GUILFORD COUNTY

DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH DIVISION

March 10, 1997

Unicon Concrete
Attn: Gary McLamb
P.O. Box 1664
Clemmons, NC 27012

SUBJECT: MONITOR WELL CONSTRUCTION
PERMIT #: 161-97-MW5-RW0
GUILFORD COUNTY
SITE NAME:Unicon Concrete - A & B

Dear Madam or Sir:

In accordance with your application received February 19, 1997, we are forwarding herewith Monitor Well Construction Permit #161-97-MW5-RW0 for the construction of 5 well(s).

Henceforth, correspondence and data relating to these wells shall be designated as specified in the subject heading.

This Permit will be effective from the date of its issuance and must be renewed annually. Any additional wells installed at the site in excess of the number permitted above requires that a new application be submitted so that the permit may be amended to reflect the correct number of wells on the site. This Permit shall be subject to the conditions and limitations specified therein.

Sincerely,

Kelly C. Gage
Environmental Specialist

cc: **Incident File**
Permit File

301 North Eugene Street • Greensboro, North Carolina 27401
373-3771 - 884-3771 • General Sanitation
373-3652 - 884-3652 • Food & Lodging
373-4723 • Director, Environmental Health

GUILFORD COUNTY BOARD OF HEALTH

DIVISION OF ENVIRONMENTAL HEALTH

PERMIT FOR THE CONSTRUCTION OF

A MONITOR WELL OR WELL SYSTEM

In accordance with the provisions of the Guilford County Board of Health Rules and Regulations Governing the Construction, Repair, and Abandonment of Wells,

PERMISSION IS HEREBY GRANTED TO

Unicon Concrete

for

Unicon Concrete - A & B

FOR THE CONSTRUCTION OF 5well(s) located at 406 Tomlinson St., High Point, North Carolina in Guilford County in accordance with the application dated February 14, 1997 and in conformity with the specifications and supporting data, all of which are filed with the Guilford County Health Department, Division of Environmental Health and are considered a part of this Permit.

This Permit is for well construction only, and does not waive any provisions or requirements or any other applicable laws or regulations.

Construction of a well under this Permit shall be in compliance with the Guilford County Board of Health Rules and Regulations Governing the Construction, Repair, and Abandonment of Wells, and any other laws and regulations pertaining to well construction.

This Permit will be effective from the date of its issuance until the site assessment and/or remediation has been completed, and shall be subject to other specified conditions, limitations or exceptions as follows:

1. Written permission must be obtained from the property owner prior to construction of the well.

2. A permanent identification plate with the date of construction, depth of well, screen interval, depth of grout, drilling contractor, and his registration number shall be attached to the well head or the outer protective steel casing.

3. The well construction completion form and all water quality data are to be submitted to the Guilford County Division of Environmental Health, 301 N. Eugene Street, Greensboro, North Carolina, 27401 to the attention of Kelly C. Gage.

4. All laboratory analyses of groundwater samples collected from the permitted monitor well(s) are to be submitted to the Guilford County Division of Environmental Health, 301 N. Eugene Street, Greensboro, North Carolina, 27401 to the attention of Kelly C. Gage.

5. All additional investigative findings in relation to the pollution sources being monitored, as indicated under Item #9 of the permit application, are to be submitted to the Guilford County Division of Environmental Health, 301 N. Eugene Street, Greensboro, North Carolina, 27401 to the attention of Kelly C. Gage within sixty (60) days of well completion, and quarterly thereafter.

6. The well shall be afforded a means of protection against vandalism, damage, or unauthorized use.

7. When any monitor well is no longer useful for its intended purpose, it shall be abandoned in compliance with the Guilford County Board of Health Rules and Regulations Governing the Construction, Repair, and Abandonment of Wells and a well abandonment form sent to the Guilford County Division of Environmental Health, 301 N. Eugene Street, Greensboro, North Carolina, 27401 to the attention of Kelly C. Gage.

8. The monitor well shall be constructed in accordance with the Guilford County Board of Health's recommended construction details.

9. If additional monitor wells, not included on the original application, need to be constructed, a new application must be submitted, so that the Permit may be amended.

Permit issued March 10, 1997

FOR THE GUILFORD COUNTY BOARD OF HEALTH

Kelly C. Gage, Environmental Specialist
Division of Environmental Health

By Authority of the Guilford County Board of Health
Permit #161-97-MW5-RW0

GUILFORD COUNTY
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
APPLICATION FOR PERMIT TO CONSTRUCT A MONITORING/RECOVERY WELL SYSTEM

Date: 2/14/97

In accordance with the provisions of the Guilford County Board of Health Rules and Regulations Governing the Construction and Abandonment of Monitoring and Recovery Wells, application is hereby made for a permit to construct monitoring/recovery wells.

1. Site Name: UNICON CONCRETE, INC. Incident #: 14000
2. Address of Well: 406 TOMLINSON ST., High POINT, NC 27260
3. Name of Well Owner: UNICON CONCRETE, INC. Telephone: 910-659-5625
4. Owner's Mailing Address: P.O. Box 1664, Clemmons, NC 27012
5. Property Owner (if different from well owner): _____
6. Property Owners' Mailing Address: _____
7. Reason for Monitoring Well(s): Suspected Contamination, Site Assessement
   (e.g. nondischarge permit, suspected contamination, environmental assessment, etc.)
8. Type of facility for which the well is needed: UST
   (e.g. nondischarge facility, waste disposal site, landfill, underground storage tank, etc.)
9. Contaminant type (if applicable): _____
   (e.g. nutrients, organics, heavy metals, etc.)
10. Are there existing recovery wells associated with the monitoring well(s)? _____
    If yes, how many? _____ Number of new/additional recovery well(s) to be installed _____
11. Distance to a known waste or pollution source: _____ feet
12. Are any water supply wells located <500 feet from the proposed well? _____
    If yes, give distance : _____ feet
13. Well Driller: _____
14. Registration #: _____
15. Driller's Address: _____

    Telephone: _____

Fee:	$200.00
Date Paid:	2-19-97
Receipt# :	15107

(Continued on Reverse)

PROPOSED MONITORING/RECOVERY WELL CONSTRUCTION INFORMATION

1. Total number of wells to be constructed:_____Number to be completed in bedrock:_____

   Number to be completed in unconsolidated material:_____

2. Estimated depth of well(s):_____feet

3. Gravel or sand pack interval (if appropriate): From _____feet to_____feet

4. Type of casing used:_____
   (i.e. PVC, stainless steel, galvanized steel, etc.)

5. Diameter of casing:_____inches Thickness of casing:_____inches

6. How will the well(s) be secured?_____

7. Beginning construction date:_____

8. Completion date:_____

ADDITIONAL INFORMATION

1. ATTACH A SITE MAP SHOWING THE LOCATIONS OF THE FOLLOWING:

   (a) PROPOSED MONITORING/RECOVERY WELL(S)

   (b) ALL EXISTING MONITORING/RECOVERY WELLS AND TEST BORINGS WITHIN THE PROPERTY BOUNDARY

   (c) ALL WATER SUPPLY WELLS WITHIN 500 FEET OF THE WELL

   (d) AT LEAST TWO REFERENCE POINTS (e.g. numbered roads, intersections, streams, etc.)

2. PROVIDE A WELL CONSTRUCTION DIAGRAM OF EACH WELL SHOWING DIAMETER, ESTIMATED DEPTH, SCREEN INTERVALS, SAND/GRAVEL PACKS, TYPE OF CASING MATERIAL, CASING WALL THICKNESS, WELL HEAD COMPLETION DETAILS, ETC.

The Applicant hereby agrees the proposed well(s) will be constructed in accordance with approved specifications and conditions of the Well Construction Permit as regulated under the Guilford County Board of Health Rules and Regulations Governing the Construction and Abandonment of Monitoring and Recovery Wells and accepts full responsibility for compliance with these rules.

Gary D. McSwain for Unicon Concrete Inc AREA MANAGER

Signature of Applicant or Agent Title

If the property is owned by someone other than the applicant, the property owner hereby consents to allow the applicant to construct monitoring wells as outlined in this application and that it shall be the responsibility of the applicant to ensure that these monitoring/recovery wells conform to the Guilford County Board of Health well construction standards.

_____ Attach agreements.

Signature of Property Owner (if different from applicant)

1.0 INTRODUCTION AND BACKGROUND INFORMATION

On April 12, 1993, Piedmont Environmental Services, Inc. removed a 1,500 gallon capacity gasoline underground storage tank (UST) from the Unicon Concrete Company site located at 406 Tomlinson Street in High Point, North Carolina. An estimated 5 cubic yards of potentially petroleum contaminated soils were stockpiled onsite during the removal. Soil samples collected at the time of the removal did not contain petroleum hydrocarbons in excess of the State of North Carolina action levels. However, indications of a release in the form of a strong petroleum odor and possible phase-separated hydrocarbons were observed by Ms. Kelly Gage of the Guilford County Emergency Services at the time of removal. Ms. Gage subsequently requested that additional samples be collected and analyzed.

On June 4, 1993, S&ME, Inc. was contracted by Unicon Concrete to perform three hand-auger borings at the former location of the gasoline UST (Figure 123-2). Groundwater was encountered at a depth of 7 feet below the ground surface. Two soil samples were collected from the hand-auger borings. A composite sample was collected from the existing soil stockpile. Laboratory analyses of the soil samples collected from the hand-auger borings did not detect total petroleum hydrocarbon (TPH) concentrations above the site specific clean up level of 180 ppm as determined by the Site Sensitivity Evaluation completed by S&ME. The composite sample contained 50 parts per million (ppm) volatile TPH. A temporary monitoring well AB-1 (Figure 123-2) was installed in the hand-auger boring located at the former UST location. A groundwater sample collected from this location contained petroleum constituents, benzene and ethylbenzene, in excess of State of North Carolina standards. Benzene and ethylbenzene were detected in concentrations of 740 and 72 ppb, respectively. The results of the laboratory analyses were reported to the Guilford County Emergency Services on July 13, 1993. The North Carolina Department of Environment, Health and Natural Resources issued a Notice of Violation (NOV) on September 7, 1993.

In response to this NOV, S&ME, Inc. was contracted by the Unicon Concrete Company in October of 1993 to perform a Comprehensive Site Assessment (CSA) at the concrete plant. A site location map is presented as Figure 123-1, and a site plan is presented as Figure 123-2.

2.0 LOCAL LAND USE AND ADJOINING PROPERTIES

The land use of the area surrounding the subject site is primarily commercial and industrial. A number of vacant industrial facilities are located near the site. Adjacent businesses include: Ace Towing and Walker Bedding to the south; Prochem Chemicals to the west; General Food Service and an electrical power substation to the north; Maitland-Smith, Ltd. (furniture showroom) to the east. The ownership of the adjacent properties is shown on Figure 123-3.

3.0 POTENTIAL RECEPTORS AND MIGRATION PATHWAYS

The site is located within the High Point City limits. Potable water is supplied by the City of High Point Municipal Water System. No known water supply wells are located within 1,500 feet of the site. No surface water intakes for public water supplies are located within 0.5 miles of the contaminated zone. The City of High Point Municipal Water System obtains water from High Point City Lake and Oak Hollow Lake. Both of these reservoirs are located in separate watersheds from the subject site.

A small stream bisects the property. The stream flows from north to south and discharges into Richland Creek approximately 4,500 feet south of the subject site.

A natural gas line extends from the old conveyor in an easterly direction across the site (Figure 123-2). The gas line is located upgradient in relation to the former UST location (source of contamination) and does not appear to provide a migration pathway.

4.0 REGIONAL GEOLOGY

The site is located in the Carolina Slate Belt of the Piedmont Physiographic Province, an area underlain by mafic and felsic igneous and metamorphic rocks. The soils present in the area were formed by physical and chemical weathering of the preexisting rock. The typical residual soil profile consists of more extensively weathered clays and silts near the ground surface transitioning to sandy silts and sands with depth. Partially weathered subsurface materials are generally referred to as saprolite. Saprolite thickness varies in depth from a few feet near bedrock outcrops to over 100 feet.

5.0 REGIONAL HYDROGEOLOGY

The groundwater system in the Piedmont is recharged by precipitation in the interstream areas. A part of the precipitation infiltrates through the unsaturated zone to the water table, which normally occurs in saprolite with secondary storage in fractures within the bedrock. Groundwater moves laterally and downward through the saprolite into bedrock fractures or to streams in the adjacent valleys.

6.0 SOIL BORINGS

S&ME drilled five soil borings (MW-1, MW-2, MW-3, MW-4 and MW-5) at the approximate locations shown on Figure 123-2. These boring locations were based on data collected during the initial phase of site activities performed by S&ME, Inc. Borings MW-2, MW-3, MW-4 and MW-5 were each drilled to an approximate depth of 16 feet below the ground surface. Boring MW-1 was drilled to a depth of approximately 48 feet below the ground surface. All of the borings were drilled using an air rotary drilling rig equipped with a 6-inch air bit. A test boring record was completed for each boring location and is contained on the Well Logs in Appendix I. To prevent cross contamination, all downhole drilling equipment was steam cleaned prior to drilling at each boring location. The drill cuttings were stockpiled onsite on 3 layers of 10 ml plastic and covered with 10 ml plastic.

7.0 SUBSURFACE CONDITIONS

During the drilling activities S&ME encountered the following subsurface materials:

- concrete or crushed stone to depth of approximately 8 inches below grade;
- fill material consisting of medium to fine sandy silt to depths ranging from 1 foot to 3 feet below grade.
- alluvial material consisting of clayey fine sandy silt was encountered from 10 to 13 feet (MW-1) and from five to eight feet (MW-2). Alluvium was not encountered in the other borings.
- residual material consisting of partially weathered rock to boring termination at each location.

Two geologic cross sections were completed using data collected during the drilling. The locations of these cross sections are shown in Figure 123-2. The cross sections are presented as Figures 123-6 and 123-7.

8.0 OVA SCREENING

During drilling operations soil samples were collected at selected intervals. Penetration testing was not performed due to the density of subsurface material. Soil samples were obtained by advancing a split-spoon sampler under hydraulic pressure. A portion of each soil sample was placed into a clean ziplock bag and allowed to volatilize for approximately ten minutes. The samples were then screened with a Century Model 128 GC Organic Vapor Analyzer (OVA) to record organic vapor concentrations. The OVA detected organic vapors in the samples collected from boring MW-1 in concentrations ranging from below detection limit to 300 parts per million (ppm). Organic vapors were not detected in any soil samples collected from the other borings (MW-2, MW-3, MW-4 and MW-5). The results of the OVA screening are presented in Table 1.

9.0 SHALLOW MONITORING WELL INSTALLATION

Four borings were converted to Type II groundwater monitoring wells (MW-2, MW-3, MW-4 and MW-5) with total depths ranging from 13 to 16 feet below the ground surface. These depths were selected based on consideration of the depth to groundwater as indicated by soil moisture conditions, drill cuttings, and observations of water within the boreholes.

Each well was constructed with 2-inch I.D. Schedule 40 PVC casing and screen. The PVC screen and casing were lowered through the annulus of the boreholes to the appropriate depth. A 10-foot slotted well screen with machined 0.01-inch slot widths was installed at the bottom of each well. The screened interval was positioned to intersect the elevation of the apparent water table at the time of installation. The bottom of the slotted interval was sealed with a threaded plug. A solid section of PVC riser pipe was placed above the screened interval. The annular space around each well was filled with washed and graded sand from the bottom of the boring to one foot above the top of the screen. After placement of the sand, bentonite pellets were placed immediately above the sand pack. The bentonite pellets were hydrated by adding approximately ten gallons of tap water. After hydrating the bentonite pellets, a bentonite/neat cement mixture containing approximately four percent bentonite was pumped into the annulus of the boring from the bentonite cap to the ground surface. The wells were fitted with flush-mounted covers equipped with lockable, water-tight well caps. The construction details for each well are shown on the Well Logs found in Appendix I.

Each well was developed by evacuating at least three well volumes using a new disposable bailer. The wells were developed to achieve two objectives: 1) to remove sand, silt and other fine sediments which may have entered the well during its construction, and 2) to develop the sandpack surrounding the screened interval.

10.0 DEEP WELL INSTALLATION

One deep Type III groundwater monitoring well (MW-1) was installed at the location shown on Figure 123-2. The well was installed to determine the vertical extent of petroleum hydrocarbons in groundwater at the site. The well was constructed by drilling to a depth of approximately 43 feet below grade. A stainless steel 6-inch outer casing was installed through the annulus of the borehole. The outer casing was mounted in place by pumping a neat cement/bentonite slurry into the annulus of the borehole. The slurry was allowed to solidify overnight. The following day, a 4-inch bit was inserted through the annulus of the outer casing. The bit was used to drill through the bottom of the outer casing and into the undisturbed subsurface materials to a depth of approximately 48 feet below the ground surface (5 feet below the bottom of the outer casing). A 48-foot section (inner casing) of 2-inch I.D. schedule 40 PVC riser with a 5-foot 0.01-inch slot screen at the bottom, was lowered through the annulus of the outer casing. The inner casing was positioned so that the screened interval extended 5 feet beyond the bottom of the outer casing. Washed and graded sand was tremmied through the interior of the outer casing to form a sand pack around the screened interval. The inner casing was raised approximately 6 inches to allow sand to fall below the bottom of the screened interval. A 2-foot bentonite seal was installed immediately above the sand pack. A neat cement/bentonite slurry was used to fill the annulus between the inner and outer casings to the ground surface. The construction details are shown on the Well Log found in Appendix I. The well was developed using the same procedure described in Section 9.0.

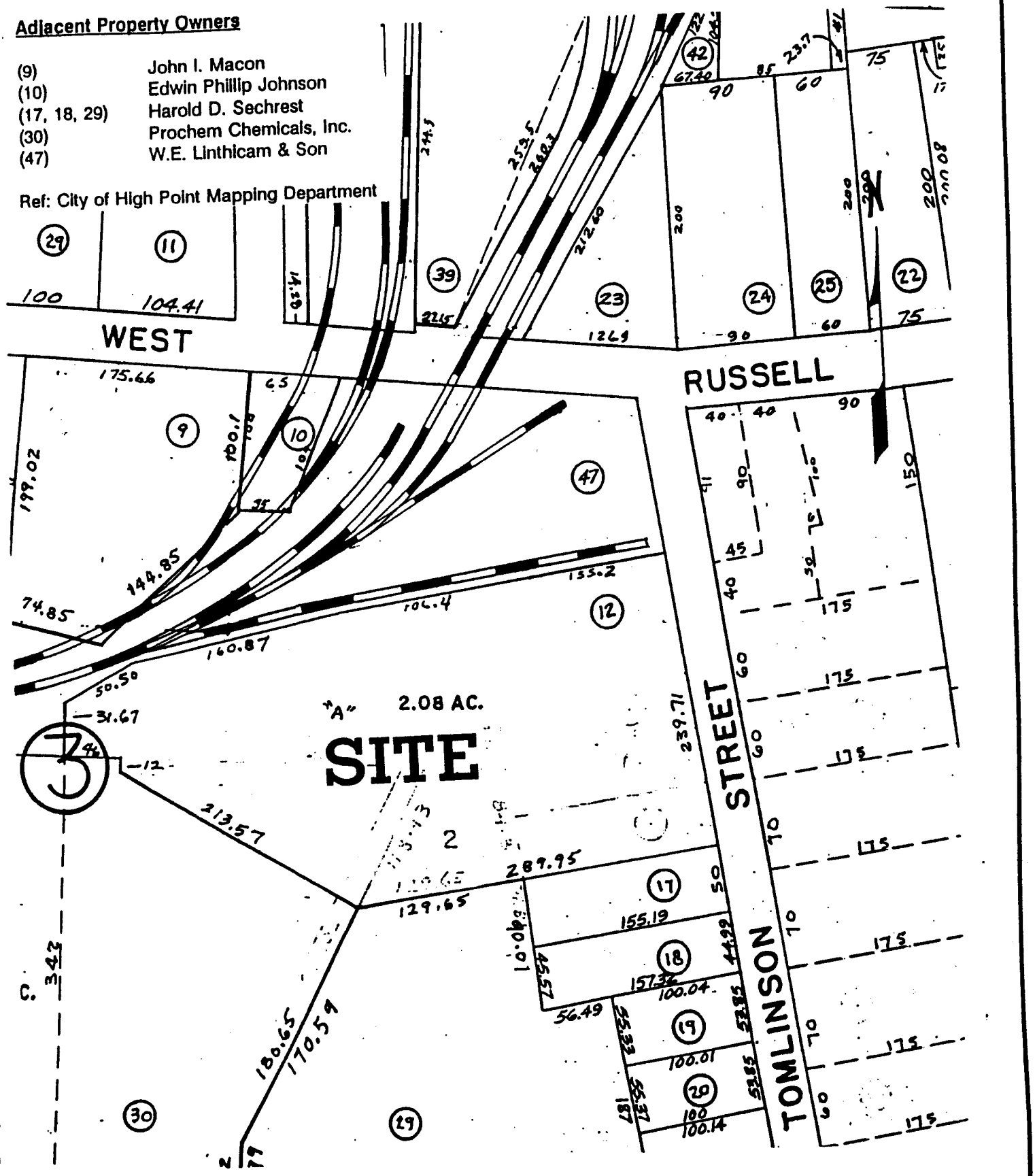
11.0 GROUNDWATER FLOW DIRECTION

After well installations were completed, the elevation of the top of each well's inner casing was measured to the nearest 0.01 feet. The elevations were measured relative to a temporary benchmark which was assigned an arbitrary reference elevation of 100 feet. The distances between each well were also measured.

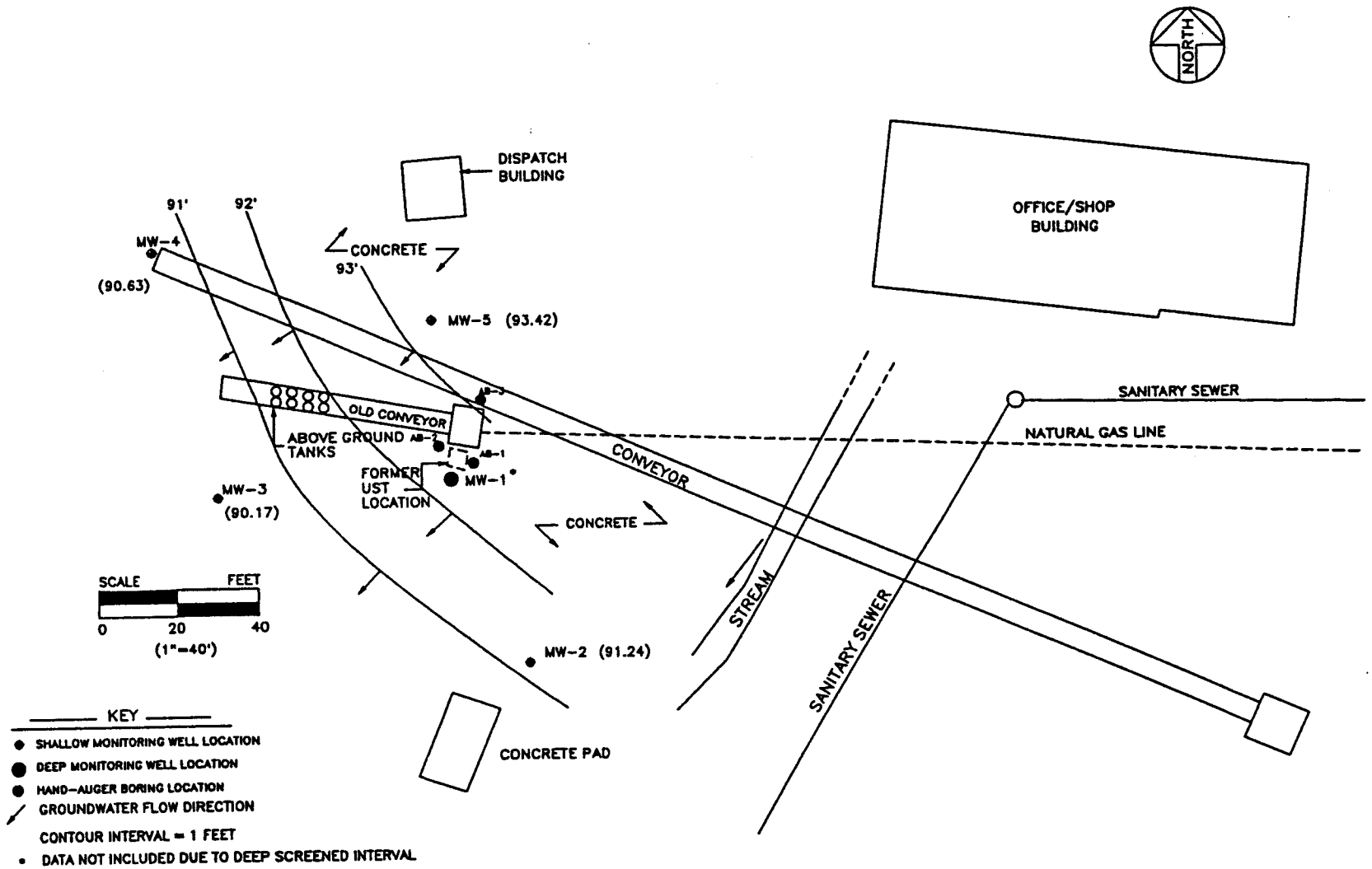
The depth to groundwater was measured in each monitoring well on October 8, 1993 (see Table 2). The measurements were converted to the elevations of static water level in the wells and the data used to construct a contoured map of the water table (123-4). These data show that groundwater flow is to the southwest.

12.0 GROUNDWATER SAMPLING

The five wells (MW-1, MW-2, MW-3, MW-4 and MW-5) were purged by removing at least three well volumes of water using disposable bailers. After purging each well, a groundwater sample was collected. Each groundwater sample was transferred from the bailer into nine 40-milliliter glass and one 250-milliliter plastic, laboratory prepared containers equipped with Teflon-lined screw caps. New disposable vinyl gloves were utilized in the sample collection and transfer for each well location. The sample containers were completely filled with sample to eliminate available headspace. Each sample container was then labeled with the project name and number, the time and date of sample collection, the analyses to be performed, and the presence or absence of preservative. The sample containers were then placed on ice in a cooler and cooled to approximately 4 degrees celsius. The chain-of-custody was initiated and the cooler was shipped to IEA Laboratories located in Research Triangle Park, North Carolina.



SCALE: 1"=100'	S&ME ENVIRONMENTAL SERVICES ENGINEERING • TESTING	UNICON CONCRETE COMPANY HIGH POINT, NORTH CAROLINA ADJACENT PROPERTY OWNERS	FIGURE NO 123-3
CHECKED BY: JB			
DRAWN BY: VR		JOB NO: 1584-93-123	
DATE: 10-29-93			



SCALE:	AS SHOWN
CHECKED BY:	JB
DRAWN BY:	VR
DATE:	10-29-93

S&ME
ENVIRONMENTAL SERVICES
ENGINEERING • TESTING

UNICON CONCRETE COMPANY
HIGH POINT, NORTH CAROLINA
WATER TABLE CONTOUR MAP

JOB NO. 1584-93-123

FIGURE NO. 123-4