VOLUNTARY CLEANUP PROGRAM
REMEDIAL WORK PLAN SUPPLEMENT

HOT SPOT REMOVAL

124 -136 SECOND AVENUE
BROOKLYN, NEW YORK
SITE #V00405-2

Prepared For:

Forest City Ratner Companies
One Metrotech Center
Brooklyn, New York

Prepared By:

AKRF Engineering, P.C.
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New York, New York 10017
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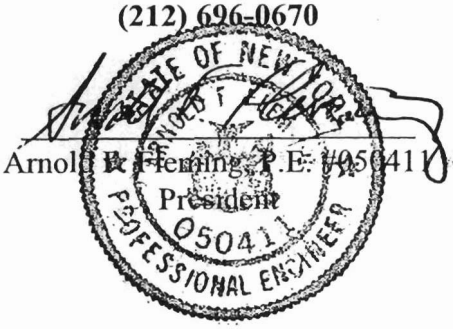

Arnold B. Fleming, P.E. #05041
President

October 1, 2001

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1.0 INTRODUCTION

The work described in this plan is intended to delineate and remove hotspots of coal tar contamination which were identified in the Remedial Investigation Report (July 10, 2001) on the 124-136 Second Avenue site in Brooklyn, New York. Please see Figure 1 for Project Site Location. Hotspots are defined as areas of contaminated soil above the meadow mat layer (approximately 15 feet below grade) which either exceeds the TCLP standard for benzene, contains total concentrations of target compound list polycyclic aromatic hydrocarbons (PAH's) exceeding 1000 parts per million, or contains free mobile coal tar. All soil has already been removed from the site to the depth of groundwater (approximately four feet below grade) and has been replaced with fill material.

The soil in the hotspots will be removed from the ground and disposed of at an appropriate off-site facility. However, because the targeted soil is located below the groundwater table, sheeting will be driven around the hotspots prior to removal. The presence of this sheeting would inhibit endpoint collection after soil removal. Therefore samples will be collected to define the horizontal and vertical limits of the hotspots prior to soil removal through the three-phase sampling program outlined in this document. All work will be performed in accordance with the existing project Health and Safety and Community Air Monitoring Plan, which is located in Appendix A of the Remedial Work Plan (March 2001). Where necessary, enclosures will be provided to control emissions of volatile organic compounds.

Information relating to the project site history, previous investigations and/or other remedial actions is contained in the Remedial Work Plan. This document presents further detail about the Hot Spot Removal remedial action presented in the Remedial Work Plan and only contains background information relevant to this action.

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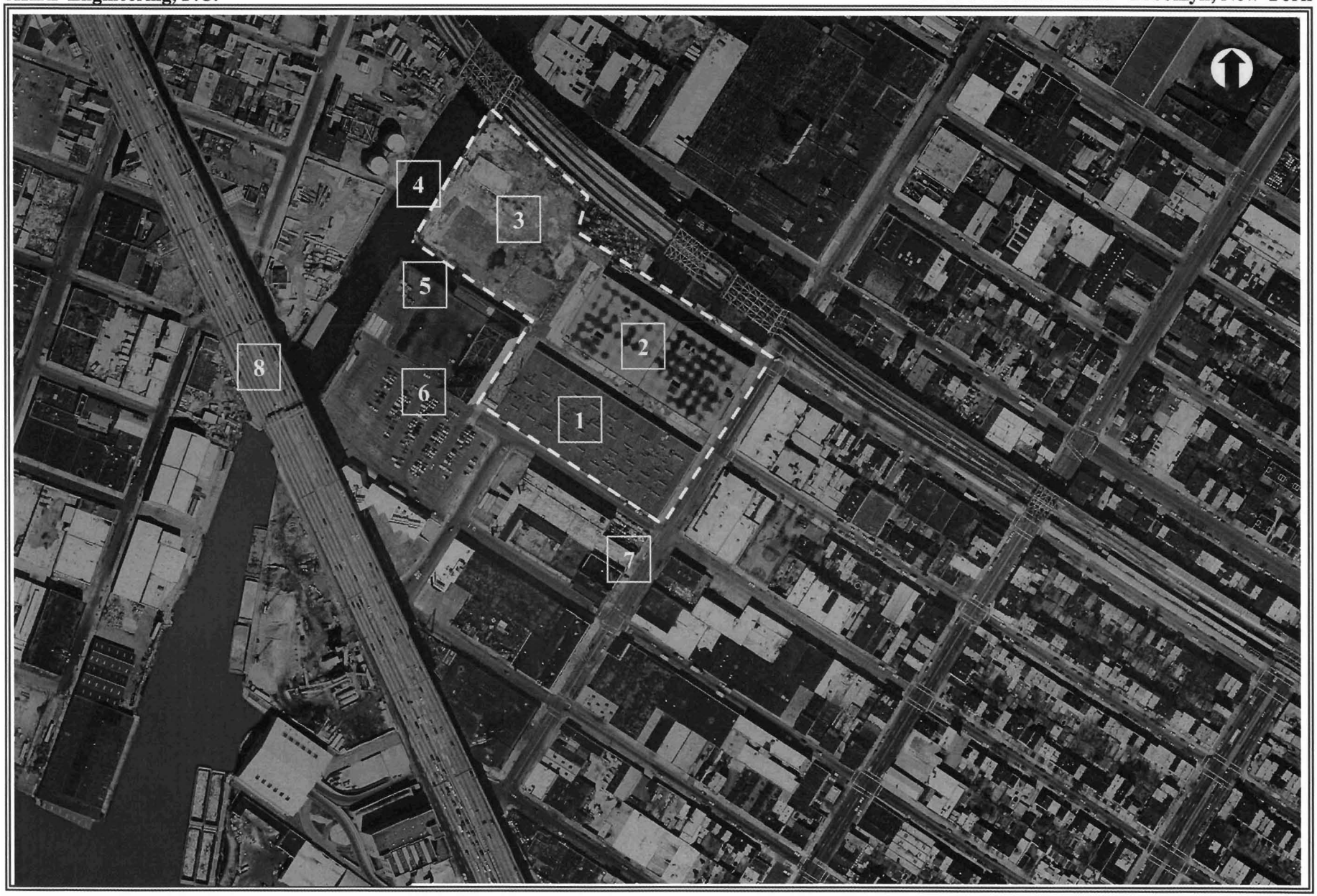

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1. Former USPS Vehicle Maintenance Facility, now demolished. Former gasholder area.
2. Former USPS Detached Mail Unit building, now partially demolished.
3. Northeast portion of site.
4. Gowanus Canal
5. 11th Street Basin
6. Hamilton Plaza shopping mall and parking lot.
7. Second Avenue
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Project Site (Not to Scale)

FIGURE 1
1996 AERIAL PHOTOGRAPH OF SITE AREA

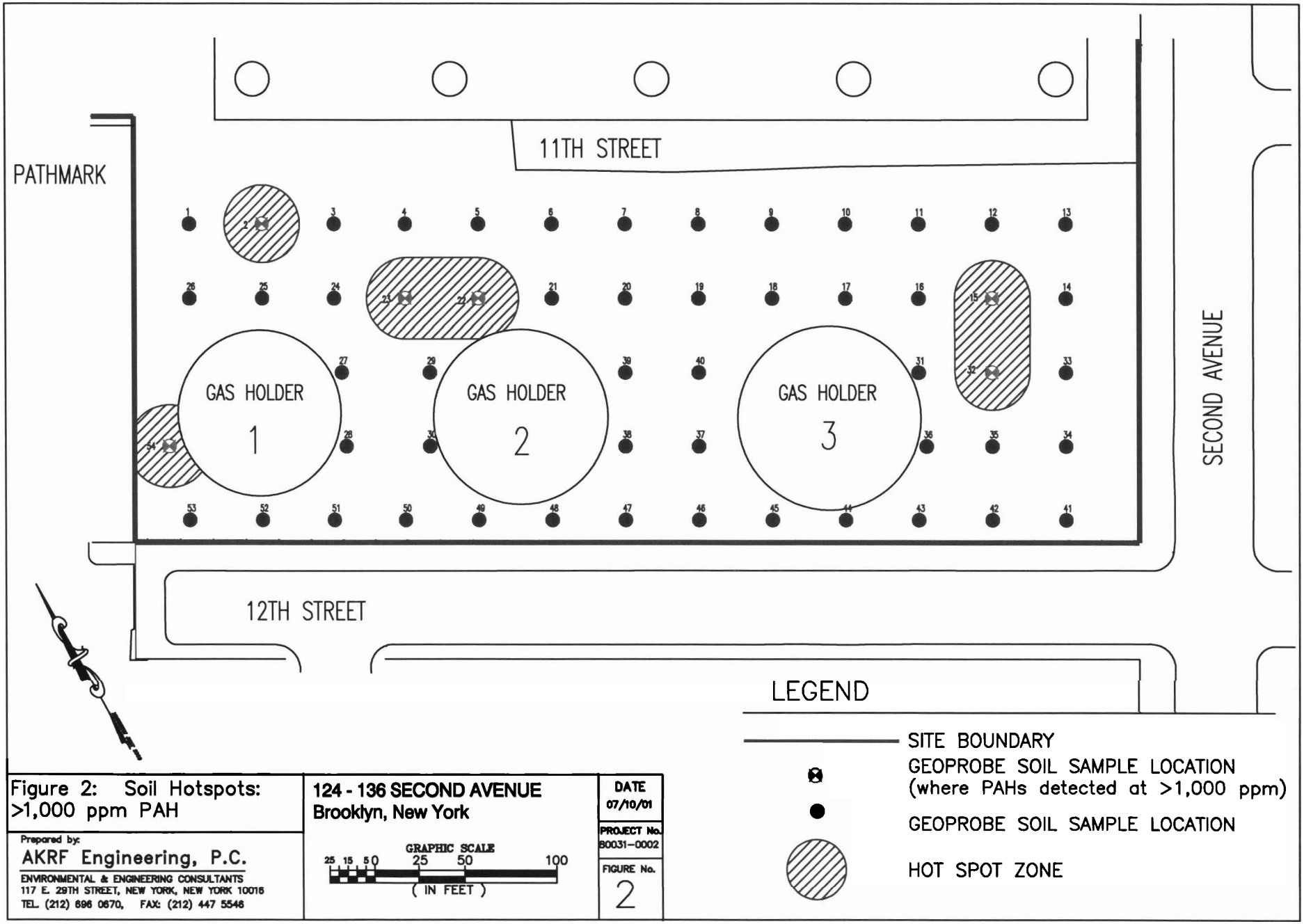

Figure 2: Soil Hotspots: >1,000 ppm PAH

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124 - 136 SECOND AVENUE
Brooklyn, New York

GRAPHIC SCALE
25 15 5 0 25 50 100
(IN FEET)

DATE 07/10/01
PROJECT No. 80031-0002
FIGURE No. 2

FILE LOCATION: G:/FILES/AUTOCAD/DOWNJ52.DWG

3.0 ENDPOINT SAMPLING PROGRAM METHODOLOGY

The Remedial Investigation Report (July 11, 2001) summarized the results of a Geoprobe® sampling program performed in February and March 2001, which identified six sampling locations (of 35 attempted locations on a 40-foot grid of the site) where greater than 1,000 ppm of total target compound list PAHs were detected. Please see Figure 2 for identified hotspot locations. The proposed endpoint sampling program will further define the extent of coal tar contamination through a three phase investigation. Please see Figure 3 for proposed sampling locations.

3.1 Phase I

Borings will be performed on 20-foot spacings around the hotspots which were identified in the February and March 2001 sampling and presented in the Remedial Investigation Report (July 11, 2001). At each sampling location, a Geoprobe rig will be used to drive a sampling probe into the soil. Soil samples will be collected by driving the soil sampling probe with a four-foot Teflon liner into the soil at four-foot depth intervals until the meadow mat layer is reached (expected at15 feet below grade). The first four-foot liner will be discarded (since the top four feet is clean fill placed on the site after the original top four feet of soil were excavated). Soil gas will be screened in the other three 4-foot teflon liners at one-foot intervals using a photoionization detector (PID). A field geologist will record soil conditions in the four-foot liners. One soil sample will be collected from each of the three 4-foot liners. The sample will be collected from the one-foot interval that shows evidence that it contains higher levels of contamination than any other interval (free phase product, increased visual staining, chemical odor and/or elevated PID readings). The soil samples will be containerized in accordance with EPA analytical protocols. Each sample will be labeled, sealed, and placed in a chilled cooler for shipment to the laboratory. Soil samples will be analyzed for target compound list semivolatile organic compounds (EPA Method 8270). Laboratory reporting will be reduced deliverables.

In addition to the identified hot spots, areas where piping associated with the gasholders is present will be investigated. Any piping found during the gasholder excavation will be "chased" and excavated to the property boundaries. The areas adjacent to holders 2 and 3 at Geoprobe borehole locations 38 and 44 will be investigated.

3.2 Phase II

Based on the results of the Phase I sampling program, a Geoprobe® will be used to sample soil at a 10-foot spacing surrounding the Phase I sampling locations. If the sample exceeds the level of 1,000 ppm total target compound list PAHs exceeds 1,000-ppm, the sample will have met the coal tar-contaminated (hotspot) criteria. For each Phase I boring location, if the soil in one or more of the samples meets the hotspot criteria, the Phase II boring would be located 10 feet further away from

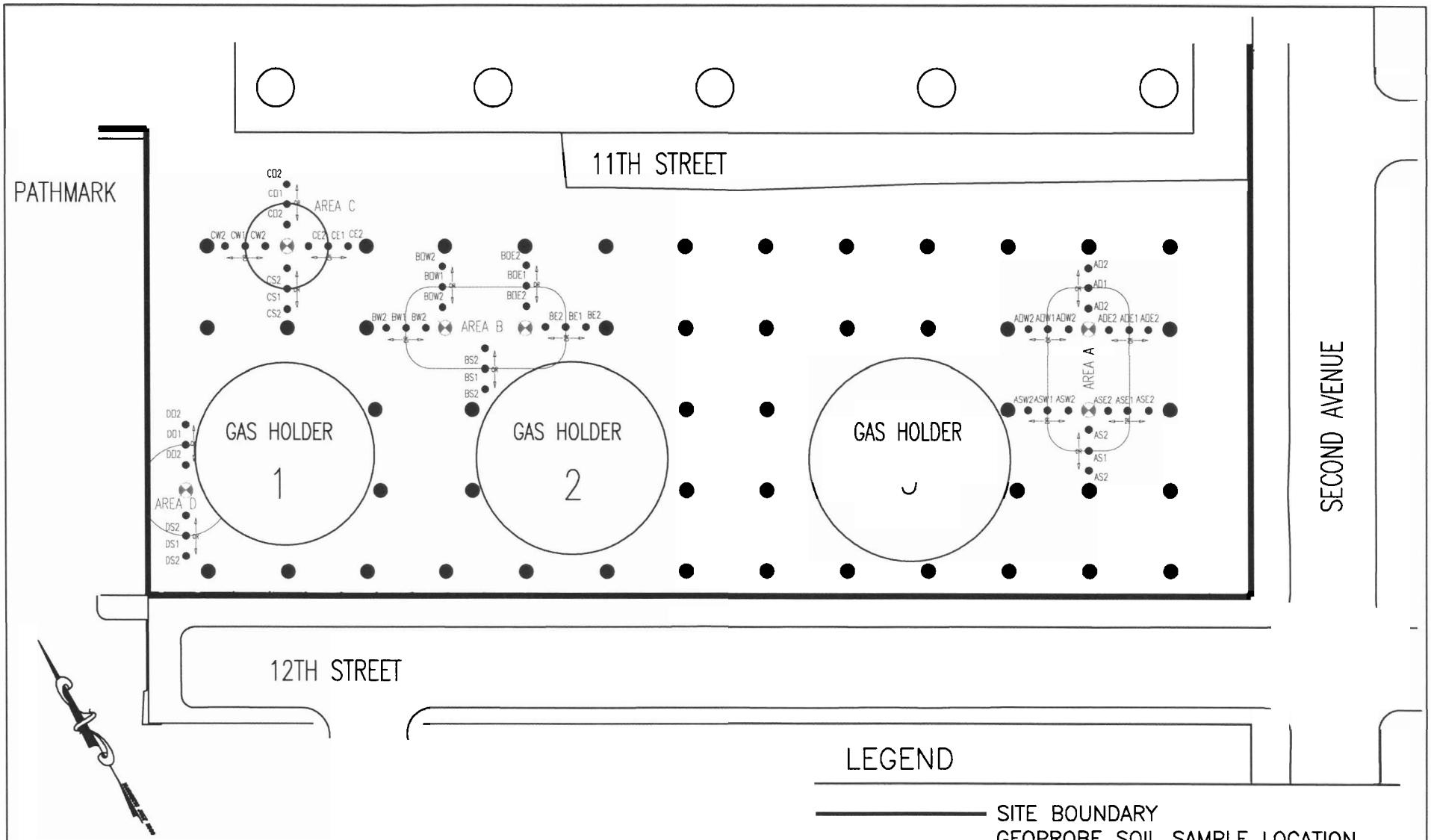

Figure 3: Delineation Sample Locations

124 - 136 SECOND AVENUE
Brooklyn, New York

GRAPHIC SCALE
25 15 50 25 50 100
(IN FEET)

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FIGURE No. 3

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FILE LOCATION: C:/FILES/AUTOCAD/GOWANUS2.DWG

the original hot spot location (as identified in the Remedial Investigation Report). Sampling will follow the same procedure as the Phase I sampling. If none of the three samples from the Phase I boring location meet the hotspot criteria, the Phase II boring would be located 10 feet closer to the original hot spot location. Three soil samples will be collected from this Phase II boring location using the same methodology as described in Section 4.1. The soil samples will be containerized in accordance with EPA analytical protocols. Each sample will be labeled, sealed, and placed in a chilled cooler for shipment to the laboratory. Soil samples will be analyzed for target compound list semivolatile organic compounds (EPA Method 8270). Laboratory reporting will be reduced deliverables.

3.3 Phase III

Based on the results of Phase II of the proposed sampling program, a Geoprobe® will be used to collect three 'endpoint' samples from the Phase I or Phase II boring location nearest to the original hot spot location in which none of the three samples collected met hotspot criteria. If at least one of the three samples in both the Phase I and Phase II borings met hotspot criteria, the endpoint sample would be collected at a location 40 feet away from the original hotspot which would have already been sampled as part of the Remedial Investigation sampling program.

One sample will be collected as described above from a one-foot interval in each of the three 4-foot teflon liners beneath the first 4-foot Teflon liner (which will be discarded). The soil samples will be containerized in accordance with EPA analytical protocols. Each sample will be labeled, sealed, and placed in a chilled cooler for shipment to the laboratory. These samples will be tested for target compound list SVOCs by EPA Method 8270 and for TCLP benzene. Laboratory analysis for the endpoint samples will follow ASP specifications with Category B deliverables.

4.0 LABORATORY ANALYSES

All laboratory analyses will be performed by a NYSDOH ELAP-certified laboratory. The laboratory reports will contain NYSDEC ASP Category B deliverables only for Phase III analyses. A Data Usability Summary Report will be prepared in accordance with NYSDEC's "Guidance for the Development of Data Usability Summary Reports".

5.0 REPORTING

An Intermediary Report will be generated prior to hot spot removal presenting the results of the endpoint sampling program. This report will include a schematic plan showing the boundaries of the four hotspot areas as re-defined by this 3-phased sampling program. The Intermediary Report will also provide specifications for the installation of sheeting and for the excavation, stockpiling, and replacement of soil from the top four feet and from the 4-foot intervals in which less than 1,000 ppm total target compound list PAHs were detected; and for the excavation and proper disposal of soil

from 4-foot intervals where greater than 1,000 ppm total target compound list PAHs were detected.

6.0 HOTSPOT REMOVAL

6.1 Sheeting Installation

Because the identified hotspots are located below the static groundwater table, it will be necessary to install interlocking steel sheeting around each excavation area in order to dewater the excavations prior to the removal of the soils and to stabilize the sides of the excavation. Sheeting will be keyed into the meadow mat around the four hotspot areas in the locations specified in the Intermediary Report.

6.2 Dewatering

A sump will be excavated in one corner of the work area and a dewatering pump installed. The groundwater level will then be lowered by pumping the groundwater into a nearby holding tank. The sump will be extended downwards, as needed. Water removed during dewatering will be held on site temporarily, and will then be shipped off site for treatment/disposal, or treated on-site using the oil/water separator from the remediation system.

6.3 Surface Soil Removal

During previous activity on the site, the top four feet of soil (to the depth of the groundwater interface) was excavated and disposed of at an off-site facility as part of a Stipulation Agreement (December 1, 1997) which was entered into with the DEC by a potential developer of the site. The excavation was backfilled with demolition debris and clean fill.

After the sheeting has been installed around the four identified hotspots, the top four feet of fill material will be stockpiled in Area 3 of Figure 1. As this soil is recently placed clean fill, it will be unnecessary to cover with plastic sheeting.

6.4 Hotspot Removal

Disposal approval at a thermal treatment facility licensed to handle coal tar-contaminated wastes will be obtained prior to the commencement of hotspot excavation. Impacted soil from within the four hotspots will be excavated and stockpiled on 6-mil plastic sheeting inside of the former USPS Detached Mail Unit building (Area 2 on Figure 1). The stockpiled soil will be covered with 6-mil plastic sheeting and will remain inside of this facility until trucks can be mobilized to direct load the

contaminated soil. A waste manifest will be completed for each load, detailing the origin of the generator, transporter and disposal facility. Copies of the signed manifests and certified weight tickets will be presented for each load and will be included in the Remediation Completion Report.

6.5 Backfill

Once the soil has been removed in the four sheeted hotspot locations tp the depth of the meadow mat, the areas will be backfilled with clean fill from on-site and with a recycled concrete aggregate (RCA) material in order to provide a solid base even under wet conditions. The excavation will be backfilled in one-foot lifts with each lift being compacted as the material is placed within the excavation. When the excavation has been backfilled to grade level, the sheeting will be removed and the area will be rough graded.

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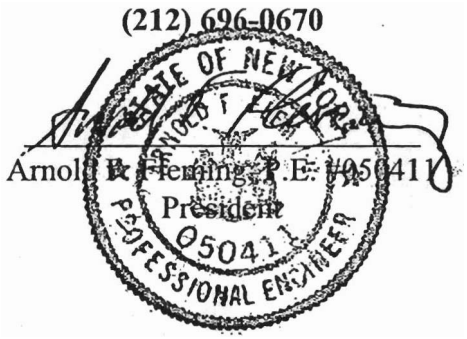

Arnold F. Fleming, P.E. #050411
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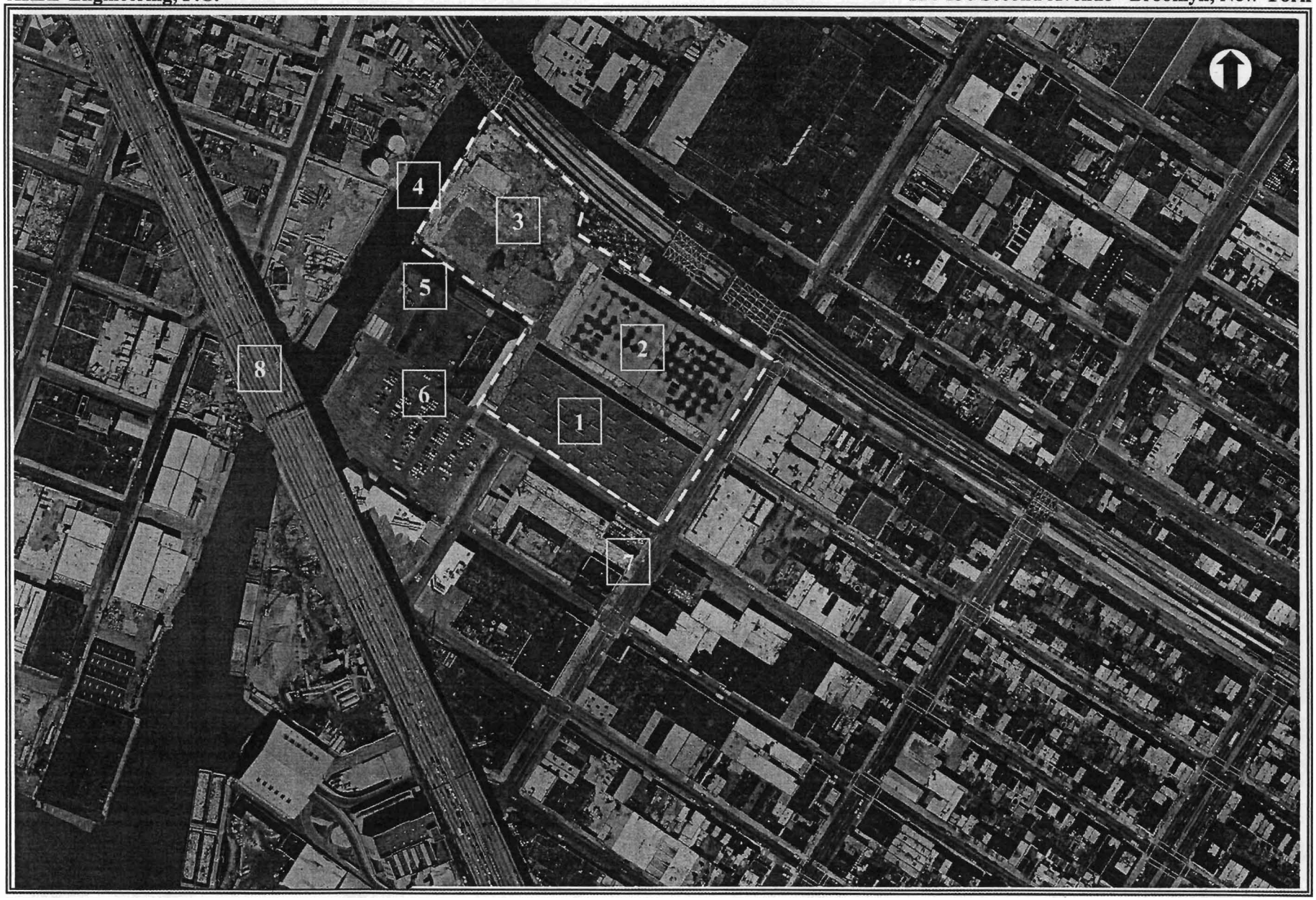

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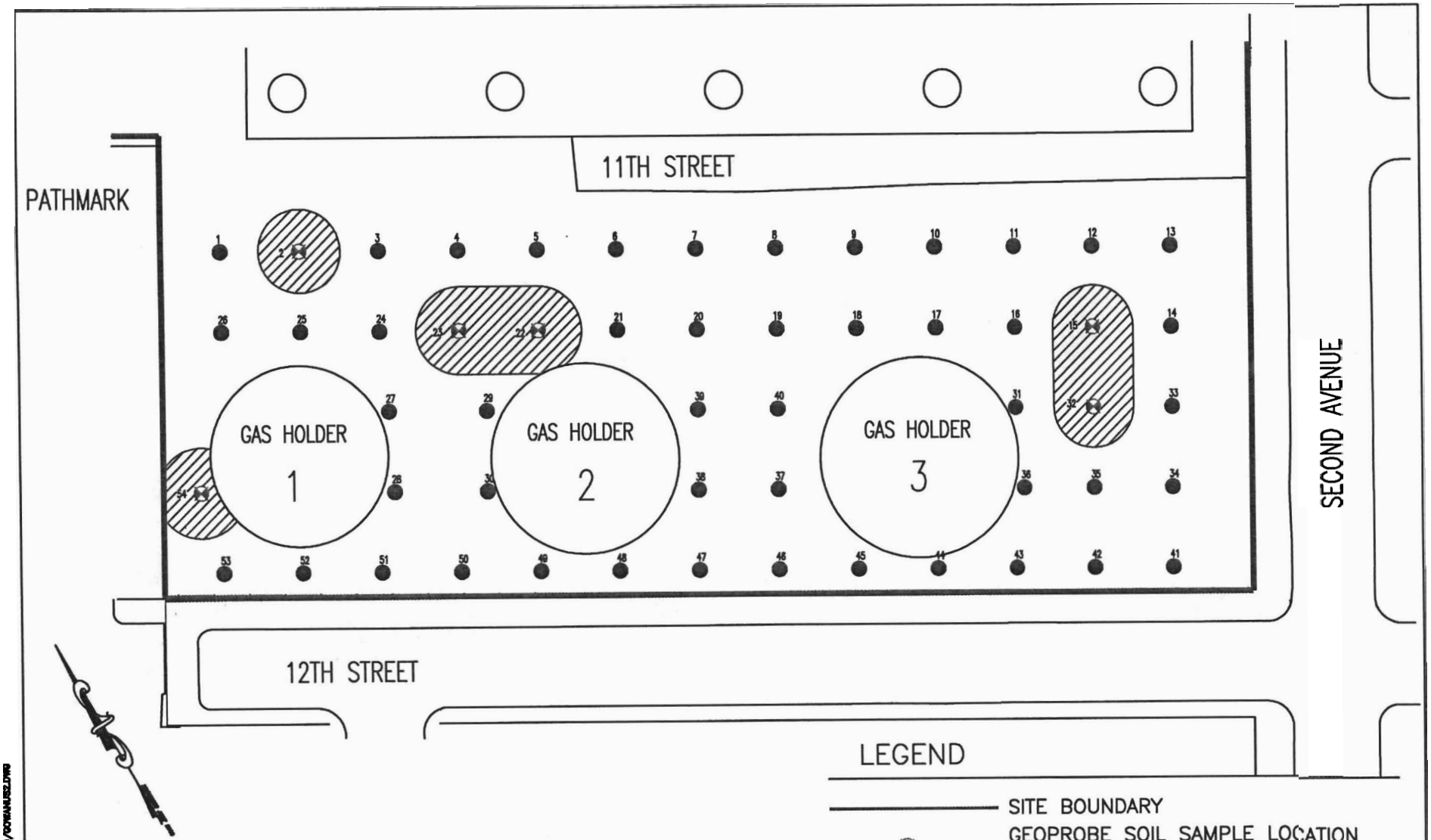

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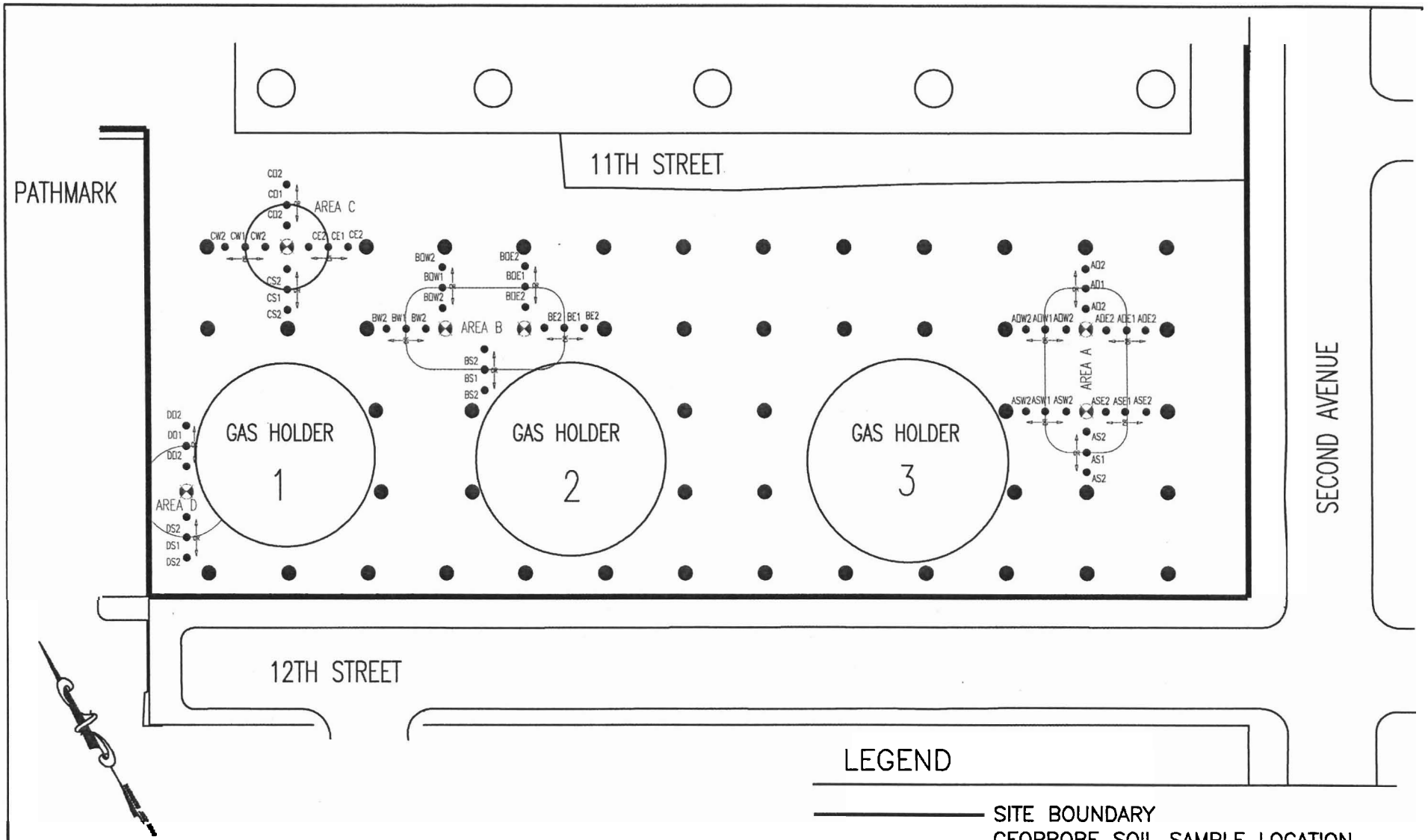

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