

MAR 08 1993

Winston-Salem
Regional Office
Sun Refining and
Marketing Company
Eleven Penn Center
1835 Market Street
Philadelphia PA 19103-2990



March 4, 1993

Regional Supervisor
North Carolina Department of Environmental
Health and Natural Resources
Region IV
Division of Environmental Management
Groundwater Section - Pollution Control Branch
8025 North Point Blvd.
Winston-Salem, NC 27106

Re: Mid-States Oil Environmental Site Assessments

Dear Regional Supervisor:

Confirming Sun's consultant's (Richard Catlin and Associates) verbal reporting of potential contamination at the Mid-States Oil properties, attached is the environmental assessment reports that we prepared as part of a real estate transaction for the properties noted below:

- | | | | | | |
|------|--|---------------------|--|-----|---|
| (15) | Kernersville Sunoco ✓
Kernersville, NC
0275-7656 | (9) | South Elm
Greensboro, NC
0275-7516 | (8) | Summit Ave. Sunoco ✓
Greensboro, NC
0276-0007 |
| (4) | Clemmons Sunoco
Clemmons, NC
0275-7375 | <i>not received</i> | | | |
- (will be sent under separate cover)*

In accordance with the state requirements/regulations, Sun will proceed with additional investigative activities, if required, forward any and all data reports, etc. generated as a result of the further investigative activities to your office. The future contact person from Sun regarding any further activities for this site will be Dan Shine who can be reached at (215) 499-5705.

If you have any questions, feel free to contact Mr. Shine or myself at (215) 977-6145. We look forward to working with you on these sites.

Sincerely,

Tinamarie V. Smith
Senior Environmental Specialist

TVS:vlp

Attachments

cc: File
Chron



February 25, 1993



LAW ENGINEERING

GEOTECHNICAL, ENVIRONMENTAL
& CONSTRUCTION MATERIALS
CONSULTANTS

Sun Refining and Marketing Company
1835 West Market Street
11 Penn Center 9th Floor
Philadelphia, PA 19103-2950

Attention: Ms. Tinamarie V. Smith
Sr. Environmental Specialist
Risk Management Department

Subject: Report of Mid-State Oil Company Divestment
Contamination Assessment
Summit Avenue Sunoco
1103 Summit Avenue
Greensboro, North Carolina
Duns No. 0276-0007
Law Job No. 259-90007-01

Dear Ms. Smith:

Law Engineering is pleased to submit this report of our contamination assessment for the subject site as authorized by your Work Order No. MRMSR70007M18180. The objective of our services was to assist Sun Refining and Marketing Company in developing baseline data concerning the presence or absence of subsurface petroleum hydrocarbon contamination at the Summit Avenue Sunoco site. This report includes a description of the site activities and the results obtained.

Law Engineering appreciates the opportunity to provide our environmental consulting services on this project. Please contact us if we may be of further service.



Sincerely,

LAW ENGINEERING

Scott C. Veenstra
Project Geologist

James D. Rudder, Jr. P.G.
Principal Geologist

SCV/JDR/bjp

7347-F WEST FRIENDLY AVE.
GREENSBORO, NC 27410
919-294-4221

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Winston-Salem
Regional Office

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- Monitoring Well Construction Diagrams
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1.0 SITE DESCRIPTION

1.1 Site Location

The Summit Avenue Sunoco is located at 1103 Summit Avenue in Greensboro, North Carolina (Figure 1). This area is predominantly developed with commercial businesses. The site consists of one building, two gasoline dispensing pump islands, and six underground storage tanks (USTs).

1.2 Adjacent Properties

A site reconnaissance was conducted by Denise Poulos of Law Engineering on November 16, 1992. During the site reconnaissance, observations of the site and adjacent property visible from the site were made to identify evidence of potential sources of contamination that may impact the subject site.

Contiguous property to the north is an If It's Paper retail store. Contiguous properties to the east, across Summit Avenue, are a Crown Service Station and a Libby Hill Seafood Restaurant. Contiguous property to the south and west is developed with a McDonald's restaurant and parking lot (Figure 2). During a visual reconnaissance of the adjoining properties, we sought to identify off-site facilities that may reasonably have USTs or generate hazardous wastes. Field indicators of USTs, such as gas pumps,



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vent stacks, fill ports, monitoring wells, etc. were specifically sought during our site reconnaissance. Evidence of underground storage tanks was observed at the Crown Service Station located east of the site.

1.3 Regulatory List Review

We have obtained the EPA North Carolina National Priorities List (superfund sites), current as of October 1, 1992, for listings located within a one-half mile radius of the site. Appearance on this list indicates a documented contaminated site. No listed sites were located within one-half mile of the subject site.

We have reviewed the North Carolina Department of Natural Resources and Community Development Pollution Incident Report with Addresses, dated October 6, 1992, for listings located within a one-half mile radius of the site. Appearance on this list indicates a documented



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contamination incident. The following sites appear on this listing:

Facility and Address	Approximate Location Relative to the Site
Aycock School 811 Cypress Street	2000 Ft Southwest
Bell South Services, Inc 1026 Tucker Street	2000 Ft East
Bessemer Union 76 1300 East Bessemer Avenue	1500 Ft South
Bob Dunn Ford 801 East Bessemer Avenue	2000 Ft South
Cone Mills Corp 1201 Maple Street	1500 Ft East
Village Sunoco 920 North Church Street	2500 Ft West

1.4 Topographic

The site is situated on relatively level ground. Topographic drawings indicate that surface drainage on the site is generally to the southwest towards North Buffalo Creek (Figure 1). The direction of ground-water flow inferred from the surface topography is generally to the southwest. Areas to the north and northeast are potentially upgradient of the site based on the ground-water flow direction inferred from the surface topography. The direction of



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ground-water flow based on well survey and depth to ground-water data is to the south. This supports the assumption based on topography that areas to the north and northeast are upgradient of the site.

1.5 Bay Drains

As part of the site reconnaissance, visual observations and interviews with personnel at the site were made to identify existing or former bay drains. Bay drains were not identified at the site. Based on discussions with the station operator, we learned that the facility was a full service station at some time in the past. Bay drains were likely associated with the site at that time.

1.6 Contaminated Soil Stored On-Site

We did not observe contaminated soil being stored on-site prior to this assessment. Approximately four cubic yards of soil cuttings generated from the drilling of the on-site soil borings were stockpiled at the location indicated on Figure 3.



2.0 SITE HISTORY

2.1 UST Systems

Based on information provided to Law Engineering by Sun Refining and Marketing Company, the USTs present at the site include:

<u>Quantity</u>	<u>Size</u>	<u>Construction</u>	<u>Year Installed</u>
4	4,000 gal.	Unknown	Unknown
2	550 gal.	Unknown	Unknown

2.2 Other Reporting

Sun Refining and Marketing Company was unable to provide any existing environmental files concerning the site. No further environmental file reviews for the site were conducted.

3.0 REGIONAL HYDROGEOLOGY

3.1 Local Aquifer Usage & Classification

The site is located in the Carolina Slate Belt of the Piedmont Physiographic Province, an area underlain by metamorphic rock. The local ground-water aquifer is classified by the North Carolina Environmental Management Commission as Class GA waters (North Carolina Administrative Code, Title 15, Subchapter 2L, Section



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.0201). Class GA waters are existing or potential sources of drinking water suitable for human consumption.

3.2 Private Wells

We contacted Ms. Eleanor Clark of the City of Greensboro Water and Sewer Division. Ms. Clark informed us that the site and surrounding properties are served by the municipal water system. No private wells were identified in the vicinity of the site.

3.3 Municipal Wells

Municipal wells are not utilized by the City of Greensboro as a source of potable water. The City of Greensboro pipes its water from reservoirs located in Guilford County. No municipal wells were identified in the vicinity of the site.

4.0 METHODS OF INVESTIGATION

4.1 Soil Borings and Sampling

Law Engineering personnel drilled four soil borings to depths ranging from 20 to 25 feet below grade (MW-1 through MW-4) on December 2 and 3, 1992 (Figure 3). The borings were drilled using a truck-mounted auger drilling rig equipped with 10-inch O.D. (6 1/4-inch I.D.) hollow stem augers. To prevent cross contamination, the



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downhole drilling equipment was steam cleaned prior to commencing activities at each boring location.

The termination depth of each boring was selected based on consideration of the depth to ground water at each location, as indicated by soil moisture conditions, auger cuttings, observations of water within the boreholes, and the objectives stated in the contracted scope of services specified by Sun Refining and Marketing Company.

Soil samples were collected at five-foot intervals starting at a depth of 3.5 feet below the ground surface. The samples were collected using a split-spoon sampler 18-inches long having an inside diameter of 1 3/4-inches. The soil sampling methodology was performed in general accordance with ASTM D-1586. Representative samples were classified in the field by Law Engineering's on-site field personnel. Soil Test Boring Records were completed for each boring and are contained in the Appendix.

The split-spoon samplers were decontaminated prior to each use utilizing the following procedure:

- o High pressure steam cleaning with potable (tap) water

4.2 OVA Screening

Representative portions of each soil sample obtained from the borings were transferred into a new, clean one-quart capacity zip-lock baggy (half full), and the baggy placed in a warm location. Approximately ten minutes after the time of collection, the baggy was opened slightly, the probe of a Century 128 Organic Vapor Analyzer inserted, and the baggy immediately resealed using finger pressure. The meter of the OVA was monitored and the reading recorded. An OVA is useful only as a screening tool in evaluating the absence or presence of volatile organic compounds (VOCs), and should not be relied upon to quantify VOCs in soil samples. The results of the OVA screening are included as Table 1.

4.3 Soil Sample Collection

Immediately after collection each subsurface sample was removed from the split-spoon sampler by hand using new disposable vinyl gloves, and a representative portion packed into one clean, four-ounce and one two-ounce capacity glass containers equipped with a teflon-lined screw caps. The sample containers were packed tightly with sample to minimize available headspace.

After being filled, each sample container was labeled with the job name and number, the time and date of sample collection, the analyses to be performed, and the presence or absence of



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preservative. The filled sample containers were placed into a new one-quart capacity zip-lock baggy. The baggy containing the filled sample containers was then placed into a cooler containing ice and cooled to approximately 4° Centigrade. The Chain of Custody was initiated.

At the end of each sampling day the coolers containing samples were shipped via overnight express delivery to Law Environmental National Laboratories (LENL) in Kennesaw, Georgia. LENL analyzed the samples for benzene, toluene, ethylbenzene and xylenes (BTEX) using the EPA Method 8020, and total semi-volatile petroleum hydrocarbons (TPH) using the EPA Method 8015. The Chain of Custody was maintained, as documented in the Appendix.

4.4 Monitoring Well Installation

After completion of the soil borings, the borings were converted to monitoring wells with depths of 20 feet below the ground surface. The depths were selected based on consideration of the depth to ground water at each location, as indicated by soil moisture conditions, auger cuttings, observations of water within the boreholes, and the objectives stated in the contracted scope of services specified by Sun Refining and Marketing Company.

Each of the soil borings was converted to a Type II ground-water monitoring well constructed with four-inch I.D. Schedule 40 PVC



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flush-threaded casing and screen. The PVC screen and casing were lowered through the annulus of the augers to the appropriate depths. A 15-foot slotted well screen with machined 0.010-inch slot widths was installed at the bottom of each of the wells. Threaded bottom plugs were placed at the bottom of each well screen.

A solid section of PVC riser pipe was placed above the screened interval and extended to a point just below grade. The annular space around each well was filled with a washed and graded sand to a depth equivalent to approximately one foot above the top of the screen.

A minimum one-foot thick seal of bentonite was placed immediately above the sand pack. After placement in the well, the bentonite was hydrated by applying approximately ten gallons of potable (tap) water and waiting approximately 30 minutes.

After hydrating the bentonite pellets, a bentonite/neat cement mixture containing approximately four percent bentonite was pumped down the hole to fill the annulus of the boring from the bentonite cap to the ground surface. The wells were installed with flush-mounted steel covers. The wells were equipped with lockable, water-tight well caps. The general construction details for each well are shown on the Boring Logs and Well Installation Diagrams in the Appendix.



4.5 Surveying

After installation of the wells was completed, the relative vertical elevation of the top of each well's casing was measured to the nearest 0.01 feet by Law Engineering field personnel (Table 2). The elevations measured were relative to the top of casing on well MW-1, which was arbitrarily assigned an elevation of 100 feet above mean sea level (AMSL). The distances between the wells were also measured.

4.6 Monitoring Well Development

After installation the wells were developed by evacuating at least five well volumes, or to dryness twice, using a decontaminated three-foot long, three-inch I.D. PVC bailer. The bailer was decontaminated prior to use at each well location utilizing the following procedure:

- o Rinsing with potable (tap) water
- o Washing in an Alcanox-potable water solution
- o Rinsing with potable water

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 wells' screened intervals.



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During development of the wells on December 7, 1992, the pH of the development water from the wells was monitored. The average pH of the developed wells was 6.1 standard units.

4.7 Monitoring Well Sampling

The monitoring wells were sampled on December 17, 1992 (a minimum of seven days after development). Each well was purged by removing at least three but not more than five well volumes, or bailing to dryness and allowing recovery of approximately 75 percent of the well's volume. Purging was accomplished using a new one-liter capacity disposable teflon bailer. After the purging of a well was completed, ground-water samples were immediately collected from the well.

Immediately after collection, the ground-water sample was transferred from the bailer into three 40 milliliter (ml) and two 1-liter clean, glass containers equipped with teflon-lined screw-caps. New disposable vinyl gloves were utilized in the sample transfer. The sample containers were completely filled with sample to eliminate headspace.

After being filled, each sample container was labeled with the job name and number, the time and date of sample collection, the analyses to be performed, and the presence or absence of preservative. The filled sample containers were then placed into



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a cooler containing blue ice, or zip lock baggies containing ice, and cooled to approximately 4° Centigrade. The Chain of Custody was initiated.

At the end of each sampling day the coolers containing samples were shipped via overnight express delivery to LENL. LENL analyzed the samples for BTEX (EPA Method 602) and TPH (EPA Method 8015). The Chain of Custody was maintained, as documented in the Appendix.

5.0 RESULTS OF ASSESSMENT

5.1 Sensitive Receptors and Adjacent UST Sources

The site is the Summit Avenue Sunoco located at 1103 Summit Avenue in Greensboro, North Carolina. No municipal or private wells were identified in the vicinity of the site.

The site is located in a commercial area of Greensboro, North Carolina. Evidence of underground storage tanks was observed at a Crown Gas Station located east of the site, across Summit Avenue. This facility is not upgradient of the site based on the direction of ground-water flow inferred from the surface topography and the estimated ground-water flow direction based on well survey and depth to water table data. Therefore, we do not consider it to be a reasonably likely off-site contamination source of the Summit Avenue Sunoco.



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Our review of selected regulatory lists identified several contaminated facilities in the vicinity of the site. These facilities are located at least 1500 feet from the site. Based on this distance, we do not consider them to be reasonably likely off-site contamination sources of the Summit Avenue Sunoco.

5.2 Depth to Ground Water and Ground-Water Flow Direction

As measured in the newly-installed monitoring wells, the depth of the ground-water table below the ground surface at the site ranged from 10.0 (MW-2) to 10.4 (MW-4) feet. The average depth of the ground-water table below the ground surface at the site was 10.2 feet.

Contouring the relative ground water elevations, the estimated direction of ground-water flow is towards the south (Figure 6). The hydraulic gradient of the water table is approximately 0.0096 feet per foot from well MW-4 to well MW-1.

5.3 Results of Soil Sample Analyses

Four subsurface samples were collected while drilling the hollow-stem auger borings (Table 1). Laboratory analyses of three of the samples contained detectable BTEX or TPH concentrations (Tables 3 and 4, respectively).



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The highest concentrations of BTEX (1.919 ppm) and TPH (309 ppm) detected in the four soil samples were detected in the sample collected from well MW-1. The next highest concentrations of BTEX and TPH were detected in soil samples collected from borings MW-4 (BTEX - 0.228 ppm, TPH - 81 ppm) and MW-3 (BTEX - 0.0028 ppm, TPH - not detected).

5.4 Results of Free Product Gauging

The depths to ground water and separate-phase hydrocarbon thicknesses were measured by Law Engineering personnel on December 17, 1992 (Table 5). All fluid measurements at the site were measured using the highest point at the top of the well casing as a reference point, and using Solinist Model 121 interface probe.

None of the four wells on the subject site had a detectable occurrence of separate-phase hydrocarbon.

5.5 Results of Ground-Water Sampling

The four ground-water monitoring wells located at the site were sampled on December 17, 1992. The detected BTEX (Table 6) and TPH concentrations (Table 7) were plotted on separate site maps. The BTEX (Figure 4) and TPH concentrations (Figure 5) are distributed similarly in ground water beneath the site.



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The highest concentration of BTEX (230 ppb) detected in the ground-water samples was detected in the sample collected from well MW-2. The next highest concentrations of BTEX were detected in samples collected from wells MW-4 (35.3 ppb) and MW-1 (1.6 ppb). The highest concentration of TPH (1300 ppb) detected in the ground-water samples was detected in the sample collected from well MW-1. TPH concentrations were not detected in the other three ground water samples.

6.0 QUALIFICATION OF REPORT

The activities and evaluative approaches used in this assessment are consistent with those normally employed in hydrogeological assessments and waste management projects of this type. Our evaluation of site conditions has been based on our understanding of the site, the site-specific information provided by Sun Oil Company and the data obtained from the site assessment and remediation activities performed to date at the subject site. The primary objective of this assessment was to perform sufficient work to determine if detectable petroleum hydrocarbon contamination in soil or ground-water exists at the site.

TABLES



TABLE 1
RESULTS OF OVA SCREENING - SOIL BORINGS

SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA
DUNS NO. 0276-0007

Boring	Depth-FT	OVA-PPM
MW-1	3.5 to 5.0	>1000*
	8.5 to 10.0	200
	13.5 to 15.0	22
	18.5 to 20.0	40
MW-2	3.5 to 5.0	30*
	8.5 to 10.0	10
	13.5 to 15.0	4
	18.5 to 20.0	14
MW-3	3.5 to 5.0	4
	8.5 to 10.0	10
	13.5 to 15.0	18*
	18.5 to 20.0	14
MW-4	3.5 to 5.0	>1000*
	8.5 to 10.0	360
	13.5 to 15.0	240
	18.5 to 20.0	20

* = Sample collected for laboratory analyses.

TABLE 2

MONITORING WELL SURVEY DATA

SUMMIT AVENUE
 GREENSBORO, NORTH CAROLINA
 DUNS NO. 0276-0007

Well No.	Relative TOC Elevation	Depth To Ground Water	Relative Elevation of Ground Water
MW-1	100.00	10.2	89.80
MW-2	100.91	10.0	90.91
MW-3	101.23	10.2	91.03
MW-4	100.95	10.4	90.55

Measurements in feet

Date of Survey Measurements - January 28, 1993

TOC = Top of Casing Elevation

TABLE 3

BTEX CONCENTRATIONS DETECTED IN SOIL SAMPLES
IN PPM

SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA
DUNS NO. 0276-0007

Well No.	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX
MW-1	0.059	0.27	0.29	1.3	1.919
MW-2	ND	ND	ND	ND	ND
MW-3	ND	0.0028	ND	ND	0.0028
MW-4	0.047	0.011	0.078	0.092	0.228

ND = Not Detected

ppm = Parts Per Million

Date of Sample Collection - December 3, 1992

TABLE 4

TPH CONCENTRATIONS DETECTED IN SOIL SAMPLES
IN PPM

SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA
DUNS NO. 0276-0007

Well No.	Semi-Volatile Gas Range	Total Petroleum Hydrocarbons	Diesel Range
MW-1	69		240
MW-2	ND		ND
MW-3	ND		ND
MW-4	11		70

ND = Not Detected

ppm = Parts Per Million

Date of Sample Collection - December 3, 1992

TABLE 5

RESULTS OF FREE PRODUCT GAUGING

SUMMIT AVENUE
 GREENSBORO, NORTH CAROLINA
 DUNS NO. 0276-0007

Well No.	Depth to Free Product	Depth To Ground Water	Thickness of Free Product
MW-1	ND	10.2	ND
MW-2	ND	10.0	ND
MW-3	ND	10.2	ND
MW-4	ND	10.4	ND

Measurements in feet

Date of Water Level Measurements -December 17, 1992

TOC = Top of Casing Elevation

ND = Not Detected

TABLE 6

BTEX CONCENTRATIONS DETECTED IN GROUND WATER
IN PPB

SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA
DUNS NO. 0276-0007

Well No.	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX
MW-1	ND	ND	1.6	ND	1.6
MW-2	230	ND	ND	ND	230
MW-3	ND	ND	ND	ND	ND
MW-4	32	ND	ND	3.3	35.3

ND = Not Detected

ppb = Parts Per Billion

Date of Sample Collection - December 17, 1992

TABLE 7

TPH CONCENTRATIONS DETECTED IN GROUND WATER
IN PPB

SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA
DUNS NO. 0276-0007

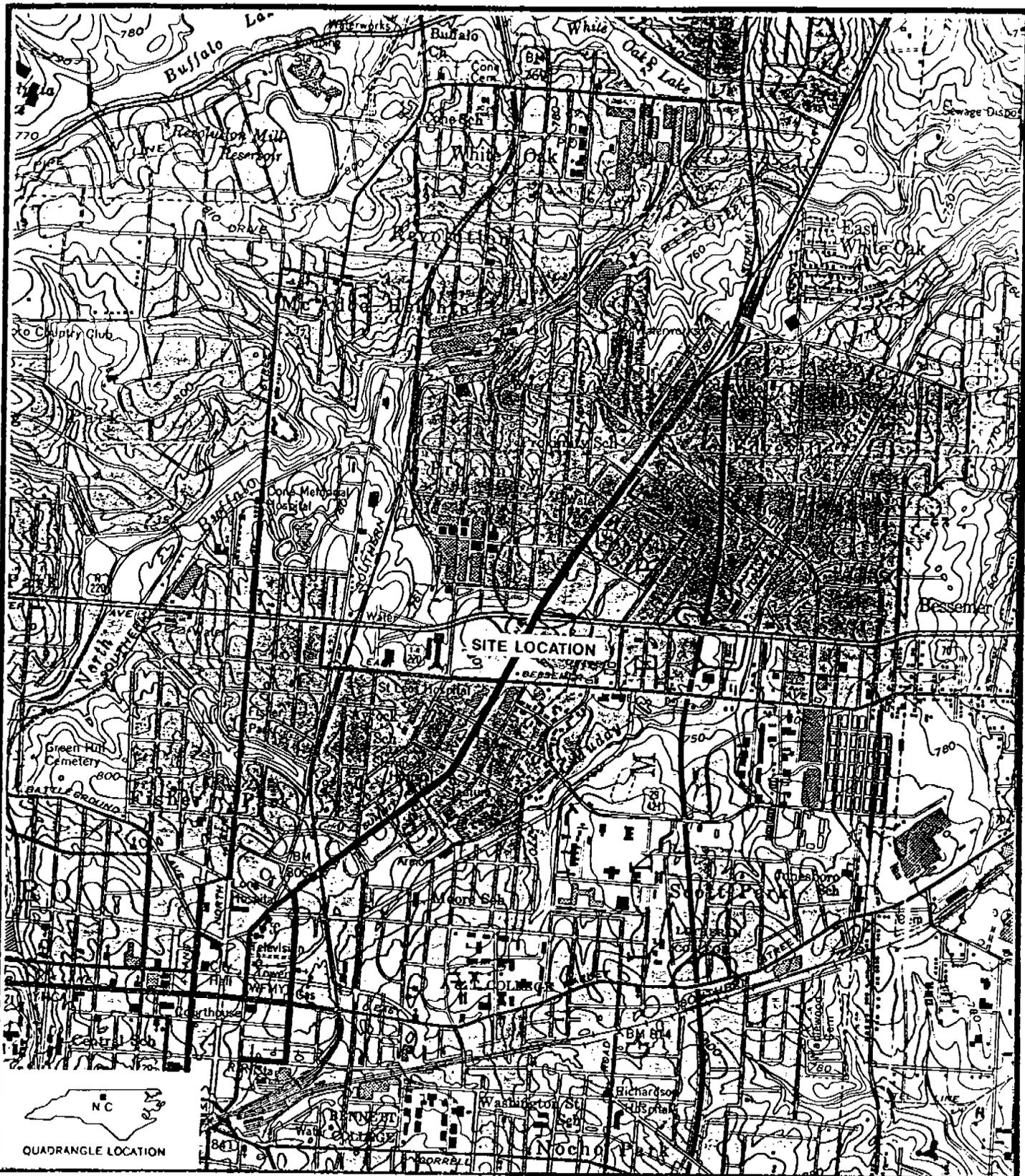
Well No.	Semi-Volatile Total Petroleum Hydrocarbons	
	Gas Range	Diesel Range
MW-1	1300	ND
MW-2	ND	ND
MW-3	ND	ND
MW-4	ND	ND

ND = Not Detected

ppb = Parts Per Billion

Date of Sample Collection = December 17, 1992

FIGURES



REFERENCE: USGS TOPOGRAPHIC MAP
GREENSBORO QUADRANGLE, DATED 1951
PHOTOREVISED 1968

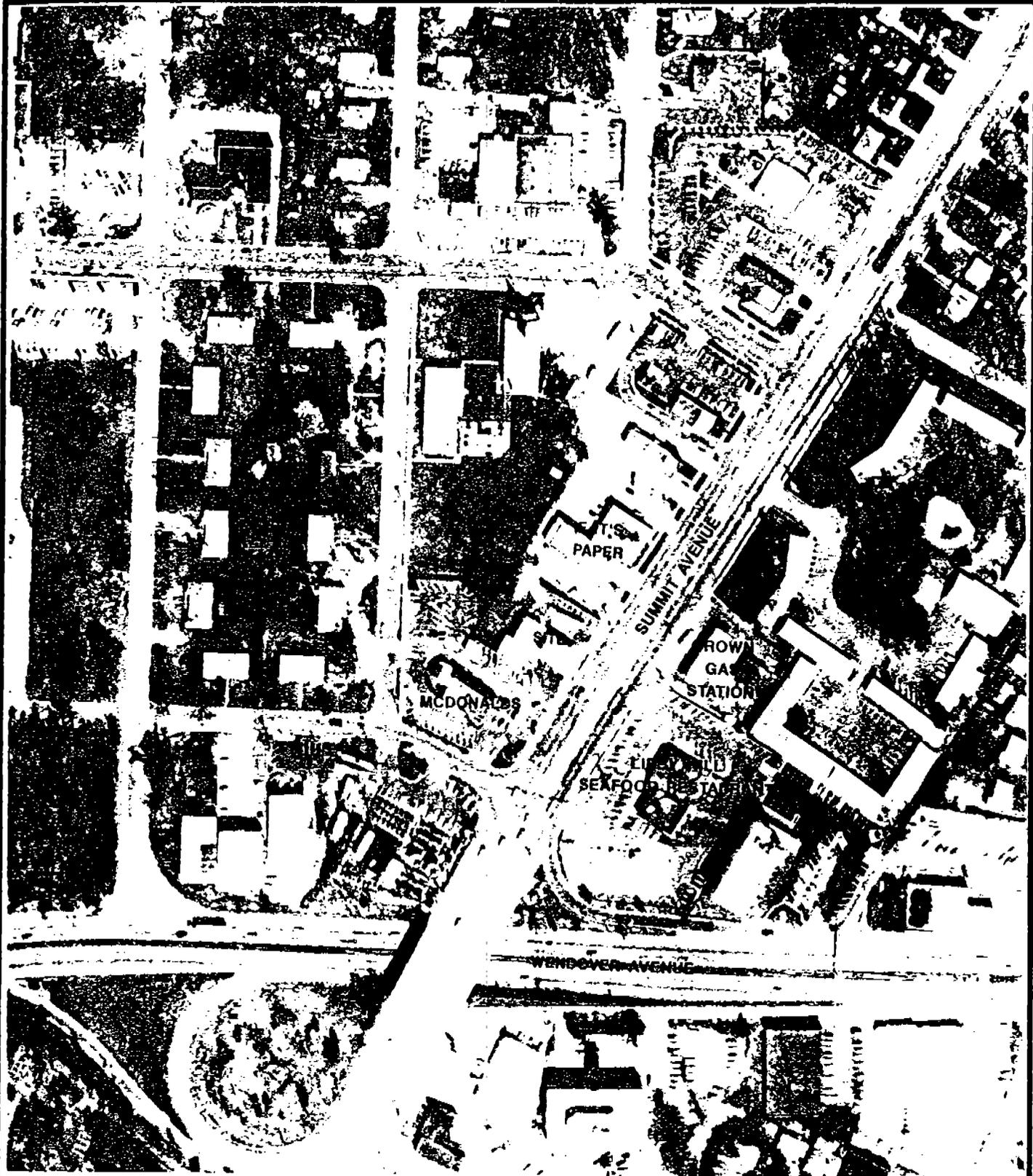


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GREENSBORO, NORTH CAROLINA

SITE LOCATION MAP
SUMMIT AVENUE SUNOCO
GREENSBORO, NORTH CAROLINA

JOB NO. 259-90007-01

FIGURE 1



REFERENCE: GREENSBORO PLANNING DEPARTMENT
AERIAL PHOTOGRAPH, SHEET 12, DATED 1990

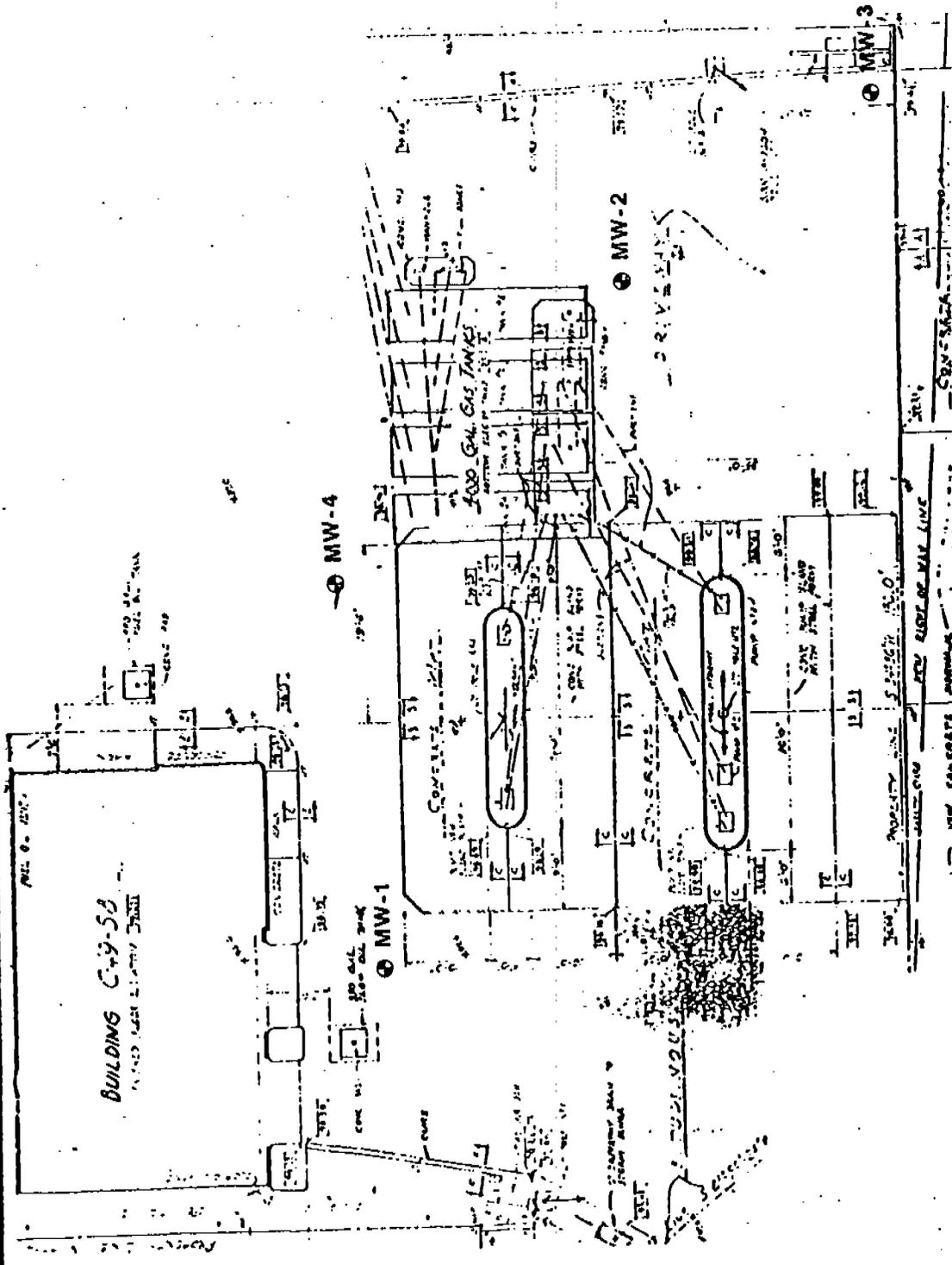


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GREENSBORO, NORTH CAROLINA

ADJACENT PROPERTIES MAP
SUMMIT AVENUE SUNOCO
GREENSBORO, NORTH CAROLINA

JOB NO. 259-90007-01

FIGURE 2

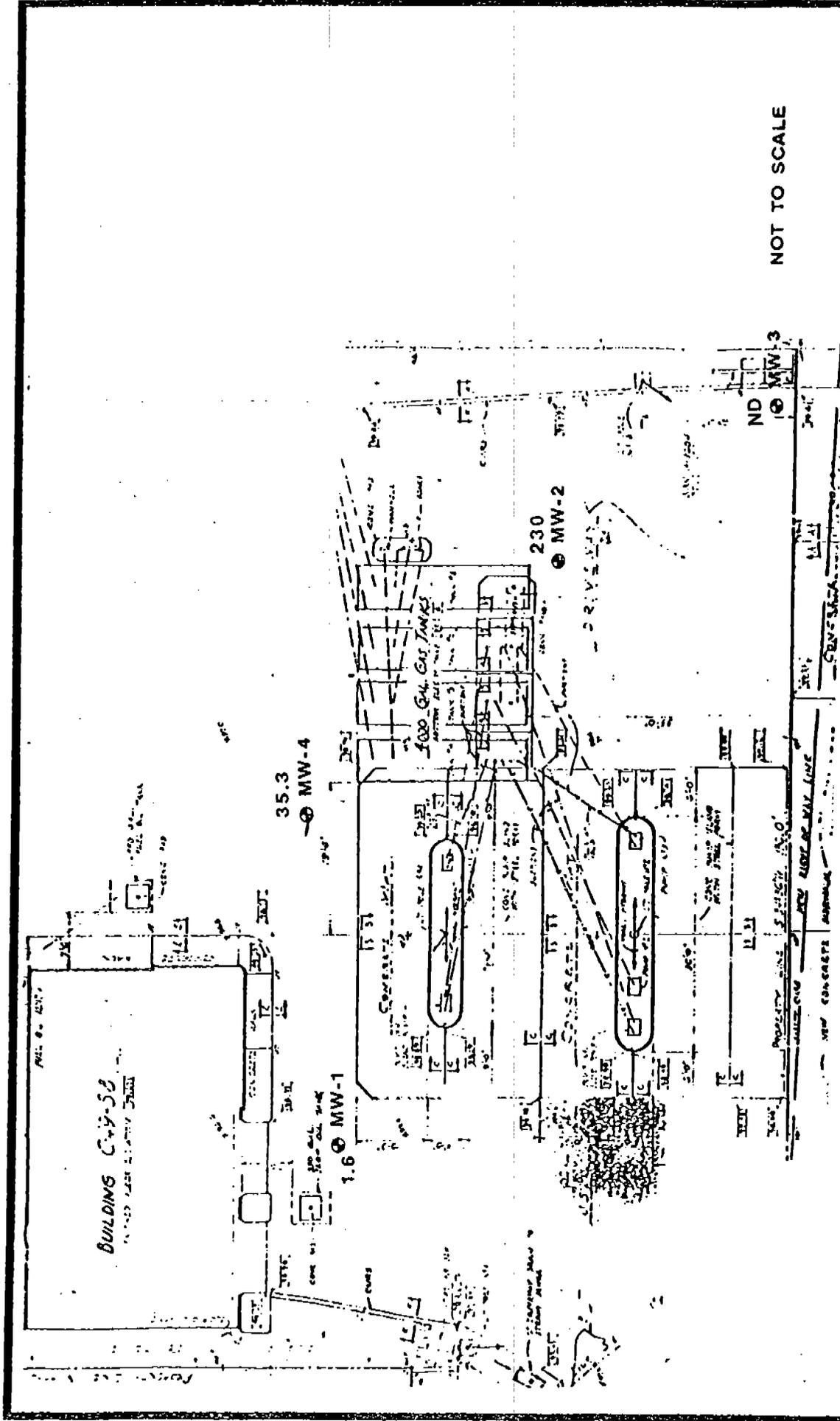


NOT TO SCALE

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GREENSBORO, NORTH CAROLINA
MONITORING WELL LOCATIONS
SUMMIT AVENUE SUNOCO
GREENSBORO, NORTH CAROLINA

JOB NO. 259-90007-01 FIGURE 3

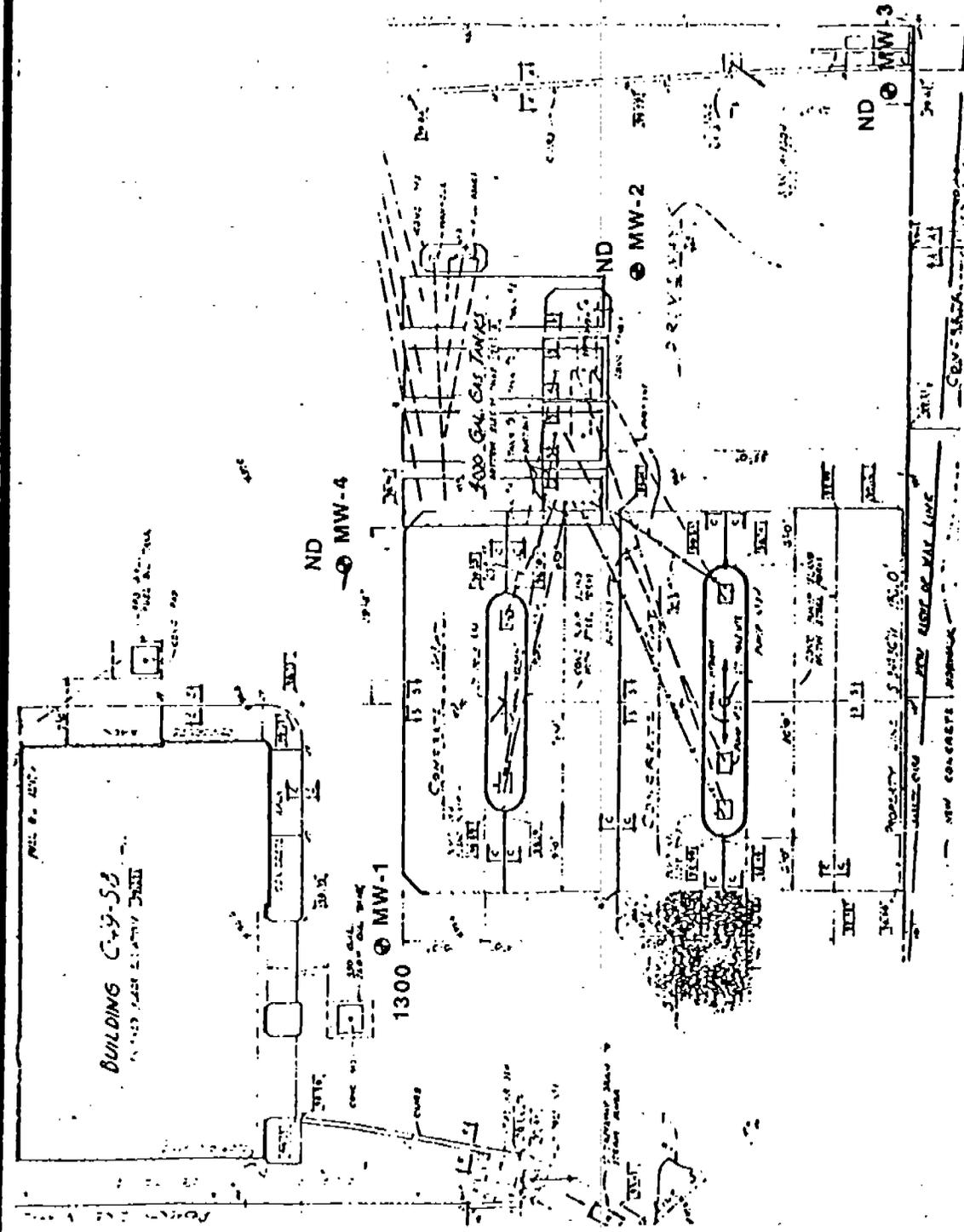
⊙ MW - MONITORING WELL LOCATION
 REF: SITE PLAN PROVIDED BY SUNOCO



NOT TO SCALE

● MW - MONITORING WELL LOCATION
 230 BTEX CONCENTRATION IN PPB
 REF: SITE PLAN PROVIDED BY SUNOCO

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 GREENSBORO, NORTH CAROLINA
 BTEX IN GROUND WATER (PPB)
 SUMMIT AVENUE SUNOCO
 GREENSBORO, NORTH CAROLINA
 JOB NO. 259-90007-01 FIGURE 4



NOT TO SCALE

○ MW - MONITORING WELL LOCATION
 1300 TPH CONCENTRATION IN PPB

REF: SITE PLAN PROVIDED
 BY SUNOCO

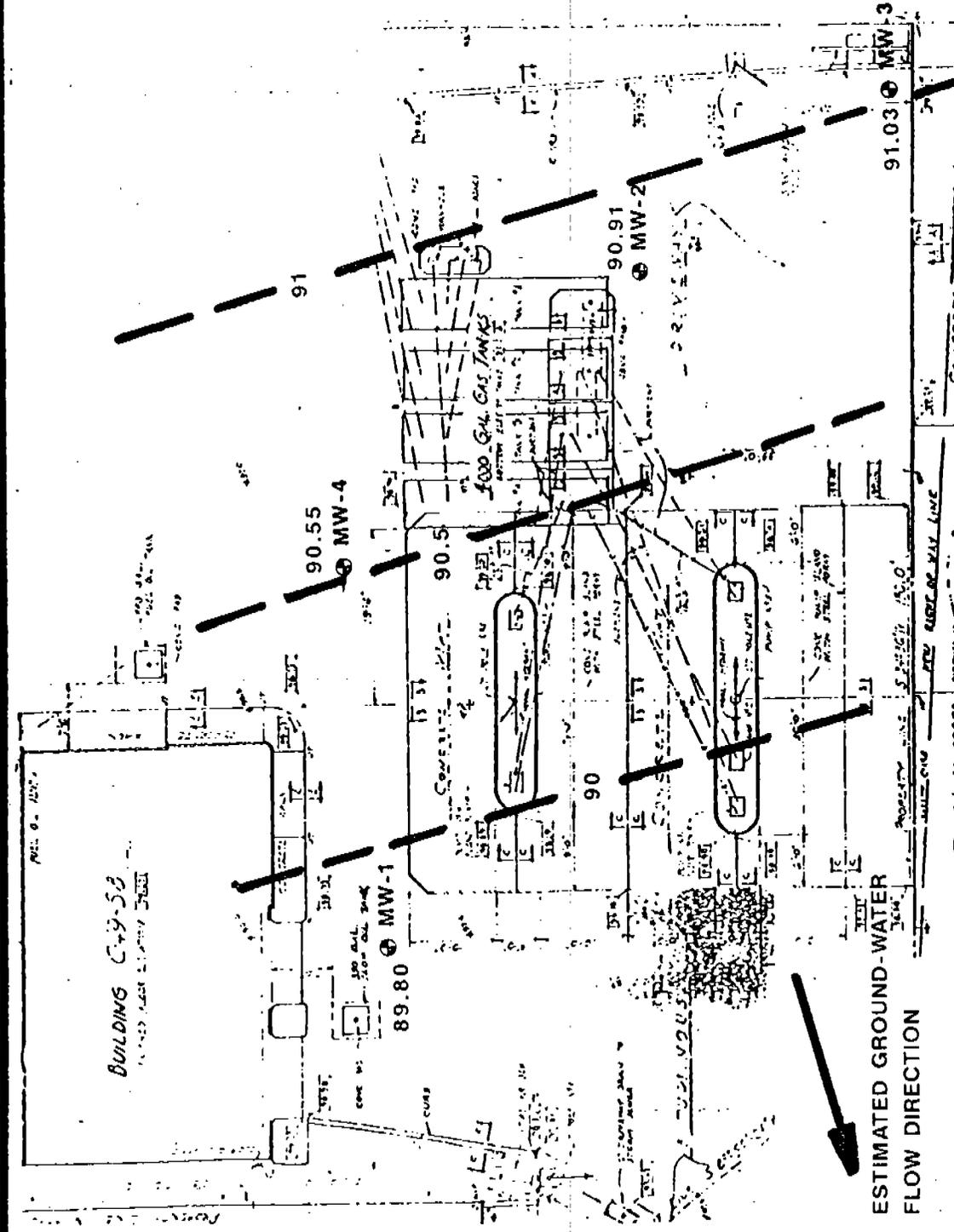


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 GREENSBORO, NORTH CAROLINA

TPH IN GROUND WATER (PPB)
 SUMMIT AVENUE SUNOCO
 GREENSBORO, NORTH CAROLINA

JOB NO. 259-90007-01

FIGURE 5



NOT TO SCALE

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	GREENSBORO, NORTH CAROLINA
RELATIVE GROUND WATER ELEVATION	
SUMMIT AVENUE SUNOCO	
GREENSBORO, NORTH CAROLINA	
JOB NO. 259-90007-01	FIGURE 6

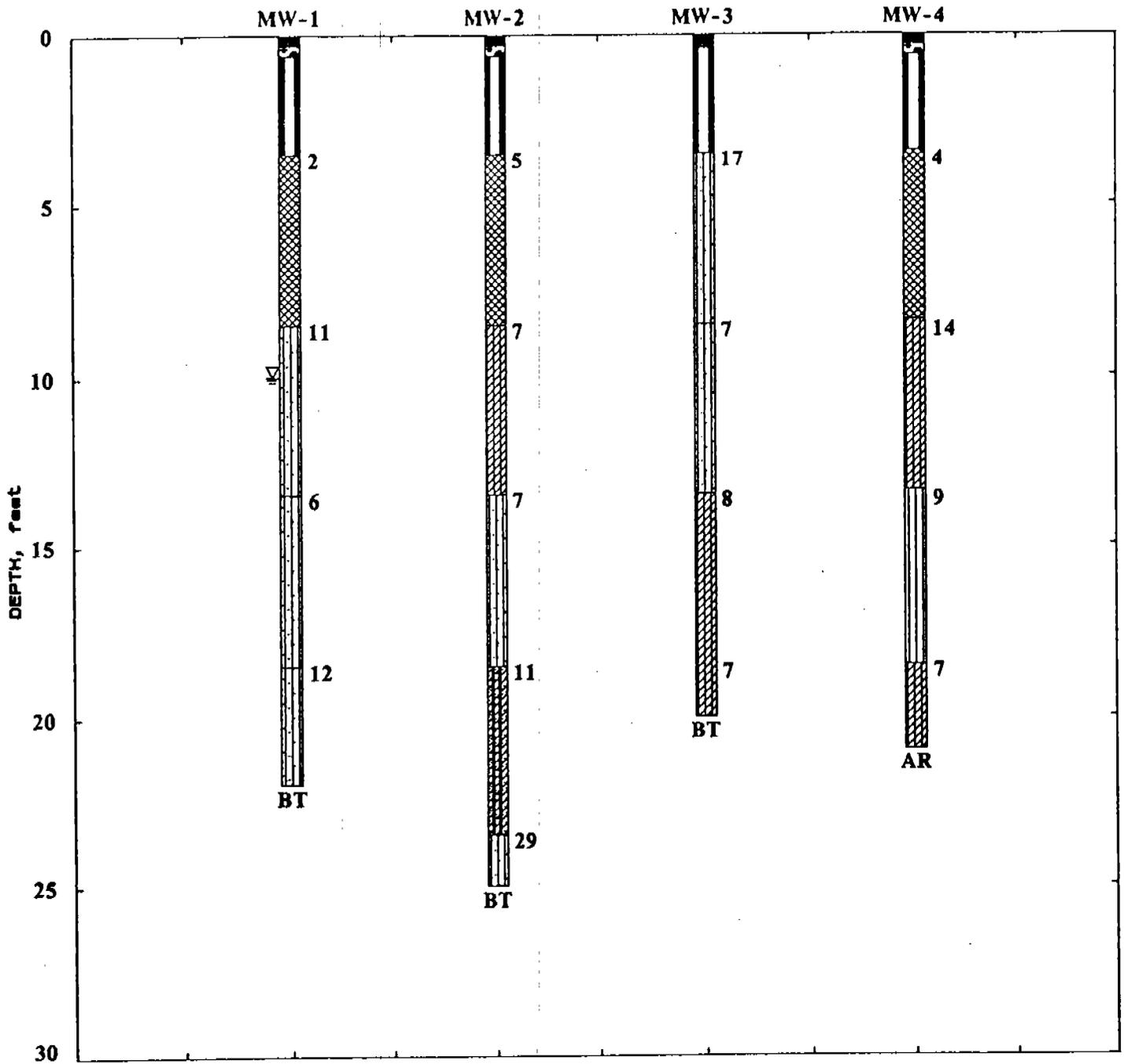
● MW - MONITORING WELL LOCATION
 91.03 - RELATIVE GROUND WATER ELEVATION

REF: SITE PLAN PROVIDED BY SUNOCO

APPENDIX

SOIL TEST BORING LOGS

HORIZONTAL NOT TO SCALE



NOTES:

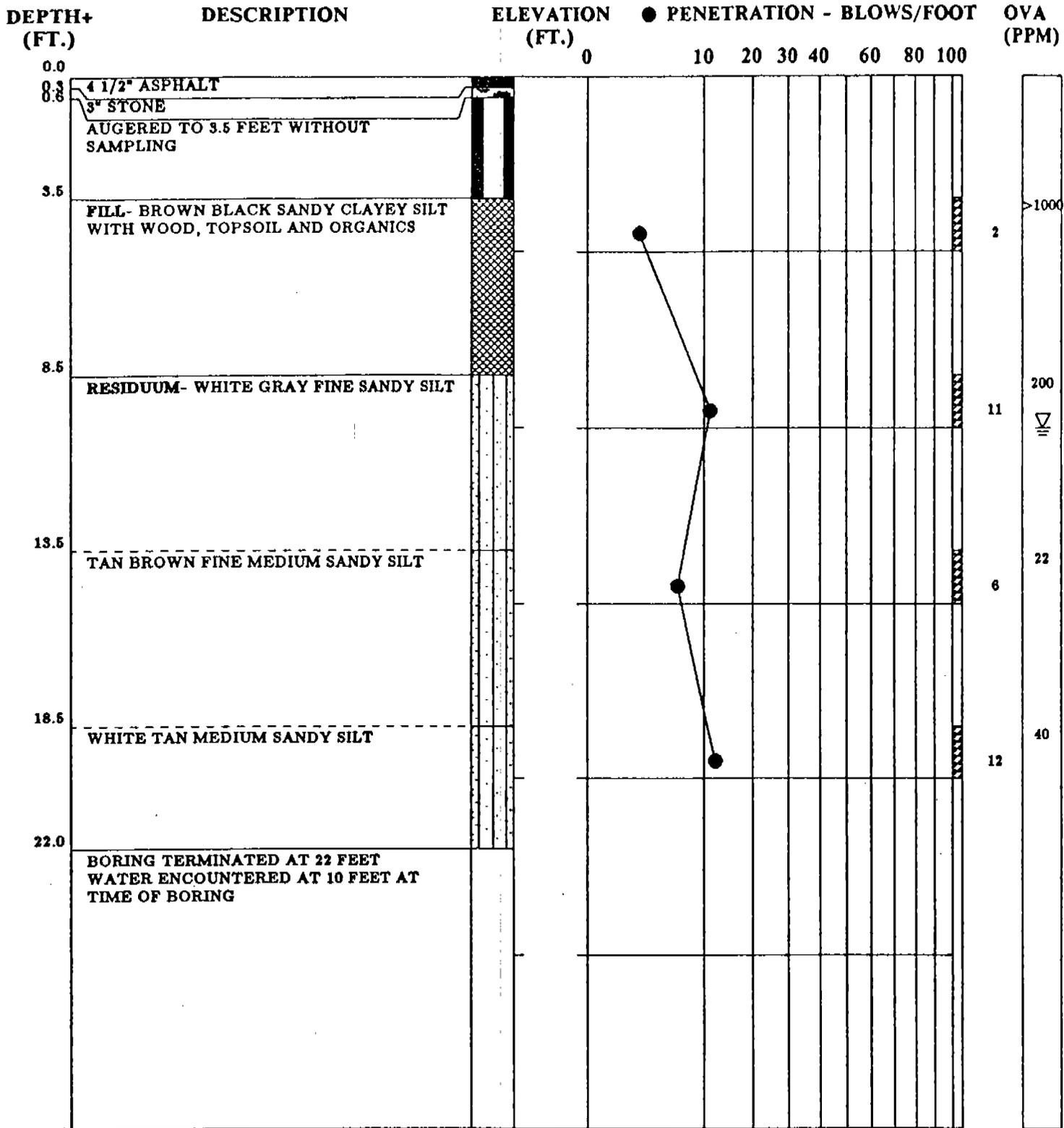
NUMBERS NEXT TO PROFILES REPRESENT PENETRATION RESISTANCE (BLOWS PER FOOT)

SEE KEY SHEET FOR EXPLANATION OF MATERIAL SYMBOLS

GENERALIZED SUBSURFACE PROFILE

PROJECT SUNOCO-SUMMIT AVENUE
 LOCATION GREENSBORO, NORTH CAROLINA
 LAW JOB NO. 259-90007-01 FIGURE 2

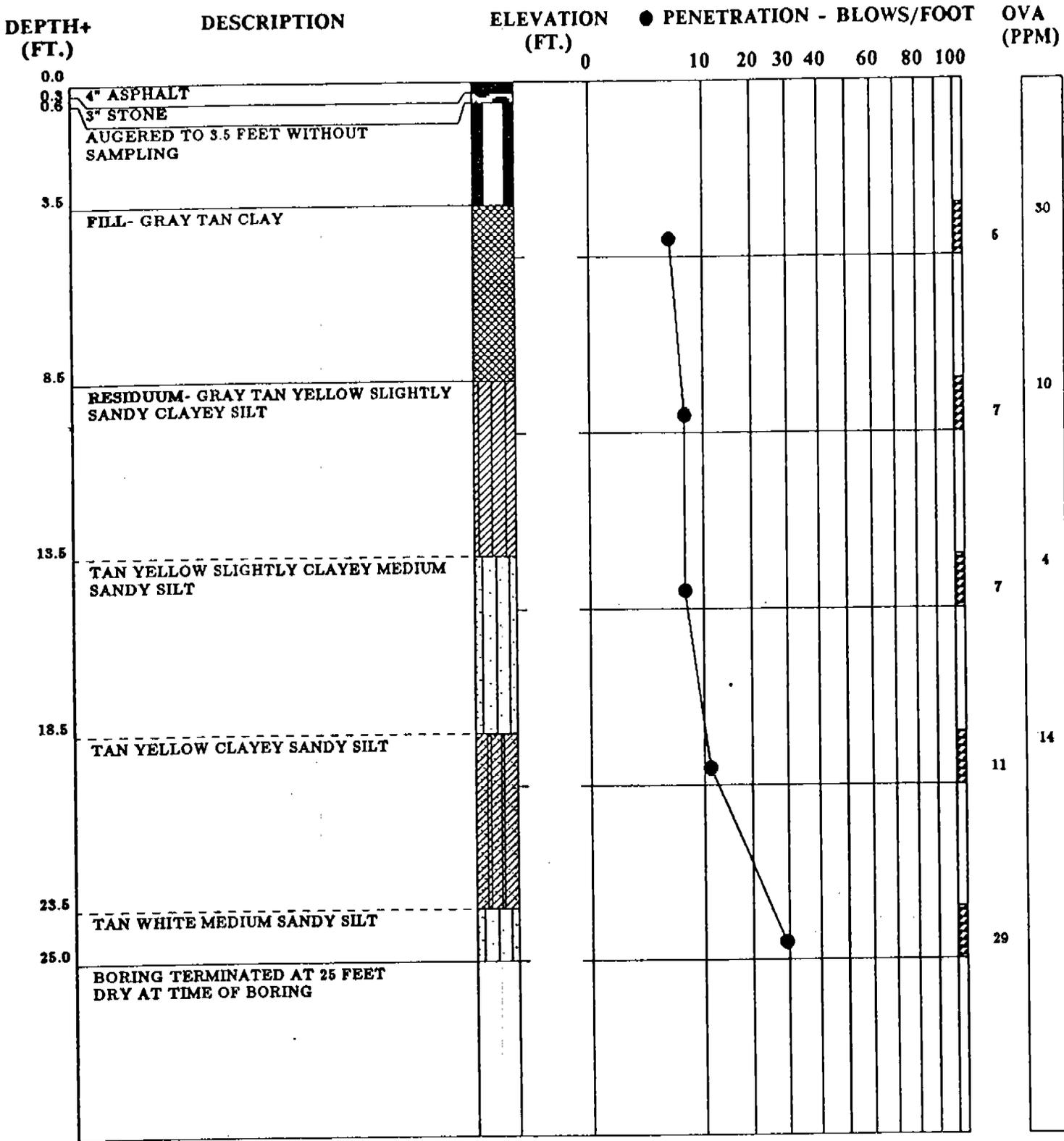
 LAW ENGINEERING



REMARKS:

TEST BORING RECORD	
BORING NUMBER	MW-1
DATE DRILLED	December 2, 1992
PROJECT NUMBER	259-90007-01
PROJECT	SUNOCO-SUMMIT AVENUE
PAGE 1 OF 1	
▲ LAW ENGINEERING	

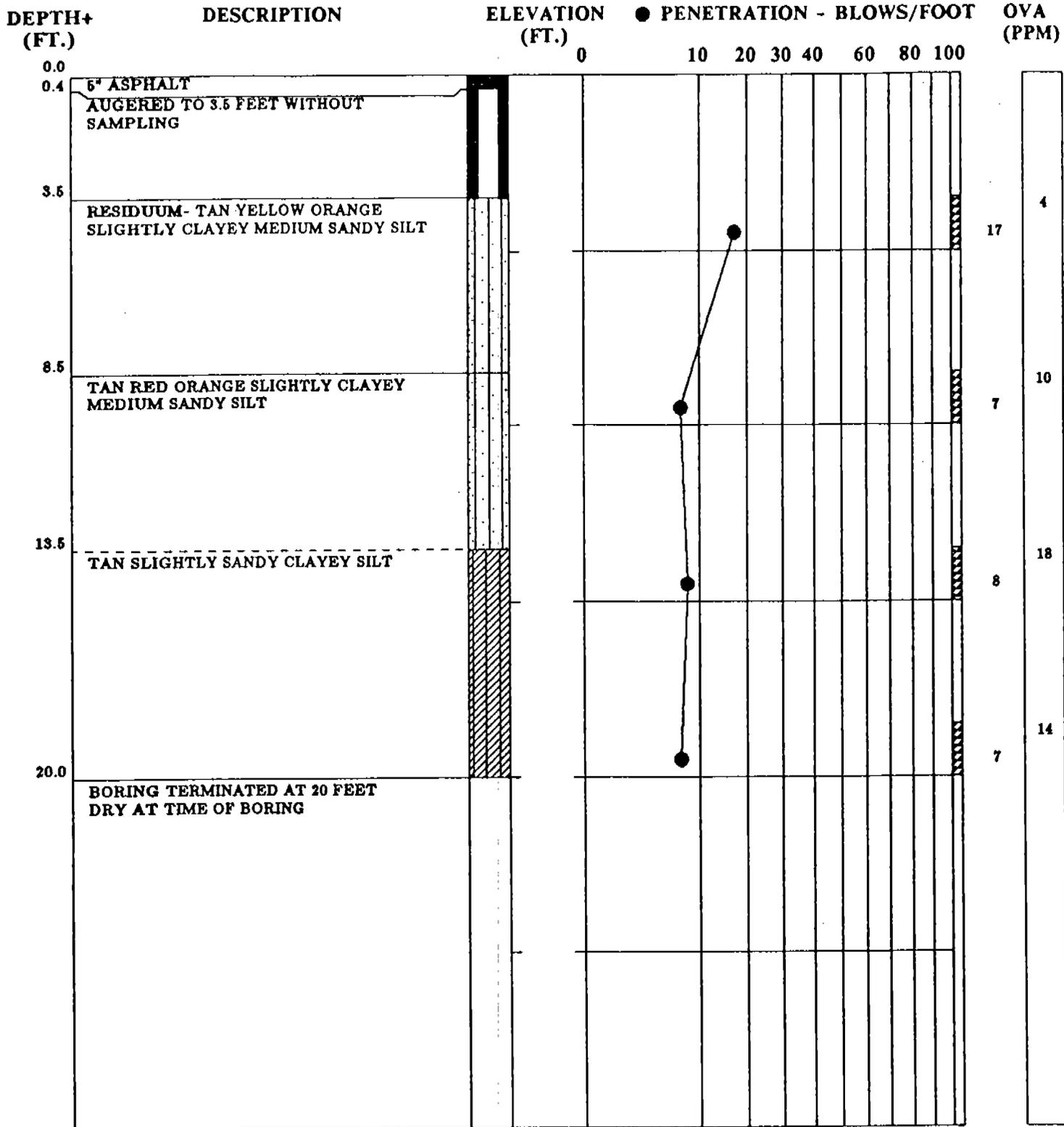
SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE



REMARKS:

TEST BORING RECORD	
BORING NUMBER	MW-2
DATE DRILLED	December 2, 1992
PROJECT NUMBER	259-90007-01
PROJECT	SUNOCO-SUMMIT AVENUE
PAGE 1 OF 1	
▲ LAW ENGINEERING	

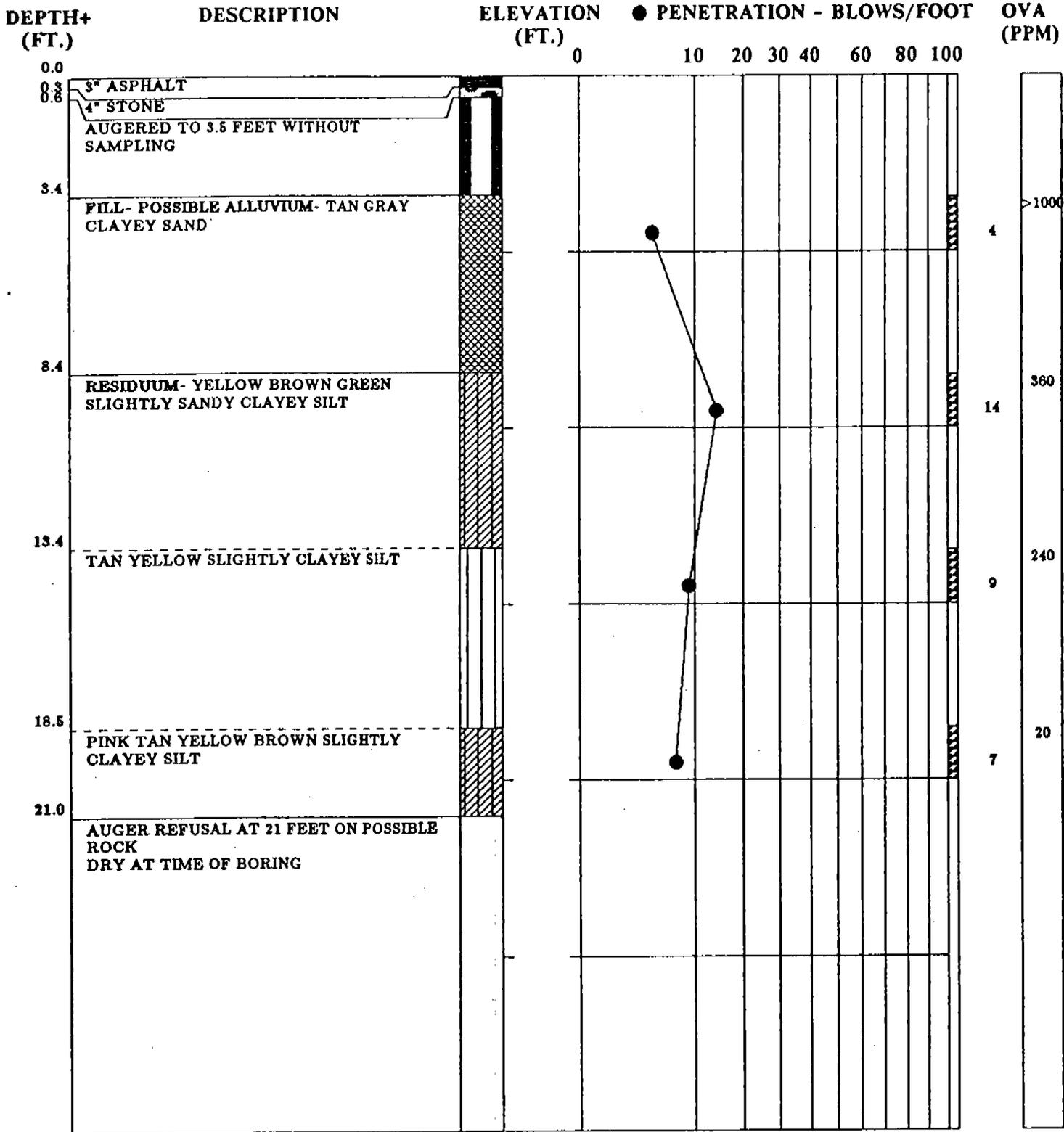
SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE



REMARKS:

TEST BORING RECORD	
BORING NUMBER	MW-3
DATE DRILLED	December 3, 1992
PROJECT NUMBER	259-90007-01
PROJECT	SUNOCO-SUMMIT AVENUE
PAGE 1 OF 1	
▲ LAW ENGINEERING	

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE



REMARKS:

TEST BORING RECORD	
BORING NUMBER	MW-4
DATE DRILLED	December 2, 1992
PROJECT NUMBER	259-90007-01
PROJECT	SUNOCO-SUMMIT AVENUE
PAGE 1 OF 1	
▲ LAW ENGINEERING	

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

MONITORING WELL CONSTRUCTION DIAGRAMS

Quad. No. _____ Serial No. _____
 Lat. _____ Long. _____ Fe _____
 Minor Basin _____
 Basin Code _____
 Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Law Engineering
 DRILLER REGISTRATION NUMBER 332

STATE WELL CONSTRUCTION PERMIT NUMBER: 40-1070-WM-0495

1. WELL LOCATION: (Show sketch of the location below)
 Nearest Town Greensboro, NC

County: Guilford

(Road, Community, or Subdivision and Lot No.) _____

Depth From _____ To _____ DRILLING LOG Formation Description

2. OWNER Sunoco/Mid-State Oil Company
 ADDRESS 1835 Market St., 11 Penn Ctr., 9th Floor
Philadelphia PA 19103
(Street or Route No.)
 City or Town State Zip Code

See Soil Test Boring Log MW-1

3. DATE DRILLED 12/3/92 USE OF WELL Monitoring

4. TOTAL DEPTH 22 ft CUTTINGS COLLECTED Yes No

5. DOES WELL REPLACE EXISTING WELL? Yes No

6. STATIC WATER LEVEL: _____ FT. above TOP OF CASING,
 below TOP OF CASING IS _____ FT. ABOVE LAND SURFACE

7. YIELD (gpm): N.A. METHOD OF TEST N.A.

8. WATER ZONES (depth): _____

9. CHLORINATION: Type N.A. Amount N.A.

10. CASING:

From	To	Depth	Diameter	Wall Thickness or Weight/Ft.	Material
0	5	Ft.	4-in	Sch 40	PVC
From	To	Ft.			
From	To	Ft.			

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)

11. GROUT:

From	To	Depth	Material	Method
0	3	Ft.	Neat Cement	Tremie
From	To	Ft.		

See Monitoring Well Location Map

12. SCREEN:

From	To	Depth	Diameter	Slot Size	Material
5	20	Ft.	4 in	0.010 in	PVC
From	To	Ft.	in	in	
From	To	Ft.	in	in	

13. GRAVEL PACK:

From	To	Depth	Size	Material
4	20	Ft.		Sand
From	To	Ft.		

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

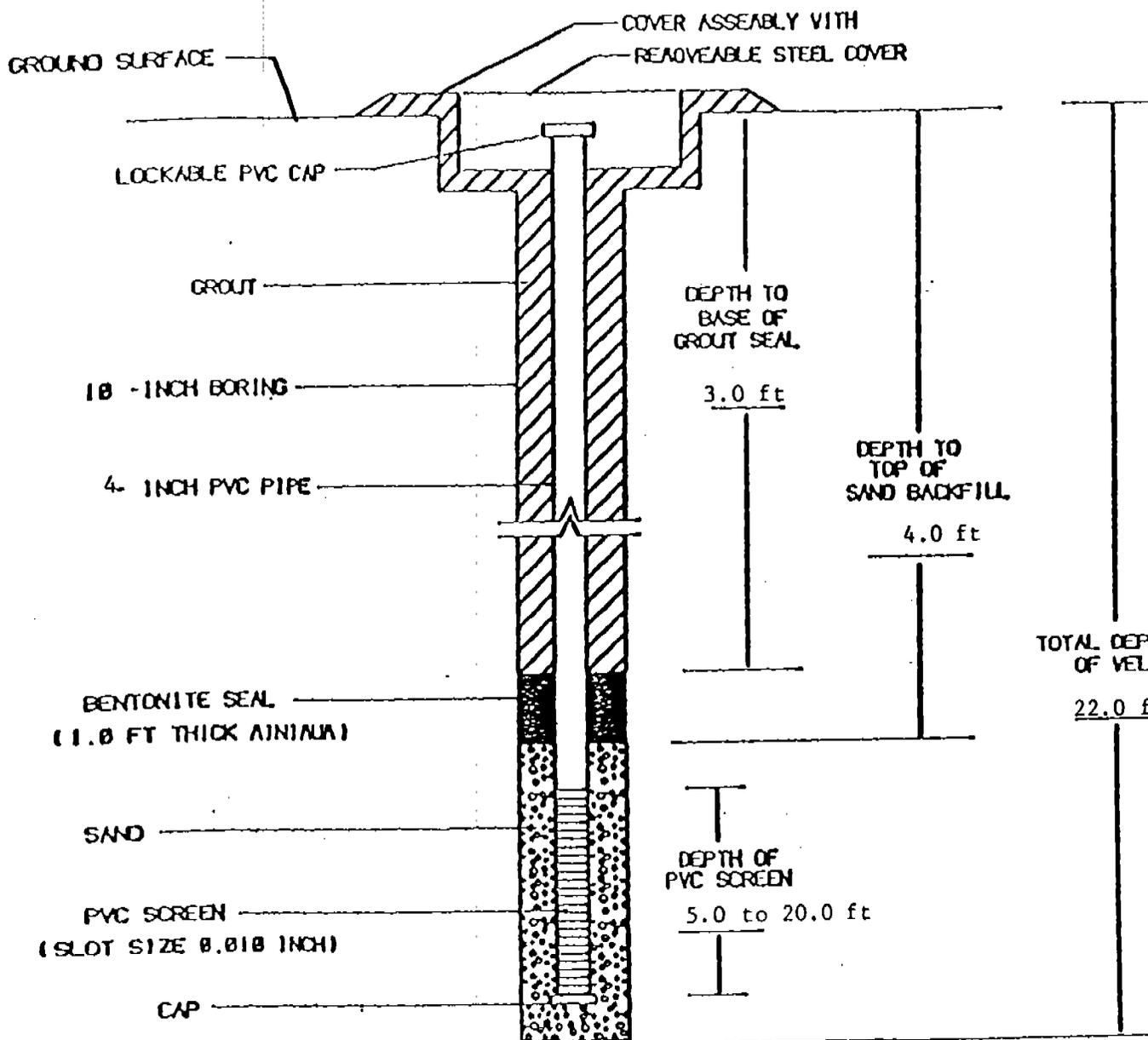
SIGNATURE OF CONTRACTOR OR AGENT

2/23/93

DATE

GROUND-WATER MONITORING WELL INSTALLATION RECORD

JOB NAME Summit Ave Sunoco JOB NUMBER 259-90007-01
 WELL NUMBER MW-1 GROUND SURFACE ELEVATION _____
 LOCATION Greensboro, North Carolina
 INSTALLATION DATE December 3, 1992



NOTE: ALL PVC PIPE JOINTS
HAVE SCREW CONNECTORS

Qued. No. _____ Serial No. _____
 Lat. _____ Long. _____ Pc _____
 Minor Basin _____
 Basin Code _____
 Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR Law Engineering
 DRILLER REGISTRATION NUMBER 332

STATE WELL CONSTRUCTION PERMIT NUMBER: 40-1070-WM-0495

1. WELL LOCATION: (Show sketch of the location below)
 Nearest Town: Greensboro, NC

(Road, Community, or Subdivision and Lot No.)

2. OWNER Sunoco/Mid-State Oil Company
 ADDRESS 1835 Market St. 11 Penn Ctr. 9th Floor
Philadelphia PA 19103
(Street or Route No.)
City or Town State Zip Code

3. DATE DRILLED 12/3/92 USE OF WELL Monitoring

4. TOTAL DEPTH 25 ft CUTTINGS COLLECTED Yes No

5. DOES WELL REPLACE EXISTING WELL? Yes No

6. STATIC WATER LEVEL: _____ FT. above TOP OF CASING,
 below
 TOP OF CASING IS _____ FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N.A. METHOD OF TEST N.A.

8. WATER ZONES (depth): _____

9. CHLORINATION: Type N.A. Amount N.A.

10. CASING:

From	Depth	To	Diameter	Wall Thickness or Weight/Ft.	Material
0	5	5	4-in	Sch 40	PVC
From	To	Ft.			
From	To	Ft.			

11. GROUT:

From	Depth	To	Material	Method
0	3	3	Neat Cement	Tremie
From	To	Ft.		

12. SCREEN:

From	Depth	To	Diameter	Slot Size	Material
5	20	20	4 in	0.010 in	PVC
From	To	Ft.	in	in	
From	To	Ft.	in	in	

13. GRAVEL PACK:

From	Depth	To	Size	Material
4	20	20		Sand
From	To	Ft.		

14. REMARKS: _____

County: Gailford

Depth		DRILLING LOG Formation Description
From	To	
		See Soil Test Boring Log MW-2

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)

See Monitoring Well Location Map

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

SIGNATURE OF CONTRACTOR OR AGENT

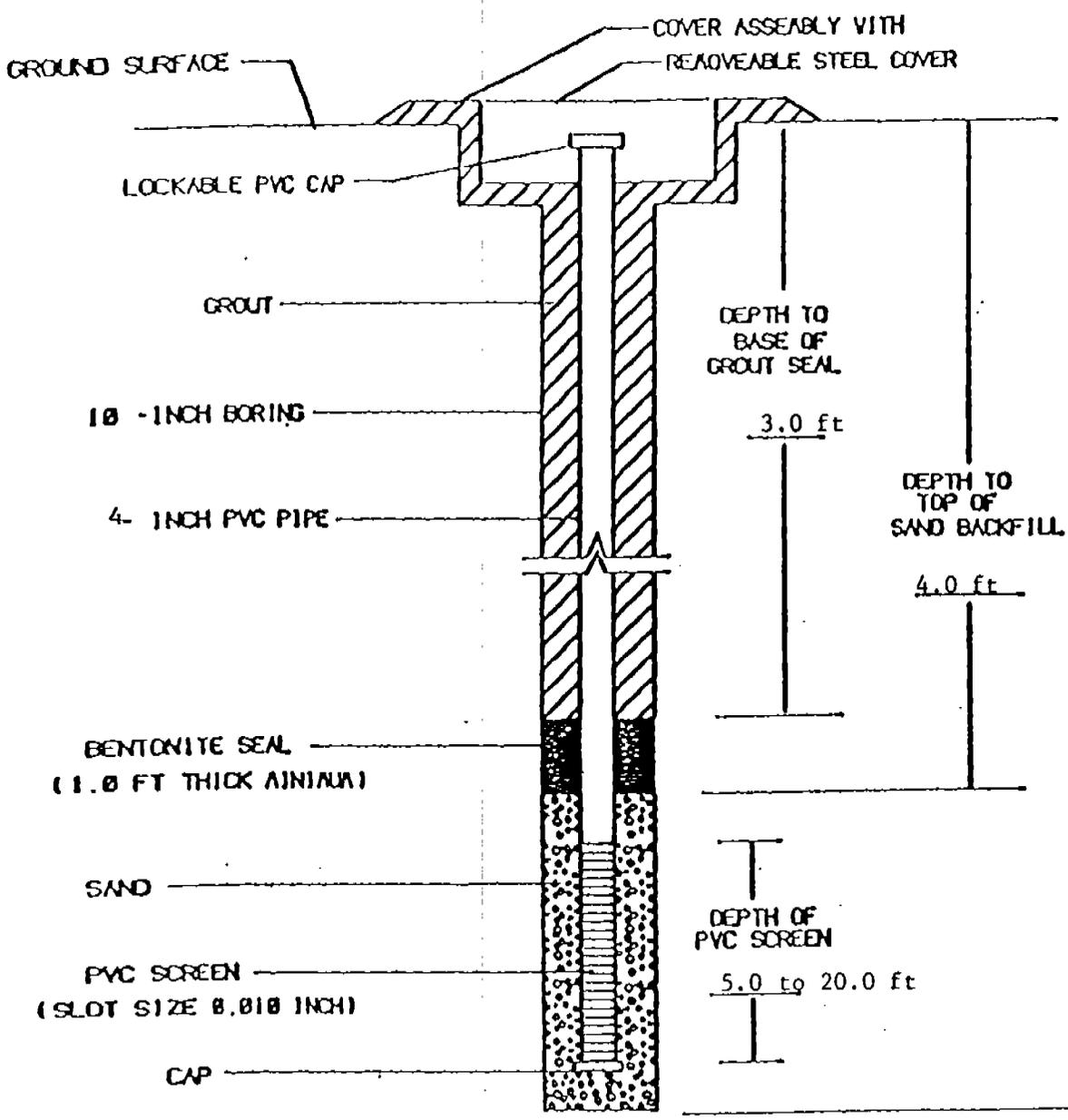
2/23/93

DATE

Submit original to Division of Environmental Management and copy to well owner.

GROUND-WATER MONITORING WELL INSTALLATION RECORD

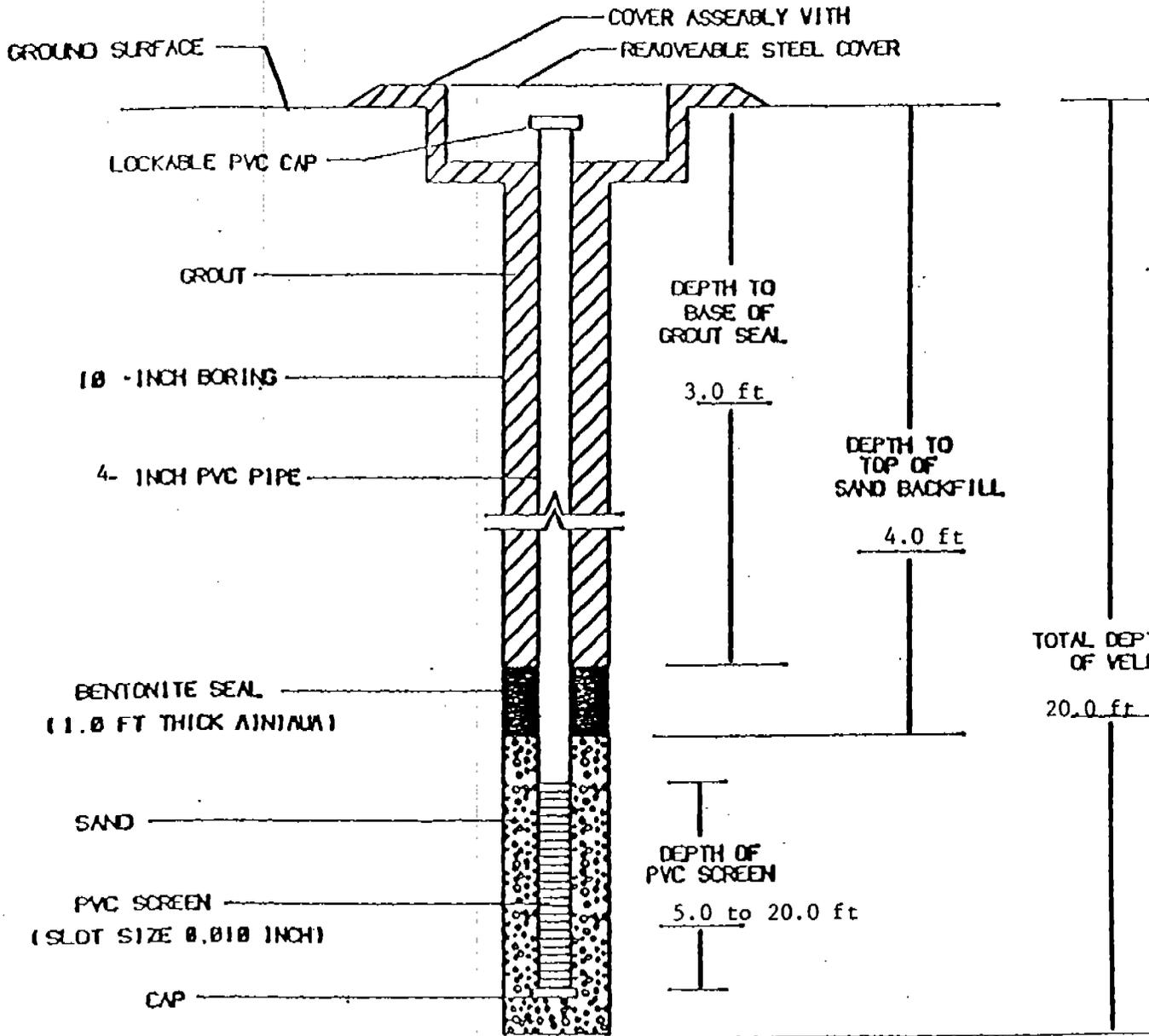
JOB NAME Summit Ave Sunoco **JOB NUMBER** 259-90007-01
WELL NUMBER MW-2 **GROUND SURFACE ELEVATION** _____
LOCATION Greensboro, North Carolina
INSTALLATION DATE December 3, 1992



NOTE: ALL PVC PIPE JOINTS
HAVE SCREW CONNECTORS

GROUND-WATER MONITORING WELL INSTALLATION RECORD

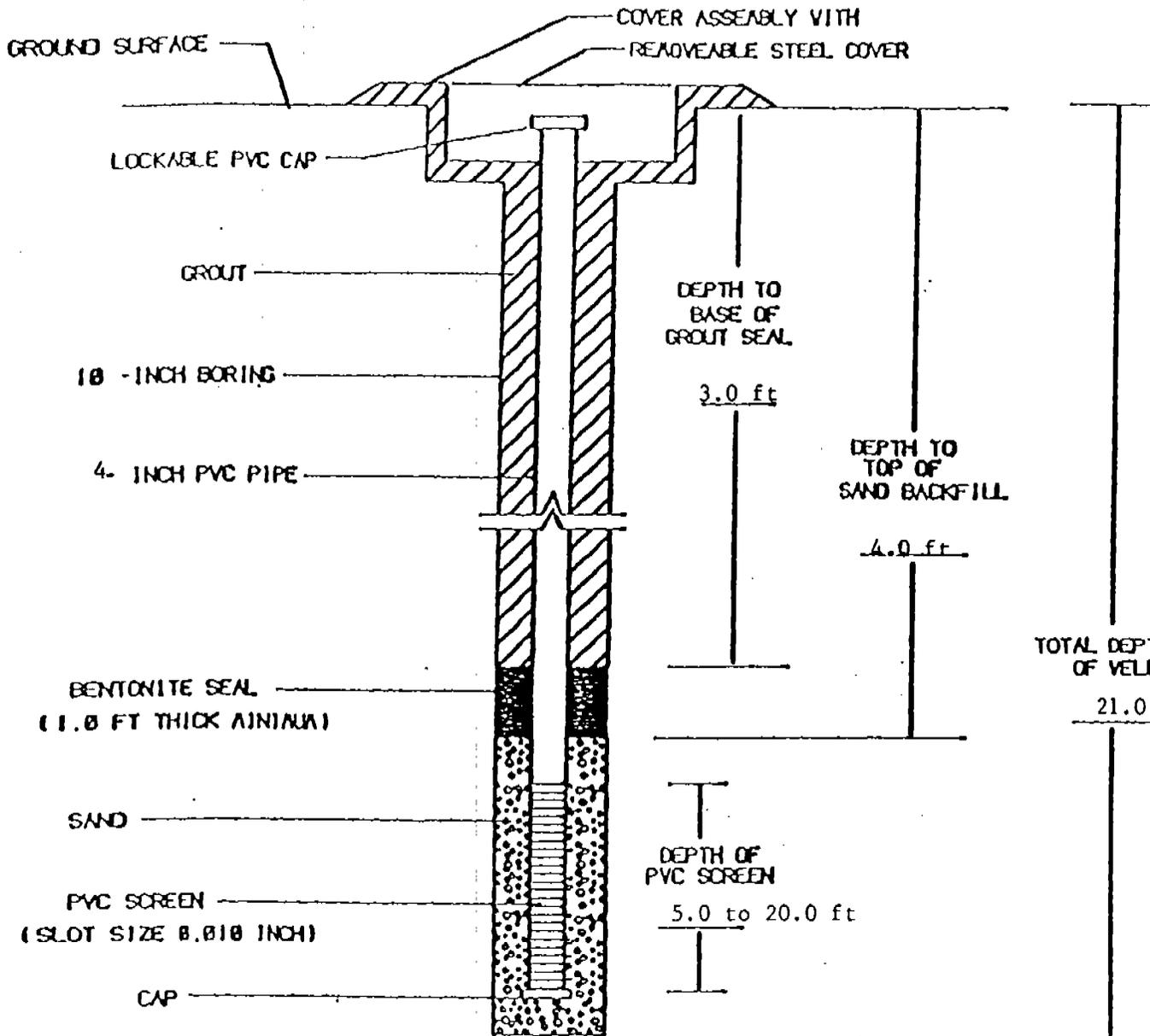
JOB NAME Summit Ave Sunoco JOB NUMBER 259-90007-01
 WELL NUMBER MW-3 GROUND SURFACE ELEVATION _____
 LOCATION Greensboro, North Carolina
 INSTALLATION DATE December 3, 1992



NOTE: ALL PVC PIPE JOINTS
 HAVE SCREW CONNECTORS

GROUND-WATER MONITORING WELL INSTALLATION RECORD

JOB NAME Summit Ave Sunoco JOB NUMBER 259-90007-01
 WELL NUMBER MW-4 GROUND SURFACE ELEVATION _____
 LOCATION Greensboro, North Carolina
 INSTALLATION DATE December 3, 1992



NOTE: ALL PVC PIPE JOINTS
 HAVE SCREW CONNECTORS

LABORATORY ANALYTICAL DATA REPORTS



LAW ENVIRONMENTAL, INC.

NATIONAL LABORATORIES DIVISION
300 CHASTAIN CENTER BLVD. SUITE 315
KENNESAW, GEORGIA 30144
404-426-4309 FAX 426-0243

December 9, 1992

Law Engineering, Inc.
7347 J. West Friendly Ave.
Greensboro, NC 27410

Attention: Scott Veenstra

LE Job Number: 259-90007-01

Subject: Chemical analysis of samples received on 12/04/92.

Dear Mr. Veenstra:

Law Environmental National Laboratories has completed its analysis of your samples and reports the results on the following pages. These results related only to the contents of the samples as submitted. This report shall not be reproduced except in full without the approval of Law Environmental National Laboratories.

If there are any questions, please do not hesitate to contact us.

Sincerely,

LAW ENVIRONMENTAL NATL LABS

Linda Harris
Hydrocarbon Laboratory Supervisor

Attachment: Data Report
Invoice

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 12/14/92
Page 1

--- Project Information ---

Lab Number : 62-6035-02
Project No. : 259-90007.01
Project Name : SUNOCO

Cust. No. :

Manager: SCOTT VEENSTRA

--- Sample Information ---

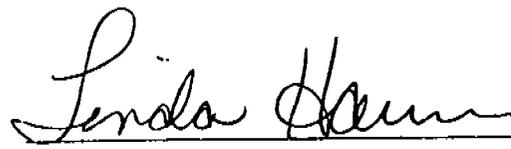
Station ID' : MW-1
Matrix : SO
Type : GRAB
Collector : RE

Sampled Date/Time : 12/03/92 10:30
Received Date/Time : 12/04/92 09:55
Received From/By : RE/SE
Chain of Custody : 14741
Number of Containers : 2

Remarks : *THE CHROMATOGRAM IS IN THE RANGE OF GASOLINE.
 **THE CHROMATOGRAM IS IN THE RANGE OF DIESEL.

--- Test Data ---

Parameter.....	Method....	Units	PQL.....	Results...	Test Date	Anal
-- SAMPLE PREPARATION RESULTS --						
Ext/TPH Semi-Volatile/So/Son	EPA 3550			NA	12/07/92	JM
Moisture (Oven Dried @ 105 C)	EPA 160.3M wt %		1	21	12/09/92	DM
--- SERIES 15000						
Benzene	EPA 8020	mg/kg	.002	0.059	12/09/92	RO
Toluene	EPA 8020	mg/kg	.002	0.27	12/12/92	RO
Ethylbenzene	EPA 8020	mg/kg	.002	0.29	12/09/92	RO
Xylene, Total	EPA 8020	mg/kg	.005	1.3	12/09/92	RO
-- TPH-Semi-Volatile RESULTS --						
Gas Range	8015M/3550	mg/kg	4	69*	12/08/92	DL
Diesel Range	8015M/3550	mg/kg	4	240**	12/08/92	DL
-- SCREENING FOR BTEX RESULTS --						
SCREENING FOR BTEX				NA	12/08/92	OR

Signed 

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 12/12/92
Page 1

--- Project Information ---

Lab Number : 62-6035-04
Project No. : 259-90007.01
Project Name : SUNOCO

Cust. No. :

Manager: SCOTT VEENSTRA

--- Sample Information ---

Station ID : MW-2
Matrix : SO
Type : GRAB
Collector : RE

Sampled Date/Time : 12/03/92 16:30
Received Date/Time : 12/04/92 09:55
Received From/By : RE/SE
Chain of Custody : 14741
Number of Containers : 2

Remarks :

--- Test Data ---

Parameter.....	Method....	Units	PQL.....	Results...	Test Date	Anal
-- SAMPLE PREPARATION RESULTS --						
Ext/TPH Semi-Volatile/So/Son	EPA 3550			NA	12/07/92	JMR
Moisture (Oven Dried @ 105 C)	EPA 160.3M wt %	1		25	12/09/92	DM
--- SERIES 15000						
Benzene	EPA 8020	mg/kg	.003	ND	12/09/92	RO
Toluene	EPA 8020	mg/kg	.003	ND	12/09/92	RO
Ethylbenzene	EPA 8020	mg/kg	.003	ND	12/09/92	RO
Xylene, Total	EPA 8020	mg/kg	.006	ND	12/09/92	RO
-- TPH-Semi-Volatile RESULTS --						
Gas Range	8015M/3550	mg/kg	4	ND	12/09/92	DL
Diesel Range	8015M/3550	mg/kg	4	ND	12/09/92	DL
-- SCREENING FOR BTEX RESULTS --						
SCREENING FOR BTEX				NA	12/08/92	OR

Signed

Linda Harris

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 12/14/92
Page 1

--- Project Information ---

Lab Number : 62-6035-03
Project No. : 259-90007.01
Project Name : SUNOCO

Cust. No. :

Manager: SCOTT VEENSTRA

--- Sample Information ---

Station ID : MW-3
Matrix : SO
Type : GRAB
Collector : RE

Sampled Date/Time : 12/03/92 12:30
Received Date/Time : 12/04/92 09:55
Received From/By : RE/SE
Chain of Custody : 14741
Number of Containers : 2

Remarks :

--- Test Data ---

Parameter..... Method.... Units PQL..... Results... Test Date Ana

-- SAMPLE PREPARATION RESULTS --

Ext/TPH Semi-Volatile/So/Son	EPA 3550			NA	12/07/92	JMK
Moisture (Oven Dried @ 105 C)	EPA 160.3M wt %	1		27	12/09/92	DM

--- SERIES 15000

Benzene	EPA 8020	mg/kg	.003	ND	12/09/92	RO
Toluene	EPA 8020	mg/kg	.003	0.0028	12/09/92	RO
Ethylbenzene	EPA 8020	mg/kg	.003	ND	12/09/92	RO
Xylene, Total	EPA 8020	mg/kg	.006	ND	12/09/92	RO

-- TPH-Semi-Volatile RESULTS --

Gas Range	8015M/3550	mg/kg	4	ND	12/08/92	DLM
Diesel Range	8015M/3550	mg/kg	4	ND	12/08/92	DLM

-- SCREENING FOR BTEX RESULTS --

SCREENING FOR BTEX				NA	12/08/92	OR
--------------------	--	--	--	----	----------	----

Signed Linda Hau

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 12/10/92
Page 1

--- Project Information ---

Lab Number : 62-6035-01
Project No. : 259-90007.01
Project Name : SUNOCO

Cust. No. :

Manager: SCOTT VEENSTRA

--- Sample Information ---

Station ID : MW-4
Matrix : SO
Type : GRAB
Collector : RE

Sampled Date/Time : 12/03/92 09:30
Received Date/Time : 12/04/92 09:55
Received From/By : RE/SE
Chain of Custody : 14741
Number of Containers : 2

Remarks : *THE CHROMATOGRAM IS IN THE RANGE OF GASOLINE.
**THE CHROMATOGRAM IS IN THE RANGE OF DIESEL.

--- Test Data ---

Parameter.....	Method....	Units	PQL.....	Results...	Test Date	Anal
-- SAMPLE PREPARATION RESULTS --						
Ext/TPH Semi-Volatile/So/Son	EPA 3550			NA	12/07/92	JMK
Moisture (Oven Dried @ 105 C)	EPA 160.3M wt %	1		18	12/09/92	DM
--- SERIES 15000						
Benzene	EPA 8020	mg/kg	.002	0.047	12/09/92	RO
Toluene	EPA 8020	mg/kg	.002	0.011	12/09/92	RO
Ethylbenzene	EPA 8020	mg/kg	.002	0.078	12/09/92	RO
Xylene, Total	EPA 8020	mg/kg	.004	0.092	12/09/92	RO
-- TPH-Semi-Volatile RESULTS --						
Gas Range	8015M/3550	mg/kg	4	11*	12/08/92	DLM
Diesel Range	8015M/3550	mg/kg	4	70**	12/08/92	DLM
-- SCREENING FOR BTEX RESULTS --						
SCREENING FOR BTEX				NA	12/08/92	OR

Signed Linda Hain



LAW ENVIRONMENTAL, INC.
 NATIONAL LABORATORY
 300 CHASTAIN CENTER BLVD.
 SUITE 315
 KENNESAW, GEORGIA 30144
 (404) 426-4309

62-6035
 Q256

LAW ENVIRONMENTAL
 NATIONAL LABORATORIES

KENNESAW REQUEST FOR ANALYSIS
 HYDROCARBON LAB

PROJECT NAME: SUNOCO SUMMIT AVE COC#: _____

PROJECT #: 259-90007 TASK #: 01 PROJECT MGR: SCOTT VEENSTRA

HYDROCARBON (CIRCLE ANALYSES REQUESTED)

TURNAROUND TIME: STANDARD (1 WEEK) X RUSH _____ (INCURS RUSH FEE)
 days

SAMPLE I.D.: MW-1 VOL SV
MW-2 VOL SV MW-3 VOL SV
MW-4 VOL SV

	Water	Water/Soil
<u>BTEX</u>	602	<u>8020</u>
BTEX + MTBE	602	8020
IPE	602	8020
Petroleum Hydrocarbons, IR - EPA 418.1 Oil & Grease	9070	9071 (Soil Only)
Polynuclear Aromatic Hydrocarbons (PAH)	610	8100
Petroleum Hydrocarbons, Volatile - CAL-DHS Petroleum Hydrocarbons, Semi-Volatile - CAL-DHS		
Petroleum Hydrocarbons, Volatile - EPA 5030/8015M Petroleum Hydrocarbons, Volatile - 5030/SF BAY Petroleum Hydrocarbons, Semi-Volatile - 3550/SF BAY		
Petroleum Hydrocarbons, GRO - TENN/5030 Petroleum Hydrocarbons, DRO - TENN		
Petroleum Hydrocarbons, Volatile - IOWA/5030 Petroleum Hydrocarbons, Semi-Volatile - IOWA		
<u>Petroleum Hydrocarbons, Gas/Diesel - EPA 8015M/VA</u>		
Petroleum Hydrocarbons, IR - WTPH-418.1M/WA Petroleum Hydrocarbons, Volatile - WTPH-G/WA Petroleum Hydrocarbons, Semi-Volatile - WTPH-D/WA		

FORM COMPLETED BY: Robert Evans DATE: 12-3-92

SAMPLE RECEIPT AND NON-CONFORMANCE FORM



LENL#: 62-6035-01-204 DATE: 12/4/92

PROJECT NAME: Seneca Summit Area PROJECT #: 259-90007 T01

A: PRELIMINARY EXAMINATION: Date shipment was opened: 12/4/92

- 1. Did shipment come with a shipping air bill? Y (N) N NA
- 2. If YES, document carrier and air bill # FX 4886780032
- 3. Were custody seals present on samples? Y (N) N --
- 4. Were custody seals intact? Y N (NA)
- 5. Were custody papers filled out properly? (Y) N --
- 6. Were custody papers signed? (Y) N --
- 7. Are sampling time(s) present? (Y) N --
- 8. Are sampling date(s) present? (Y) N --
- 9. Type of packing and ice used: Bubble wrap - wet ice Y N --

B: LOGIN-IN PHASE Date samples were logged-in: 12/4/92

- 1. Did all bottles arrive intact? (Y) N --
- 2. Did all bottle labels agree with custody papers? (Y) N --
- 3. Were proper containers used for requested test? (Y) N --
- 4. Were correct preservatives added for requested test? (Y) N --
- 5. Was sufficient sample received for requested test? (Y) N --
- 6. Were air bubbles present in VOA samples? Y N (NA)

COMMENTS: _____

Processed By: SC

C: CORRECTIVE ACTION:
1. Client notified verbally Date: _____ Time: _____

2. Samples processed as received: (Y) N --

COMMENTS: _____

SAMPLE CONTROL COORDINATOR _____ INITIALS SC DATE 12/4
 SAMPLE CONTROL SUPERVISOR _____ INITIALS ST DATE 12/3/92



LAW ENVIRONMENTAL, INC.

NATIONAL LABORATORIES DIVISION
300 CHASTAIN CENTER BLVD. SUITE 315
KENNESAW, GEORGIA 30144
404-426-4309 FAX 426-0243

December 28, 1992

Law Engineering, Inc.
7347 J. West Friendly Ave.
Greensboro, NC 27410

Attention: Scott Veenstra

LE Job Number: 259-90007-01

Subject: Chemical analysis of samples received on 12/18/92.

Dear Mr. Veenstra:

Law Environmental National Laboratories has completed its analysis of your samples and reports the results on the following pages. These results related only to the contents of the samples as submitted. This report shall not be reproduced except in full without the approval of Law Environmental National Laboratories.

If there are any questions, please do not hesitate to contact us.

Sincerely,

LAW ENVIRONMENTAL NATL LABS

Linda Harris
Hydrocarbon Laboratory Supervisor

Attachment: Data Report
Invoice

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 12/31/92
Page 1

--- Project Information ---

Lab Number : 62-6120-01
Project No. : 259-90007-01
Project Name : SUMMIT AVE. SONOCO

Cust. No. :

Manager: SCOTT VEENSTRA

--- Sample Information ---

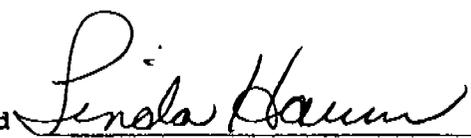
Station ID : MW-1
Matrix : W
Type : GRAB
Collector : JLR

Sampled Date/Time : 12/17/92 14:2
Received Date/Time : 12/18/92 11:3
Received From/By : JLR/LH
Chain of Custody : 17262
Number of Containers : 5

Remarks : *THE CHROMATOGRAM RESEMBLES THAT OF GASOLINE.

--- Test Data ---

Parameter.....	Method....	Units	PQL.....	Results...	Test Date	Anal
-- SAMPLE PREPARATION RESULTS --						
Ext/TPH-Semi-Volatile/W	EPA 3520			NA	12/28/92	JS
--- SERIES 15000						
Benzene	EPA 602	ug/l	1.0	ND	12/26/92	KH
Toluene	EPA 602	ug/l	1.0	ND	12/26/92	KH
Ethylbenzene	EPA 602	ug/l	1.0	1.6	12/26/92	KH
Xylene, Total	EPA 602	ug/l	2.0	ND	12/26/92	KH
-- TPH-Semi-Volatile RESULTS --						
Gas Range	8015M/3510	ug/l	500	1300*	12/29/92	DL
Diesel Range	8015M/3510	ug/l	500	ND	12/29/92	DL
-- SCREENING FOR BTEX RESULTS --						
SCREENING FOR BTEX				NA	12/22/92	RO

Signed 

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 12/31/92
Page 1

--- Project Information ---

Lab Number : 62-6120-02
Project No. : 259-90007-01
Project Name : SUMMIT AVE. SONOCO

Cust. No. :

Manager: SCOTT VEENSTRA

--- Sample Information ---

Station ID : MW-2
Matrix : W
Type : GRAB
Collector : JLR

Sampled Date/Time : 12/17/92 12:30
Received Date/Time : 12/18/92 11:30
Received From/By : JLR/LH
Chain of Custody : 17262
Number of Containers : 5

Remarks :

--- Test Data ---

Parameter.....	Method....	Units	PQL.....	Results...	Test Date	Anal
-- SAMPLE PREPARATION RESULTS --						
Ext/TPH-Semi-Volatile/W	EPA 3520			NA	12/28/92	JSB
--- SERIES 15000						
Benzene	EPA 602	ug/l	1.0	230	12/28/92	KH
Toluene	EPA 602	ug/l	1.0	ND	12/26/92	KH
Ethylbenzene	EPA 602	ug/l	1.0	ND	12/26/92	KH
Xylene, Total	EPA 602	ug/l	2.0	ND	12/26/92	KH
-- TPH-Semi-Volatile RESULTS --						
Gas Range	8015M/3510	ug/l	500	ND	12/29/92	DLM
Diesel Range	8015M/3510	ug/l	500	ND	12/29/92	DLM
-- SCREENING FOR BTEX RESULTS --						
SCREENING FOR BTEX				NA	12/22/92	RO

Signed 

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 12/31/92
Page 1

--- Project Information ---

Lab Number : 62-6120-03
Project No. : 259-90007-01
Project Name : SUMMIT AVE. SONOCO

Cust. No. :

Manager: SCOTT VEENSTRA

--- Sample Information ---

Station ID : MW-3
Matrix : W
Type : GRAB
Collector : JLR

Sampled Date/Time : 12/17/92 11:05
Received Date/Time : 12/18/92 11:30
Received From/By : JLR/LH
Chain of Custody : 17262
Number of Containers : 5

Remarks :

--- Test Data ---

Parameter.....	Method....	Units	PQL.....	Results...	Test Date	Anal
-- SAMPLE PREPARATION RESULTS --						
Ext/TPH-Semi-Volatile/W	EPA 3520			NA	12/28/92	JSB
--- SERIES 15000						
Benzene	EPA 602	ug/l	1.0	ND	12/27/92	KH
Toluene	EPA 602	ug/l	1.0	ND	12/27/92	KH
Ethylbenzene	EPA 602	ug/l	1.0	ND	12/27/92	KH
Xylene, Total	EPA 602	ug/l	2.0	ND	12/27/92	KH
-- TPH-Semi-Volatile RESULTS --						
Gas Range	8015M/3510	ug/l	500	ND	12/29/92	DLM
Diesel Range	8015M/3510	ug/l	500	ND	12/29/92	DLM
-- SCREENING FOR BTEX RESULTS --						
SCREENING FOR BTEX				NA	12/22/92	RO

Signed 

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 12/31/92
Page 1

--- Project Information ---

Lab Number : 62-6120-04
Project No. : 259-90007-01
Project Name : SUMMIT AVE. SONOCO

Cust. No. :

Manager: SCOTT VEENSTRA

--- Sample Information ---

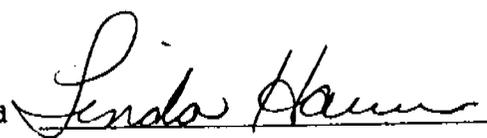
Station ID : MW-4
Matrix : W
Type : GRAB
Collector : JLR

Sampled Date/Time : 12/17/92 15:11
Received Date/Time : 12/18/92 11:30
Received From/By : JLR/LH
Chain of Custody : 17262
Number of Containers : 5

Remarks :

--- Test Data ---

Parameter.....	Method....	Units	PQL.....	Results...	Test Date	Anal
-- SAMPLE PREPARATION RESULTS --						
Ext/TPH-Semi-Volatile/W	EPA 3520			NA	12/28/92	JSB
--- SERIES 15000						
Benzene	EPA 602	ug/l	1.0	32	12/27/92	KH
Toluene	EPA 602	ug/l	1.0	ND	12/27/92	KH
Ethylbenzene	EPA 602	ug/l	1.0	ND	12/27/92	KH
Xylene, Total	EPA 602	ug/l	2.0	3.3	12/27/92	KH
-- TPH-Semi-Volatile RESULTS --						
Gas Range	8015M/3510	ug/l	500	ND	12/29/92	DLA
Diesel Range	8015M/3510	ug/l	500	ND	12/29/92	DLA
-- SCREENING FOR BTEX RESULTS --						
SCREENING FOR BTEX				NA	12/22/92	RO

Signed 

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 12/31/92
Page 1

--- Project Information ---

Lab Number : 62-6120-05
Project No. : 259-90007-01
Project Name : SUMMIT AVE. SONOCO

Cust. No. :

Manager: SCOTT VEENSTRA

--- Sample Information ---

Station ID : TRIP BLANK
Matrix : W
Type : GRAB
Collector :

Sampled Date/Time : 12/17/92 :
Received Date/Time : 12/18/92 11:30
Received From/By : JLR/LH
Chain of Custody : 17262
Number of Containers : 2

Remarks :

--- Test Data ---

Parameter.....	Method....	Units	PQL.....	Results...	Test Date	Anal
--- SERIES	15000					
Benzene	EPA 602	ug/l	1.0	ND	12/27/92	KH
Toluene	EPA 602	ug/l	1.0	ND	12/27/92	KH
Ethylbenzene	EPA 602	ug/l	1.0	ND	12/27/92	KH
Xylene, Total	EPA 602	ug/l	2.0	ND	12/27/92	KH

Signed

Linda Brown



LAW ENVIRONMENTAL, INC.
 NATIONAL LABORATORY
 112 TOWNPARK DRIVE
 KENNESAW, GEORGIA 30144
 (404) 421-3306

CHAIN OF CUSTODY RECORD

17262

SAMPLING INFORMATION

NAME OF FACILITY: SUMMIT AVE. SINOXO
 STREET ADDRESS: 1103 SUMMIT AVE.
 CITY / STATE: GREENSBORO, NC ZIP: _____

PROJECT NAME	JOB NO.	TOTAL NO. OF CONTAINERS	CONTAINER TYPE	DATE / TIME	RECEIVED BY:	DATE / TIME	RELINQUISHED BY:	DATE / TIME	
<u>SUMMIT AVE. SINOXO</u>	<u>259-9007-01</u>				<u>[Signature]</u>		<u>[Signature]</u>		
SAMPLERS (SIGNATURE)	SAMPLERS INITIALS (PRINT)								
<u>James R. Reed</u>	<u>JLR</u>								
SAMPLING DATE									
<u>12/17/92</u>									
TIME	GRAB	COM	MATRIX	SAMPLE STATION DESCRIPTION	DATE / TIME	RECEIVED BY:	DATE / TIME	RELINQUISHED BY:	DATE / TIME
<u>2:22</u>	<u>X</u>		<u>W</u>	<u>MW-1</u>					<u>62-6120-01</u>
<u>12:30</u>	<u>X</u>		<u>W</u>	<u>MW-2</u>					<u>-02</u>
<u>11:05</u>	<u>X</u>		<u>W</u>	<u>MW-3</u>					<u>-03</u>
<u>3:11</u>	<u>X</u>		<u>W</u>	<u>MW-4</u>					<u>-04</u>
<u>-</u>	<u>X</u>		<u>W</u>	<u>Trip Blank</u>					<u>-05</u>

RELINQUISHED BY: [Signature] (SIGNATURE) DATE / TIME: 12/17/92 5:28 PM

RECEIVED BY: [Signature] (SIGNATURE) DATE / TIME: 12/17/92 11:30 AM

DISTRIBUTION: ORIGINAL AND YELLOW COPIES ACCOMPANY SAMPLE SHIPMENT TO LABORATORY. PINK COPY RETAINED BY SAMPLERS. YELLOW COPY RETAINED BY LABORATORY.

REMARKS: ANALYZE SAMPLES FOR BTEX (602) and Petroleum Hydrocarbons (8015) NORMAL DAT

WATER - W SLUDGE - SL
 SOIL / SEDIMENT - SO OTHER - NA

*MATRIX



LAW ENVIRONMENTAL, INC.
 NATIONAL LABORATORY
 300 CHASTAIN CENTER BLVD.
 SUITE 315
 KENNESAW, GEORGIA 30144
 (404) 426-4309

LAW ENVIRONMENTAL
 NATIONAL LABORATORIES

KENNESAW REQUEST FOR ANALYSIS
 HYDROCARBON LAB

PROJECT NAME: SUMMIT AVE. SUNDOL COC#: 17262

PROJECT #: 259-90007 TASK #: 01 PROJECT MGR: SCOTT VEENSTRA

HYDROCARBON (CIRCLE ANALYSES REQUESTED)

TURNAROUND TIME: STANDARD (1 WEEK) X RUSH _____ (INCURS RUSH FEE)

SAMPLE I.D.: MW-1, MW-2, MW-3, MW-4 ^{days}

	Water	Water/Soil
<u>BTEX</u>	<u>602</u>	8020
BTEX + MTBE	602	8020
IPE	602	8020
Petroleum Hydrocarbons, IR - EPA 418.1 Oil & Grease	9070	9071 (Soil Only)
Polynuclear Aromatic Hydrocarbons (PAH)	610	8100
Petroleum Hydrocarbons, Volatile - CAL-DHS Petroleum Hydrocarbons, Semi-Volatile - CAL-DHS		
Petroleum Hydrocarbons, Volatile - EPA 5030/8015M Petroleum Hydrocarbons, Volatile - 5030/SF BAY Petroleum Hydrocarbons, Semi-Volatile - 3550/SF BAY		
Petroleum Hydrocarbons, GRO - TENN/5030 Petroleum Hydrocarbons, DRO - TENN		
Petroleum Hydrocarbons, Volatile - IOWA/5030 Petroleum Hydrocarbons, Semi-Volatile - IOWA		
<u>Petroleum Hydrocarbons, Gas/Diesel - EPA 8015M/VA</u>		
Petroleum Hydrocarbons, IR - WTPH-418.1M/WA Petroleum Hydrocarbons, Volatile - WTPH-G/WA Petroleum Hydrocarbons, Semi-Volatile - WTPH-D/WA		

FORM COMPLETED BY: James L Reid DATE: 12/17/92

MONITORING WELL CONSTRUCTION PERMIT

Rec'd
12/9/92
SCW



State of North Carolina
Department of Environment, Health, and Natural Resources
Winston-Salem Regional Office

James G. Martin, Governor
William W. Cobey, Jr., Secretary

Margaret Plemmons Foster
Regional Manager

DIVISION OF ENVIRONMENTAL MANAGEMENT
GROUNDWATER SECTION

December 4, 1992

Mid-State Oil Company
c/o SUN
1835 Market Street 11PC/9
Philadelphia, PA 19103-2990

SUBJECT: MONITOR WELL CONSTRUCTION
PERMIT NO. 40-1070-WM-0495
GUILFORD COUNTY
FILE NAME: 1105 Summit Avenue - Sunoco

Dear Sir:

In accordance with your application received November 17, 1992, we are forwarding herewith Monitor Well Construction Permit No. 40-1070-WM-0495 for the construction of four monitor wells or more as needed in the Charlotte Belt Hydrogeologic Unit.

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

This Permit will be effective from the date of its issuance and shall be subject to the conditions and limitations as specified therein.

Sincerely,

Sherri V. Knight
Groundwater Supervisor

LDC/SVK/ahl
Enclosure

cc: Groundwater Section - Central Office
Guilford County Division of Emergency Management
WSRO Files
~~Law Engineering~~

NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION
DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES

PERMIT FOR THE CONSTRUCTION OF
A MONITOR WELL OR WELL SYSTEM

In accordance with the provisions of Article 7, Chapter 87, North Carolina General Statutes, and other applicable Laws, Rules, and Regulations.

PERMISSION IS HEREBY GRANTED TO
Mid-State Oil Company

FOR THE CONSTRUCTION OF FOUR MONITOR WELLS OR MORE AS NEEDED in the Charlotte Belt Hydrogeologic unit located at 1105 Summit Avenue, Greensboro, North Carolina in Guilford County in accordance with the application dated November 13, 1992, and in conformity with the specifications and supporting data, all of which are filed with the Department of Environment, Health and Natural Resources 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 North Carolina Well Construction Regulations and Standards, 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 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 wells.
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 Central Office of the Groundwater Section P. O. Box 29535, Raleigh, North Carolina 27611.
4. All laboratory analysis of Groundwater samples collected from the permitted monitor wells are to be submitted to North Carolina Department of Environment, Health, and Natural Resources, Groundwater Section, P. O. Box 29535, Raleigh, N. C. 27611 with a copy to the North Carolina Department of Environment, Health and Natural Resources, Groundwater Section, 8025 North Point Boulevard, Suite 100, Winston-Salem, N. C. 27106 within 60 days of well completion, and quarterly thereafter.
5. All additional investigative findings in relation to the pollution sources being monitored, as indicated under "Additional Information" of form GW-22M ("Item J" of form GW-22B) of permit application, are to be submitted to North Carolina Department of Environment, Health and Natural Resources, Groundwater Section, P. O. Box 29535, Raleigh, N. C. 27611 with a copy to North Carolina Department of Environment, Health, and Natural Resources, Groundwater Section, 8025 North Point Boulevard, Suite 100, Winston-Salem, N. C. 27106 within 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 North Carolina Administrative Code 15. 2C.0113 and a well abandonment form sent to the North Carolina Department of Environment, Health, and Natural Resources, Groundwater Section, P. O. Box 29535, Raleigh, N. C. 27611 with a copy to North Carolina Department of Environment, Health and Natural Resources, Groundwater Section, 8025 North Point Boulevard, Suite 100, Winston-Salem, N. C. 27106.

Permit No. 40-1070-WM-0495
Page three

8. The monitor well shall be constructed in accordance with the Groundwater Section's recommended construction details as outlined in attachment #1.
9. A county monitor well construction permit shall be required by the county health departments where applicable. In Forsyth County, contact the Forsyth County Health Department, Division of Environmental Health, P.O. Box 686, Winston-Salem, NC 27102-0686.
10. If additional monitor wells, not shown on the location diagram, need to be constructed, a map showing the proposed location shall be submitted to the Winston-Salem Regional Office, 8025 North Point Blvd., Suite 100, Winston-Salem, NC 27106.

Permit issued this the 4th day of December 1992

FOR THE NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Larry D. Coble
Larry D. Coble, Regional Supervisor
Division of Environmental Management

By Authority of the Environmental Management Commission

Permit No. 40-1070-WM-0495