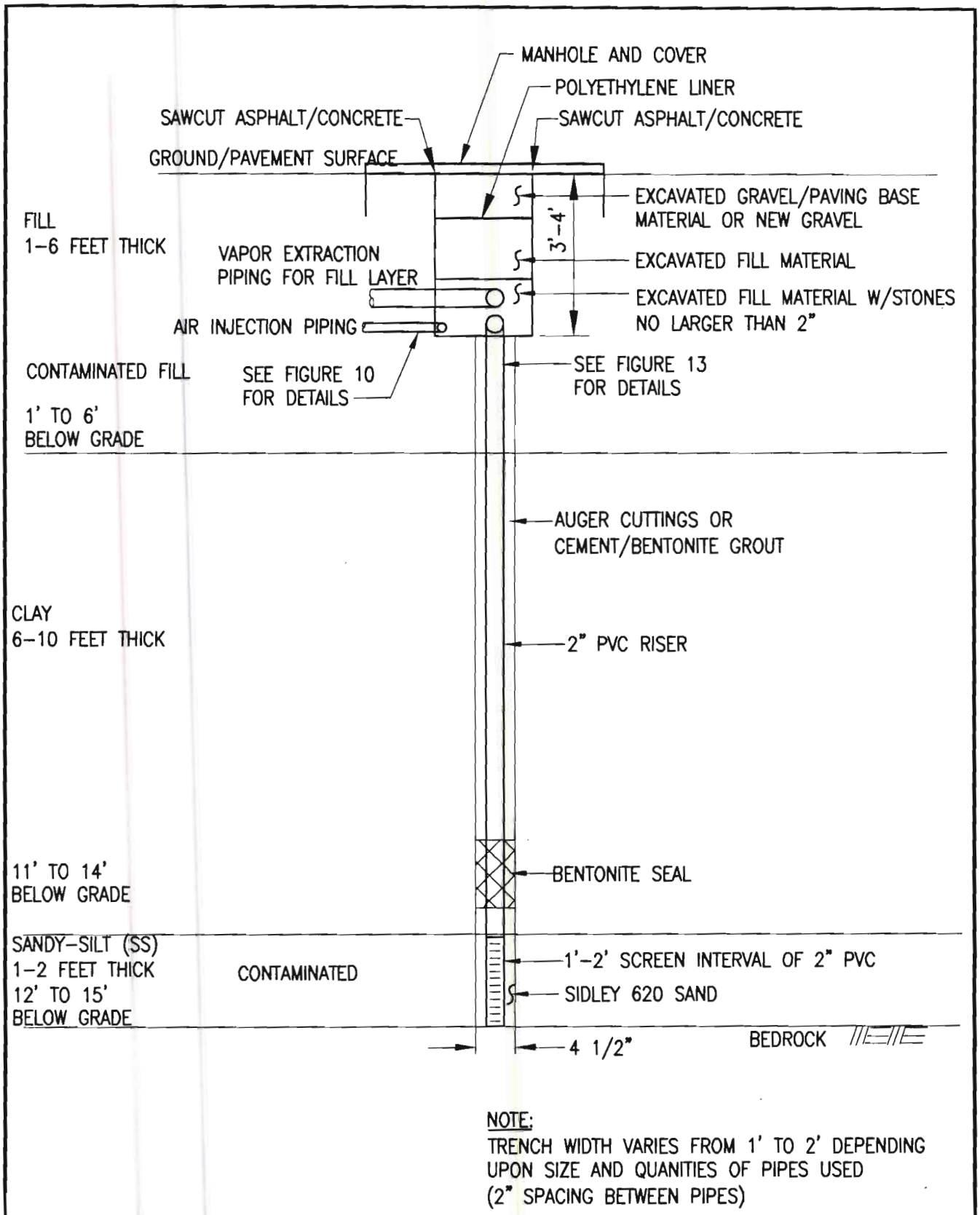


DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796–5000	PROJECT # 3947–100 FILENAME: 3947100A SCALE: NTS DATE: 1/18/99 BY: AD CK: FIGURE # 10
REVISION NO.	DRAWING	TYPICAL HORIZ. VAPOR EXTRACTION WELL TRENCH DETAIL AREA W/CONTAMINATION WITHIN FILL & SILTY–SAND LAYERS		



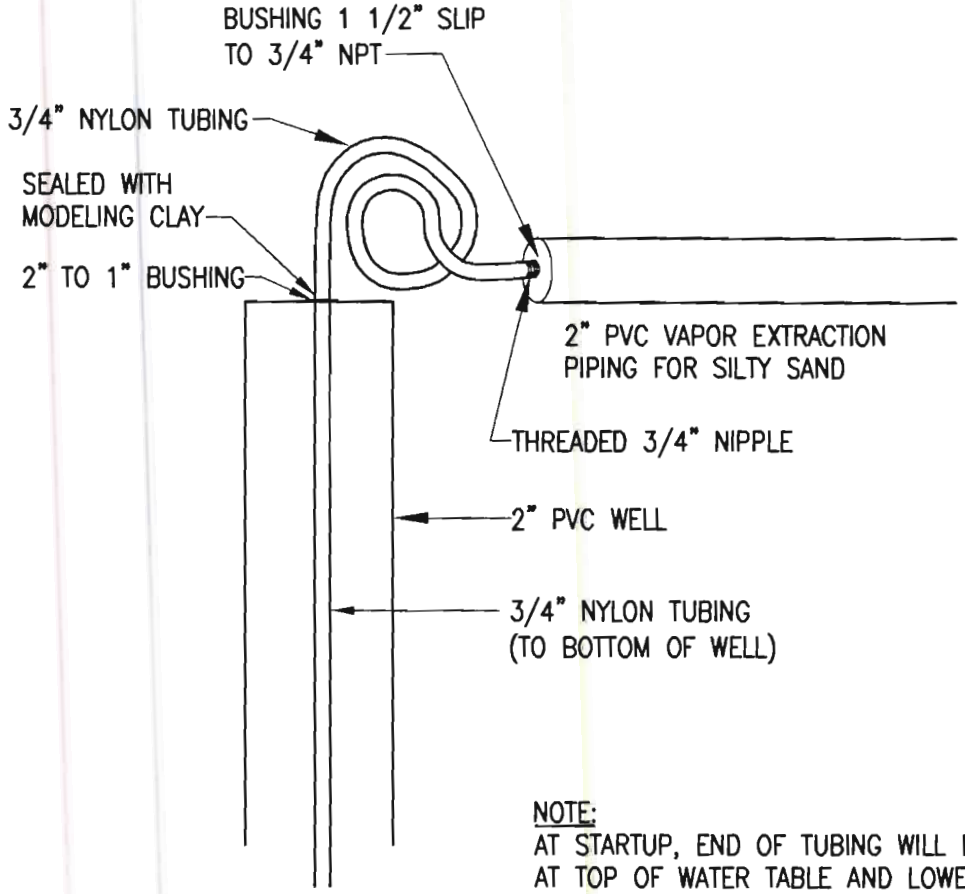
NOTE:
TRENCH WIDTH VARIES FROM 2' TO 3' DEPENDING UPON SIZE AND QUANITIES OF PIPES USED (2" SPACING BETWEEN PIPES)

DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796–5000	PROJECT # 3947–100 FILENAME: 3947100A SCALE: NTS DATE: 1/20/99 BY: AD CK: FIGURE # 11
REVISION NO.	DRAWING	TYPICAL MANIFOLD TRENCH DETAIL AREA W/CONTAMINATION WITHIN FILL & SILTY–SAND LAYERS		



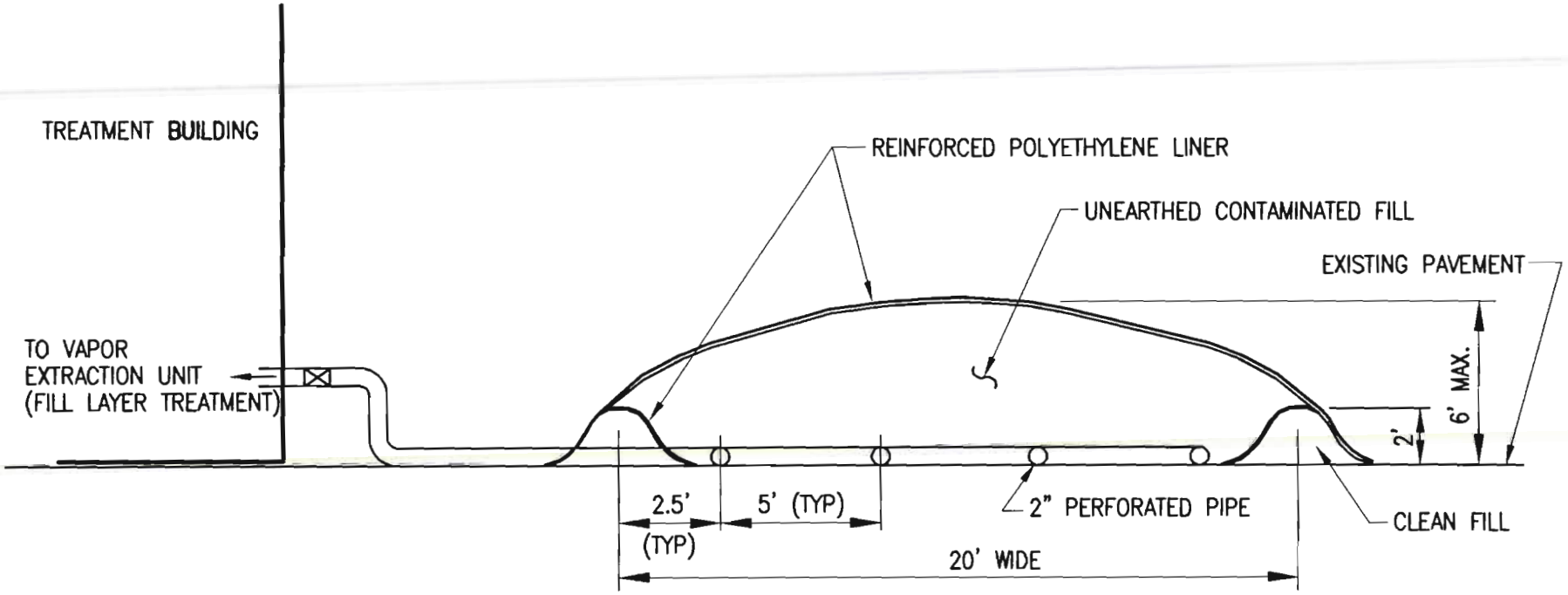
NOTE:
TRENCH WIDTH VARIES FROM 1' TO 2' DEPENDING UPON SIZE AND QUANITIES OF PIPES USED (2" SPACING BETWEEN PIPES)

DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100
REVISION NO.	DRAWING	TYPICAL VAPOR EXTRACTION WELL DETAIL AREA W/CONTAMINATION WITHIN FILL & SILTY-SAND LAYERS		FILENAME: 3947100A SCALE: NTS DATE: 1/20/99 BY: AD CK: FIGURE # 12



NOTE:
AT STARTUP, END OF TUBING WILL BE SET AT TOP OF WATER TABLE AND LOWERED AS GROUNDWATER IS REMOVED

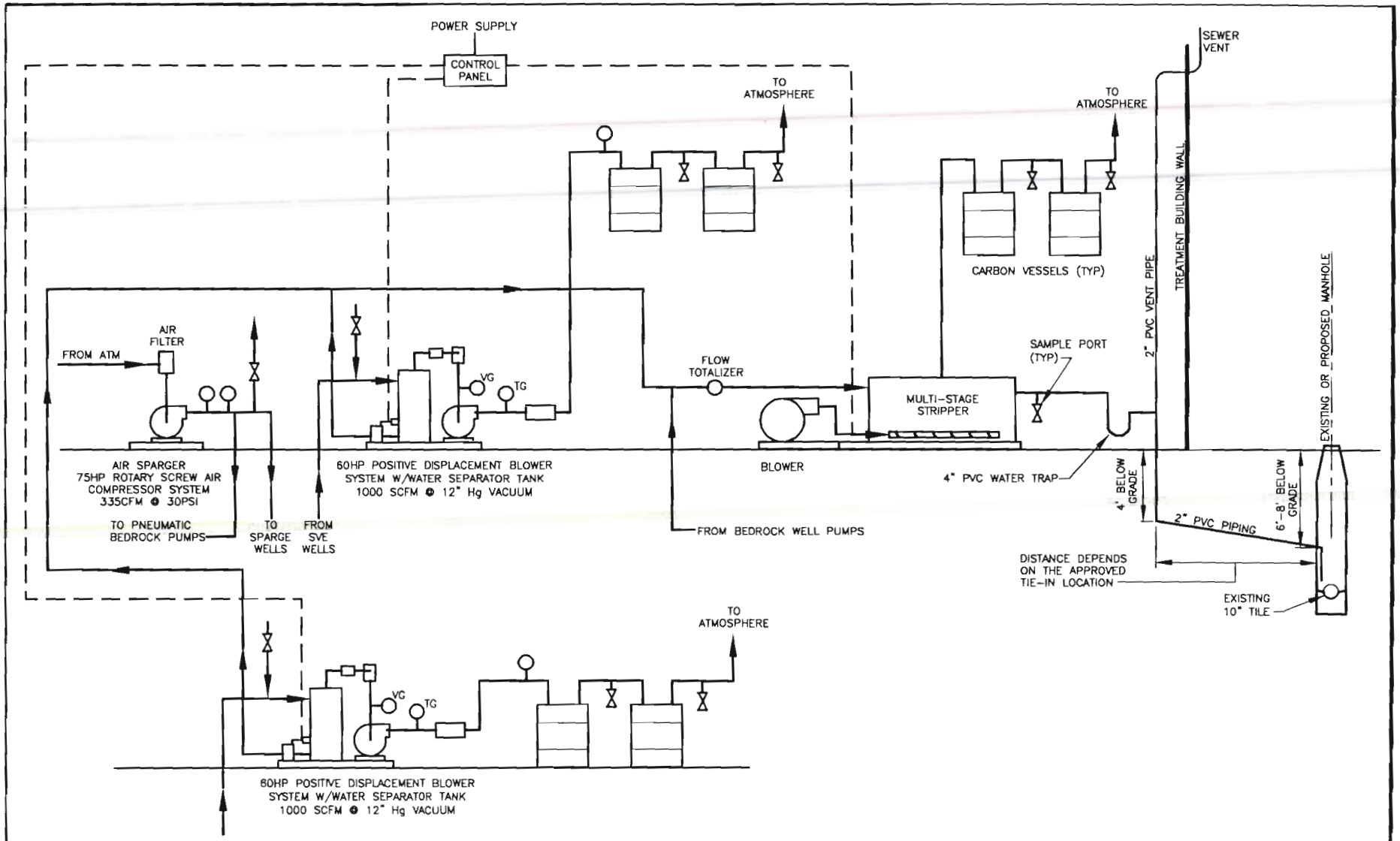
DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100 FILENAME: 3947100A SCALE: NTS DATE: 1/20/99 BY: AD CK:
REVISION NO.	DRAWING	TYPICAL SILTY SAND VAPOR EXTRACTION WELL		FIGURE # 13



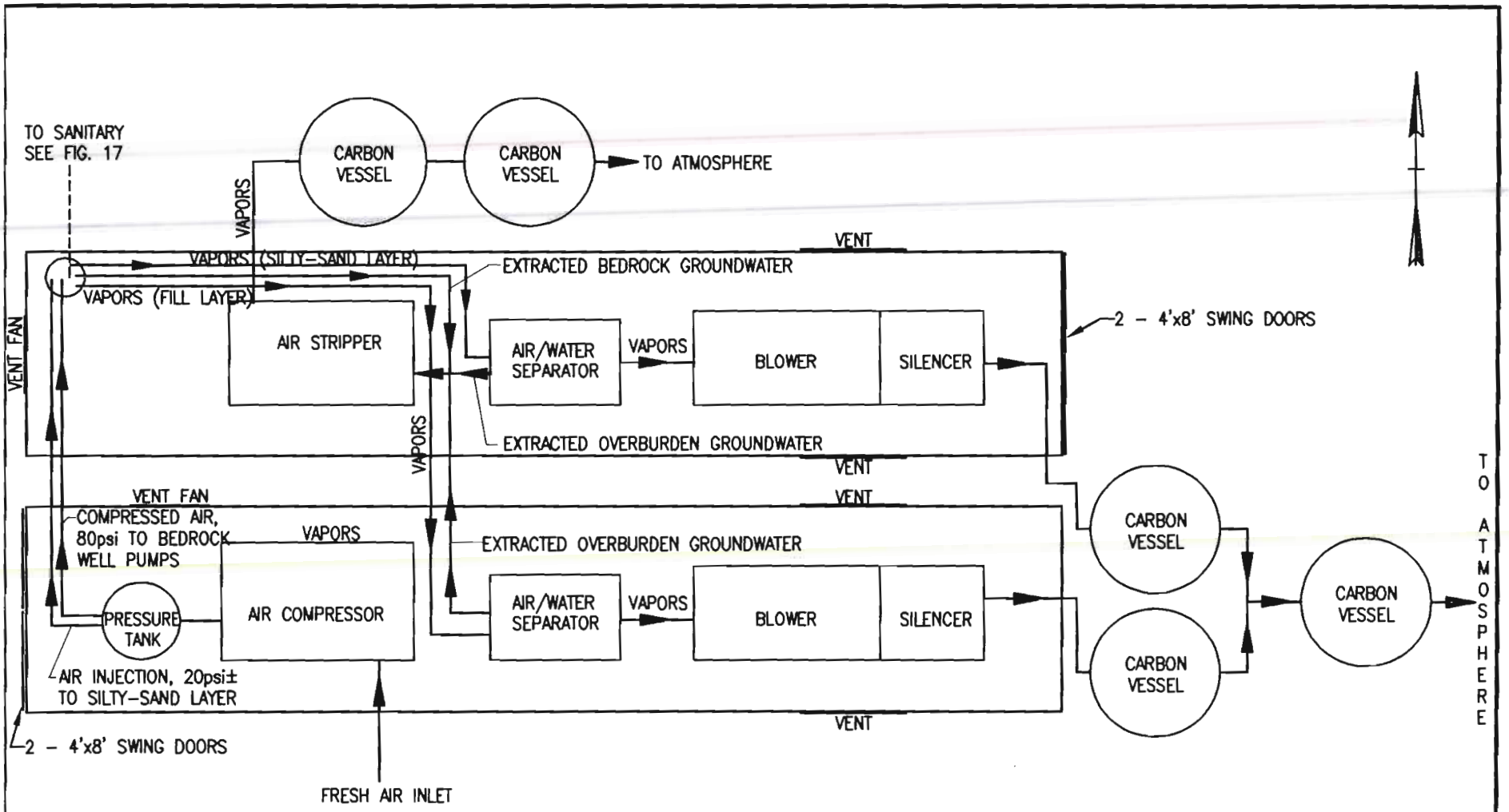
NOTE:

THE LENGTH OF THE PILE WILL BE APPROXIMATELY 20 FEET, DEPENDING ON THE AMOUNT OF UNEARTHED MATERIAL.

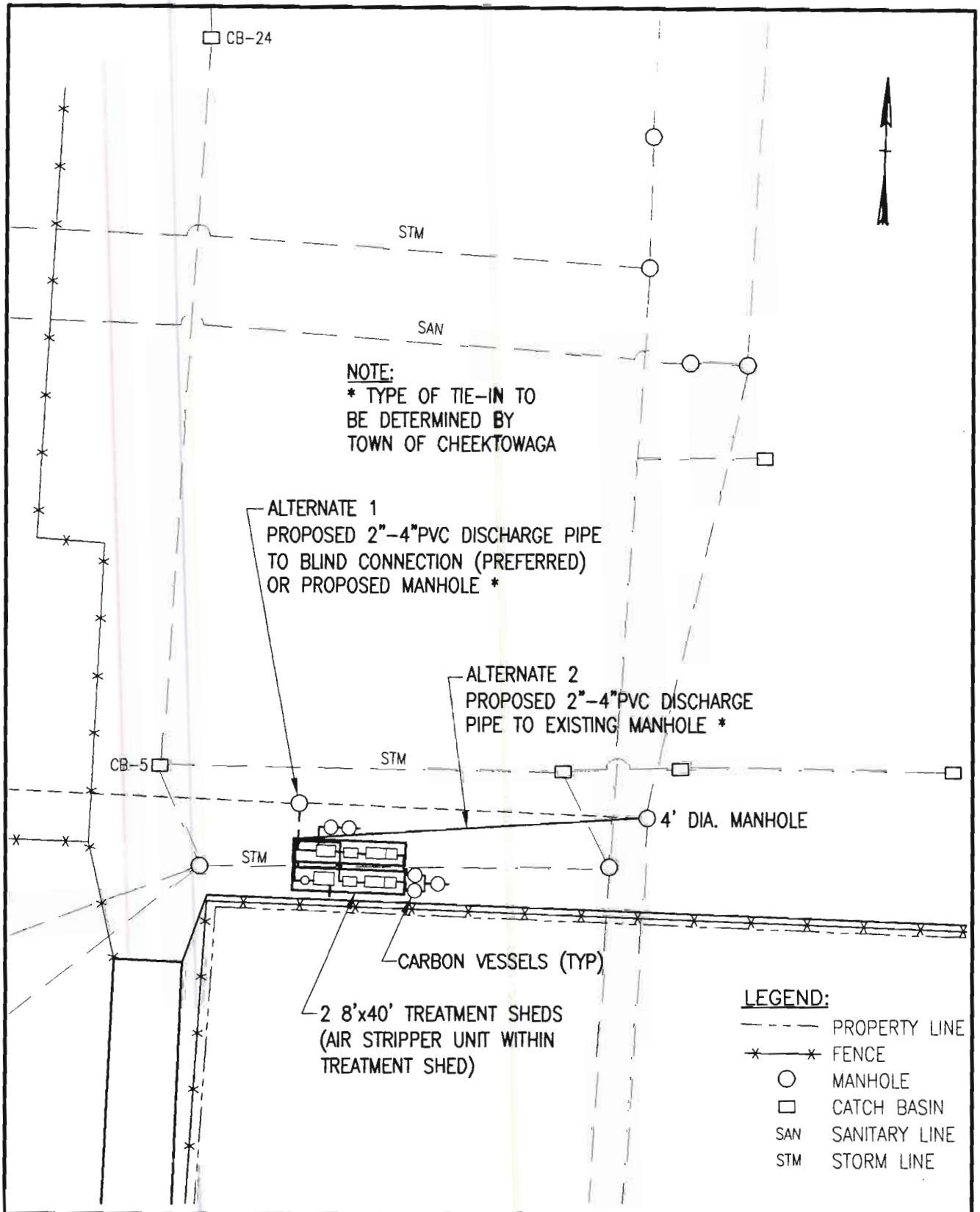
REVISIONS		PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100
NO.	DATE				FILENAME: 3947100D
		DRAWING	DETAIL DRAWING TREATMENT FOR UNEARTHED MATERIAL		SCALE: NTS DATE: 1/18/99 BY: AD CK:
					FIGURE # 14



REVISIONS		PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100 FILENAME: 3947100C SCALE: NTS DATE: 1/14/99 BY: AD CK: MC FIGURE # 15
NO.	DATE				
		DRAWING	PROCESS FLOW DIAGRAM		



REVISIONS		PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100 FILENAME: 3947100E SCALE: 1" =6' DATE: 2/16/99 BY: AD CK: FIGURE # 16
NO.	DATE				
		DRAWING	DETAIL DRAWING EQUIPMENT LAYOUT		



DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100 FILENAME: 3947100C SCALE: 1"=50' DATE: 3/16/99 BY: AD CK: MC FIGURE # 17
REVISION NO.	DRAWING	SITE PLAN		

ATTACHMENT A

B.P.D.E.S. Discharge Permit Application

E.C. /B.P.D.E.S. DISCHARGE PERMIT APPLICATION

FOR BSA USE ONLY
DATE APPLICATION REC'D: _____
INDUSTRIAL NUMBER: _____
INVESTIGATOR: _____

PART A - GENERAL INFORMATION

A1. Applicant Business Name Leica, Inc.

A2. Address of premises discharging wastewater:

Sugar and Eggertt Road	Cheektowaga	NY	14225
Street	City	State	Zip

A3a. Business Address (if different than above):

3364 Walden Avenue	Depew	NY	14043
Street	City	State	Zip

b. Mailing Address (if different than above):

P.O. Box 123	Buffalo	NY	14240-0123
Street	City	State	Zip

A4. Chief Business Official:

Name: Bruce Mallott Title: Plant Manager

A5. Facility Representative:

Name: Bruce Mallott Title: Plant Manager Phone: 716-686-3140

A6. Person to be contacted about this application, if different from above:

Name: Mark Cambra Title: NES Project Manager Phone: 203-796-5305

A7. Person to be contacted in case of emergency, if different from above:

Name: _____ Day Phone: _____ Night Phone: _____

Fax: _____

A8. Confidentiality:
Please indicate those sections of this questionnaire that you wish to remain confidential and your basis for requesting confidentiality.

N/A

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of those individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information.

12 MAR 99
Date

Bruce H Mallott
Signature of Official (Seal if Applicable)

PART B - BUSINESS DESCRIPTION

PURPOSE -The business description is primarily used to determine the substances which may enter into the wastewater discharge from the business activity.

B1. Brief Description: A facility which formerly manufactured various optical lens.

B2. Business Activity: Standard Industrial Classification (SIC) Codes for Principal Products or Services:

Activity	SIC Code (4 Digits)	Production (Monthly Avg.)*
N/A		

B3. Is there a scheduled shutdown? Yes____ No_X_ If yes, when? _____

B4. Is production seasonal? Yes____ No_X_ If yes, explain, indicating month(s) of peak production:_____

B5. Average number of employees per shift: 1st _____ 2nd _____ 3rd _____

Shift start times: 1st _____ 2nd _____ 3rd _____

Shift end times: 1st _____ 2nd _____ 3rd _____

Shifts normally worked each day: N/A

	Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
1st							
2nd							
3rd							

Operates 24 hours/day.

* Monthly average stated shall be the highest monthly average production in the previous five years.

PART C - WATER SOURCE AND USE

PURPOSE - The Water Source and Use information will enable BSA to determine the Volumes and Sources of wastewater discharged to the BSA sewer.

WATER/WASTEWATER DATA

C1. Water Sources N/A

	Average Volume (Gallons per Day)	Peak Flow&Estimated Duration (Gallons per Minute&Time)
Municipal System		
Recycled		
Private Wells		
Other (Specify)_____		
Water Account No.(s)		

C2. Water Usage N/A

	Average Volume (Gallons per Day)	Peak Flow&Estimated Duration (Gallons per Minute&Time)
Cooling Water		
Boiler Makeup		
Process Water		
Sanitary Purposes		
Other (Specify) _____		

C3. Waste Water Discharge N/A

	Average Discharge (Gallons per Day)	Peak Discharge&Estimated Duration (Gallons per Minute&Time)
Municipal Sewer/Sanitary		
- Process		
- Sanitary		
- Cooling		
Non-Sewered Discharges		
- Natural Receiving Water		
- Storm Drain		
- Waste Hauler		
- Evaporation		
- Contained in Product		
- Recycled		
- Other (Specify) Dewatering	20,000	

C4. Is your facility permitted to discharge liquid wastes under a State (S.P.D.E.S.) Permit?

Yes _____ No X Permit No. _____

C5. Does your facility have a wastewater discharge from any air pollution control equipment?

Yes _____ No X

PART D - SUBSTANCES OF CONCERN

(REFER TO ATTACHED TABLE I)

Complete all information for those substances your facility has used, produced, stored, distributed, listed under the TRI report or otherwise disposed of since last application. Do not include chemicals used only in analytical laboratory work. Enter the name and code from Table I. If facility uses a substance in any of the Classes A-M which is not specified in the list, enter it as code class plus 99, e.g. B99 with name, usage, etc.

NAME OF SUBSTANCE	CLASS	AVERAGE ANNUAL USAGE	AMOUNT NOW ON HAND	PURPOSE OF USE (STATE WHETHER PRODUCED, REACTED BLENDED PACKAGED, DISTRIBUTED, NO LONGER USED)
1, 1, 1-Trichlorethane	A07	N/A	In Subsurface	N/A
Vinyl Chloride	A10	N/A	In Subsurface	N/A
Trichlorethene	A12	N/A	In Subsurface	N/A
Ethylbenzene	D006	N/A	In Subsurface	N/A
Xylene	D003	N/A	In Subsurface	N/A
Toluene	D002	N/A	In Subsurface	N/A
Benzene	D001	N/A	In Subsurface	N/A

A - HALOGENATED HYDROCARBONS

thyl chloride
thylene chloride
loroform
rbon tetrachloride
on/Genatron
er halomethanes
1, 1-Trichlorethane
er haleothanes
yl fluoride

hlorethylene
chloroethylene
trachloroethylene
lorinated propane
lorinated propene
xachlorobutadiene
xachlorocyclopentadiene
lorinated benzene
lorinated toluene
orinated toluene
lychlorinated biphenyl (PCB)
lorinated naphthalene
chlorane ($C_{10}C1_{12}$)
logenated hydrocarbons not
ecified above

D - AROMATIC HYDROCARBONS

nzene
luene
lene
henyl
phthalene
ylbenzene
rene
enaphthene
ranthene
matic hydrocarbons not
pecified above

E - TARS

al tar
troleum tar

CLASS B - HALOGENATED ORGANICS (other than hydrocarbons)

B01. Phosgene
B02. Methyl Chloromethyl ether
B03. bis-chloromethyl ether
B04. Other chloroalkyl ethers
B05. Benzoyl chloride
B06. Chlorothymol
B07. Chlorinated phenol
B08. Chlorinated cresols or xylenols
B09. Chlorendic acid
B10. Chloraryl ethers
B11. Dichlorophene or hexachlorophene
B12. Chlorinated aniline (including methylene bis (2-chloroaniline))
B13. Dichlorobenzidine
B14. Chlorinated diphenyl oxide
B15. Chlorinated toluidine
B16. Kepone ($C_{10}C1_{10}00$)
B17. Dichlorovinyl sulfonyl pyridine
B18. Chloropicrin
B20. Tricloro-propylsulfonyl pyridine
B21. Tetrachloro-methylsulfonyl pyridine
B22. Tetrachloro-isophthalonitrile
B99. Halogenated organics not specified above

CLASS G - MISCELLANEOUS

G01. Asbestos
G02. Acrolein
G03. Acrylonitrile
G04. Isophorone
G05. Nitrosamines
G06. Ethyleneimine
G07. Propiolacetone
G08. Nitrosodimethylamine
G09. Dimethyl hydrazine
G10. Maleic anhydride
G11. Methyl isocyanate
G12. Expoxides
G13. Nitrofurans
G14. Cyanide

CLASS C - PESTICIDES (including herbicides, algaecides, biocides, slimicides and mildewcides)

C01. Aldrin/Dieldrin
C02. Chlordane and metabolites
C03. DDT and metabolites
C04. Endosulfan/Thiodan and metabolites
C05. Endrin and metabolites
C06. Heptachlor and metabolites
C07. Malathion
C08. Methoxychlor
C09. Parathion
C10. Toxaphene
C11. Sevin
C12. Kelthane
C13. Diazinon
C15. Carbaryl
C16. Silvex
C17. Dithiocarbamates
C18. Maneb
C19. Dioxathion
C20. Tandex/Karbutilate
C21. Carbofurans
C22. Pentac
C23. Folpet
C24. Dichlone
C25. Rotenone
C26. Lindane/Isotox
C27. Simazine
C28. Methoprene
C99. Pesticides not specified above

CLASS F - SUBSTITUTED AROMATICS (other than hydrocarbons and non-halogenated)

F01. Phenol, cresol, or xylenol
F02. Catechol, resorcinol, or hydroqinone
F03. Nitrophenols
F04. Nitrobenzenes
F05. Nitrotoluenes
F06. AnilineA10. Vinyl chloride
F07. Toluidines
F08. Nitroanilines
F09. Nitroanisole
F10. Toluene diisocyanate
F11. Dimethylaminoazobenzene
F12. Benzoic Acid (and Benzoate salts)
F13. Phthalic, isophthalic or terephthalic acid
F14. Phthalic anhydride
F15. Phthalate esters
F16. Phenoxyacetic acid
F17. Phenylphenols
F18. Nitrobiphenyls
F19. Aminobiphenyls (including benzidine)
F20. Diphenylhydrazine
F21. Naphthylamines
F22. Carbazole
F23. Acetylaminofluorene
F24. Dyes and organic pigments
F25. Pyridine
F99. Substituted aromatics not specified above

CLASS M - METALS AND THEIR COMPOUNDS

M01. Anthimony
M02. Arsenic
M03. Beryllium
M04. Cadmium
M05. Chromium
M06. Copper
M07. Lead
M08. Mercury
M09. Nickel
M10. Selenium
M11. Silver
M12. Thallium
M13. Zinc
M14. Boron
M15. Manganese
M18. Titanium
M21. Tungster
M22. gold
M83. Pladium
M84. Platinum
M99. Metals not specified above

If you use chemicals of unknown composition, list trade name or other identification, name

NAME	AVERAGE ANNUAL USAGE	AMOUNT NOW ON HAND	SUPPLIER	PURPOSE OF USE (STATE WHETHER PRODUCED, REACTED, BLENDED, PACKAGED, DISTRUBUTED, NO LONGER USED)
N/A				

Are you presently permitted to discharge radiological waste by the N.Y.S.D.E.C.? Yes ___ No ___

PART E - MISCELLANEOUS

E1. Do you have automatic sampling equipment or continuous wastewater flow metering equipment currently in use or included in future plans?

Current: Flow Metering Yes ___ No ___ Sampling Equipment Yes ___ No ___

Planned: Flow Metering Yes X No ___ Sampling Equipment Yes ___ No X

E2. Does your facility pretreat any wastewater prior to discharge to a sanitary sewer? Yes X No ___

If so, please show locations of pretreatment processes on attached schematic process diagram (Part F) and describe below:
Groundwater removed will be treated using an air stripper. Pump test results using an air stripper are included. The vapors will be treated with activated carbon and the treated groundwater will be discharged to the sanitary sewer.

E3. Do you have a Spill Prevention, Containment and Control Plan (SPCC) for your plant? Yes ___ No ___ N/A

E4. Do you have a Solvent Management Plan or a Toxic Organic Management Plan? Yes ___ No ___ N/A

E5. Do you generate any liquid or solid waste such as solvents, electroplating sludges, thinners, oils, still bottoms, fly ash, filler, etc? Yes ___ No ___
If yes, please fill out the following table: N/A

TYPE OF WASTE	IF THIS WASTE IS PRODUCED BY PRETREATMENT CHECK HERE	AMOUNT PER YEAR (SPECIFY LBS, TONS OR GALS)	METHOD OF DISPOSAL CHECK EACH METHOD USED				
			ON-SITE	SANITARY LANDFILL	HAZARDOUS WASTE FACILITY	RECLAIMED OR RESUED	OTHER

E6. Description of Disposal Method:

a. Disposal Site

N/A

b. Hazardous Waste Hauler - Please give name and address N/A

c. Reclaimed or Reused - Please describe process, if on-site, or give name and address of reclaimer

N/A

d. Other - Please describe

E7. Do you store any hazardous wastes on-site? Yes ____ No ____ N/A

E8. Have you filed an EPA Form 8700-12 (Notification of Hazardous Waste Activity)? Yes ____ No ____
If yes, please attach. N/A

E9. What is your Hazardous Waste Number?

E10. Do you discharge into the Buffalo Sewer Authority a waste identified by 40 CFR 261 a hazardous waste?
Yes ____ No ____ N/A

E11. If your facility is discharging a hazardous waste, have you properly notified the Buffalo Sewer Authority?
Yes _____ No _____ N/A

PART F - SCHEMATIC FLOW DIAGRAM

PURPOSE - The Schematic Flow Diagram shows the flow pattern of products through the facility and the various sources of wastewater.

F. Schematic Flow Diagram - For each major activity in which wastewater is generated, draw a diagram of the flow of matenals and water from start to completed project, showing all unit processes generating wastewater. Number each unit process having wastewater discharges to the community sewer.

General Instructions - Type or print the information. A separate Part F should be completed for each major business activity described in Part B.

A line drawing (schematic flow diagram) of each major business activity described in Part B is to be drawn in on an attached sheet of paper (all sheets should be letter size). Number each process which generates wastewater using the same numbering as in the building layout or plant site plan shown in Part G. An example of drawing required is shown in Figure 1.

To determine your average daily volume and maximum daily volume of wastewater flow you may have to read water meters, sewer meters, or make estimates of volumes that are not directly measureable.

SUMMARY OF DETECTED COMPOUNDS - MW-16A TEST
LEICA INC.
CHEEKTOWAGA, NEW YORK
OCTOBER 1996

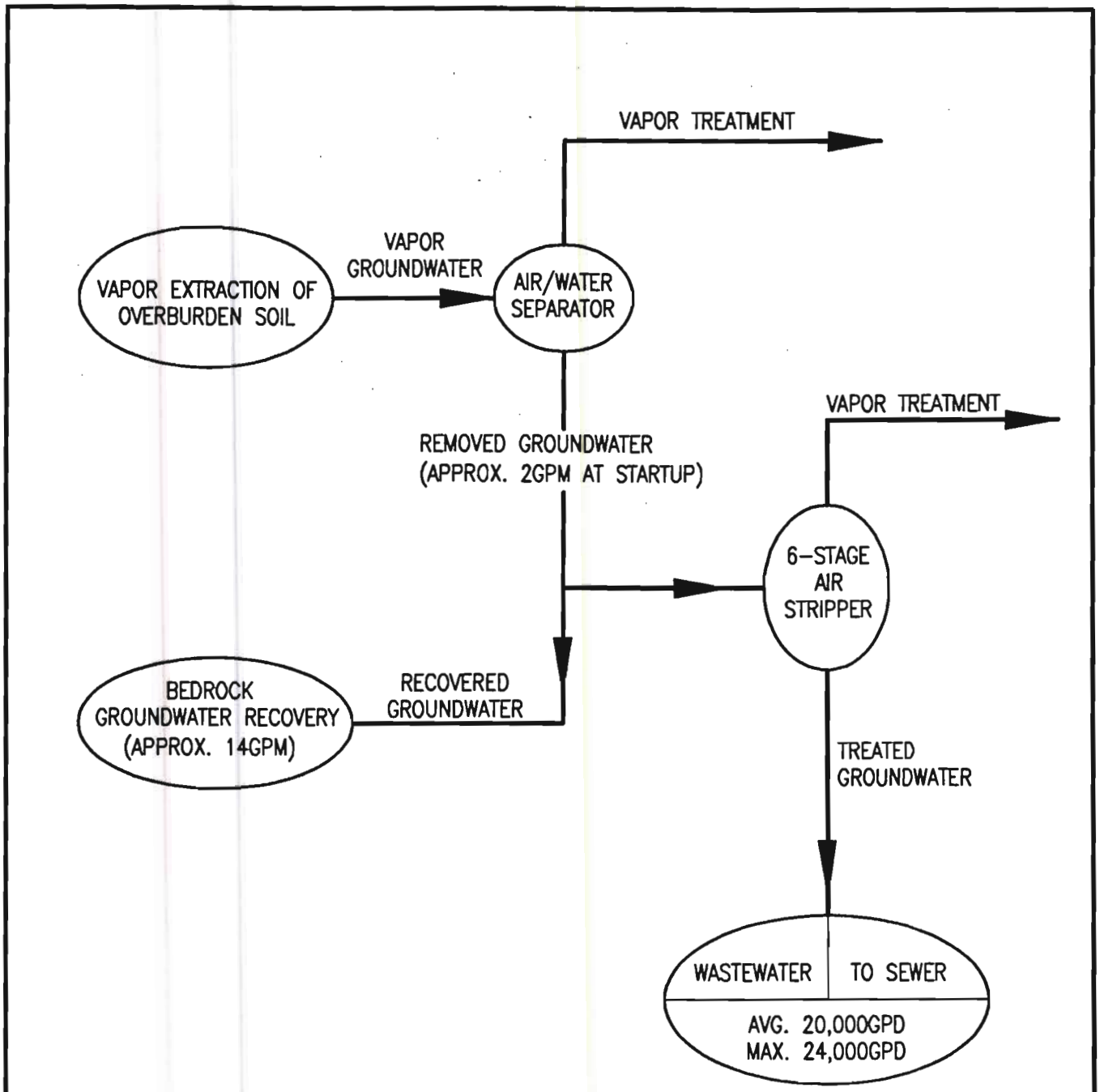
	BSA Discharge Limits [1]	Groundwater			
		0 Hours	24 Hours	48 Hours	Effluent
VOCs (ug/L)					
Chloromethane	*	3J	2J	2J	ND10
Vinyl chloride	3	8,500J	8,400	5,400	ND10
Chloroethane	420	83	9J	8J	ND10
Carbon disulfide	*	7J	3J	2J	ND10
Acetone	*	12,000	ND 5,000	ND 5,000	150
Methylene chloride	2,062	33	11J	7J	ND10
1,2-Dichloroethene (total)	285	53,000	38,000	35,000	ND10
1,1-Dichloroethane	500	11,000	4,100J	2,800J	ND10
2-Butanone	*	ND 10,000	85J	130J	6J
1,1,1-Trichloroethane	1,550	69,000	13,000	9,800	ND10
Trichloroethene	712	66,000	40,000	29,000	ND10
Benzene	142	18	18J	15J	ND10
1,1,2-Trichloroethane	*	12	9J	11J	ND10
4-Methyl-2-pentanone	*	46	20J	15J	ND10
Toluene	680	2,600J	1,100J	770J	ND10
Tetrachloroethene	267	21	11J	10J	ND10
Chlorobenzene	310	1J	1J	ND 10	ND10
Ethylbenzene	1,584	2,200J	1,000J	760J	ND10
Xylene (total)	2,080	14,000	5,400	4,100J	ND10
SVOCs (ug/L)					
4-Methylphenol	20,000	14	4J	3J	-
2,4-Dimethylphenol	20,000	6J	2J	2J	-
Naphthalene	*	72	38	36	-
4-Chloro-3-methylphenol	20,000	11	4J	3J	-
2-Methylnaphthalene	*	8J	5J	4J	-
Butylbenzylphthalate	*	ND 10	1J	ND 10	-
Inorganics (ug/L)					
Aluminum	*	17,600	147	512	-
Arsenic	1,800	19.5	4.5	5.2	-
Barium	100,000	407	301	299	-
Beryllium	*	0.93	ND 0.2	0.70	-
Cadmium	1,000	ND 0.2	ND 0.2	0.53	-
Calcium	*	161,000	122,000	118,000	-
Chromium	5,000	39.2	ND 0.60	0.67	-
Cobalt	*	11.1	ND 1.4	ND 1.4	-
Copper	16,000	38.6	7.5	5.3	-
Iron	*	44,300	670	916	-
Lead	5,000	17.1	ND 0.90	ND 0.90	-
Magnesium	*	46,500	44,300	43,700	-
Manganese	*	933	169	165	-
Nickel	14,000	32.1	ND 2.1	ND2.1	-
Potassium	*	11,000J	6,550J	6,360J	-
Sodium	*	191,000	182,000	176,000	-

SUMMARY OF DETECTED COMPOUNDS - MW-16A TEST
LEICA INC.
CHEEKTOWAGA, NEW YORK
OCTOBER 1996

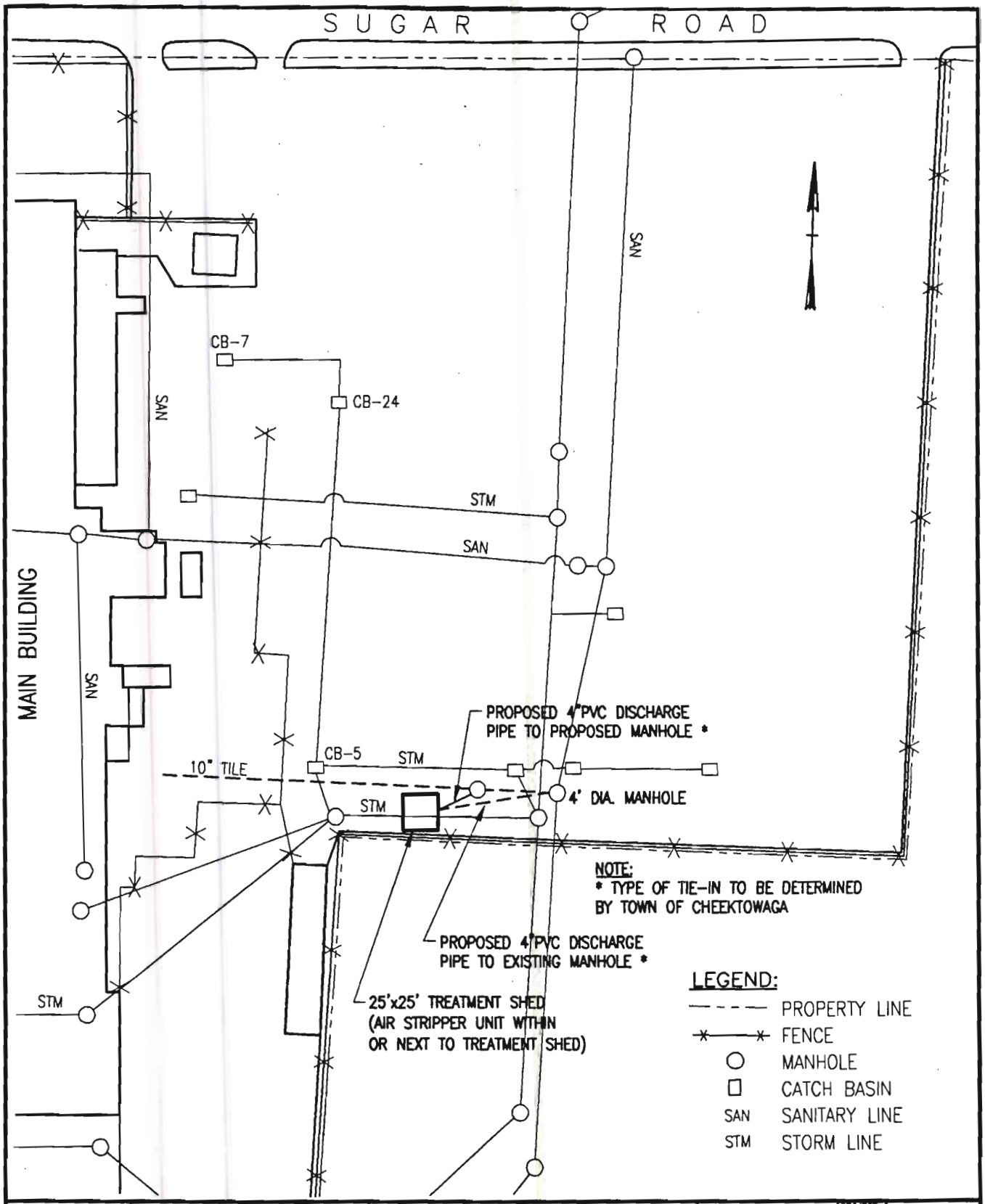
	BSA Discharge Limits [1]	Groundwater 0 Hours	Groundwater 24 Hours	Groundwater 48 Hours	Effluent
Inorganics (ug/L) (Cont'd.)					
Thallium	*	2.4	ND 1.9	3.7	-
Vanadium	25,000	30.4	ND 1.6	ND 1.6	-
Zinc	*	148	ND 15.8	ND 17	-
Dissolved iron	*	-	-	200J	-
Dissolved manganese	*	-	-	158J	-
Boron	*	-	-	186J	-
Molybdenum	*	-	-	2.9	-
Titanium	*	-	-	3.1	-
General Chemistry (mg/L)					
BOD 5				5	-
COD				63	-
Fluoride				0.66	-
Total hardness				444	-
Ammonia (as N)				0.26	-
Nitrate (as N)				0.1	-
Organic nitrogen				0.1	-
Total phenols				0.0044	-
Sulfide				1.5	-
Sulfate				104	-
Total Suspended Solids				29	-
Total alkalinity				345	-
Total dissolved solids				1,050	-
Total kjeldahl nitrogen				0.4	-
Total organic carbon				30.4	-
Total nitrogen				0.5	-
Total phosphorus (as P)				0.06	-
pH (S.U.)				7.0	-
Turbidity (NTU)				5.3	-

Notes:

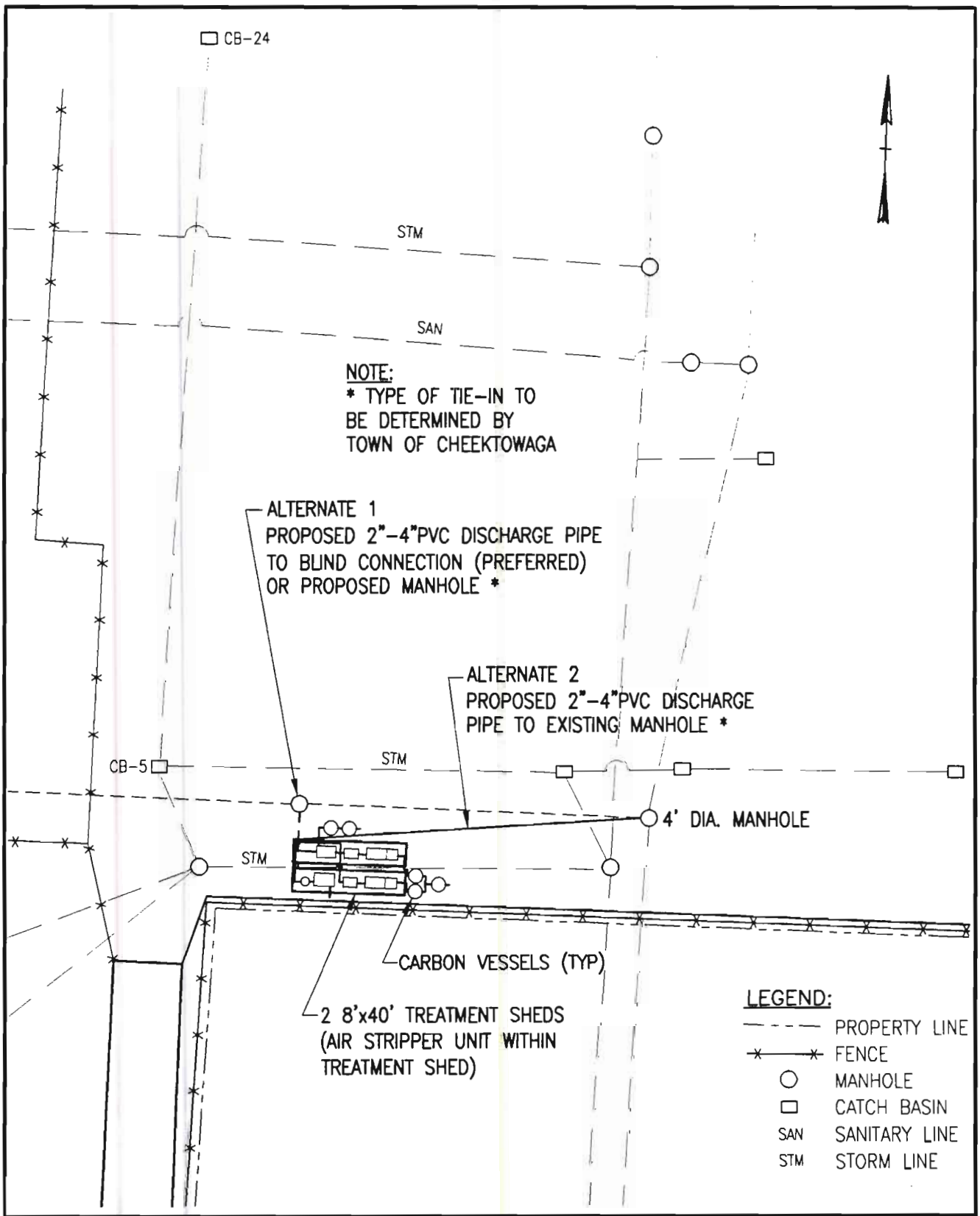
- \- Not applicable.
- * No Discharge Limit has been established for this parameter.
- (1) Buffalo Sewer Authority Discharge Limits per Jim Kruszka, March 11, 1997.
- BOD Biochemical Oxygen Demand.
- BSA Buffalo Sewer Authority
- COD Chemical Oxygen Demand.
- J Associated value is estimated.
- ND Not detected at associated value.
- S.U. Standard Units.
- SVOCs Semi-Volatile Organic Compounds.
- VOC Volatile Organic Compound.
- [ ] Parameter exceeds BSA Discharge Limit.



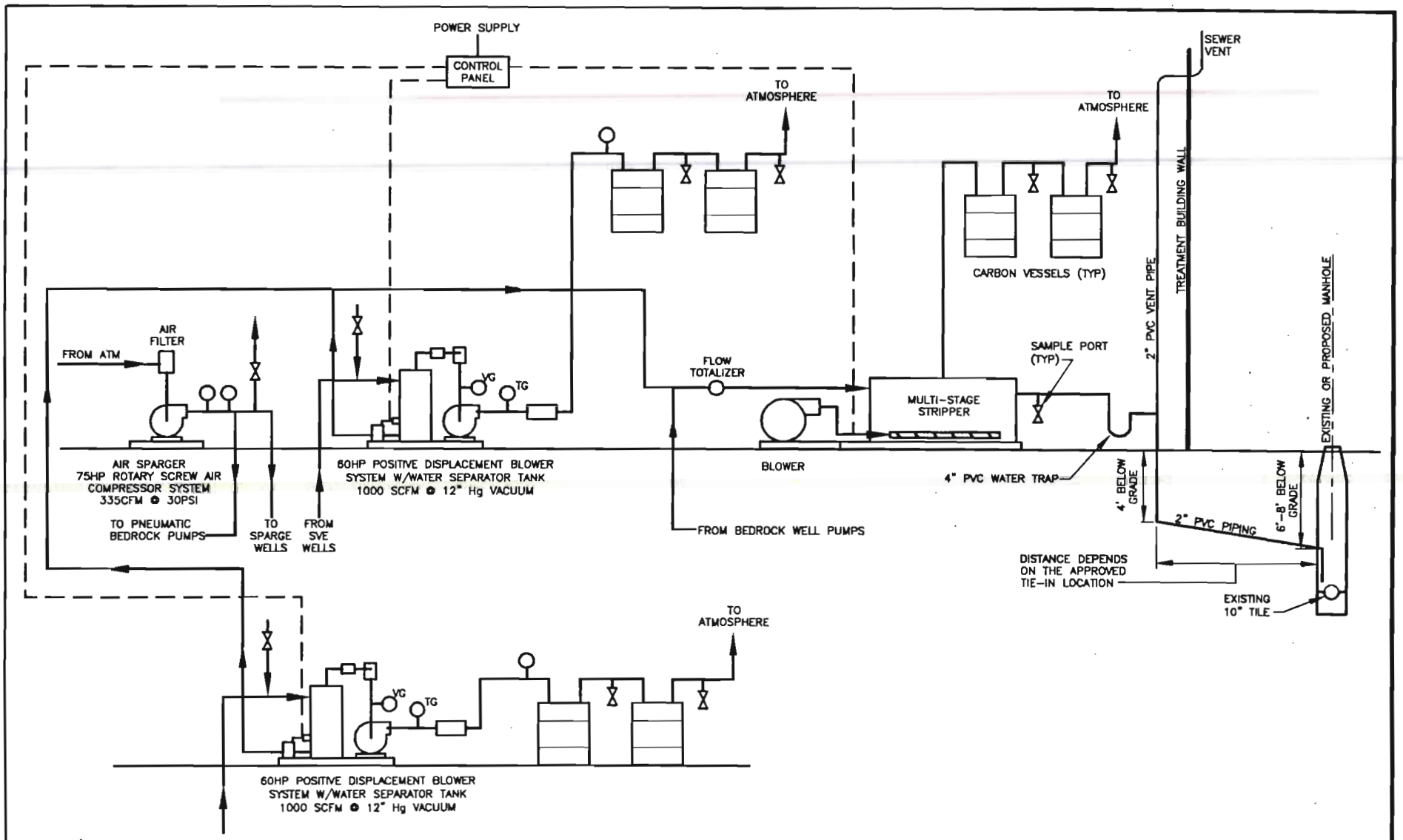
DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NY	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100
				FILENAME: 3947100B
				SCALE: NTS / DATE: 1/12/99
REVISION NO.	DRAWING	GROUNDWATER RECOVERY/TREATMENT		BY: AD / CK:
				FIGURE # 1



DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100 FILENAME: 3947100C SCALE: 1"=100' DATE: 1/12/99 BY: AD CK: MC FIGURE # 2
REVISION NO.	DRAWING	SITE PLAN		



DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	SCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 798-5000	PROJECT # 3947-100 FILENAME: 3947100C SCALE: 1" =50' DATE: 3/16/99 BY: AD CK: MC FIGURE # 3
REVISION NO.	DRAWING	SITE PLAN		



REVISIONS		PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	BCIENTECH NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 798-5000	PROJECT #: 3947-100 FILENAME: 3947100C SCALE: NTS DATE: 1/14/99 BY: AD CK: MC FIGURE # 4
NO.	DATE				
		DRAWING	PROCESS FLOW DIAGRAM		

NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
Tele:(203) 796-5000

25 Years of Excellence

January 25, 1999
ES - 1443

Mr. Gregory P. Sutton, P.E.
Project Manager
New York State Department of Environmental Conservation, Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

Subject: Submittal of Project Design Basis (Finalized Version)
Leica Optical Site, Eggert Road, Cheektowaga, NY

Dear Mr. Sutton:

Enclosed please find the finalized version of the Project Design Basis.

If you have any questions or comments, please call me at 203-796-5305.

Sincerely,

NES, INC.

Mark Cambra

Mark Cambra, P.E.
Project Manager
Leica, Inc. Remediation Project

MC/
Enclosures

cc: C. O'Conner (NYSDOH)
B. Mallott (Leica)
K. Cyr (NES)
R. McPeak (NES)

C:\Cambra\PDB-FinalCover.doc

NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
Tele:(203) 796-5000

25 Years of Excellence

PROJECT DESIGN BASIS

Leica, Inc. Site
Eggert and Sugar Roads
Town of Cheektowaga, Erie County, NY
Site ID Number: 915156

Prepared for

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation, Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

and

Leica Microsystems, Inc.
P.O. Box 123
Buffalo, New York 1420-0123

January 1999

PROJECT DESIGN BASIS

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Buffalo, New York 14203-2999

and

Leica Microsystems, Inc.
P.O. Box 123
Buffalo, New York 1420-0123

January 1999

Project Application	**Prepared By**	**Date**
3947-100	**Mark Cambra**	1/25/99
Approvals		
Title	**Signature**	**Date**
Senior Department Manager		1/25/99

TABLE OF CONTENTS

1 INTRODUCTION

NES, Inc. (NES) has been contracted by Leica Microsystems, Inc., to design the remedial system proposed at the former Leica Optical Site (Site) in Cheektowaga, New York. After delineation of the contaminated area within the Supplemental Area C, NES has initiated the design of the remedial system. The proposed remedial system originally integrated the technologies of dual vacuum extraction, and air injection to simultaneously remediate VOCs from both soil and groundwater in the overburden material. This document summarizes the observations noticed during the additional investigation. In most locations, contamination was isolated to the fill material above and the silty-sand beneath the clay layer. This document therefore describes the difference in the approach to be taken and the layout of the vapor extraction wells.

Also, concurrent with soil and shallow groundwater remediation, NES is designing a bedrock groundwater pump and treat system consistent with conceptual designs approved by NYSDEC to address the contamination present in the bedrock aquifer.

This document provides detailed information as to the well construction and system layout. Upon approval of the Basis of Design and system configuration, NES can size the equipment and design and layout the Soil Vapor Extraction and Air Sparging System. NES can then determine the size of the building to contain the equipment and determine the most appropriate location. NES will also provide details of the bedrock groundwater recovery system consisting of two wells and pumps connected to the air stripper prior to discharge to the sanitary sewer. — IW Cmpl. & Operation Remedial System design 95%

2 SITE DESCRIPTION

The site is located in Cheektowaga, New York (Figure 1). Previous site investigations indicate that the subsurface has been contaminated with chlorinated and aromatic hydrocarbons as a result of past operations at the facility. Three separate areas of contamination were identified: the former drum storage area, the northeastern source area, and the southeastern area. These areas are designated Areas A, B, and C, respectively, as shown of Figure 2. Supplemental Area C is adjacent to Area C. The contaminants of concern consist of the chlorinated hydrocarbons: vinyl chloride, 1,1-dichloroethene, 1,2-dichloroethene (cis and trans), 1,1-dichloroethane, 1,2-dichloroethane, trichloroethene, and 1,1,1-trichloroethane and the aromatic hydrocarbons: benzene, toluene, ethyl benzene, and xylenes (BTEX).

3 ADDITIONAL INVESTIGATION SUMMARY

The analytical results, presented in the Additional Investigation Report, prepared by NES, Inc. (latest revision September 1998, "Investigation Report"), indicate that the contaminated soil extends to the west and northeast of the original Area C designation.

Also, as discussed in the Investigation Report, NES discovered that the contamination is not present within the clay layer, but it is isolated within the layers above and beneath the clay. It is apparent that the clay is an aquaclude and has prevented the contamination within the fill layer (mostly xylene) from migrating downward and the contamination within the silty sand layer (mostly chlorinated solvents) from migrating upward. This change in site conditions has caused NES to alter the design strategy of addressing the contaminated material. While the concept for remediating the contamination within the silty sand will remain unchanged, the approach for remediating the fill material will differ from the approach originally planned to address the clay. Since the depth of the

fill material is shallow, ranging from one to six feet, and the permeability of the fill is much greater, horizontal trenches will be utilized in lieu of wells, which were originally planned for the clay material.

4 PROJECT DESIGN BASIS

NES has delineated most of areas of contamination. NES has initiated the final design of the subsurface remediation system. As discussed in previous documents, the subsurface remediation system integrates the technologies of dual vacuum extraction, pneumatic soil fracturing, and air injection to simultaneously remediate VOCs from both soil and groundwater in the overburden material. Concurrent with soil and shallow groundwater remediation, NES is also designing a bedrock groundwater pump and treat system consistent with conceptual designs approved by NYSDEC to address the contamination present in the bedrock aquifer. The major design parameters for the remediation system are discussed below.

4.1 SVE WELL SPACING AND DESIGN

Based on our experience with vacuum extraction in similar soils and the results observed during the pilot study (results presented in the Pilot Study Final Report, December, 1996, prepared by NES, Inc.), a zone of influence of approximately 30 to 40 feet (radius) in both the lower silty-sand interval and the fill interval are anticipated. NES has elected to take a conservative approach and set the well spacing based on a 30 foot on-center distance between wells in the fill layer and also in the silty-sand layer. This approach will provide a reasonable design safety factor and will also allow for the operation of the wells in various configurations, reducing the possibility of no or low flow zones.

Boreholes will be advanced at the 30-foot grid spacing nodes and an extraction well will be placed in each borehole. The well will contain a vertical well screen (approximately 2 feet in length) in the silty-sand interval. An impermeable layer of bentonite will be used to separate the screen interval from the soils above. This design will eliminate the preferential airflow that would occur from the zone of high permeability soils (i.e. the fill layer) if the well was screened over the entire subsurface interval. The horizontal trenches within the fill layer will contain numerous horizontal well screens (approximately 10 feet in length). The horizontal wells will be placed in trenches approximately 3 to 5 feet deep. These horizontal screened wells will be connected to the main header pipe at a spacing of approximately 30 feet. The screened wells will "tee" off the main header pipe. The horizontal pipe will have the first 10 feet as solid pipe starting at each of the vertical wells. Figures 3 and 4 provide a proposed layout of the well locations. Figure 5 provides a detailed drawing of the vapor extraction and air injection wells.

The silty-sand interval below the clay unit will be used as the main dewatering aquifer, since it will yield a larger quantity of groundwater than the clay and fill layers. This larger quantity will produce greater drawdowns and zones of influence for capture of the groundwater plume. Each of these SVE wells in the silty-sand layer will be equipped with vacuum-entrainment, groundwater recovery tubing, which does not require down-hole pumps or controls.

The material unearthed during the installation of the DVE wells will be placed in a bermed, polyethylene-lined area for treatment near the Vapor Extraction building in a location acceptable to Leica. Perforated pipes will be placed horizontally within the material that will be treated using vapor extraction. The material will be covered with polyethylene during the Vapor Extraction/Air Injection treatment process. After the material has been remediated to RAOs, it will be released to Leica for use as fill material on-site or for transport to an off-site disposal facility.

4.2 VACUUM SYSTEM

The vacuum level required to induce airflow in the soils is a function of the permeability of the soil. In order to provide an efficient application of vacuum to the subsurface, two vacuum blowers will be used to separately address the two main subsurface zones (the fill and silty-sand) requiring remediation. Both vacuum units will be positive displacement, rotary blowers with electric motors. The capacities of the blowers have been increased to account for the increased area of contamination. Each system will be capable of producing up to 12 inches of mercury vacuum and approximately 1000 scfm (approximately 60 horsepower blowers).

4.3 AIR INJECTION

This system will consist of injection points, a manifold air injection delivery system and an air compressor. Injection probes will be installed into the silty-sand layer within Areas B and C to assist with VOC transport and dewatering efforts.

Pressures of up to 20 psi are estimated for continuous air injection operations (approximately a 50 horsepower compressor). As shown in Figures 3 and 4, these air injection points will be installed near the end of the horizontal wells near the middle of the 30 foot grid node.

4.4 BEDROCK AQUIFER PUMPING SYSTEM

To address the contaminated bedrock aquifer, two (2) bedrock well pumps will be utilized. The first pump will be placed in existing well MW-16A (as depicted on Figure 3) and a second pump will be placed in a new bedrock well that will be installed approximately 150 to 200 feet west of MW-13A (within the site boundaries) (as depicted on Figure 4). Similar to MW-16A, the new bedrock well will be 6 inches in diameter and extend approximately 40 feet below grade as illustrated on Figure 6.

As discussed in previous documents, the bedrock aquifer pump study performed by CRA entitled, Constant Rate Pumping Test Report, April, 1997, demonstrated that pumping rates between 5.75 and 6.5 gallons per minute (gpm) were sufficient to achieve hydraulic influence 130 feet away from MW-6A and 1200 feet away from MW-16A. These zones of influence and pumping rates presented in the pump study indicate that installing two (2) pneumatic pumps in the locations described above will treat the bedrock aquifer within the areas of contamination.

The pneumatic pumps will each be capable of removing seven (7) to ten (10) gallons per minute of groundwater within the bedrock aquifer. The air injection compressor will power the pneumatic pumps.

4.5 EXTRACTED VAPOR TREATMENT

The most cost effective vapor treatment technology will depend upon the mass of contaminants to be treated. Based on the concentrations of contaminant present, we anticipate that using catalytic oxidation for the first three to four months followed by vapor phase carbon for the remaining duration might provide the most cost effective treatment.

The catalytic oxidation technology thermally destroys the extracted vapors, converting the vapors to carbon dioxide, water vapor and hydrogen chloride. The catalytic system will provide destruction efficiencies up to 99 percent. This technology is typically cost-effective during start-up of sites where a large mass of contaminants is present, and VOC extraction rates are greater than 25 pounds per day.

Four (4) to eight (8) vapor phase carbon canisters will be mobilized to the site after the use of the catalytic oxidizer, with additional carbon brought on site as needed. Each canister will contain 1,000

pounds of carbon and will be capable of treating approximately 100 to 150 pounds of VOCs from the vapor stream.

4.6 GROUNDWATER TREATMENT AND SANITARY SEWER DISCHARGE

We have estimated groundwater discharge rates to be 15-25 gpm; however, due to the heterogeneous soils present at the site, the actual flow quantity may vary. The most effective option for the treatment and disposal of extracted bedrock and shallow groundwater is on-site treatment with an air stripper and subsequent water discharge to the local sanitary sewer. An air stripper will strip the contaminants from the groundwater to an acceptable level for discharge into the sanitary sewer. The air discharge from the air stripper will be treated using activated carbon and monitored prior to discharge into the atmosphere.

The Town of Cheektowaga, the Erie County Sewer District, and the Buffalo Sewer Authority are uncertain about any restrictions that may be placed on the discharge. Additional storage tanks or testing parameters and frequencies may or may not be required.

5 REMEDIAL DESIGN SUBMITTALS

As described in the Order on Consent, Section IV, Paragraph B, dated October 18, 1993, items to be included in the Remedial Design are as follows:

- Construction and Operation of Remediation System;
- Collection, destruction, treatment, and/or disposal of hazardous waste and their degradation products as it relates to soil, groundwater, and air;
- Physical security of the site;
- Health and Safety of site workers, neighbors, and the environment;
- Quality control and quality assurance procedures to be applied during the implementation of the remedial design; and
- Monitoring Effectiveness during implementation.

To ensure the above requirements are addressed, the Remedial Design will consist of the following plans and documents:

- Specifications and Contract Drawings
- Operations, Maintenance and Monitoring Plan
- Contingency Plan
- Quality Assurance Program Plan
- Health and Safety Plan
- Citizen Participation Plan

In addition to these plans and documents, one permit is required; a sanitary sewer discharge permit. NES will apply for these permits and include all pertinent information in this section as part of the Remedial Design.

NES will include an updated proposed time schedule for the implementation of the Remedial Design. The schedule will be utilized during the implementation of the Remedial Design to schedule equipment orders, schedule staff support, and determine if the project is on schedule.

6 SYSTEM OPERATION AND SITE CLOSURE

Upon completion of the subsurface system construction and the three (3) week start-up period, the system will run continuously (excluding periods when undergoing repairs, as required) until the RAOs or other criteria, approved by the NYSDEC, are met.

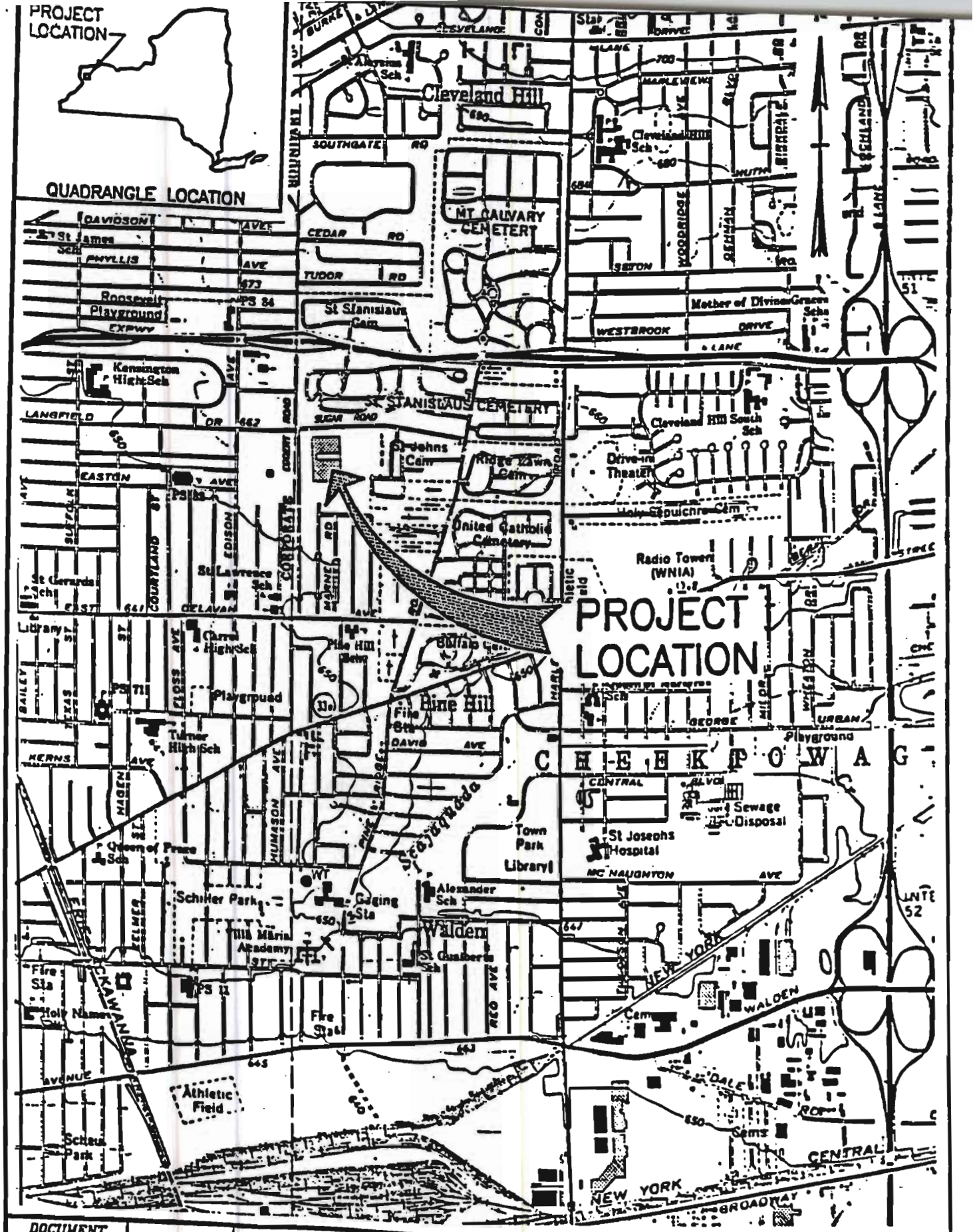
NES is proposing to collect and field analyze air samples from the exhaust of each vapor extraction system during each month of operation. Periodically, air samples will be collected from specific areas and analyzed to determine the effectiveness of the remedial system within a specific area. The data will be used to assess the success of the remedial efforts and identify whether specific areas (e.g., Areas A, B, or C) require additional remediation.

When the analytical data indicate that an area is remediated, soil samples will be collected and analyzed by EPA Method 8240 to ensure a site-wide average less than or equal to the RAOs has been achieved. Once compliance has been verified, the area will be disconnected from the remediation system and considered closed.

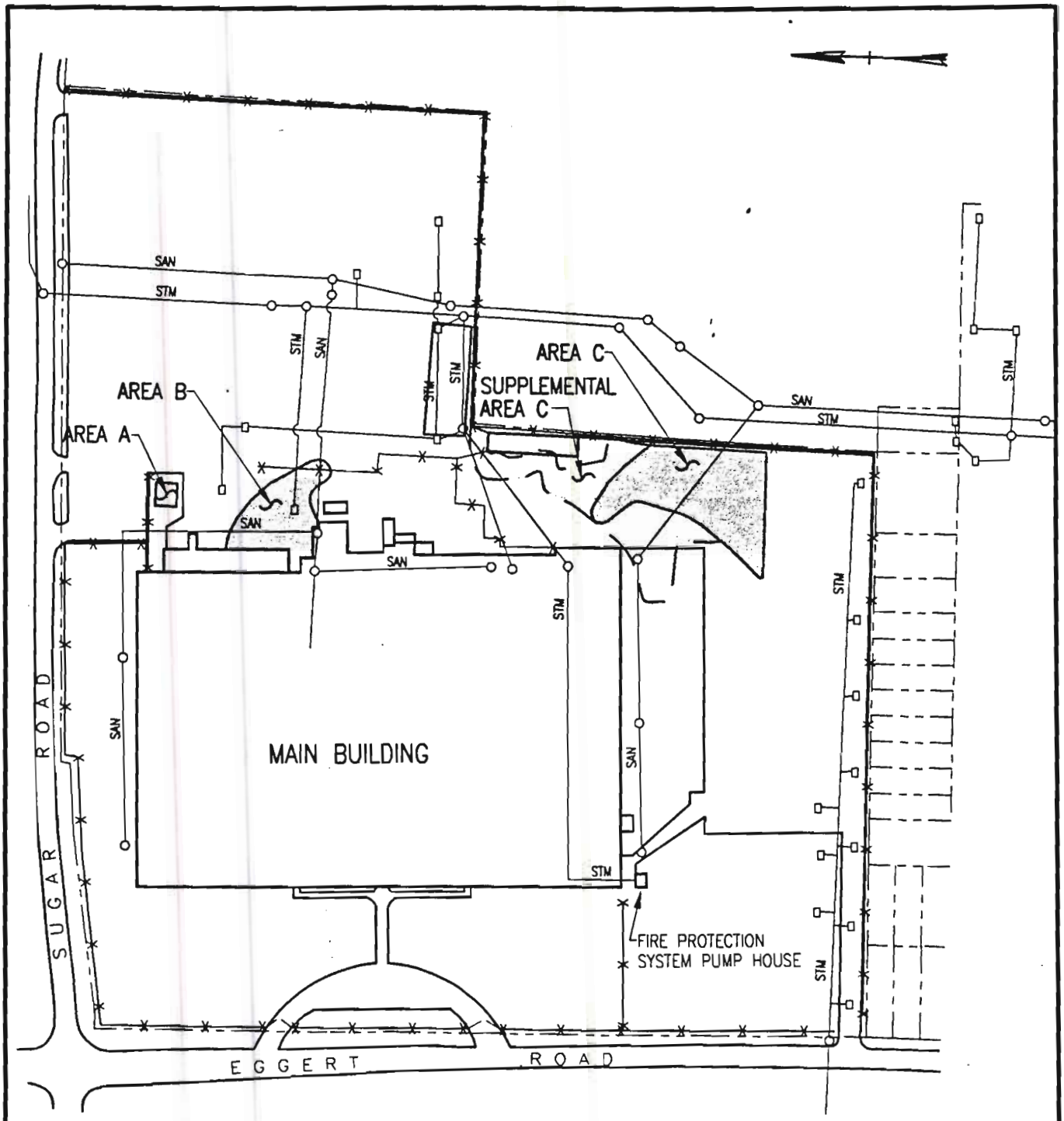
NES anticipates a maximum of approximately 40 to 50 soil samples will be required to demonstrate compliance with the RAOs. Compliance with Remedial Action Objectives (RAO) will be demonstrated when average concentrations of volatile contaminants within each of the three areas of concern are at or below the RAO or approved alternate criteria. A report will be submitted following evaluation of the analytical results.

Following completion of dual vacuum extraction system operations, NES will dismantle and remove all above grade equipment from the Leica, Inc. Site. The extraction well casings will be removed and the boreholes filled with grout. The below grade manifolding will be left in place.

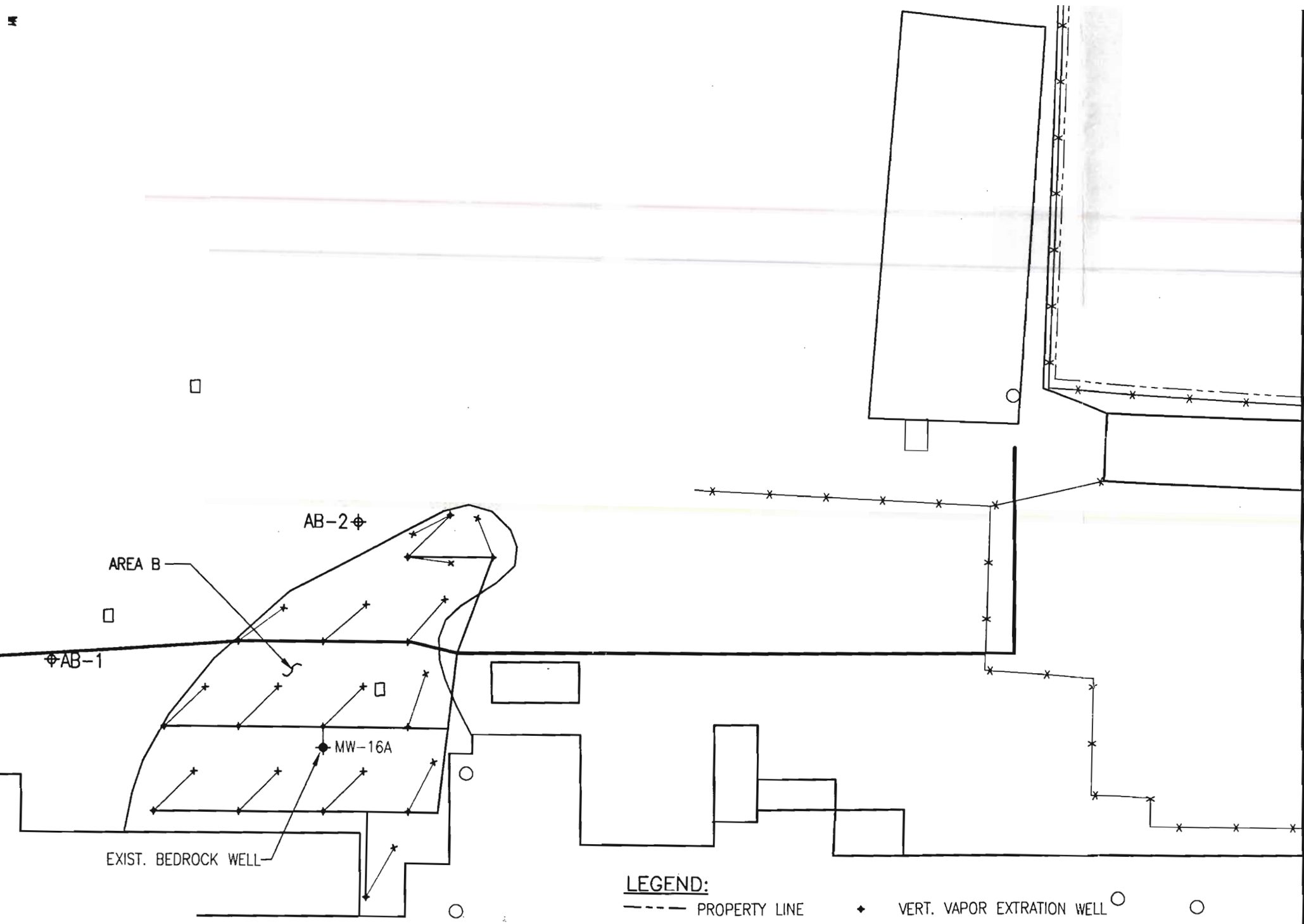
As was noted in previous reports, the bedrock remediation system (a pump and treat system) will need to operate for a longer period of time than the DVE system. Therefore, demobilization activities will not include bedrock wells, related equipment or attached subsurface piping. The bedrock system will continue to operate until the RAOs are achieved within the bedrock aquifer.



DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	nes NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 798-5000	PROJECT: 3948-100 FILENAME: 3948100A SCALE: NTS DATE: 2/25/98 BY: AD CK: FIGURE 1 1
REVISION NO.	DRAWING	SITE VICINITY MAP U.S.G.S. QUADRANGLE: BUFFALO, NY NE		



DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 798-5000	PROJECT # 3948-100 FILENAME: 3948100A SCALE: 1" =200' DATE: 11/5/98 BY: AD CK: MC FIGURE # 2
REVISION NO.	DRAWING	SITE PLAN		



LEGEND:

PROPERTY LINE

FENCE

VERT. VAPOR EXTRATION WELL

HORIZ. VAPOR EXTRACTION WELL, AIR

REVISION NO.:

LEICA, INC.
EGGERT & SUGAR ROADS
CHEEKTOWAGA, NEW YORK

PROJECT

DRAWING

AREAS A & B – VAPOR EXTRACTION, AIR INJECTION AND BEDROCK RECOVERY LAYOUT

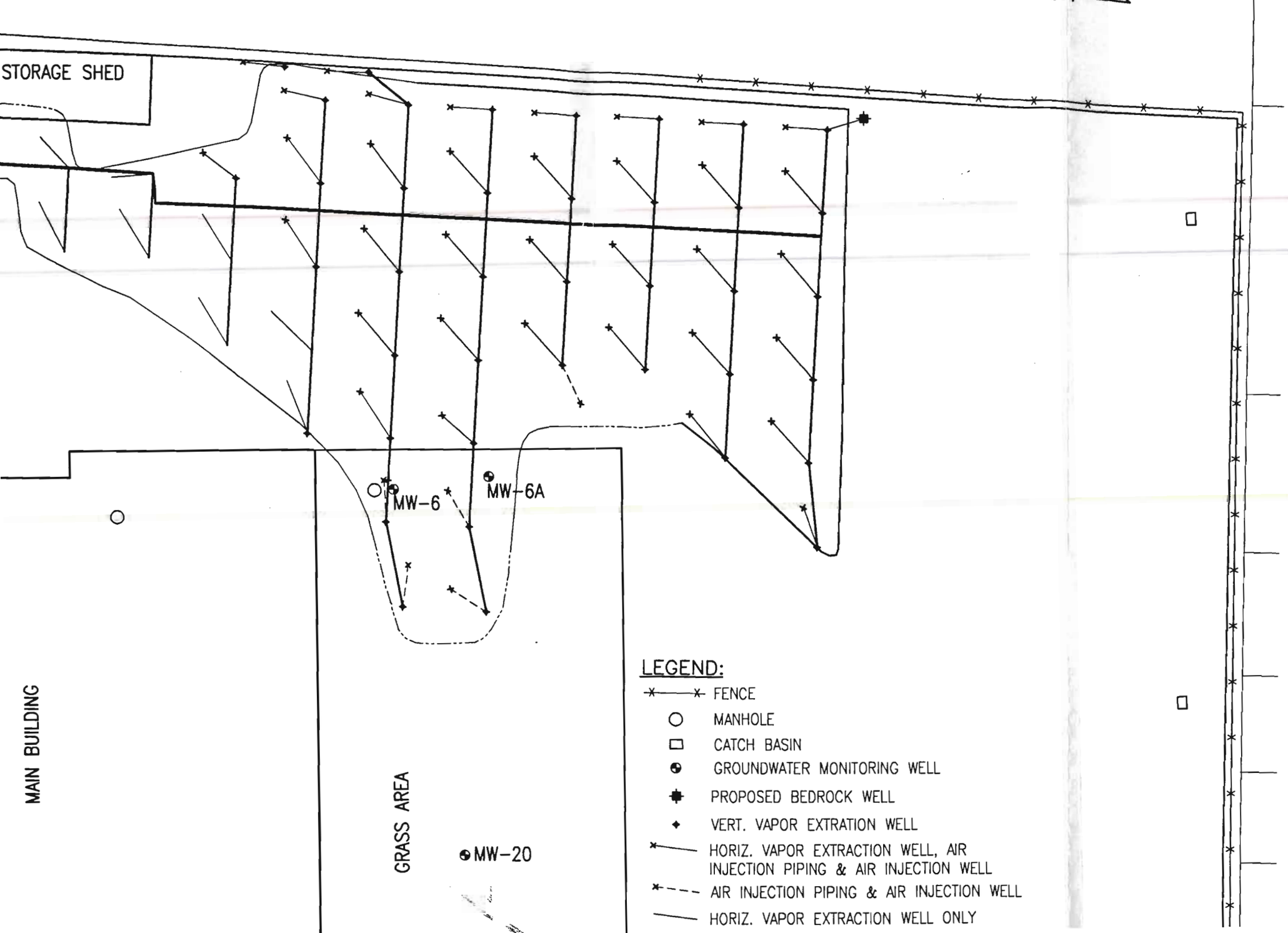
NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
(203) 796-5000

PROJECT NO.: 3948-100

FILE NAME: 3948100A

SCALE:

DATE:



LEICA, INC.
EGGERT & SUGAR ROADS
CHEEKTOWAGA, NEW YORK

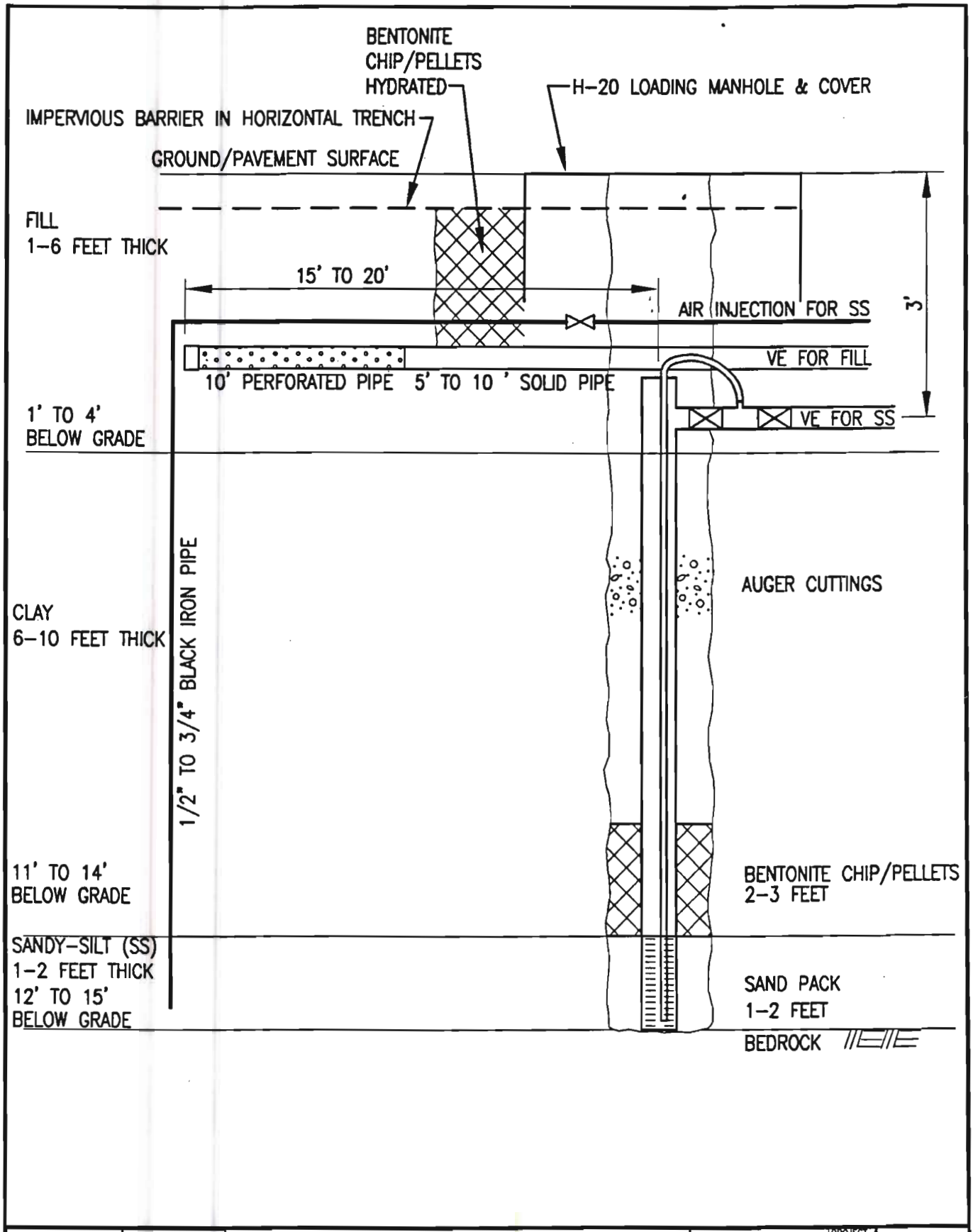
PROJECT

AREA C – VAPOR EXTRACTION, AIR INJECTION AND BEDROCK RECOVERY LAYOUT

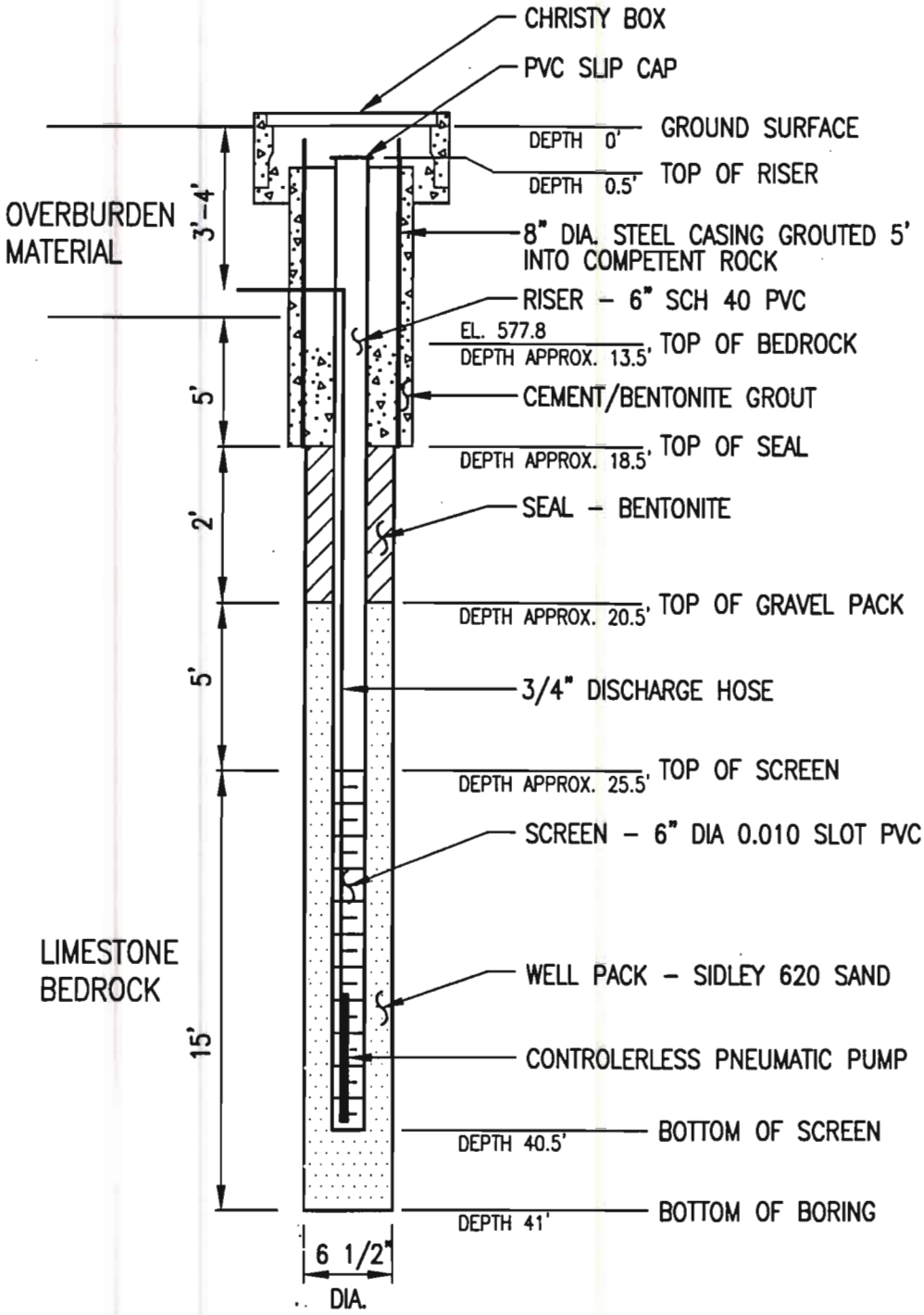
DRAWING

NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
(203) 796-5000

PROJECT NO.: 3948-100
FILE NAME: 3948100A
SCALE: 1" = 40'
DATE:



DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGO, NY	NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3947-100 FILENAME: 3947100A SCALE: NTS DATE: 11/2/98 BY: AD CK:
REVISION NO.	DRAWING	DETAIL DRAWING VAPOR EXTRACTION AND AIR INJECTION WELLS		FIGURE # 5



NOTE:

1. NOT DRAWN TO SCALE
2. SEE BORING LOG FOR DETAILED SOIL DESCRIPTION.

DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. CHEEKTOWAGA, NEW YORK	NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT # 3948-100
				FILENAME: 3948100C
				SCALE: NTS / DATE: 11/10/98
REVISION NO.	DRAWING	PROPOSED BEDROCK GROUNDWATER RECOVERY WELL DETAIL		BY: AD / CK:
				FIGURE # 6

NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
Tele:(203) 796-5000

25 Years of Excellence

QUALITY ASSURANCE PROGRAM PLAN FOR ENVIRONMENTAL SERVICES AT LEICA MICROSYSTEMS, INC. CHEEKTOWAGA, NY

Leica, Inc.
Eggert and Sugar Roads
Town of Cheektowaga, Erie County, NY
Site ID Number: 915156

Prepared for

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

and

Leica Microsystems, Inc.
P.O. Box 123
Buffalo, New York 1420-0123

January 1999

NES, Inc.

QUALITY ASSURANCE PROGRAM PLAN
FOR
ENVIRONMENTAL SERVICES AT
LEICA MICROSYSTEMS, INC.
CHEEKTOWAGA, NY

Project Application 3947-3948	Copy No.	Assigned To

APPROVALS

TITLE / DEPT. - SIGNATURE - DATE

REV NO	PREPARED BY	Project Manager	Senior Department Manager	Vice President	QA Mgr.
0	MARK CAMBRA 1/16/99	Mark Cambra 1/16/99	[signature] 1/18/99	[signature] 1/19/99	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					

NES, Inc.

DOCUMENT NO. 82A9193

REVISION LOG

REV NO.	DATE	PAGE NO.	DESCRIPTION	APPROVAL

TABLE OF CONTENTS

1. DESCRIPTION

This Quality Assurance Program Plan (QAPP) describes the organization, document approval, and Construction Quality Assurance aspects for the construction and implementation phases of the Leica, Inc. Project. The intent of this plan is to describe the project management structure, including organizational charts and descriptions of applicable responsibilities, that will be utilized during the construction phase of this project. Management of the physical aspects of the site will also be addressed in this plan.

This QAPP has been produced to assist site personnel, contractors and other project personnel, and is not intended to supercede or replace the construction specifications or work plan set forth for this site.

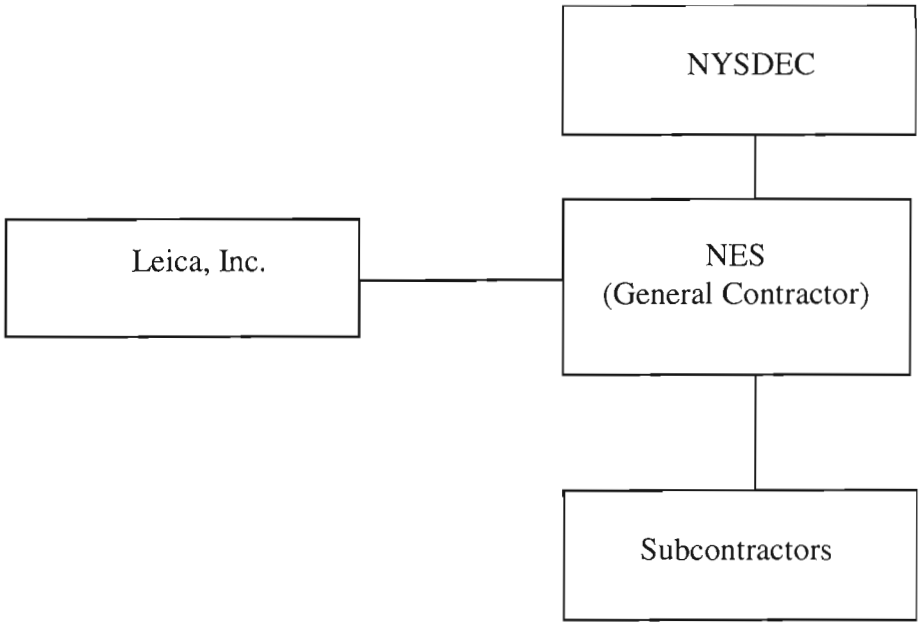
This QAPP defines the policies and practices employed by NES to facilitate the proper installation and maintenance of all design procedures set forth in the Remedial Design Work Plan approved by the NYSDEC. All work performed by contractors and agents of Leica, Inc. (Leica) are subject to the provisions and guidelines set forth herein. All submittals, reports, data tables, correspondence, calculations and drawings generated by NES for the implementation phase of this project shall be reviewed in accordance with these procedures.

Parts of this plan have been modeled after the USEPA, Office of Solid Waste and Emergency Response technical guidance document, Construction Quality for Hazardous Waste Land Disposal Facilities.

2. PROJECT ORGANIZATION, RESPONSIBILITY AND AUTHORITY

2.1 CORPORATION RESPONSIBILITIES

The management structure of this project will be as follows:



2.1.1 Facility Operator - Leica

Leica is ultimately responsible for the design, construction, and operation of the proposed remediation. The direct implementation of these criteria will be carried out by NES as the General Contractor. This responsibility includes complying with the requirements of the NYSDEC, by the submission of QAPP documentation, to ensure that the facility is constructed as specified in the design. Leica is named as a Potentially Responsible Party for the remedial area being addressed and is legally responsible for final completion of this project.

2.1.2 Permitting Agency - NYSDEC

It is the responsibility of the NYSDEC, Division of Environmental Remediation to review the *Remedial Design Report* (including this QAPP) for compliance with New York State regulations. The NYSDEC has the responsibility and authority to review and accept or reject any design revisions or requests for variance that are submitted by Leica or NES after approval of the *Remedial Design Report*. The NYSDEC also has the responsibility and authority to review all QAPP documentation during or after construction to confirm that the approved QAPP is followed and that the facility was constructed as specified in the design (USEPA, 1986).

The review and approval of the *Remedial Design Report* by the NYSDEC does not relieve Leica or NES of the responsibility for compliance with all applicable Federal, State and local regulations.

NYSDEC is the government agency providing regulatory oversight on the project. They are responsible for the approval of remedial design and implementation plan, determination of project closure criteria, and final approval on the completion of all applicable remedial criteria. Note: the New York State Department of Health (NYSDOH) is also providing regulatory oversight on the project and is included as part of the Government agencies.

2.1.3 General Contractor - NES

The primary responsibility of NES as the General Contractor is to construct the remedial system in strict accordance with the design and specifications (USEPA, 1986). Additionally, NES is responsible for implementing the operational and performance requirements of the NYSDEC and conducting corrective measures when NYSDEC personnel detect deviation from the approved design or specifications.

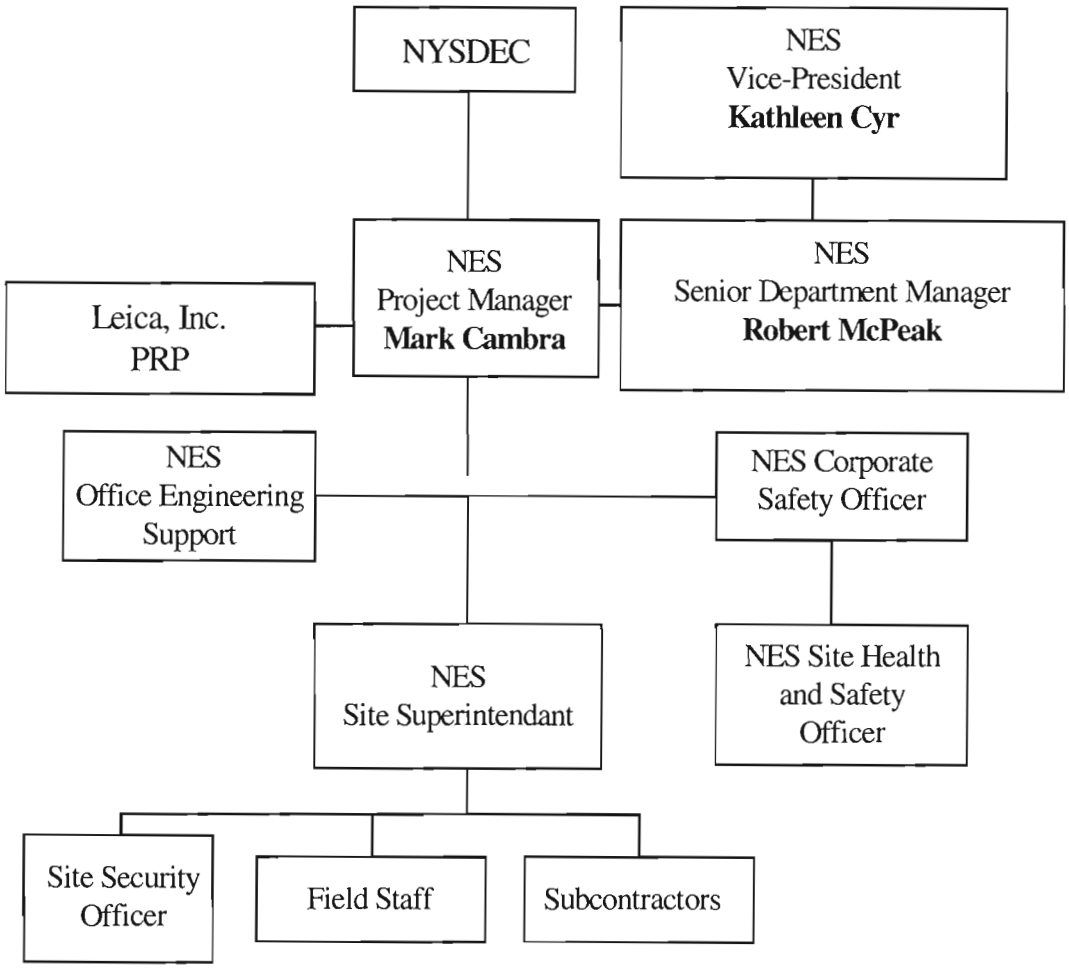
NES is the authorized representative of Leica concerning the remediation of this site. NES is responsible for designing, contracting, managing and completing the remediation of the site while adhering to applicable federal, state, and local laws and regulations.

2.1.4 Subcontractors

Responsible for the proper execution of all work contracted to them and overseen by NES.

2.2 SITE CONSTRUCTION ORGANIZATION

The management structure used to coordinate all site-related activities will be as follows:



2.2.1 NES Project Manager:

Responsibilities: Monitoring the project schedule and budget, allocation of necessary resources to complete the project, signatory authority over all submittals of any kind to non-NES entities involved in the project, and the maintenance of project documents and records. In addition, the Project Manager will be responsible for coordinating the activities of field management personnel. The Project Manager will report directly to Leica and the NYSDEC. All contact with Leica, the attorneys, and the NYSDEC will be made either through or with the consent of the Project Manager.

The Project Manager will also be responsible for coordinating communication with the public. This will generally be done in consultation with the NYSDEC (i.e. public meetings or mailings).

Qualifications: Education - 4 year college degree in a related engineering field from an accredited Institution.

Experience - 5 years of project management regarding design and remediation projects.

Additional Requirements -Involved with 10 other environmental projects. Professional Engineer (required) in the State of New York (preferred).

NES Site Inspector/Engineer:

Responsibilities: Inspect all work as related to the project specifications and the anticipation (when possible) of all necessary field modifications. Responsible for monitoring field progress, initial review of subcontractor submittals and other correspondence, and instructing the Site Superintendent of any deficiencies and modifications. The Site Inspector will report to the Project Manager.

Qualifications: Education - 4 year college degree in a related engineering field from an accredited Institution.

Experience - 3 years of inspection or field engineering at remediation projects.

Additional Requirements - Involved with 2 other environmental remediation projects.

2.2.2 Engineering Office Staff:

Responsibilities: Provide support to the Project Manager in preparing system design, reviewing and approving submittals from subcontractors, and assisting in the preparation of documents (e.g. submittals) for the NYSDEC. The office staff will also be responsible for monitoring costs, budgets, and schedules and preparing as-built drawings of the closure. The Engineering Office Staff will provide engineering support to the Site Superintendent but reports to the Project Manager.

Qualifications: Education - 4 year college degree in a related engineering or environmental field from an accredited Institution.

Experience - Range from entry to senior level engineers, geologists, environmental scientists, and ACAD operators.

2.2.3 NES Site Superintendent - QAPP Personnel:

The Site Superintendent has the responsibility for all aspects of QAPP implementation in the field. The Site Superintendent reports directly to the NES Project Manager who has the ultimate responsibility for quality management and the implementation of the QAPP.

Responsibilities: Holds ultimate on-site responsibility for the proper execution of all site work and authorization of unplanned contingencies (including subcontractor's tasks). Also responsible for site coordination with office objectives, prioritization of site activities, and completion of all progress records. The Site Superintendent will report to the Project Manager.

The Site Superintendent will also be responsible for all on-site interaction with the NYSDEC and any other public or non-NES entities. The Site Superintendent will be responsible for notifying the Project Manager of the content of these contacts.

Specific responsibilities of the Site Superintendent include (USEPA, 1986):

- Scheduling and coordinating inspection activities;
- Confirming that regular calibration of testing equipment is properly conducted and recorded;
- Confirming that the test data are accurately recorded and maintained;
- Verifying that the raw data are properly recorded, validated, reduced, summarized and interpreted.
- Providing reports on inspection results including:
- Review and interpretation of all data sheets and reports;
- Identification of work in need of special testing or inspection; and
- Rejection of defective work and verification that corrective measures are implemented.
- Performing independent site inspection of the work in progress to assess compliance with the facility design and specifications; and
- Verifying that the equipment used in testing meets the test requirements and that the test are conducted according to standardized procedures.

Qualifications: Education - 4 year college degree from an accredited Institution.

Experience - 5 years in related engineering, construction, and environmental projects. Note, a college degree is not required if the person's work experence exceeds 10 years.

2.2.4 NES Corporate Safety Officer:

Responsibilities: Oversight of the project regarding health and safety to ensure that all personnel are working in accordance with the site Health and Safety Plan and Corporate

NES Health and Safety Plan (NES Document Control Numbers 82A8117-82A8126). The Corporate Safety Officer reports to the President of NES on policy issues and activities related to the health and safety of NES Employees.

Qualifications: Education - 4 year college degree from an accredited Institution.

Experience - 5 years involving health and safety and/or industrial hygiene.

Additional Requirements - Must be familiar with health and safety regulations and good practices. Must set policy and develop plans and procedures to reduce worker risk.

2.2.5 NES Site Health and Safety (H&S) Officer:

Responsibilities: Responsible for maintaining all documentation related to project safety as defined by 29 CFR 1910. In addition, the Site H & S Officer will be required to update any employee health and safety training, oversee the adherence to site safety criteria during the project, advise other members of project team about any safety-related issues, and ensure that all personnel are working in accordance with the Health and Safety Plan. The Site H & S Officer will report to the NES Corporate Safety Officer as it pertains to Health and Safety related issues. The NES Site Superintendent may also have the responsibilities of the NES Site H&S Officer.

Qualifications: Education - 4 year college degree from an accredited Institution.

Experience - 2 years as a field health and safety officer.

Additional Requirements - Must be familiar with health and safety regulations and good practices.

2.2.6 Site Security Officer:

Responsibilities: Responsible for the daily maintenance of site security. This includes monitoring the condition of site security measures, recommending any required changes to and/or maintenance of those measures, and ensuring daily implementation of the measures (locking gates, removing keys from equipment, securing site tools, etc.). The Site Security Officer shall report to the Site Superintendent.

Qualifications: Requirements - Competent laborer, mature and responsible enough to perform the duties required.

2.2.7 Subcontractors:

Responsibilities: Responsible for the proper staffing, executing, and coordinating their contracted task within the time frame allotted. Subcontractors will report to the Site Superintendent.

Qualifications: Requirements - A professional in the work they will be performing.

Note: The NYSDEC will review and approve the bidders lists for the following tasks:

- Drilling Subcontractor; and
- Electrician.

2.3 PROJECT CORRESPONDENCE

All communications and notices to the Client shall be addressed to:

Leica Microsystems, Inc.
362 Walden Ave.
Depew, NY 14043-2437
ATTN: Mr. Bruce Mallott

All Communications and notices from the Client to NES shall be addressed to:

NES
44 Shelter Rock Road
Danbury, Connecticut 06810
ATTN: Mr. Mark Cambra, P.E.

3. SITE MANAGEMENT

3.1 SITE OFFICE

The site office will be within the site area. The office trailer will:

- Enable site personnel to monitor people entering and exiting the site;
- Store records on-site;
- Contain communication equipment i.e. phone, fax, computer, etc.;
- Provide security to the work area; and
- Provide a location for site meetings.

The office trailer will also provide office space for NYSDEC personnel, including access to a phone fax, utilities and site records.

3.2 SITE ACCESS

The site access point is from the entrance gate located in the south west corner of the site on Eggert Road.

3.3 EQUIPMENT AND MATERIAL STAGING AREA

Equipment and material will be staged in the area near the contaminated soil in a location acceptable to NYSDEC, Leica, and the current owners (Samson Distribution Corporation/Calypso Development Corporation). Routine maintenance and repairs (when possible) will be conducted in this area only. The staging area will be cleaned regularly and kept free of maintenance waste and debris at all times. The staging area shall be removed and returned to its original condition.

3.4 SITE SECURITY

The office trailer will be located on site to monitor people entering and exiting the site. If possible, signs will be posted on the entrance gate and at 100 foot intervals around the southern portion of the site perimeter to further deter trespassing. Breaches of site security measures shall be reported to the designated Site Security Officer and handled accordingly.

4. DESIGN CONTROL

4.1 DESIGN SPECIFICATIONS AND DRAWINGS

The design will be prepared in accordance with the applicable Technical Service Agreement, NES proposal, and subsequent letters.

4.2 DESIGN CRITERIA

Design criteria are found in the Technical Service Agreement, NES proposal, and subsequent letters.

4.3 DESIGN CONTROL

Design control measures are established to correctly translate applicable standards and client requirements into project planning and design documents and procedures for services provided to clients. Notebooks are established to include assumptions, project planning factors, end product definitions, project performance methodologies, calculations and other pertinent data that may be required for future reference on the project. All assumptions, analyses, calculations or decisions will be reviewed for accuracy by an individual other than the individual who originated the data.

Design verification will be performed in a planned, controlled and documented manner. Design interfaces will be identified and controlled and the design efforts will be coordinated among the participating organizations.

Design controls are established to assure the adequacy of a design. Design verification will be performed prior to the release of any document or performance of any service. Where changes to previously verified designs have been made, design verification will be required for the changes, including evaluation of the effects of those changes on the overall design and on any design analyses upon which the design is based.

4.4 DESIGN REVIEW MEETINGS

Formal Design Review Meetings will be held on an as-needed basis.

4.5 DESIGN DOCUMENTS, PROCEDURES AND DRAWINGS

Design documents, procedures, and drawings that may be prepared for this project are listed below:

- Work Plan
- Design Specification
- Design Drawings

5. PROJECT DOCUMENTS

NES documents shall be controlled and processed in accordance with the requirements of the NES Procedures.

Table 5.1 identifies the documents to be submitted to Leica.

TABLE 5.1

DOCUMENTS TO BE SUBMITTED TO CLIENT

Investigation Documents	
Investigation Work Plan	A
Supplemental C Investigation Report	A
Design Documents	
Work Plan/ Specifications	A
Contract Drawings	A
Remediation Documents	
Closure Report	A

A - For Client Approval prior to submission to NYSDEC

3 QUALITY ASSURANCE RECORDS

This section sets forth the measures to be followed by NES for the collection, filing, storing, and maintenance of quality assurance records required to furnish evidence of this project's safety-related activities.

Quality Assurance records specified in Table 6.1 shall be collected, organized, and maintained during the life of the project. Records shall be legible, complete, and identifiable. All project records listed in Table 6.1 shall be stored by the designated party (Document Control Personnel) in accordance with NES Procedure 80A9099 which describes the controls that apply to the collection, storage and maintenance of quality assurance records at NES or Procedure 80A9003 which describes the controls of the document.

TABLE 6.1

QUALITY ASSURANCE RECORD INDEX

	Document Control	Duplicate Storage	Retention Period
1. Q.A. Program Plan	X		Lifetime
2. Project Planning and Calculation Notebooks (includes Computer Printouts as applicable)		X	Lifetime
3. Investigation Work Plan	X		5 years
4. Supplemental C Investigation Report		X	5 years
5. Work Plan/ Specifications	X		5 years
6. Contract Drawings	X		5 years
7. Closure Report		X	3 years

7. PROJECT MEETINGS

Periodic meetings held before and during the life of the construction project will enhance communication between all personnel and agencies involved in the project.

7.1 PRECONSTRUCTION MEETING

The Preconstruction Meeting will be held within forty-five (45) days after the effective date of the Remedial Design Approval. Specific agenda items are outline in the Technical Specifications. In general, the Preconstruction Meeting is held to:

- establish communication lines, responsibility and organization of the construction phase;
- review construction schedules and contract documents; and
- institute procedures for approval of shop drawings and field decisions.

7.2 PROJECT MEETINGS

Project Meetings will be held bi-weekly and be attended by representatives of the NYSDEC, the Site Superintendent, the Site Inspector/Engineer, the Health and Safety Officer and any subcontractors or material suppliers as requested by NES or the NYSDEC. In general, Progress Meetings will be held to discuss work progress, project schedules and any changes that may affect the design or schedule.

7.3 PROGRESS MEETINGS

Progress Meetings will be held daily prior to the commencement of work. Attendees shall include the Site Superintendent , the Site Inspector/Engineer and the Health and Safety Officer. Progress Meetings will be held to (USEPA, 1986):

- review the previous and present day's activities;
- identify the subcontractor's personnel and equipment assignments for the day; and
- discuss any potential construction problems.

8 GENERAL INSPECTION GUIDELINES

8.1 EQUIPMENT CALIBRATION

Field equipment to be used at the site will be calibrated with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturers' specifications. Copies of the calibration and operation instructions from the manufacturer will be kept with the instrument when it is used at the site. It is the Site Superintendent's and/or Site Safety Officer responsibility to be familiar with these instructions.

Equipment to be used in the field during field sampling will be examined daily to certify that it is in good operating condition. This includes checking the manufacturer's operating manual to ensure that all maintenance requirements are being observed. Preventative maintenance will be conducted for equipment to ensure the accuracy of measurement systems. Key spare parts for each apparatus will be available.

8.2 SAMPLING

All laboratories to be used for analysis of chemical verification samples shall be certified and approved to conduct environmental analyses by the New York State Department of Health (NYSDOH). All chemical analyses will be conducted in accordance with NYSDEC's Analytical Services Protocol (ASP).

All field sampling, handling, storage and delivery shall be performed in accordance with appropriate NYSDEC protocols and NES Standard Operating Procedures.

9 INSPECTION ACTIVITIES

This section addresses the inspection activities necessary to ensure that the facility has been constructed to meet or exceed all design criteria, plans, and specifications. The most vital inspection activity is continuous visual observation of the installation/construction process. Visual observation will dictate frequency and location of additional inspection activities such as physical testing. All inspection activities, including visual observations, shall be properly documented as specified in Section 10 DOCUMENTATION.

The following subsections outline the major components of the design. Each section notes the applicable Technical Specification section, regulation and Standard Operating Procedure and outlines the general inspection and testing procedures. Testing frequencies and references are listed in the Technical Specifications.

9.1 VAPOR EXTRACTION WELL INSTALLATION

Various vapor extraction wells will be installed in locations detailed on the Contract Drawings. Placement of these wells, both laterally and vertically, are critical to ensure proper operation of the system. Verification that these wells are installed as designed will include:

- Field measurement will be performed and checked to ensure the proper spatial orientation:
- Careful examination of the subsurface geology during installation will be executed to ensure the well's screened interval is within the correct geologic zone; and
- Well documented field logs will be required to illustrate actual locations and depths of each well.

9.2 AIR INJECTION POINT INSTALLATION

Various air injection points will be installed in locations detailed on the Contract Drawings. Placement of these points, both laterally and vertically, are critical to ensure proper operation of the system. Verification that these points are installed as designed will include:

- Field measurement will be performed and checked to ensure the proper spatial orientation;

- The depth of each point will be predetermined prior to installation by examination of the geology observed in the extraction well installed within the area; and
- Well documented field logs will be required to illustrate actual locations and depths of each point.

9.3 EQUIPMENT INSTALLATION

Various pieces of equipment will be installed in locations detailed on the Contract Drawings. Installation of the equipment is critical to ensure proper operation of the system. Verification that the equipment is supplied and installed as designed will include:

- Verification that the size and type of equipment that was designed was delivered; and
- Verification that the equipment is installed in accordance with manufacturer's recommendations and specifications.

9.4 PIPING/CONNECTION TEST FOR INTEGRITY

Before the piping is buried and the system is activated, NES will test the piping for tightness. NES will pressure or vacuum test the pipes to ensure that there are no leaks which would cause the system to operate inefficiently. Once tested and approved, the pipes will be buried.

9.5 SYSTEM START-UP

Prior to releasing subcontractors and the field crew, NES will thoroughly test each component of the system to ensure it is functioning as it was designed. All equipment, monitoring devices, and alarms will be tested prior to running the system on continuous basis.

10 DOCUMENTATION

All original documents will be stored in the NES Corporate office located in Danbury, CT. Correspondence to the NYSDEC and other agencies, manifests, cost estimates and schedules, monthly schedule updates, monthly reports and the Consent Order are examples of the documents which will be kept in the office. NES will designate a central location to store these documents so they will be accessible to all appropriate NES employees. Field logs and other documents will be maintained in the field office so that work activities can be monitored and documented. These documents will include but are not limited to the following:

- Daily Work Logs (as described below);
- Field Inspection Reports (as described below);
- Monthly Status Reports (as describe is Section 8);
- Health and Safety Plan;
- Required Accident and OSHA Information;
- Field Notebooks;
- Copies of Plans and all Revisions;
- Purchase Orders;
- Project Schedule with Updates;
- Calibration Information;
- Site Meeting Minutes;
- Consent Order;
- Shop Drawings; and
- Pertinent Correspondence.

10.1 DAILY WORK LOGS

The Site Superintendent shall maintain Daily Work Logs as a detailed record of site work progress. A sample Daily Work Log sheet appears at the end of this section. Pertinent items appearing on the report include:

1. Daily Work Log No.: unique identifying number (preceded by 3947-DWL-) for each Daily Work Log for cross-referencing and document control.
2. Date/Time/Weather.
3. Visitors: a listing of personnel and their firms on site not part of the regular work force.
4. Work Performed: a general accounting of the major tasks performed that day which include subcontractors performing the work.
5. Equipment/Personnel Used: major equipment items and personnel utilized to perform the day's work.

6. Material Delivered/Disposed: materials brought on site for fill or construction or materials sent off site for disposal and any certifications required by the Technical Specifications.
7. Materials Accepted/Rejected: materials accepted or rejected for fill or construction and the corresponding Inspection Report Number.
8. Air Monitoring: results of any air monitoring performed in accordance with the site Health and Safety Plan.
9. NES Site Superintendent Signature.
10. Additional Comments.

10.2 FIELD INSPECTION REPORTS

The Field Inspection Reports are designed to aid the Site Superintendent in inspecting and testing materials brought to the site. Due to the varied nature of different testing/inspection procedures for different products, the Field Inspection Reports will not cover all aspects of every test/inspection procedure and should be supplemented with actual test data sheets, photographs, sketches, etc., to properly document the material acceptance/rejection. Pertinent information includes:

1. Field Inspection Report No.: unique identifying number (preceded by 3948-FIR-) for each Field Inspection Report for cross-referencing and document control.
2. Field Work/Material Inspected and Observations: work items inspected for the day, the location and a summary of the observations.
3. Tests Performed: listing of tests performed including the standard test method, Technical Specification reference section, test result and specification requirement.
4. Conclusions: acceptance/rejection of material and any observation conclusions.
5. NES Site Inspector/Engineer Signature.

A sample Field Inspection Report is included at the end of this document.

11 MONTHLY STATUS REPORTS

The status of remedial work and the documentation of work will be provided in monthly reports submitted to the NYSDEC and other specified entities.
As required by Section VII of the Order on Consent, written progress reports will be prepared by NES. Though only bimonthly progress reports are required, NES will prepare monthly progress reports during the construction phase of the remedial action. The format of these reports will be consistent with the items specified in Section VII. (i)-(vii) of the Order on Consent as described below.

1. The monthly reports will describe the remedial actions that have been conducted toward the achievement of compliance with the Order of Consent during the previous month.
2. The monthly reports will include all sampling results and tests received or generated in the previous month, including quality assurance/quality control information, but excluding calibration testing.
3. The monthly reports will also identify all work plans, reports, and other deliverables required that were completed and submitted during the previous month.
4. The monthly reports will also describe all actions, including but not limited to data collection and implementation of work plans, that are scheduled for the next month and provide other information relating to the progress of work at the Site.
5. Information regarding the percent complete, unresolved delays encountered or anticipated that may affect the future schedule for the implementation of obligations of the Order of Consent, as well as efforts made to mitigate those delays to any work plan that has been proposed to the NYSDEC or that the NYSDEC has approved.
6. The report will discuss any proposed modifications to the NYSDEC approved Work Plan and Remedial Design.
7. The monthly report will also describe all activities undertaken in support of the Citizen Participation Plan during the previous month and those to be undertaken in the next month.

These monthly reports will be submitted to the NYSDEC by the tenth day of every month following the effective date of this order.

Copies of the monthly reports will be submitted as follows:

1. Two copies (one original) to the Project Manager, Leica, Inc. Site, NYSDEC Division of Environmental Remediation, Region 9, 270 Michigan Avenue, Buffalo, NY 14203-2999
2. One copy to Mr. Cameron O'Conner, Bureau of Environmental Exposure Investigation, New York State Department of Health, 584 Delaware Ave., Buffalo, NY 14202
3. One copy to Mr. Bruce Mallott, Leica Microsystems, Inc., 3364 Walden Ave., Depew, New York 14043

In addition to the above:

1. One copy will be kept on file at NES, 44 Shelter Rock Road, Danbury, CT 06810, in the central files, in care of Mark Cambra.
2. One copy will also be kept on file at the NES, construction office at the Site.

12 APPROVAL OF FIELD GENERATED DOCUMENTS

Field generated documents must have an accelerated approval process that will allow rapid turn-around time for comments, corrections and approvals. This process is designed to avoid delays in work due to extensive review procedures while maintaining the necessary quality assurance and control procedures. Field generated documents include shop drawings, specifications and calculations.

12.1 RESPONSIBILITY

The NYSDEC Site Representative will have the authority and responsibility of giving final approval to all site generated documentation. The NYSDEC Site Representative approval will bear the same weight as an approval from the Regional NYSDEC Office or Project Manager.

The NES Project Manager has the final approval authority for NES. The NES Project Manager has the responsibility of ensuring that all field generated documents are submitted and utilized without errors, all procedures outlined herein have been followed, and all approved documents are routed appropriately.

The Site Superintendent is responsible for the initiation, procurement, initial review and approval of all field documents. The Site Superintendent will act as liaison between the subcontractor and NES site personnel in all technical documentation matters. The Site Superintendent is also responsible for ensuring that all field documents are implemented and incorporated into the field work as approved.

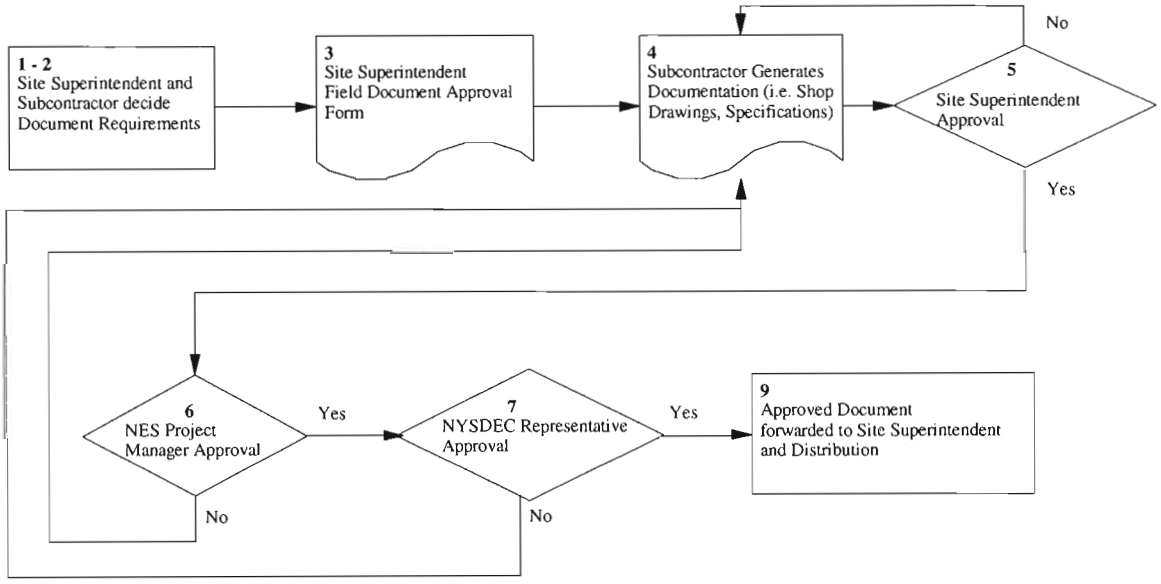
The Subcontractor must provide the documentation as well as changes and updates as specified by the Site Superintendent.

12.2 PROCEDURE

1. The Subcontractor or the Site Superintendent shall initiate the procedure when it is deemed necessary to modify or deviate from approved specifications and/or drawings.
2. The Subcontractor (when appropriate) and the Site Superintendent shall mutually decide on the documentation and/or drawings necessary for field approval.
3. The Site Superintendent shall generate a Field Document Approval Form (attached) and record the Document Approval Number in the master log maintained by the Project Manager.
4. The Subcontractor shall submit the necessary documentation to the Site Superintendent.

5. The Site Superintendent shall review the documentation and confer with the Subcontractor to regenerate drawings and documents to reflect the changes, if any.
6. Once the Site Superintendent is satisfied as to the content and accuracy of the documents, they will be forwarded to the NES Project Manager for review and approval.
7. Upon approval from the NES Project Manager, the package will be forwarded to the NYSDEC Project Manager for review and approval.
8. If any individual within the approval chain requires modifications or corrections to the documentation, they will send the package back to the Project Manager or Site Superintendent to perform the necessary modifications and consult with the Subcontractor.
9. Final approved documents shall be maintained as part of the project file. A copy of all approved documents will be routed to the Site Superintendent, NYSDEC Regional Office and NES Corporate Office.

The approval process is depicted below:



Under no circumstances should information be altered after final signature. If it becomes necessary for processed documents to be revised, the new pages must be formally reviewed and approved (as described above). If a document becomes a controlled document, procedures mandated by the NES Document Control Procedure shall also be followed for controlling and revising the document.

12.3 STORAGE OF RECORDS

NES shall maintain records for all applicable project documents, all documentation generated in the design, and all correspondence relevant to the project. Controlled documents shall be maintained in dual storage facilities; one copy will be maintained by NES Environmental Engineering and Remediation Department and one copy will be maintained by NES Document Control Department. Other project documentation will be maintained in a central filing system within the NES Environmental Services Department. Records may be originals or reproduced copies.

13 AUDITS

The auditing procedure provides a comprehensive system of planned and documented internal audits to verify compliance with all aspects of the Quality Assurance Program.

13.1 INTERNAL AUDITS

No specific project audit is required. An internal audit of Environmental Services Projects will be conducted annually based on a sample of all projects.

13.2 EXTERNAL AUDITS

Audits may be requested by Leica or NYSDEC to review project documentation and assure quality project management. NES will make all project files available for review upon request.

14 REMEDIATION SCHEDULE

Included as Attachment B is the Project Schedule, which is subject to the force majeure provisions, including notification to the NYSDEC.

15 REFERENCES

USEPA 1986. Office of Solid Waste and Emergency Response, Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, OSWER Report No. EPA/530-SW-86-031, OSWER Policy Directive No. 9472003, October 1986, National Technical Information Service, Springfield, VA.

APPENDIX A
SAMPLE FORMS AND REPORTS

- Daily Work Log
- Field Inspection Report
- Field Generated Document Approval Form

DAILY WORK LOG

Page ___ of ___

Date: __/__/__ Work Began: __:__ Ended __:__ Weather: _____

Visitors	Representing	Time In	Time Out

Work Performed	Location/Contractor

Equipment Used	Personnel

Materials Delivered / Disposed	Certifications	Quantity

Materials Accepted / Rejected	Inspection Report No.

Air Monitoring: Location	Results

_____

NES Site Superintendent

DAILY WORK LOG

Page ___ of ___

(continued)

Date: / /

Additional Comments:

Date: / /

FIELD INSPECTION REPORT

Page ___ of ___

Field Work/Material Inspected	Location

Observations

Tests Performed			
Standard Method	Tech Spec No.	Test Result	Spec Value

Conclusions

NES Site Superintendent

FIELD GENERATED DOCUMENT APPROVAL FORM

Date: ___/___/___

Specification Section: _____ Specification Title: _____

Subcontractor: _____ Contact: _____

Description of Specification:

Reason for Change:

DOCUMENT TITLES:	**Type:**

APPROVALS:	**Signature**	**Date**
Subcontractor		
NES Site Superintendent		
NES Project Manager		
NYSDEC Project Representative		

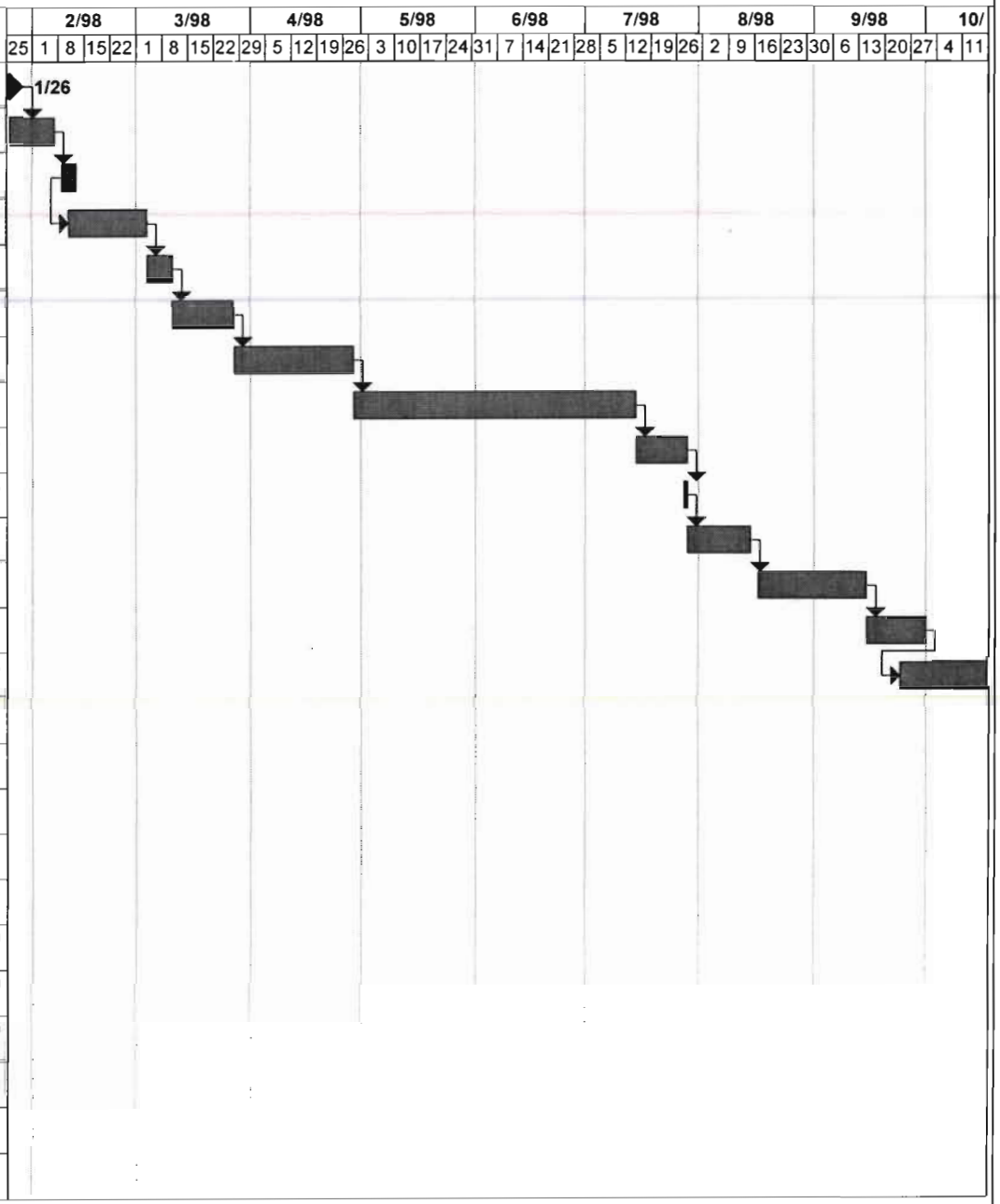
Route approved document to NES Project Manager for project files.

Distribute copy to: NES Site Superintendent
NES Document Control
NYSDEC Regional Office

APPENDIX B
PROJECT SCHEDULE

Proposed Remedial Design Schedule

ID	Task Name	Dur.	Start	Finish
1	Award of Contract	0 days	Mon 1/26/98	Mon 1/26/98
2	Prepare Scope of Work (Outline)	2 wks	Mon 1/26/98	Fri 2/6/98
3	NYDEC Review/Approval	4 days	Mon 2/9/98	Thu 2/12/98
4	Prepare Work Plan (Investigation)	3 wks	Wed 2/11/98	Tue 3/3/98
5	NYDEC Review/Approval	1 wk	Wed 3/4/98	Tue 3/10/98
6	Investigate Supp. C	2.5 wks	Wed 3/11/98	Fri 3/27/98
7	Lab Analysis	4.5 wks	Fri 3/27/98	Tue 4/28/98
8	Prepare Invest Report	11 wks	Wed 4/29/98	Tue 7/14/98
9	NYDEC Review/Approval	2 wks	Wed 7/15/98	Tue 7/28/98
10	Investigate Supp. C (additional)	1 day	Tue 7/28/98	Tue 7/28/98
11	Lab Analysis	13 days	Wed 7/29/98	Fri 8/14/98
12	Prepare Invest Report	21 days	Mon 8/17/98	Mon 9/14/98
13	NYDEC Review/Approval	12 days	Tue 9/15/98	Wed 9/30/98
14	Prepare 30% design submittal	8 wks	Thu 9/24/98	Wed 11/18/98
15	NYDEC Review/Comments	6 wks	Thu 11/19/98	Wed 12/30/98
16	Prepare 95% design submittal	4 wks	Thu 12/24/98	Wed 1/20/99
17	NYDEC Review/Comments	2 wks	Thu 1/21/99	Wed 2/3/99
18	Final System Design	2 wks	Thu 2/4/99	Wed 2/17/99
19	NYDEC Review/Approval	2 wks	Thu 2/18/99	Wed 3/3/99
20	Well and Probe Installation	8 wks	Mon 3/15/99	Fri 5/7/99
21	Equipment and System Installation	12 wks	Mon 3/29/99	Fri 6/18/99
22	System Start Up	3 wks	Mon 6/21/99	Fri 7/9/99
23	Continued Operations	104 wks	Mon 7/12/99	Fri 7/6/01
24	System Demobiliztion	1 wk	Mon 7/9/01	Fri 7/13/01
25	Final Close Out Report	6 wks	Mon 7/16/01	Fri 8/24/01



Project: schedule.MPP
Date: Mon 1/11/99

Task
Milestone
Critcal
External Tasks
Project Summary
Split
Rolled Up Split

Proposed Remedial Design Schedule

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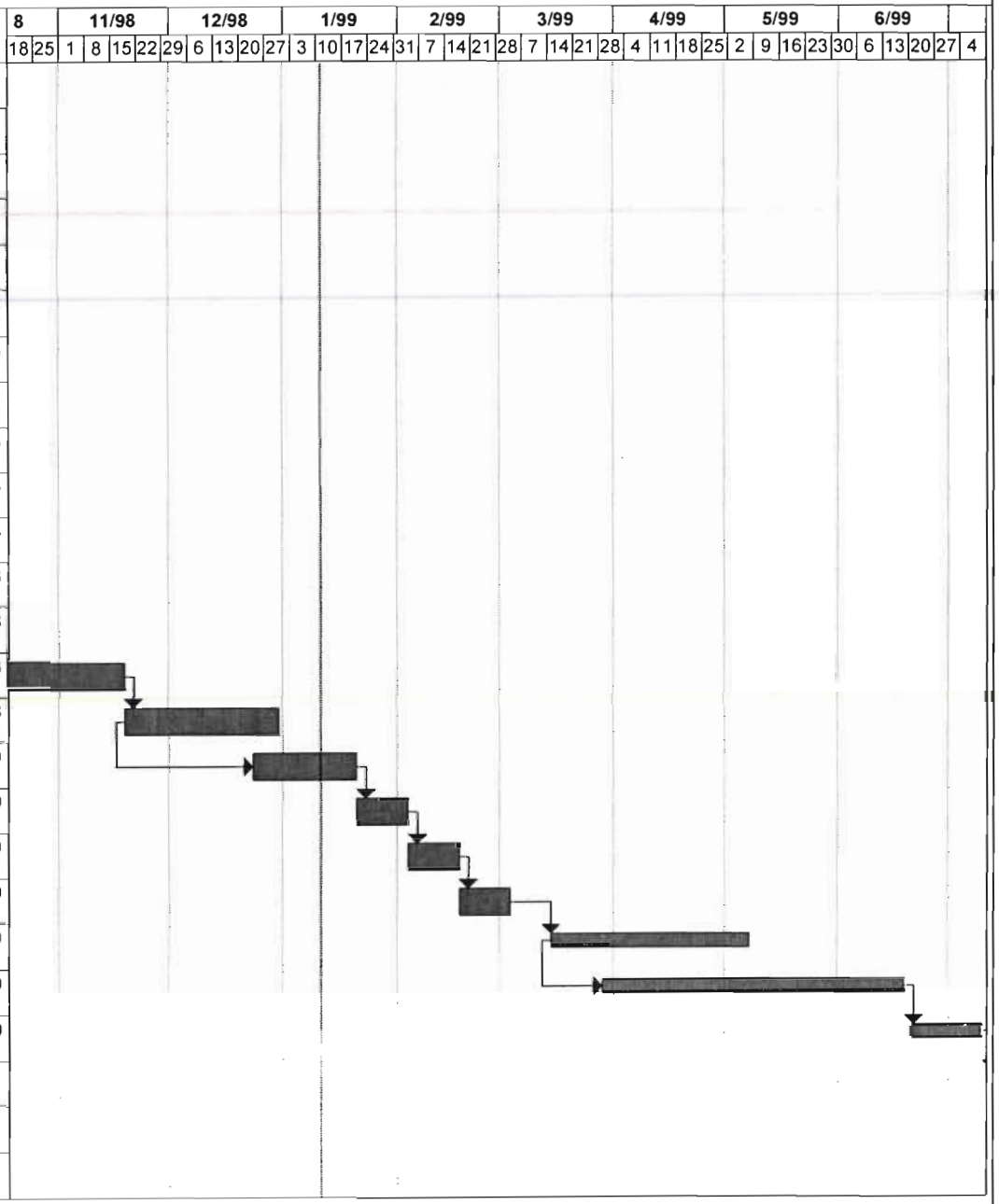

Project: schedule.MPP
Date: Mon 1/11/99

Task
Milestone
Critcal
External Tasks
Project Summary
Split
Rolled Up Split

NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
Tele:(203) 796-5000

25 Years of Excellence

REMEDIATION SYSTEM INSTALLATION
SITE HEALTH AND SAFETY PLAN

Leica, Inc. Site
Eggert and Sugar Roads
Town of Cheektowaga, Erie County, NY
Site ID Number: 915156

Prepared for

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation, Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

and

Leica Microsystems, Inc.
P.O. Box 123
Buffalo, New York 1420-0123

January 1999

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January 1999

Project Application	**Prepared By**	**Date**
3947-100	**Jon Menti**	1/20/99

Approvals

Title	**Signature**	**Date**
NES Health and Safety Officer		1/20/99
NES Project Manager		1/20/99
NES Senior Department Manager	Robert E. McCabe	1/20/99

Table of Contents

1 SCOPE OF WORK

The remediation system installation involves the following activities:

- Trenching and installing piping;
- Well installation; and
- Installing air injection units.

The remediation system installation involves the installation of subsurface piping and equipment for the removal of Volatile Organic Compounds (VOCs) from the subsurface.

Support activities will include:

- Data analyses of samples;
- Mapping the area of contamination for remediation;
- Installation of an equipment storage building; and
- Installation of equipment into the building.

1.1 PHYSICAL DESCRIPTION

The Leica Optical Site is located at the southeast corner of the Eggert and Sugar Road intersection in Cheektowaga, New York. There are three separate areas of contamination consisting of the former drum storage area, the northeast source area, and the southeastern area. The areas are also known as Leica areas A, B, and C, respectively.

1.2 PROJECT PHASE OBJECTIVE

The overall objective of this phase of the project is to install and operate the remediation system and thereby remediate areas of VOC contaminated soils. This task will be accomplished without posing any acute or chronic health hazards to site workers or to the general public. Essential secondary objectives include a) keeping all soil and water samples free of cross-contamination and b) keeping any unnecessary environmental harm from taking place.

2 HEALTH AND SAFETY PERSONNEL

Name:	**Responsibility:**
Mark Cambra	Project Manager
Joseph Glista	Site Superintendent
Joseph Glista	Site Health and Safety Officer
Richard Moss	NES Safety Officer

The Site Health and Safety Officer (HSO), and Site Superintendent are responsible for ensuring that the policies and procedures detailed in this plan and the NES Health and Safety Plan (policies 82A8117 - 82A8125) are implemented.

Site workers are responsible for reporting suspected overexposures and other suspected unsafe or unhealthy conditions. This program is largely dependent on individual site worker participation and open communication.

Subcontractors may provide a Site Specific Health and Safety Plan (SHASP) for their employees addressing exposure to hazardous materials or other site hazards. (The subcontractor may also choose to use the NES SHASP). However, the subcontractor shall hold NES harmless from, and indemnify it against all liability in the event of an employee injury. NES, if requested, will review and approve the subcontractor's health and safety plan at any time or during any phase of this project.

2.1 EMERGENCY INFORMATION

The following information shall be posted near all site telephones.

Emergency Services

Name:	Location:	Number:
Fire: Medical:	Eggert and Sugar Road	**911**
Police:	Eggert and Sugar Road	**911**
Poison Control Center:	Children's Hospital (Buffalo)	716-878-7654

Agency Notifications

Organization:	Name:	Number:
NYDEC	Greg Sutton	716-851-7220
NYS Health Department	Cameron O'Conner	716-847-4507
Cheektowaga Emergency Services	Routine number	716-685-1238
Erie County Department of Health	John Kociela, Director	716-858-7677

Other Emergency Notification Numbers

Organization:	Name:	Number:
Leica Microsystems, Inc	Bruce Mallott	716-686-3140
NES Safety Officer	Richard Moss	203-796-5234
NES Project Manager	Mark Cambra	203-796-5305
NES Personnel Office	Bonnie Ianuzzi	203-796-5273

2.2 SITE SAFETY EQUIPMENT, SUPPLY AND INFORMATION

Site safety equipment and medical supplies will be kept inside the NES site office trailer. The following equipment and information will be posted within the office trailer:

- First aid kit;
- Eyewash station;

- 10 lbs. ABC rated portable fire extingusher;
- MSDS for any materials used by NES or it's sub-contractors; and
- Federal and New York State employees rights posting.

2.3 SITE CONTROL AND SECURITY

Site control and security encompasses every aspect of NES operations. This phase of the project involves activities within the fenced-in property of the site. Site control rules are intended to meet several objectives:

- Prevent unauthorized persons from inadvertently approaching work areas which may contain hazards;
- Protect private properties from inadvertent incursion or damage during construction or sampling activities;
- Prevent unauthorized vehicular traffic, which would possibly act to cross - contaminate public or private property, and
- Ensure the security of the Contractor's and Subcontractor's property and equipment.

3 GENERAL RULES AND PROCEDURES

All site workers will sign-in when starting the workday, and sign-out when leaving. A daily log has been established for this purpose. This log is not intended as a record of employment attendance, but only as a means of determining the presence of individuals in the sampling and construction areas for security reasons.

3.1 SITE SPECIFIC TRAINING

NES will provide and maintain on-site documentation for the following OSHA Health and Safety and Site - Specific training:

- Site Workers will document 40 hours of training and work on-site for 3 days under supervision to meet OSHA 29 CFR 1910.120(e)(3)(i) General Site Worker criteria.
- Site Workers will also meet the annual 8-hour refresher training requirements under 29 CFR 1910.120(e)(8).

The Site Supervisor and Site Health and Safety Officer shall each document 40 hour and supervised training in accordance with OSHA 29 CFR 1910.120(e)(3)(i) and an additional 8 hours of Site Supervisor training in accordance with OSHA CFR 1910.120(e)(4).

Upon initial mobilization at the site and prior to work activity, employees will be provided thorough documented instruction, regarding all aspects of the Health and Safety Plan, with emphasis upon:

- Site contaminants;

- Location of site control zones and restrictions;
- Location of safety equipment;
- Personal protective equipment required;
- Emergency procedures, and
- General safe work practices, site restrictions, policies and procedures.

Safety meetings will be conducted at least weekly with all site employees and representatives of Sub-contractors. Typical topics would include:

- Review of hazards associated with new work activity or specific work conditions;
- Compliance issues, such as temporarily restricted areas; and
- General safety training where deficiencies or difficulties with safe equipment operation are evident.

3.2 VISITORS

All visitors and agency representatives must report directly to the NES Site Supervisor prior to entering the work area. Visitors are not permitted within the work area unless accompanied by authorized site personnel. All visitors and agency representatives will sign-in and out on a visitor log administered by the Site Health and Safety Officer. The Site Health and Safety Officer will assign to visitors and agency representatives all necessary personal protective equipment and review with them the site policies and procedures. Visitors and agency representatives will comply with the NES HASP while on the premises.

3.3 VEHICLE OPERATIONS

Privately owned vehicles (POV) are not permitted beyond the designated parking areas which are reserved for site personnel and visitors. Only authorized NES vehicles are permitted beyond the parking area. Subcontractor vehicles will be permitted beyond the employee parking area only with the permission of the Site Superintendent or Site Health and Safety Officer.

4 SITE WORKER PROTECTION

4.1 SUB-SURFACE UTILITIES

Before any work activities take place, including boring, drilling and digging, all possible underground utilities must be marked and identified by the appropriate agency to ensure the safety of all site workers. This task is the responsibility of the Drilling Contractor and NES.

4.2 PETROLEUM HYDROCARBON EXPOSURE

Petroleum hydrocarbons, present as soil contamination and/or free product can pose significant flammability, toxicity, and mechanical hazards. Lighter fractions, although largely depleted through volatization and microbial action, may be present in isolated pockets. Potential anaerobic biodegradation at lower depths could result in methane pockets that can be released during excavation or sampling activities.

Site workers shall limit direct contact to petroleum hydrocarbon contamination to levels as low as reasonably achievable. The use of Tyvek coveralls with Level D personal protective equipment will be required.

The action level for Level C operations will be a 200 ppm airborne concentration, detected by the PID or by detector tube. Level C operations require workers to use an air purifying respirator. The establishment of an exclusion zone will need to be implemented if the action levels are met, to ensure that all workers within the work area are properly equipped with respiratory protection.

The ceiling level or maximum concentration that can be present with workers in the exclusion zone will be 300 ppm. High concentrations of mist or vapor may cause respiratory tract irritation, headache, dizziness, nausea, and vomiting. Prolonged skin contact may cause irritation or dermatitis. Ingestion may cause nausea, vomiting, and esophageal irritation, edema, with possible central nervous system depression. The emergence of any of these symptoms requires evacuation of workers from the exclusion zone, Safety Officer notification and medical attention, as appropriate, for the affected employee(s).

Although flammable airborne concentrations are not anticipated in the exclusion zones, the action level will be 10% of the lower explosive limit (LEL). Since a mixture of petroleum hydrocarbons is present, and the vapor constituents cannot be readily identified, an LEL of 1% volume to volume in air will be assumed. Therefore, a 1,000-ppm VOC concentration (10% of the assumed LEL) will be considered a potentially flammable atmosphere. The calibrant gas will be methane. The action level will require that all exclusion zone work be suspended and the exclusion zone evacuated at 10% of the LEL.

4.3 CHLORINATED SOLVENTS

Chlorinated solvents are organic liquids with a chloroform-like odor. They are used as solvents for removing grease from machined metal products. Site workers shall limit direct contact with solvents to levels as low as reasonably possible. Latex gloves shall be used when handling any liquid or soil samples and when decontaminating equipment.

The Action Level for Level C operations will be 10 ppm airborne concentration in the work area. (A reading taken *within* a monitoring well does not constitute the "work area"). Detector tubes or a photoionization detector (PID) shall be used to monitor for chlorinated solvents. Where concentrations exceed the action limit, workers in the area shall wear full-face air purifying respirators. Care is warranted as short term and long term inhalation exposures of >0.2 ppm could potentially cause adverse health effects to the liver, nervous system and circulatory system.

4.4 LIFTING HAZARDS

Care must be taken when loading and unloading equipment or supplies from elevated platforms, such as rack trucks and shipping containers. Workers must also exercise appropriate caution in moving drums and poly rolls. The Site Superintendent is responsible for ensuring that an adequate number of workers are assigned to each lifting task.

Employees are not required to lift any object under circumstances that they believe would be potentially injurious, due to the object's weight, dimensions, or ability of a container to retain contents during the lifting process.

4.5 ENVIRONMENTAL HAZARDS

4.5.1 NOISE

Site workers exposed to noise at or above 85 dB on an 8 hour time-weighted average are to wear hearing protection (earplugs or muffs). Engineering controls to limit high noise exposure, such as varying personnel assignments, should be instituted when feasible. Refer to the NES Health and Safety Plan, Worker Protection and safe Work Practices, NES Document 82A8118 for compliance information.

4.5.2 HYPERTHERMIA

Conditions in the work area during the summer months can be expected to occasionally exceed 90°F during the day, accompanied by high humidity. The ambient wet bulb globe temperature (WBGT) may be above 90°F at certain times. **These ambient conditions are greatly exacerbated by the protective equipment such as cotton coveralls, Tyvek or PVC coveralls, hard hats and gloves.**

These dangerous environmental conditions can have rapid deleterious affects on a worker's ability to safely perform basic tasks and recognize obvious hazards. It is essential that proper precautions, outlined below be consistently followed.

Heat related problems include **heat cramps, heat exhaustion, and heat stroke.** Refer to the NES Health and Safety Plan, Worker Protection and Safety Work Practices (82A8118) for a detailed explanation of the symptoms and first aid for each condition. This document is included with the Site Health and Safety Plan. **All workers MUST be familiarized with this information.**

Preventive measures, when conditions warrant, require establishing a designated rest area near each work area. This refuge area should offer a cooler environment, with water or a suitable "sport-ade" liquid available at all times. Workers are permitted to cease work activities and rest in a cooler refuge area any time that they deem necessary due to the effects of heat stress. **The designated initial refuge area is the NES Project Office.**

4.5.3 HYPOTHERMIA

Cold-related problems can arise in two forms, hypothermia and frostbite, which often occur together. Both hypothemia and frostbite are extremely serious and require immediate treatment. Hypothermia is a drop in internal body temperature due to the inability to retain sufficient metabolic body heat. This usually occurs in five stages: shivering, listlessness and sleepiness, unresponsiveness, freezing of the extremities, and death. Frostbite, which may start as "frost nip" and progress to superficial and deep frostbite, is the actual freezing of the skin and underlying tissues.

Conditions which warrant vigilance for hypothermia and frostbite are not necessarily extreme. *Individuals who work in wet conditions, have poor circulation, restrictive clothing, long periods of inactivity, or have taken certain prescription drugs may be susceptible at temperatures as high as 50°F.*

Under potential hypothermic environmental conditions, supervisors will provide frequent rest periods which include warm and dry refuge and warm fluids. The NES Project Office is the designated refuge area.

Workers showing signs of frostbite or hypothermia shall be placed in a warm, dry area and provided with warm fluids. Treatment shall be provided on a first aid basis by the Site Health and Safety Officer or other certified first aid provider. Emergency Medical Services will be requested as signs & symptoms warrant, including minor symptoms that persist for more than 10 minutes.

4.6 *TRENCHING*

Trenching operations will take place on the paved areas within the site. Trench cutting will be achieved with the use of a Ditch Trencher. Well piping will be installed within the trenches.

The trench cuts will be approximately 6" wide x 2-3' deep. This size trench is ***not*** a confined space hazard (29 CFR 1910.146). However, the trench may pose a trip and fall hazard and caution must be used when working in or around this area. If any trench area is to be left open

over night, the trench must be marked off with yellow barricade tape. The tape will read "CAUTION". Trenches are not to be left open over weekends or holidays.

4.7 PERSONAL PROTECTIVE EQUIPMENT (PPE)

During trench cutting, well drilling or the use of a direct push apparatus, hearing protection must be used at all times to reduce dB level exposure for NES employees working with or around this equipment. ANSI approved eye protection also must be worn when working with any machinery or cutting, drilling, and digging equipment. For the sampling phase of this project the minimum of level "D" protective equipment must be maintained by all Site Workers. Depending on site-specific conditions, the HSO may require upgrading of the PPE to a higher level. Specific personal protective equipment for each level of protection is as follows. Site workers are always given the option to upgrade personal protective equipment (PPE). Downgrading of PPE is permissible only under the expressed direction of the Site Health and Safety Officer.

LEVEL	PROTECTIVE EQUIPMENT
A	Not applicable
B	Not applicable
C	**All Level D PPE and:** Tyvek coveralls Latex gloves (under leather work gloves) Rubber over-boots Full face air purifying respirator (APR) with HEPA/VOC filter canister*
D	Hard Hats Leather work gloves with latex gloves Safety toe boots Impact eye protection Face Shield with hard hat for specified tasks Integral hearing protection with hard hat for specified tasks Splash protection for specified tasks Tyvek coveralls for specified tasks

*Respirator canisters determined by type of chemical hazard. All canisters will have HEPA filters.

5 ADDITIONAL SITE SAFETY PROCEDURES

5.1 SPILL RESPONSE PROCEDURES

The following materials may be present on site and may have the potential for release:

- Diesel fuel used to power equipment
- Gasoline used to power equipment
- Hydraulic fluid used in equipment hydraulic systems

- Other chemicals within the site area, such as chlorinated hydrocarbons extracted as contaminated media.

In the event there is a hydraulic line leak, fuel spill, or accidental spill of contaminated media (water or soil), the following procedures will be implemented:

1. All operations will cease and affected equipment will be shut off.
2. Absorbent materials will be applied to the spill area.
3. Upon containment, the absorbent materials will be collected in 5-gallon pails or 55-gallon drums, and held on-site. The waste will be disposed of as required by federal and New York state laws.
4. The Leica site representative will be notified of the release.
5. Any spill of petroleum products in excess of 5 gallons shall be reported to the NYSDEC within 2 hours of the release.

5.2 LOCKOUT/TAGOUT

Prior to maintenance or repair work on equipment, all electrical, hydraulic, pneumatic or steam pressurized sources of energy must be OFF or fully disconnected in accordance with NES Lockout/Tagout Procedures. Refer to NES Document 82A8124, Control of Hazardous Energy Sources for compliance information.

5.3 MEDICAL SURVEILLANCE

The NES Site Health and Safety Officer shall be notified of any onsite emergencies and be responsible for ensuring that the appropriate actions are taken.

NES intends to take all appropriate measures to ensure the health and safety of employees that may be at the risk of exposure to potentially harmful conditions during the course of this project.

- A medical surveillance program is promulgated by federal law. The OSHA 29 CFR 1910.120(f) HAZWOPER standard requires that employees participate in a medical surveillance program if they have work assignments that pose risk of exposure to hazardous substances.

Medical surveillance is an ongoing process that begins prior to the start of the employee's job assignment. The medical surveillance program will include the following examinations:

- Pre-employment medical examination.
- Periodic medical examination.
- Post-exposure examination, when necessary.
- Exit or termination medical examination.

Emergency medical examination and treatment.

NES will utilize Board Certified Physicians specializing in Occupational Medicine. The primary Medical Advisor is listed below. An alternate Medical Advisor may be assigned by the NES Safety Officer.

Corporate Health Care
Germantown Road
Danbury, CT. 06810
(203) 207 –3300

6 COMMUNITY AIR MONITORING PLAN

As recommended by the New York State Department of Health, real-time air monitoring, for volatile compounds and particulate levels at the perimeter of the work area is necessary when ground intrusive activities are occurring. The plan includes the following:

- Volatile organic compounds must be monitored at the downwind perimeter of the work area on a continuous basis. If total organic vapor levels exceed 5 ppm above background, work activities must be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings must be recorded and be available for State (DEC & DOH) personnel to review.

- Particulates should be continuously monitored upwind, downwind and within the work area at temporary particulate monitoring stations. If the downwind particulate level is 150 ug/m3 greater than the upwind particulate level, then dust suppression techniques must be employed. All reading must be recorded and be available for State (DEC & DOH) personnel to review.

6.1 VAPOR EMMISSION RESPONSE PLAN

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume provided:

- The organic vapor level 200 ft. downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

6.2 MAJOR VAPOR EMISSION

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts to abate the emission source are unsuccessful and if the organic vapor levels of 5 ppm above background levels persist for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect. However, the Major Vapor Emission Response Plan shall be immediately placed into effect if organic vapor levels are greater than 10 ppm above background.

6.3 MAJOR VAPOR EMISSION RESPONSE PLAN

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in the Health and Safety Plan of the Work Plan will go into effect.

2. The local police will be contacted immediately by the Safety Officer and advised of the situation.

3. Air monitoring will be conducted at 30 minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, work activity may resume and air monitoring may be halted or modified by the Safety Officer.

NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810
Tele:(203) 796-5000

25 Years of Excellence

CONTINGENCY PLAN
FOR REMEDIAL CONSTRUCTION ACTIVITIES

Leica, Inc.
Eggert and Sugar Roads
Town of Cheektowaga, Erie County, NY
Site ID Number: 915156

Prepared for

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation, Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

and

Leica Microsystems, Inc.
P.O. Box 123
Buffalo, New York 1420-0123

January 1999

CONTINGENCY PLAN
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January 1999

Project Application	Prepared By	Date
3948-100	Mark Cambra	1/15/99

Approvals

Title	Signature	Date
Senior Department Manager	Robert E. McCabe	1/20/99

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1. INTRODUCTION

The primary intent of the Contingency Plan is to accomplish the approved remediation goals and to ensure compatibility between the NYSDEC, Owner, PRP, Project Engineer, and local authorities to resolve any failures and/or problems of the remedial design system components.

The Contingency Plan stipulates responses to a variety of situations that may occur at the Leica, Inc. Site. The Contingency Plan supplements the Site Health and Safety Plan and the Site Operation and Maintenance Plan. The Site Health and Safety Plan will control emergency response, Site specific monitoring, and environmental safety issues.

The Contingency Plan for remedial construction activities identifies measures to ensure the protection of the environment and Site personnel, and will generally address health and safety issues if there are unexpected Site conditions. The Contingency Plan items include the alternative operations and methods to be used as back up to remedial design and for construction activities conducted. The Contingency Plan is to be implemented if any element of the remedial design fails to achieve any of its objectives or otherwise fails to protect the environment. A Contingency Plan situation matrix is provided to summarize Contingency Plan items and will be used as a general reference for field use and emergency response.

2. REMEDIAL CONSTRUCTION ACTIVITIES

2.1 Erosion, Sedimentation, and Dust Control

The work to be conducted will consist of both temporary and permanent control measures during the life of the construction and remedial project period. Both temporary and permanent type erosion controls will be coordinated with all other remedial actions to the maximum extent practicable. The goal is to guarantee economical, effective, and continuous erosion control throughout the remedial construction and post construction project period.

If there is a conflict between the Contract Document requirements and pollution control laws, rules, or regulations of State, Federal, or local agencies, the more restrictive laws, rules, or regulations will apply.

Dust control measures will be conducted as required during construction activities. Equipment and materials utilized to control dust will be kept on-site for use as required. During the progress of the work, the Contractor will conduct all operations and maintain the work area in a way that minimizes the creation and dispersion of dust. If determined by the Project Engineer, NYSDEC, or NYSDOH, water and/or calcium chloride will be applied for more effective dust control. (See Health and Safety Plan for additional discussion regarding dust control.)

2.2 Reference Materials

Copies of all pertinent equipment and material shop drawings, Contract Documents, and as-built drawings will be maintained on-site. A copy of the Site Health and Safety Plan, as well as all pertinent correspondence, including the NYSDEC Order of Consent, will also be maintained on-site for review and use.

2.3 Roadway Systems, On and Off Site

The use of on-site roadway systems will require routine maintenance during the active construction phases of the project. This would include erosion and sediment controls, dust control, and possibly snowplowing so access to critical areas can be achieved.

2.4 Utilities and Power Sources, Emergency Power

Before any excavation and land modification activities, NES will contact the New York "Underground Facilities Protection Organization" to mark out and locate all facilities and utilities on or near the Site. This "Underground Facilities Protection Organization" [(800) 962-7962 or (716) 893-1133] notification must remain intact during all pre- and post-construction activities. New York State's Industrial Code 53 requires that the underground protective organization be called at least two working days (but not more than 10 working days) before we start to drill, dig, excavate, blast, or drive pipe or posts. When called, the following information will be provided:

Name:	Leica, Inc. Site (Present owners - Sam Son)
Address:	Corner of Eggert Road and Sugar Road, Town of Cheektowaga, Erie County, NY
Work to be undertaken:	Drilling, Excavation, Backfilling, and Environmental Remediation Activities

Rewiring and/or re-networking of the Site power source activities during emergency situations will be discussed with the Power Company. Alternate standby generator options will, in all cases, be available upon short notice.

2.5 Weather Conditions/Dewatering

Site weather conditions are cold and snowy in the winter and warm in the summer. Precipitation is well distributed during the year. From late fall through winter, snow storms are frequent and the average snowfall is heavy. Normal ingress and egress to the Site will be maintained during any winter snow events which occur while work is in progress. Snow plowing of Site roadways and work areas will be undertaken as required.

Equipment necessary for dewatering activities such as pumps, hoses, and miscellaneous piping will be utilized. Emergency power systems and emergency procedures will be used as required for brief or extended periods of time.

2.6 Buried Drums of Unknown/Known Materials

The uncovering of buried drums containing unknown materials may create a need to subcontract an emergency response firm, laboratory facilities, or disposal facilities. The subcontractor will assist in the removal and disposal of these materials.

2.7 Discovery of Free Product, Unknown/Known Liquids and Sludges, or Unexpected heavy Contamination

The discovery of free product or other unknown liquids on-site may also create a need for an emergency response firm, laboratory facilities, disposal facilities, or excavation contractors to assist in the removal and dispose of the liquids or materials found.

Several **laboratory facilities** available in the area to evaluate chemical constituents include:

- ACTS Testing Labs Inc., 3916 Broadway, Cheektowaga, NY, 14227 (716) 684-3300
  Soils and Hazardous Waste Analysis, Drinking Water Analysis, Waste Water Analysis
- Ecology and Environment, Inc., 368 Pleasentview, Lancaster, NY, 15086-1397 (716) 684-8060
  Sampling of Contaminated Soil/Waste, Groundwater, Air Emissions

Several **emergency response firms** are as follows:

- Environmental Services Group NY, 177 Wales Ave., Tonawanda, NY, (716) 695-6720
  Contaminated Soil, Waste Oil, Bulk and Containerized Liquids and Solids
- Buffalo Fuel Co. Vulcan, Niagara Falls, NY 14303 (716) 873-7196
  Construction Site Cleanup, Hazardous Waste Transport (24 Hours), Contaminated Soils Removal and Disposal

Several **waste disposal facilities** are the following:

- BFI, CECOS Inter., Inc., P.O. Box 340 L.P.O., Niagara Falls, NY 14304, (716) 282-2676
  Heavy Metal Wastes, Landfill Leachates, Groundwater, Aqueous Slurries, Acid/Caustic Solutions, Contact: Nicholas Morreale
- BFI Waste Systems, 2321 Kenmore, Ave., Kenmore, NY, (716) 614-333

Several **waste transport firms** include:

- Frank's Vacuum Truck Service, Inc. 4500 Royal Ave., Niagara Falls, NY 14303, (716) 284-2132
  Bulk, Liquids, Bulk Solids, Containerized Solids, Vacuum Truck Services
- The Environmental Service Group (NY), Inc., PO Box 242, Tonawanda, NY, 14150, (716) 695-6720, Bulk Loads, Contaminated Liquids and Solids

Several **excavation contractor firms** include:

- ALLWASH of Syracuse, Inc., subsidiary of Environmental Services, Inc., Tonawanda, NY
  Remedial Action Contractor, OSHA Trained
- Clean Harbors Inc. 333 Metro Park, Rochester, 14623 (716) 424-4690
  Incident Response

2.8 Emergency Response and Public Protection

Pre-planning is essential to effectively address emergency situations. The Contingency Plan is compatible with the spill response, fire, emergency response, and disaster plans of local, state, and Federal agencies, as well as, the Site Health and Safety Plan. The Contingency Plan is to be reviewed on a periodic basis to better respond to new or changing Site conditions or received information. The Contingency Plan, in conjunction with the Site Health and Safety Plan, should be discussed with Site personnel at appropriate intervals during the performance of the work.

The Site field and office authorities, as well as local authorities responsible for emergency response, will coordinate to respond to unanticipated Site conditions and emergency situations in a timely fashion. All personnel involved must be familiar with the Site Health and Safety Plan, as well as the chain of command, control, and communication systems in place for the Site.

During any emergencies, the health and safety of on-site personnel and the general public has the highest priority. To help ensure that Site health and safety concerns are under control, a Site health and safety meeting will be held before the initiation of any new, major Site activity and weekly during remedial construction activities. Several Site control procedures will be implemented to reduce Site worker and general public exposure to hazards. These procedures include the establishment of work zones, strict enforcement of decontamination procedures, establishment of Site security measures, set up and use of a workable communication network, Site staff training, and the use of engineering controls. (See the Site Health and Safety Plan for further information).

2.9 Emergency Contingency Plan

Emergency contingency planning will include the response to emergency situations and potential notification to the appropriate public officials and agencies. Emergency response procedures will be tailored specifically for nearby residential communities.

Table 1 Contingency Plan -- Telephone Contacts for Emergency Notifications

The following information shall be posted near all Site telephones.

NAME	LOCATION	NUMBER
Fire Medical		911
Police, Emergency		911
Hospital Corner Walden and Harlem Avenues	St. Joseph's Hospital 2605 Harlem Road Cheektowaga, NY.	(716) 891-2450
Poison Control Center	Children's Hospital (Buffalo)	(716) 878-7654

Site Location of Emergency Supplies

First Aid Supplies	NES Site Office
Eye Wash Station	NES Site Office
Spill Response Kit	NES Site Office
MSDS Chemical Information	NES Site Office

Agency Notifications

Organization	Name	Number
NYSDEC - Region 9 Office	Martin Doster	(716) 851-7220
Cheektowaga Emergency Services Police/Fire	Routine number	(716) 685-1238
NYSDOH - Buffalo Office	Cameron O'Connor	(716) 847-4500
Erie County Department of Health	John Kociela, Director	(716) 858-7677
Cheektowaga Disaster Service Coordinator	Earl Lodker	(716) 686-3465 (office) (716) 896-8091 (home)
Sanitation Department	David Kulik, Director of Solid Waste	(716) 686-3426

Other Emergency Notification Numbers

Organization	Name	Number
National Emergency Response Center		(800) 424-8802
Chemtrec		(800) 424-9300
Underground Facilities Protection Organization	Within NY State Out of State	(800) 962-7962 (716) 893-1133
Electrical Service Emergency	Niagara Mohawk	(800) 962-7962
NES Safety Officer	Rich Moss	(203) 796-5234
NES Project Manager	To Be Determined	
Site Health and Safety Officer	To Be Determined	
NES Site Superintendent	To Be Determined	
NES Personnel Office	Bonnie Ianuzzi	(203) 796-5263
NES Personnel Fax		(203) 796-2459

3. REVIEW OF CONSTRUCTION OPERATION METHODS AND SPECIFICATIONS

Proposed construction activities and the methods to be utilized to achieve project goals (including the specifications) will be periodically reviewed and updated during the course of design and construction.

4. MAJOR FAILURE/PROBLEMS MATRIX

Table 2 provides an easy reference listing of major failures and problems as discussed that might occur during both construction activities and remedial operations. This tabulation is a supplement to the requirements of the Site Health and Safety Plan.

Table 2 Contingency Plan -- Summary of Anticipated Major Failure/Problems and Proposed Solutions

Anticipated Major Failure/Problems	Proposed Solution(s)
Brush Fires	The Site field and office authorities and local response agencies will coordinate respond to emergency situations. All personnel involved must be familiar with the Site Health and Safety Plan, as well as the chain of command, control, and communication systems in place for the Site.
Buried Drums of Unknown Materials	The uncovering of buried drums containing unknown materials will require characterization and possibly the subcontracting of an emergency response firm. This subcontractor may be used to provide for the removal, transport, and disposal of these materials. Work in this area will be stopped until the material is identified and appropriate actions are taken.
Causes of Emergencies	See Site Safety and Health Plan for responses.
Discovery of Free Product and Unknown Liquids	The discovery of free product or other unknown liquids on-Site may also require the use of an emergency response firm to remove and dispose of the liquids found.
Discovery of Tanks	Notify emergency authorities; continuously monitor atmosphere, excavate top of tank; open covers; sample contents; remove liquid and sludges; pressure wash interior; remove liquid and properly dispose of materials; excavate tank (if appropriate) and remove: decontaminate; and scrap metal. A crane and/or large excavator may be required.
Emergency Contingency Plan	The emergency Contingency Plan for this project requires notification of the following agencies and contacts at a minimum: • NYSDEC -- Region 9 Office, (716) 851-7220 • NYSDOH – Buffalo Office, Cameron O'Connor, (716) 847-4500 • Erie County Department of Health, John Kociela, (716) 858-7677 • Cheektowaga Disaster Service Coordinator, Earl Loder, (716) 686-3465
Emergency Response and Public Protection	The Site field and office authorities and local response agencies will coordinate response to emergency situations. All personnel involved must be familiar with the Site Health and Safety Plan, as well as the chain of command, control, and communication systems in place for the Site.

Anticipated Major Failure/Problems	Proposed Solution(s)
	The on-Site health and safety responsibilities to direct response activities will consider the health and safety of on-site personnel and the general public as the highest priority. To help ensure that Site health and safety concerns are under control, a Site meeting should be held prior to the initiation of any new, major Site activity and weekly during remedial construction activities. Several Site control procedures will be implemented to reduce Site worker and general public exposure to hazards. These procedures include the establishment of work zones, strict enforcement of decontamination procedures, the establishment of Site security measures, the set up and use of a workable communication network, Site staff training, and the use of engineering controls.
Dust Control	Dust control measures will be conducted during construction activities. Equipment and materials utilized to control dust will be kept on-site for use as required. During the progress of the Work, operations will be conducted and maintained in areas of activity in a way that minimizes the creation and dispersion of dust. If determined by the Project Engineer or NYSDEC, the use of water and/or calcium chloride for more effective dust control will be required.
Failure of Pumps and SVE Equipment	Repair, replace, provide additional equipment, install and/or use another well, revisions to treatment system.
Roadway Systems, On and Off Site	The use of on-site roadway systems will require routine maintenance during the active construction phases of the project. This would include dust control and possibly snowplowing so access to critical areas can be maintained.
Utilities and Power Sources, Emergency Power	At least 2 days (but not more than 10 days) prior to any excavation and land modification activities the Contractor will contact the New York "Underground Facilities Protection Organization" (800)982-7962 or (716)893-1133, to mark out and locate all facilities and utilities on or near the Site. This "Underground Facilities Protection Organization" notification must remain intact during all pre- and post- construction activities. Rewiring and/or re-networking of the Site power source activities during emergency situations will be discussed with the power company. Alternate standby generator options will, in all cases, be available upon short notice.
Weather Conditions and Dewatering	Site weather conditions are cold and snowy in the winter and warm in the summer. Precipitation is well distributed during the year. From late fall through winter, snow storms are frequent and the average snowfall is heavy. Normal ingress and egress to the Site will be maintained during any winter snow events which occur while work is in progress. Snow plowing

Anticipated Major Failure/Problems	Proposed Solution(s)
	of Site roadways and work areas will be undertaken as required. Equipment necessary for dewatering activities such as pumps, hoses, and miscellaneous piping will be utilized. Emergency power systems and emergency procedures will be used as required for brief or extended periods of time.

5. TROUBLE SHOOTING GUIDE TO REMEDIAL ACTIVITIES

5.1 Security

This maintenance includes gates, fences, and warning signs. Potential problems and a response are noted in the trouble-shooting guide for Site security as follows:

Potential Problems	Response
Gates and Fences	
Vandalized	Repair or replace gate or fencing that has been vandalized. Site Supervisor will be notified.
Rusty Hinges and Damaged Locks	Hinges and locks must be oiled or replaced as necessary.
Unsecured Fencing	Fencing fabric must be reattached.

5.2 Groundwater Monitoring and SVE Wells

The troubleshooting guide for on-site monitor wells include the following:

Potential Problem	Response
Well Vandalized	Repair or replace as necessary. Report incident to appropriate personnel.
Well Casing No Longer Vertical	Inspect well casing and seals to determine extent of damage. Remove and replace well as necessary.
Damaged Lock	Replace lock and provide new keys to appropriate personnel.
Well Discovered Unlocked	Lock well and report incident to facility operator.
Well ID Not Visible or Legible on Casing	Remove old ID and replace with a legible one.

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Danbury, CT 06810
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25 Years of Excellence

CITIZEN PARTICIPATION PLAN

LEICA, Inc.
Eggert and Sugar Roads
Town of Cheektowaga, Erie County, NY
Site ID Number: 915156

Prepared for

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation, Region 9
270 Michigan Avenue
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January 1999

Project Application	Prepared By	Date
3947-100	Mark Cambra	1/15/99

Approvals

Title	Signature	Date
Senior Department Manager	Robert E. M. Pedersen	1/20/99

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1. INTRODUCTION

NES, Inc. (NES) has been contracted by Leica Microsystems, Inc., to prepare a Citizen Participation Plan for the remedial activities at the Leica, Inc. (Leica) Site at Sugar and Eggert Roads in Cheektowaga, N.Y. The New York State Department of Environmental Conservation (NYSDEC) is working with Leica and NES on the remediation of the Leica Site (Site). The NYSDEC and Leica are committed to a citizen participation program as part of their responsibilities for the remedial program at the Leica Site.

In many instances, the NYSDEC is able to identify and enter into legal agreements with companies who owned or operated, or currently own or operate facilities identified as hazardous waste sites. These companies are called Potentially Responsible Parties, or PRP's. Leica is the only PRP that has agreed to perform the remediation of the property.

Citizen participation is aimed at increasing public understanding of NYSDEC's and Leica's responsibilities and the remedial activities at the Site. The citizen participation program also provides communication between the general public and the parties involved in the remedial action, thus providing 1) an opportunity for NYSDEC and Leica to obtain site information from the public that will aid in the protection of both public health and the environment, and 2) a mechanism for the parties involved to learn the public's concern and answer questions about the Site and the remedial process.

2. SITE BACKGROUND INFORMATION

The Site is located in the Town of Cheektowaga at Eggert and Sugar Roads (See figure 1). The Site occupies 24 acres on the east side of Eggert Road (See figure 2). The surrounding land uses include cemeteries to the north and east, vacant grassy land to the west and residential properties to the south.

The manufacturing facility was built on the Site in 1938 by the Spencer Lens Company for the manufacture of scientific instruments and high quality optical devices. Spencer Lens operated at the Site from 1938 to 1945. American Optical Corporation owned and operated the Site from 1945 to 1986 also manufacturing similar products. From 1986 to 1990, Cambridge Instruments Inc. owned and occupied the Site for the manufacture of similar optical products. In 1990, Cambridge Instruments Inc. merged with Leica and operated under the Leica name at this Site until 1993. In July 1993, Leica ceased manufacturing operations at the Site. In October 1993, the facility and most of the land was sold to Samson Distribution Corporation/Calypso Development Corporation for use as a distribution warehouse. Leica retained title to a 100 x 390 foot area in the southeast corner of the property which contains the majority of the contamination.

Until about 1956, ash, resulting from the use of coal as a boiler fuel, was landfilled on site in a low area in the southeast corner of the Site. After 1956, the ash was disposed off-site by the Town of Cheektowaga. This area was covered with soil and was subsequently paved for use as

an employee parking area in the late 1950s. The buildings and asphalt parking areas occupy approximately 65 percent of the Plant Site.

As a prelude to selling the facility, Leica conducted a Phase I Environmental Audit of the facility in August 1990. As a follow-up to the audit, a Phase II Site Assessment was performed between November 1990 and January 1991. Results of the Phase II Site Assessment showed volatile organic compounds (VOCs) in the groundwater and subsurface soils on the property. In addition, an area was identified that contained petroleum hydrocarbons in the subsurface soils. Between October 1991 and January 1992, additional investigations were conducted to determine the extent of the contamination. While the extent of the petroleum hydrocarbon contamination has been determined, additional work is necessary to determine the extent of the VOC contamination. Typical petroleum hydrocarbons detected at the Site consist of the compounds benzene, xylene, toluene and ethylbenzene, while the major volatile compounds detected consist of dichloroethene and trichloroethene.

Leica, Inc., manufactures and assembles scientific instruments and optical devices. The company has no record of the use or disposal of the materials detected at the Site.

3. PROJECT OBJECTIVE

Based upon the Remedial Investigation/Feasibility Study (RI/FS) for the Site and the criteria identified for the evaluation of alternatives, the NYSDEC has selected a Dual Vacuum Extraction/Pneumatic Fracturing/Air Injection System to be used to remove groundwater within the overburden (soil) groundwater zone and treat the contaminated soil, and a Groundwater Extraction/Treatment System to be used to address contaminated groundwater in bedrock. The goals for this Site are to attain Remedial Action Objectives (RAOs) for groundwater, surface and subsurface soil, surface water and sediment.

3.1 PROJECT DESCRIPTION

The components of the remedy are as follows:

Soils and Upper Groundwater Table

- Installation of a Dual Vacuum Extraction/Pneumatic Fracturing/Air Injection system to remove groundwater within the overburden (soil) groundwater zone and treat contaminated soil. Non-Aqueous Phase Liquid (NAPL) will be recovered to the extent practicable.

- Implementation of a long term monitoring program which will assess the effectiveness of the selected remedy. This long-term program will be a component of the operation and maintenance for the Site and will be developed in accordance with the Remedial Design.

Bedrock Groundwater

- Installation of a Groundwater Extraction and Treatment System. The system will be designed to collect groundwater using recovery wells and is intended to prevent the movement of contaminants off the property.

- Treat recovered groundwater to meet discharge standards and discharge to the local sanitary sewer system. Treatment will be by air stripping, thermal oxidation, granular carbon or other acceptable methods.

- Implementation of a long term monitoring program which will assess the effectiveness of the selected remedy. This long-term program will be a component of the operation and maintenance for the Site and will be developed in accordance with the Remedial Design.

- Implementation of deed restrictions on the Site property to restrict site use and intrusive activities.

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility or volume as a principal element. The New York Sate Department of Health (NYSDOH) concurs with the remedy selected for the Site as being protective of human health.

3.2 SCHEDULE FOR THE REMEDIAL PROGRAM

A schedule for the Remedial Design and Implementation is detailed in the Additional Investigation and Proposed Remedial Action Work Plan, dated April, 1998. Figure 3 depicts the proposed schedule.

4. CITIZEN PARTICIPATION ACTIVITIES

This section describes the specific citizen participation activities planned during the Leica Site remedial program. These activities will be developed in phases as the remedial program progresses, and may be modified as the NYSDEC Project Manager and assigned Citizen Participation Specialist gain additional insight into local interest in citizen participation and the project, or as the technical program and information about the Site changes.

Below are listed some major elements of the site remedial program. For each program element, the preliminary citizen participation activities that will take place or have taken place are listed. As previously noted, additional citizen participation activities are added, and the plan is revised to include other activities as the site progresses through the remedial process.

COMPLETED CITIZEN PARTICIPATION ACTIVITIES

1. NYSDEC has established a preliminary site mailing list. The mailing list will be updated by NYSDEC following each public meeting, and as additional interested citizens are ascertained by NYSDEC, DOH and Leica.

2. NYSDEC has established a local document repository at the Town of Cheektowaga, Town Hall.

3. NYSDEC will approve the list of documents to be placed in the repository.

4. Leica will provide copies of all necessary documents to the local repositories, NYSDEC Central and Regional offices, and NYSDOH.

FUTURE CITIZEN PARTICIPATION ACTIVITIES

Due to the magnitude of work, visibility of the Site, and citizen interest, a public meeting will be held by NYSDEC prior to initiating construction activities to implement the Remedial Design. The purpose of the meeting will be to provide citizens with an idea of what they can expect during the field work and a project schedule. The meeting will also allow NYSDEC and Leica to learn concerns of the public and answer questions.

- NYSDEC will draft a meeting announcement and circulate to DOH and Leica for comments.
- NYSDEC will make necessary meeting room arrangements.
- Leica will provide NYSDEC with a check made payable to the "Postmaster-Buffalo", to cover the cost of distribution of the meeting announcement to the mailing list. NYSDEC will mail the meeting announcements.
- NYSDEC will conduct the public meeting, with participation by DOH and Leica. The purpose of this meeting is to introduce the public to our staff, the remedial process, the Site, etc., and to gather initial public reaction, comments and questions.
- If necessary, NYSDEC will prepare a Responsiveness Summary of the meeting and Leica will provide NYSDEC with postage (as described above), so NYSDEC may distribute the Responsiveness Summary to the mailing list.

5. CONTACT LIST

A list of people and organizations that will be contacted regarding this project is included as Appendix A.

6. COMPANY AND REGULATORY AGENCY CONTACTS

NYSDEC Contracts: Mr. Martin Doster, P.E., Regional Engineer
Mr. Michael Podd, Public Affairs
Mr. Gregory Sutton, P.E., Project Manager

NYSDEC's toll free number (800-342-9296) is available and staffed daily, Monday through Friday during business hours by members of the Albany based citizen participation staff. Messages will be answered as soon as possible.

NYSDOH Contacts: Mr. Cameron O'Connor, Regional DOH contact
Ms. Emmy Thomee, Albany DOH HELP contact

NYSDOH has a toll free number (800-458-1158). NYSDOH technical staff is at extension 308. Health Liaison Program (HELP) Staff is at extension 402.

Company Contact(s):

PRP:

Mr. Bruce Mallott
Leica, Inc.
P.O. Box 123
Buffalo, NY 14240-0123

PRP's Remedial Contractor

Mr. Mark Cambra, P.E.
NES, Inc.
44 Shelter Rock Road
Danbury, CT 06810

7. DOCUMENT REPOSITORIES

Document repositories are established at the following locations, to make site documents easily accessible for the public to read and review. NES encourages the public to use the document repository and review site documents prior to attending public meetings whenever possible.

1. NYSDEC Region 9 Headquarters
   Div. of Hazardous Waste Remediation
   270 Michigan Ave.
   Buffalo, NY 14203-2999
   Phone (716) 851-7220
   BY APPOINTMENT ONLY

2. Reinstein Memorial Library, 2580 Harlem Road, Cheektowaga, NY 14225
   The following documents have been or will be placed in the document repository:
   - Phase II Site Investigation Report, October, 1991
   - RI/FS Scope of Work, December, 1992
   - Sediment Sampling Summary, Storm and Sanitary Sewers, December, 1992
   - Feasibility Study, March 1996*
   - Remedial Predesign, April 1996*

- Remedial Investigation Volumes I and II, October 1994*
- Remedial Investigation/Feasibility Study and Preliminary Remedial Action Objective, January 1995*
- Feasibility Study Addendum, January 1997*
- Proposed Remedial Action Plan, February 1997*
- Additional Investigation and Proposed Remedial Action Work Plan, April 1998
- Additional Investigation Report, July 1998 Revised September 1998

* Indicates that the document had been placed in the document repository as of the date this report was submitted.

8. GLOSSARY OF TERMS AND MAJOR PROGRAM ELEMENTS

Definitions of Commonly Used Citizen Participation Terms

Availability Session- Scheduled gathering of the Department staff and the public in a setting less formal than a public meeting. Encourages "one-to-one" discussions in which the public meets with Department staff on an individual or small group basis to discuss particular questions or concerns.

Citizen Participation- A process to inform and involve the interested/affected public in the decision-making process during identification, assessment and remediation of hazardous waste sites. This process helps to assure that the best decisions are made from environmental, human health, economic, social and political perspectives.

Citizen Participation Plan- A document that describes the site-specific citizen participation activities that will take place to complement the "technical" (remedial) activities. It also provides site background and rationale for the selected citizen participation program for the Site. A plan may be updated or altered as public interest or the technical aspects of the program change.

Citizen Participation Specialist- A Department staff member within the Division of Hazardous Waste Remediation who provides guidance, evaluation and assistance to help the Project Manager carry out his/her site-specific Citizen Participation program.

Contact List- Names, address and/or telephone numbers of individuals, groups, organizations, and media interested in and/or affected by a particular hazardous waste site. Compiled and updated by the Department. Interest in the Site, stage of remediation and other factors guide how comprehensive the list becomes. Used to assist the Department to inform and involve the interested/affected public.

Document Repository- Typically a regional NYSDEC office and public building, such as a library or town hall, near a particular site, at which documents related to remedial and citizen participation activities at the site are available to the public. Environmental management

Councils (EMCs), Conservation Advisory Committees (CACs) as well as active local groups often can serve as supplemental document repositories.

Information Sheet- A written discussion of the site's remedial process, or some part of the Site, prepared by the Department for public use in easily understandable language. May be prepared for the "general" public or a particular segment. Uses may include, for example: discussion of an element of the remedial program, opportunities for public involvement, availability of a report or other information, or announcement of a public meeting. May be mailed to all or part of the interested public, distributed at meetings and availability sessions or sent on an "as requested" a basis.

Project Manager- A Department staff member within the Division of Hazardous Waste Remediation (usually an engineer, geologist or hydrogeologist) responsible for the day-to-day administration of activities, and ultimate disposition of, one or more hazardous waste sties. The Project Manager works with the Citizen Participation staff, as well as Department fiscal and legal staff and the New York State Department of Health (NYSDOH) staff to accomplish site-related goals and objectives.

Public- The universe of individuals, groups and organizations: (a) affected (or potentially affected) by an inactive hazardous waste site and/or its remedial program; (b) interested in the Site and/or its remediation; (c) having information about the Site and its history.

Public Meeting- A scheduled gathering of the Department staff and the public to give and receive information, ask questions and discuss concerns. May take one of the following forms: Large-group meeting called by the Department; participation by the Department at a meeting sponsored by another organization such as a town board or Department of Health; working group or workshop; public availability session.

Public Notice- A written or verbal informational technique for telling people about an important part of a site's remedial program coming up soon (examples: announcement that the report for the RI/FS is publicity available; or a public meeting has been scheduled).

The Public Notice may be formal, such as a paid legal advertisement in a newspaper circulated widely in the geographic area of the Site.

The Public Notice may also be more informal (examples: paid newspaper advertisement; telephone calls to key citizen leaders; or targeted mailings).

Responsiveness Summary- A formal or informal written or verbal summary and response by the Department to public questions and comments. Prepared during or after important elements in a site's remedial program. The responsiveness summary may list and respond to each question, or summarize and respond to questions in categories.

Toll-Free "800" Telephone Information Number- Provides cost-free access to the NYSDEC or NYSDOH to members of the public who have questions, concerns or information about a particular hazardous waste site. Calls are taken and recorded 24 hours a day and a Department Albany-based staff member contacts the caller as soon as possible (usually the same day).

NYSDEC's Toll Free Number: 800-342-9296

NYSDOH's Toll Free Number: 800-458-1158
Ext. 308= NYSDOH Technical Staff
Ext. 402= NYSDOH Health Liaison Program Staff

Definitions of Significant Elements and Terms of the Remedial Program

NOTE: The first eight definitions represent major elements of the remedial process. They are presented in the order in which they occur, rather than in alphabetical order, to provide a context to aid in their definition.

Site Placed on Registry of Inactive Hazardous Waste Sites - Each inactive site know or suspected of containing hazardous waste must be included in the Registry. Therefore, all the sites which state or county environmental or public health agencies identify as know or suspected to have received hazardous waste should be listed in the Registry as they are identified. Whenever possible, the Department carries out an initial evaluation at the site before listing.

Phase I Site Investigation- Preliminary characterizations of hazardous substances present at a site; estimates pathways by which pollutants might be migrating away from the original site of disposal; identifies population or resources which might be affected by pollutants from a site; observes how the disposal area was used or operated; and gathers information regarding who might me responsible for wastes at a site. Interviews with site owners, employees and local residents to gather pertinent information about a site. Information gathered is summarized in a Phase I report.

After a Phase I investigation, NYSDEC may choose to initiate an emergency response; to nominate the site for the National Priorities List; or, where additional information is needed to determine site significance, to conduct further (Phase II) investigation.

Phase II Site Investigation- Ordered by NYSDEC when additional information is still needed after completion of Phase I to properly classify the site. A Phase II investigation is not sufficiently detailed to determine the full extent of the contamination, to evaluate remedial alternatives, or to prepare a conceptual design for construction. Information gathered is summarized in a Phase II report and is used to arrive at a final hazard ranking score and to classify the site.

Remedial Investigation (RI)- A process to determine the nature and extent of contamination by collecting data and analyzing the site. It includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for, and proposed extent of, a remedial program for the site.

Feasibility Study (FS)- A process for developing, evaluating and selecting remedial actions, using data gathered during the remedial investigation to: define the objectives of the remedial program for the site and broadly develop remedial action alternatives; perform an initial screening of these alternatives; and perform a detailed analysis of a limited number of alternatives which remain after the initial screening stage.

Remedial Design- Once a remedial action has been selected, technical drawings and specifications for remedial construction at a site are developed, as specified in the final RI/FS report. Design documents are used to bid and construct the chosen remedial actions. Remedial design is prepared by consulting engineers with experience in inactive hazardous waste disposal site remedial actions.

Construction- NYSDEC selects contractors and supervises construction work to carry out the designed remedial alternative. Construction may be as straightforward as excavation of contaminated soil with disposal at a permitted hazardous waste facility. On the other hand, it may involve drum sampling and identification, complete encapsulation, leachate collection, storage and treatment, groundwater management, Soil Vapor Extraction or other technologies. Construction costs may vary from several thousand dollars to many millions of dollars, depending on the size of the site, the soil, groundwater and other conditions, and the nature of the wastes.

Monitoring/Maintenance- Denotes post-closure activities to ensure continued effectiveness of the remedial actions. Typical monitoring/maintenance activities include quarterly inspection by an engineering technician; measurement of the level of water in monitoring wells; or collection of groundwater and surface water samples and analysis for parameters showing the condition of water, presence of toxic substances, or other indicators of possible pollution from the site. Maintenance may be required indefinitely at many sites.

Consent Order- A legal and enforceable negotiated agreement between the Department and responsible parties where responsible parties agree to undertake investigation and cleanup or pay for the costs of investigation and remedial action to be undertaken at the site and a schedule for implementation.

Contract- A legal document signed by a contractor and the NYSDEC to carry out specific site remediation activities.

Contractor- A person or firm hired to furnish materials or perform services, especially in construction projects.

Delisting- Removal of a site form the state Registry based on a study which shows the site does not contain hazardous wastes.

Potentially Responsible Party (PRP) Lead Site- A hazardous waste site at which those legally liable for the site have accepted responsibility for investigating problems at the site, and for developing and implementing the site's remedial program. PRP's include: those who owned the site during the time wastes were placed, current owners, past and present operators of the site, and those who generated the wastes placed at the site. Remedial programs developed and implemented by PRP's generally result from an enforcement action taken by the State and the costs of the remedial program are generally borne by the PRP.

Ranking System- The Untied States Environmental Protection Agency (USEPA) uses a hazard ranking system (HRS) to assign numerical scores to each hazardous waste site. The scores express the relative risk or danger from the site.

Responsible Parties- Individuals, companies (e.g., site owners, operators, transporters or generators of hazardous waste) responsible for or contributing to the contamination problems at a hazardous waste site. PRP is a potentially responsible party.

Site Classification- The Department assigns sites to classifications established by state law, as follows:

Classification 1- A site causing or presenting an imminent danger of causing irreversible or irreparable damage to the public health or environment--immediate action required.

Classification 2- A site posing a significant threat to the public health or environment--action required.

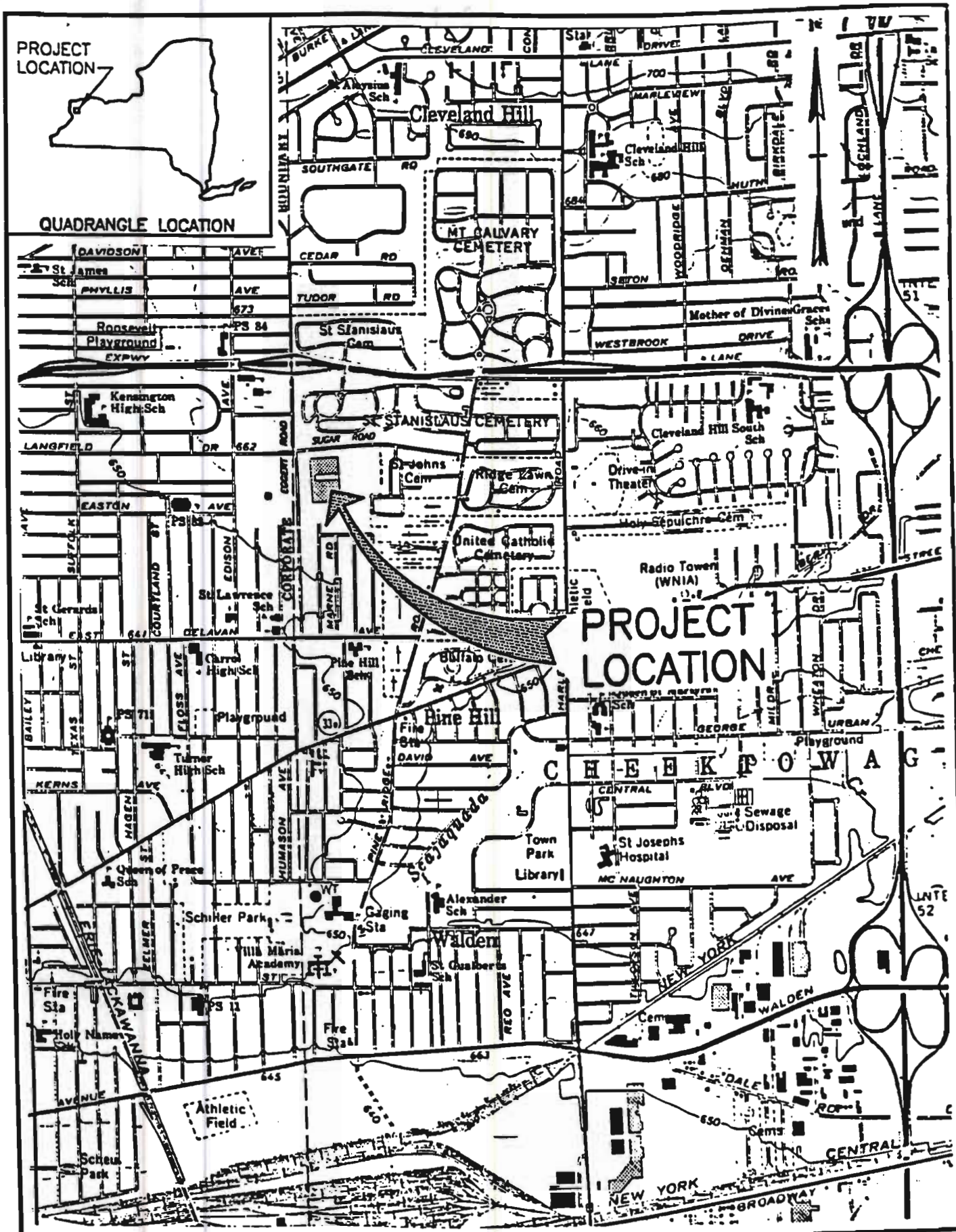
Classification 2a- A temporary classification for a site known or suspected to contain hazardous waste. Most likely the site will require a Phase I and Phase II investigation to obtain more information. Based on the results, the site then would be reclassified or removed from the state Registry if found not to contain hazardous waste.

Classification 3- A site which has hazardous waste confirmed, but not a significant threat to the public health or environment-- action may be deferred.

Classification 4- A site which has been properly closed-- requires continued management.

Classification 5- A site which has been properly closed, with no evidence of present or potential adverse impact-- no further action required.

State-Lead Site- A hazardous waste site at which the Department has responsibility for investigating problems at the site and for developing and implementing the site's remedial program. The Department uses money available from the State Superfund and the Environmental Quality Bond Act of 1986 to pay for these activities. The Department has direct control and responsibility for the remedial program.



DOCUMENT CONTROL NO.	PROJECT	LEICA, INC. EGGERT & SUGAR ROADS CHEEKTOWAGA, NEW YORK	nes NES, Inc. 44 Shelter Rock Road Danbury, CT 06810 (203) 796-5000	PROJECT: 3948-100 FILENAME: 3948100A SCALE: NTS DATE: 2/25/98 BY: AD CK: FIGURE # 1
REVISION NO.	DRAWING	SITE VICINITY MAP U.S.G.S. QUADRANGLE: BUFFALO, NY NE		

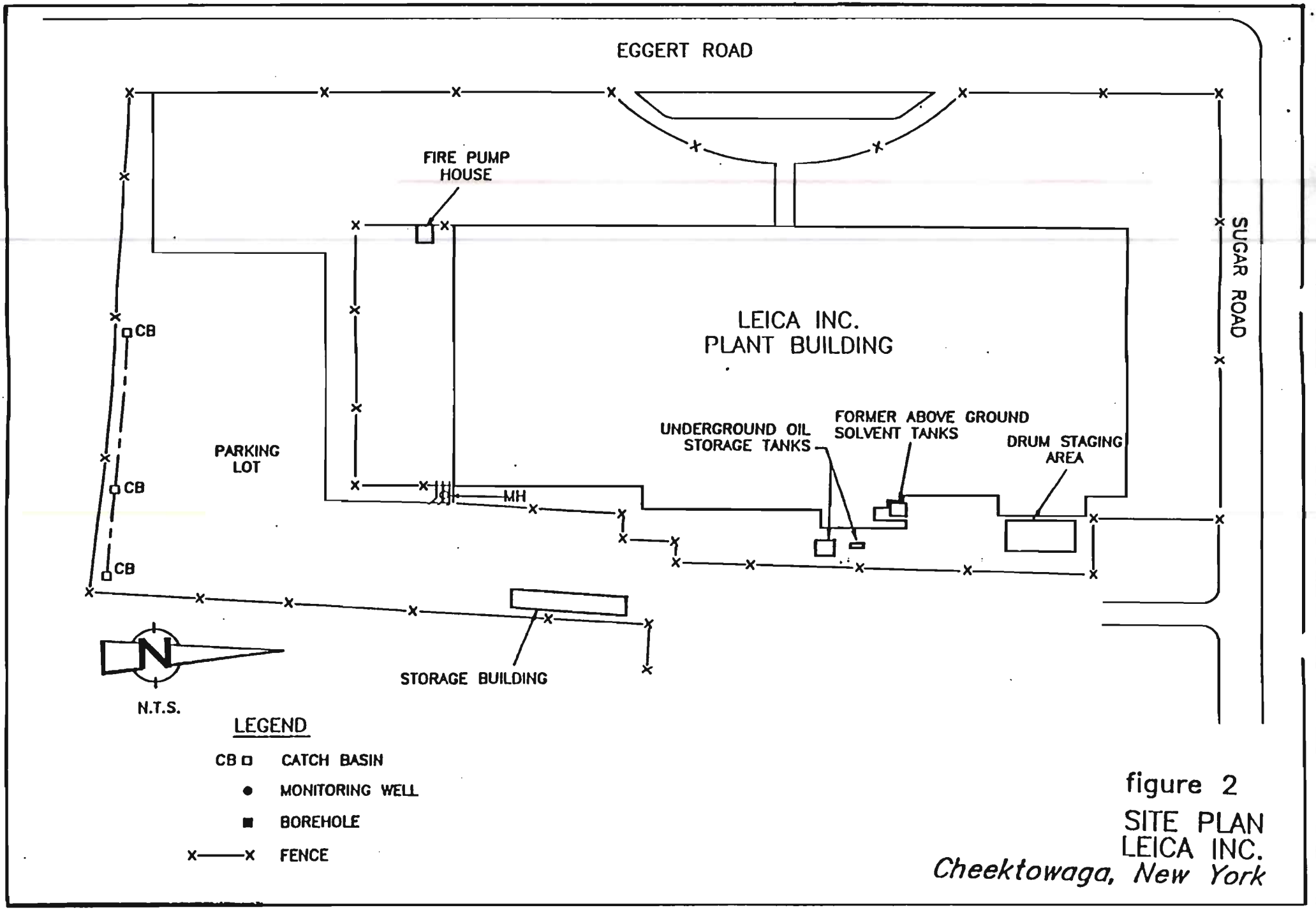
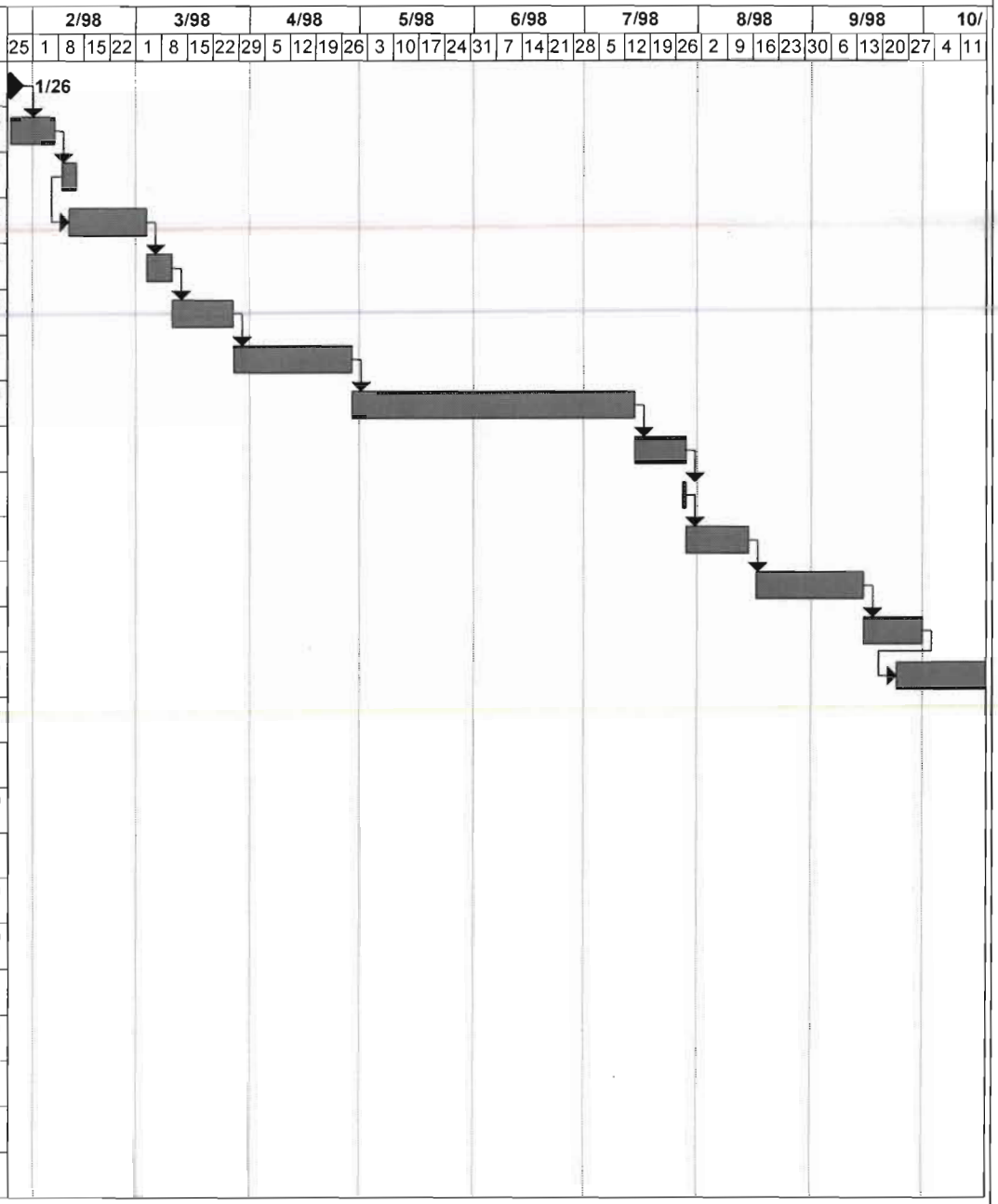


figure 2

SITE PLAN
LEICA INC.
Cheektowaga, New York

Proposed Remedial Design Schedule

ID	Task Name	Dur.	Start	Finish
1	Award of Contract	0 days	Mon 1/26/98	Mon 1/26/98
2	Prepare Scope of Work (Outline)	2 wks	Mon 1/26/98	Fri 2/6/98
3	NYDEC Review/Approval	4 days	Mon 2/9/98	Thu 2/12/98
4	Prepare Work Plan (Investigation)	3 wks	Wed 2/11/98	Tue 3/3/98
5	NYDEC Review/Approval	1 wk	Wed 3/4/98	Tue 3/10/98
6	Investigate Supp. C	2.5 wks	Wed 3/11/98	Fri 3/27/98
7	Lab Analysis	4.5 wks	Fri 3/27/98	Tue 4/28/98
8	Prepare Invest Report	11 wks	Wed 4/29/98	Tue 7/14/98
9	NYDEC Review/Approval	2 wks	Wed 7/15/98	Tue 7/28/98
10	Investigate Supp. C (additional)	1 day	Tue 7/28/98	Tue 7/28/98
11	Lab Analysis	13 days	Wed 7/29/98	Fri 8/14/98
12	Prepare Invest Report	21 days	Mon 8/17/98	Mon 9/14/98
13	NYDEC Review/Approval	12 days	Tue 9/15/98	Wed 9/30/98
14	Prepare 30% design submittal	8 wks	Thu 9/24/98	Wed 11/18/98
15	NYDEC Review/Comments	6 wks	Thu 11/19/98	Wed 12/30/98
16	Prepare 95% design submittal	4 wks	Thu 12/24/98	Wed 1/20/99
17	NYDEC Review/Comments	2 wks	Thu 1/21/99	Wed 2/3/99
18	Final System Design	2 wks	Thu 2/4/99	Wed 2/17/99
19	NYDEC Review/Approval	2 wks	Thu 2/18/99	Wed 3/3/99
20	Well and Probe Installation	8 wks	Mon 3/15/99	Fri 5/7/99
21	Equipment and System Installation	12 wks	Mon 3/29/99	Fri 6/18/99
22	System Start Up	3 wks	Mon 6/21/99	Fri 7/9/99
23	Continued Operations	104 wks	Mon 7/12/99	Fri 7/6/01
24	System Demobiliztion	1 wk	Mon 7/9/01	Fri 7/13/01
25	Final Close Out Report	6 wks	Mon 7/16/01	Fri 8/24/01



Project: schedule.MPP
Date: Mon 1/11/99

Task
Milestone
Critcal
External Tasks
Project Summary
Split
Rolled Up Split

Proposed Remedial Design Schedule

ID	Task Name	Dur.	Start	Finish
1	Award of Contract	0 days	Mon 1/26/98	Mon 1/26/98
2	Prepare Scope of Work (Outline)	2 wks	Mon 1/26/98	Fri 2/6/98
3	NYDEC Review/Approval	4 days	Mon 2/9/98	Thu 2/12/98
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16	Prepare 95% design submittal	4 wks	Thu 12/24/98	Wed 1/20/99
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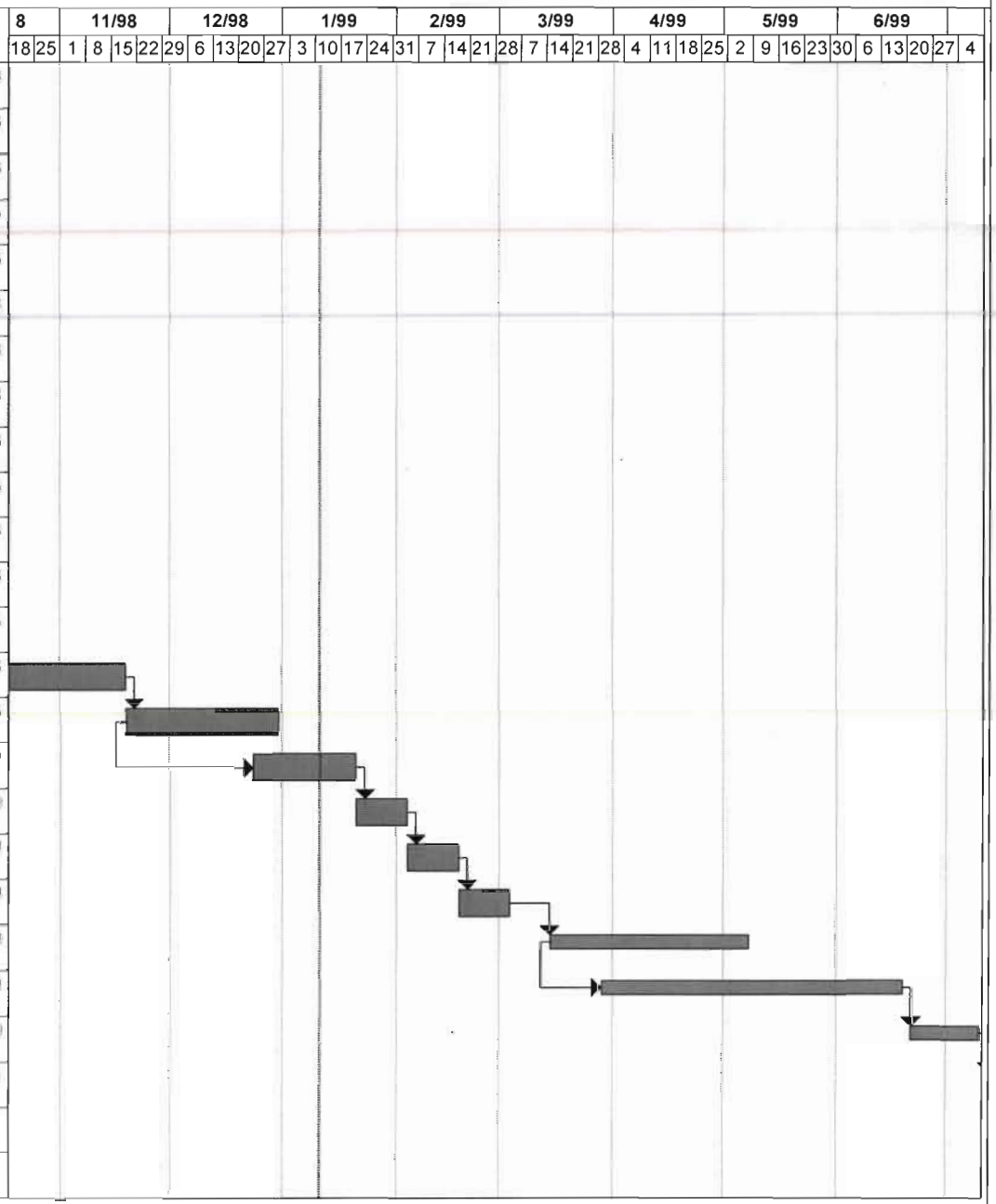

Project: schedule.MPP
Date: Mon 1/11/99

Task
Milestone
Critcal
External Tasks
Project Summary
Split
Rolled Up Split

APPENDIX A

CONTACT LIST
LEICA, INC. SITE