NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau A
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www.dec.ny.gov

April 22, 2016

Mr. Rick Gropper
Marcus Garvey Preservation LLC
1865 Palmer Avenue
Larchmont, New York 10538

Re: Marcus Garvey Apartments
Site ID No. C224198
Brooklyn, Kings County
Remedial Work Plan & Decision Document

Dear Mr. Gropper:

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health (NYSDOH) have reviewed the Remedial Work Plan (RWP) for the Marcus Garvey Apartments site dated January 2016 and prepared by Remedial Engineering, P.C. and Roux Associates, Inc. on behalf of the Marcus Garvey Preservation LLC. The RWP is hereby approved. Please ensure that a copy of the approved RWP is placed in the document repositories. The draft plan should be removed.

Attached is a copy of the Department's Decision Document for the site. The remedy is to be implemented in accordance with this Decision Document. Please ensure that a copy of the Decision Document is placed in the document repositories.

Please contact the Department's Project Manager, Stephen Malsan, at (518) 402-9646 or stephen.malsan@dec.ny.gov at your earliest convenience to discuss next steps. Please recall the Department requires seven days notice prior to the start of field work.

Sincerely,

James B. Harrington, PE
Director
Remedial Bureau A
Division of Environmental Remediation

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

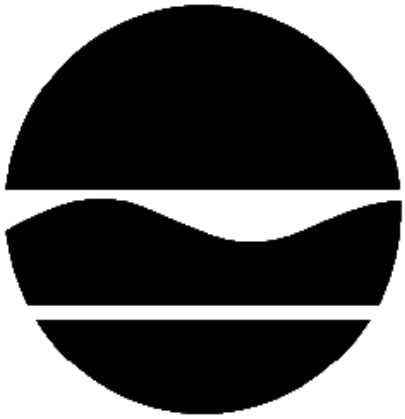
Enclosure

ec *w/attachments*:

R. Schick, NYSDEC
M. Ryan, NYSDEC
D. Evans, NYSDEC
J. O'Connell, NYSDEC Region 2
S. Malsan, NYSDEC
J. Albin, Esq., NYSDEC Region 2
K. Anders, NYSDOH
J. Deming, NYSDOH
W. Kuehner, NYSDOH
W. Kwan, Roux Associates
Michael Bogin, Esq., Sive, Paget & Riesel, P.C.

DECISION DOCUMENT

Marcus Garvey Apartments
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224198
April 2016



Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - DECISION DOCUMENT

Marcus Garvey Apartments
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224198
April 2016

Statement of Purpose and Basis

This document presents the remedy for the Marcus Garvey Apartments site, a brownfield cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Marcus Garvey Apartments site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation

Soils which are acting as a source of continued groundwater contamination will be excavated and disposed of off-site. These soils, which exceed the protection of groundwater soil cleanup objectives (PGWSCOs) as defined by 6 NYCRR Part 375-6.8, have been identified as the Hot Spot. Approximately 48 cubic yards (cy) of contaminated soil is anticipated to be removed. This Hot Spot is located below the basement floor of the former dry cleaners. Approximately 6.5 cy of contaminated concrete, including part of the basement slab and column supports for the former dry cleaning machine, will also be removed and properly disposed of. Some soil contamination made up of contaminants not contributing to the groundwater contamination will remain on-site above the Restricted Residential Use SCOs, and will be addressed by the cover system as described in remedy element 3 and the Soil Vapor Extraction system as described in remedy element 4.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil. The basement slab will be restored above the former Hot Spot area and function as part of the cover system as described in remedy element 3.

3. Cover System

A site cover currently exists and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain the existing site cover, which consists either of the structures such as buildings, pavement, sidewalks or soil where the upper two feet of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for restricted residential use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

4. Soil Vapor Extraction (SVE)

Soil excavation will occur along the western and southern walls of the basement area under the former dry cleaners. The possibility exist that contamination has seeped under the footings for these walls. If the proposed end-point samples indicate that the soil remaining under these walls do not meet the Protection of Groundwater SCOs, SVE wells will be installed to supplement the existing SSDS (see remedy element 6).

If required, SVE will be implemented to remove volatile organic compounds (VOCs) from the subsurface. VOCs will be physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil matrix which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

The SSDS for the site was designed with additional capacity to allow for the installation of several additional soil vapor extraction wells. The SVE wells will be installed below the basement floor of the former dry cleaners using 8 foot long screens. The SVE wells will be connected to the existing SSDS piping using four-inch PVC piping.

5. In-Situ Groundwater Treatment

In-situ treatment will be implemented to treat site-related contamination in the groundwater beneath the basement of the former dry cleaners and former restaurant areas of the site. A treatment agent of potassium permanganate, or other agent approved by the Department, will be applied using approximately 12 injection points screened from 10 to 20 feet below the basement slab. Periodic groundwater monitoring will be performed to determine the effectiveness of the treatment and the number of additional injections to be performed.

The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

6. Vapor Mitigation

The applicant, upon acquisition of the site, installed and began operation of a SSDS system to address this potential exposure pathway. This system covers the entire foot print of the building. Sampling is being conducted to determine if the system is effective. This system will be operated and maintained pursuant to the Site Management Plan discussed under remedial element 8.

7. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential, commercial or industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

8. Site Management Plan

A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 7 above.

Engineering Controls: The soil cover discussed in Paragraph 3; the SVE system discussed in Paragraph 4 above, if required; and the sub-slab depressurization system discussed in Paragraph 6

above.

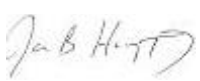
This plan includes, but may not be limited to:
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater water use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any new buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any occupied existing or future buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s). The plan includes, but is not limited to:
- procedures for operating and maintaining the system(s); and
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.



April 22, 2016
Date

James B. Harrington, PE Director
Remedial Bureau A

DECISION DOCUMENT

Marcus Garvey Apartments
Brooklyn, Kings County
Site No. C224198
April 2016

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

Stone Avenue - Brooklyn Public Library
581 Mother Gaston Boulevard
Brooklyn, NY 11212
Phone: (718) 485-8347

Brooklyn Community Board 16
444 Thomas S. Boyland Street
Brooklyn, NY 11212
Phone: (718) 385-0323

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Marcus Garvey Apartments are located at 650 Rockaway Avenue, Brooklyn NY, Kings County. The site is approximately 0.3 acres in size.

Site Features: The site consists of a building footprint that occupies a portion of the tax lot. The site is located at the southwest corner of the intersection of Dumont Avenue and Rockaway Avenue. The site is bordered by Rockaway Avenue to the east, a courtyard to the west beyond which are two multifamily residential units, Dumont Avenue to the north and a vacant lot to the south. The site is entirely comprised of one mixed-use commercial/residential building with a six unit, one-story commercial component located along Rockaway Avenue and a 55-unit, four-story residential component located immediately behind (west) of the commercial component. Thirteen of the residential units are on the ground floor and don't have basements.

The northern-most commercial unit north of the passage way, closest to the intersection of Dumont and Rockaway Avenues, contained the former dry cleaner and is currently vacant. The next two commercial units are also currently vacant. There is an open passageway to allow access to the courtyard at the rear of the building and the residential units. The three commercial units that are south of the passageway are currently occupied by a grocer, a deli and a meat market. The entire building is slab on grade except for a basement area under the former dry cleaner, a basement area under the former restaurant, both in the northern group of commercial units, and a small basement/boiler room under part of the grocer in the southern section of commercial units.

Current Zoning/Use: The current and future use of the site is residential and commercial. The site is zoned as C2-5, which is a commercial overlay within a residential zone. The zoning of the properties surrounding the site is primarily R6 residential.

Historic Use: The site was developed sometime before 1907 with mixed residential/commercial use building(s). The current site building was constructed circa 1974. The 2013 Phase I ESA identified a former dry cleaner as a recognized environmental concern with respect to the site. The dry cleaner reportedly operated from 1995 to 2011 and occupied the northern most commercial unit, closest to the intersection of Dumont and Rockaway Avenues. The applicant recently determined that a previous building that once stood where the commercial unit that is now occupied by the deli is, may have been used as a dry cleaner. Indoor air sampling, and additional indoor sub-slab soil vapor and off-site outdoor soil vapor sampling will be conducted by the

applicant.

The applicant, upon acquisition of the site, installed and has operated an on-site sub-slab depressurization system (a system that ventilates/removes the air beneath the building) to prevent the indoor air quality from being affected by the contamination in soil vapor beneath the building. This system covers the entire footprint of the building.

Site Geology and Hydrogeology: The site is relatively flat and has a surface elevation of approximately 30 feet above mean sea level. The area surrounding the site is gently sloped to the south towards Jamaica Bay. Soils on the site are likely to be derived from sand and gravel outwash deposits which overlie clays, sands and gravel. Sources indicate that the Gardiner's Clay is approximately 180 feet below land surface and bedrock could be as deep as 400 feet below land surface. According to the USGS soils on the site are mapped as Urban Land. The Phase II ESA determined that site soils consists predominantly of fine to coarse grained sand and the depth to groundwater is approximately 21 feet below land surface with a groundwater flow direction generally to the south.

A site location map is attached as Figures 1 and 2.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to restricted residential (or less restrictive uses) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

The Applicant under the Brownfield Cleanup Agreement is a Volunteer. The Volunteer does not have an obligation to address off-site contamination. The Department has determined that this site poses a significant threat to human health and the environment and contamination may be migrating off-site; accordingly, enforcement actions are necessary. The Department will seek to identify any parties (other than the Volunteer) known or suspected to be responsible for contamination at or emanating from the site, referred to as Potentially Responsible Parties (PRPs). The Department will bring an enforcement action against the PRPs. If an enforcement action cannot be brought, or does not result in the initiation of a remedial program by any PRPs, the Department will evaluate the off-site contamination for action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State incurs or has incurred.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor
- sub-slab vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized

below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

tetrachloroethene (PCE) cis-1,2-dichloroethene
trichloroethene (TCE)

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination:

During the site investigation, soil and groundwater samples were collected and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), pesticides, and herbicides. Soil vapor samples were analyzed for VOCs. There were detections of the non-VOC parameters; however, the primary contaminant of concern is tetrachloroethene (PCE) and its associated degradation products trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE). Past site operations as a drycleaner have contaminated soil, soil vapor and groundwater beneath the building with these contaminants.

Soil - PCE was detected in 39 soil samples, ranging in concentration from 0.002 ppm (estimated) to 200 ppm. PCE exceeded the unrestricted use and protection of groundwater soil cleanup objectives soil cleanup objectives (SCOs) (1.3 ppm) in eight samples, and exceeded the restricted residential SCO (19 ppm) in one sample RSB-12/0-2 (200 ppm). TCE was detected in 21 soil samples, ranging in concentration from 0.00057 ppm (estimated) to 0.51 ppm. TCE exceeded the unrestricted use and protection of groundwater SCOs (0.47 ppm) at only one location, RSB-12/0-2, at a concentration of 0.51 ppm. These samples were all collected in the basement of the former drycleaner.

SVOCs in soil, exceeded the restricted residential SCOs in four of the on-site samples analyzed and all were at the two-foot interval taken from just under the basement slab. The SVOC exceedances are limited to polycyclic aromatic hydrocarbons (PAHs).

For metals in soils, unrestricted use SCOs were exceeded in four of the samples analyzed for four metals. Only one was detected above the Protection of Groundwater or Restricted Residential SCOs (barium 550 ppm).

For pesticides/herbicides, the unrestricted use SCOs were exceeded in five of the samples analyzed for pesticides/herbicides. None were detected above the Protection of Groundwater or Restricted Residential SCOs

Soil Vapor - Five on-site sub-slab soil vapor samples were collected and analyzed for VOCs. These sample locations are below the former dry cleaner space, as well as beneath other retail and residential spaces in the building structure. PCE and TCE were detected in several sample locations at concentrations that indicate actions are warranted to minimize current or potential exposures associated with soil vapor intrusion. The highest detections were from under the two basement areas (PCE in sample SS-5 and SS-5R (111,000 micrograms per cubic meter [ug/m3] and 47,600 ug/m3, respectively) and TCE in samples SS-5 (1,840 ug/m3), SS-5R (618 ug/m3) and SS-6 (688 ug/m3)).

Additionally, elevated concentrations of VOCs were identified in two soil vapor samples collected off-site between the site and the adjacent off-site residential building to the west that fronts on Dumont Street. Significantly lower to non-detect levels of VOCs were observed in sub-slab soil vapor samples collected beneath the residential building to the west of the site that fronts on Dumont Street and in soil vapor samples collected in the courtyard to the west, adjacent to the residential portion of the off-site building that fronts on Chester Street.

Groundwater - PCE and its associated degradation products are found in groundwater at the site exceeding groundwater standards (typically 5 ppb). The highest detections of these contaminates in groundwater is directly under the former drycleaner at MW-2 (PCE at 7,700 ppb, TCE at 110 ppb and cis-1,2-DCE at 190 ppb). The highest off-site detection in groundwater was MW-7 (PCE at 2,600 ppb) located southeast of the site across Rockaway Avenue.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

People may contact contaminants in the soil if they dig below the existing cover materials (buildings and pavement). People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is

referred to as soil vapor intrusion. A Sub-slab depressurization system (a system that ventilates/removes the air beneath the building) has been installed in the on-site building to prevent the indoor air quality from being affected by the contamination in soil vapor beneath the building. Environmental sampling is needed to determine whether soil vapor intrusion is a concern for off-site buildings.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation and In-Situ Treatment remedy.

The elements of the selected remedy, as shown in Figures 3 and 4, are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation

Soils which are acting as a source of continued groundwater contamination will be excavated and disposed of off-site. These soils, which exceed the protection of groundwater soil cleanup objectives (PGWSCOs) as defined by 6 NYCRR Part 375-6.8, have been identified as the Hot Spot. Approximately 48 cubic yards (cy) of contaminated soil is anticipated to be removed. This Hot Spot is located below the basement floor of the former dry cleaners. Approximately 6.5 cy of contaminated concrete, including part of the basement slab and column supports for the former dry cleaning machine, will also be removed and properly disposed of. Some soil contamination made up of contaminants not contributing to the groundwater contamination will remain on-site above the Restricted Residential Use SCOs, and will be addressed by the cover system as described in remedy element 3 and the Soil Vapor Extraction system as described in remedy element 4.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil. The basement slab will be restored above the former Hot Spot area and function as part of the cover system as described in remedy element 3.

3. Cover System

A site cover currently exists and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain the existing site cover, which consists either of the structures such as buildings, pavement, sidewalks or soil where the upper two feet of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for restricted residential use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

4. Soil Vapor Extraction (SVE)

Soil excavation will occur along the western and southern walls of the basement area under the former dry cleaners. The possibility exist that contamination has seeped under the footings for these walls. If the proposed end-point samples indicate that the soil remaining under these walls do not meet the Protection of Groundwater SCOs, SVE wells will be installed to supplement the existing SSDS (see remedy element 6).

If required, SVE will be implemented to remove volatile organic compounds (VOCs) from the subsurface. VOCs will be physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil matrix which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

The SSDS for the site was designed with additional capacity to allow for the installation of several additional soil vapor extraction wells. The SVE wells will be installed below the basement floor of the former dry cleaners using 8 foot long screens. The SVE wells will be connected to the existing SSDS piping using four-inch PVC piping.

5. In-Situ Groundwater Treatment

In-situ treatment will be implemented to treat site-related contamination in the groundwater beneath the basement of the former dry cleaners and former restaurant areas of the site. A treatment agent of potassium permanganate, or other agent approved by the Department, will be applied using approximately 12 injection points screened from 10 to 20 feet below the basement slab. Periodic groundwater monitoring will be performed to determine the effectiveness of the treatment and the number of additional injections to be performed.

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Sampling is being conducted to determine if the system is effective. This system will be operated and maintained pursuant to the Site Management Plan discussed under remedial element 8.

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Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential, commercial or industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

8. Site Management Plan

A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 7 above.

Engineering Controls: The soil cover discussed in Paragraph 3; the SVE system discussed in Paragraph 4 above, if required; and the sub-slab depressurization system discussed in Paragraph 6 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater water use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any new buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any occupied existing or future buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s). The plan includes, but is not limited to:

- procedures for operating and maintaining the system(s); and
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

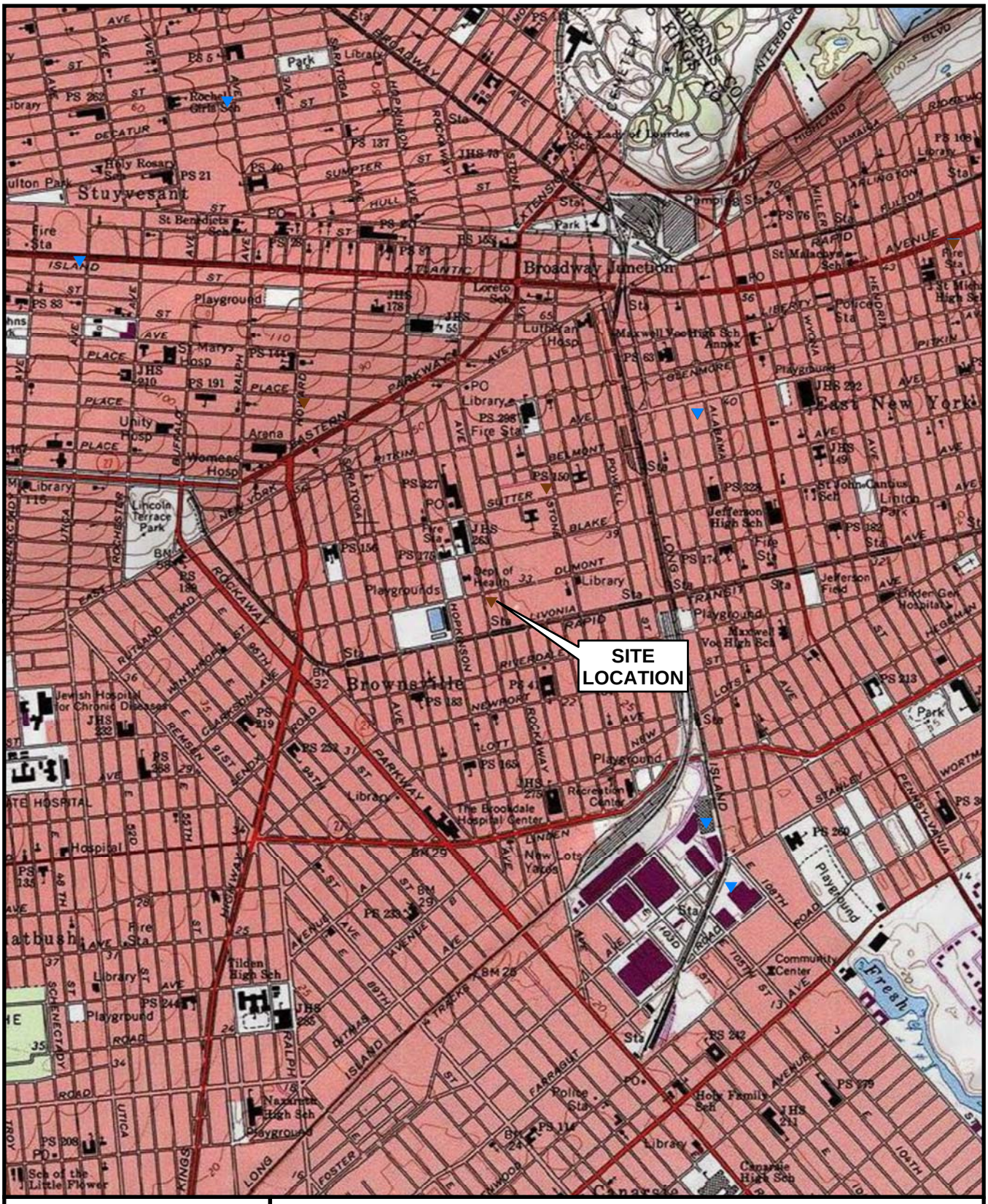


Figure 1

Site Location Map

Marcus Garvey Apartments
Brooklyn, Kings County
Site No. C224198

DEPARTMENT OF ENVIRONMENTAL CONSERVATION • NEW YORK STATE •

N
W E
S

0 75 150
Feet

Figure 2
Site Map

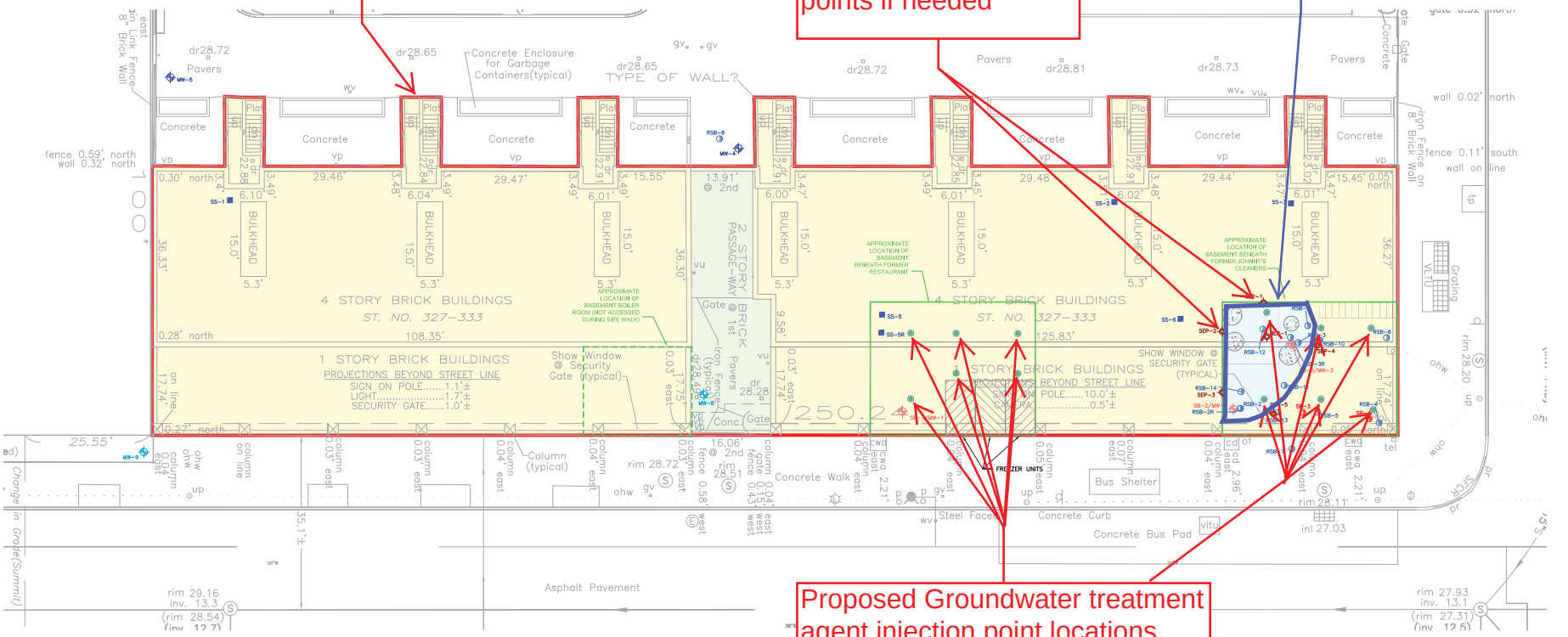
Marcus Garvey Apartments
Brooklyn, Kings County
Site No. C224198

DEPARTMENT OF ENVIRONMENTAL CONSERVATION • NEW YORK STATE •

Site Boundary (red line)

Proposed locations of soil vapor extraction points if needed

Proposed limits of Hot Spot soil excavation to 4 feet below basement slab



Proposed Groundwater treatment agent injection point locations

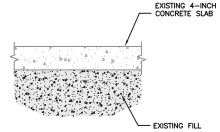
LEGEND

- PROPOSED IN SITU CHEMICAL INJECTION WELL (SEE NOTE 4)
- SEP-1 PROPOSED DOCUMENTATION SAMPLE
- MW-8 PROPOSED MONITORING WELL
- MW-4 LOCATION AND DESIGNATION OF SHALLOW, DEEP AND INTERMEDIATE MONITORING WELL CLUSTER
- MW-1 LOCATION AND DESIGNATION OF MONITORING WELL AND SOIL BORING INSTALLED BY ECOSYSTEMS STRATEGIES, INC.
- SS-1 LOCATION AND DESIGNATION OF TEMPORARY SUB-SLAB VAPOR SAMPLING POINT
- SV-1 LOCATION AND DESIGNATION OF TEMPORARY SOIL VAPOR SAMPLING POINT
- RSB-1 LOCATION AND DESIGNATION OF SOIL BORING
- SB-4 LOCATION AND DESIGNATION OF SOIL BORING INSTALLED BY ECOSYSTEMS STRATEGIES, INC.
- PROPOSED LIMITS OF HOT SPOT EXCAVATION TO 4 FEET BBS AND CONCRETE SLAB REMOVAL AND REPAIR
- SITE COVER SYSTEM COMPRISED OF EXISTING OR REPAIRED CONCRETE SLAB
- SITE COVER SYSTEM COMPRISED OF EXISTING CONCRETE PAVERS
- BCP SITE BOUNDARY
- APPROXIMATE LOCATION OF BASEMENT (DASHED LINE INDICATES BASEMENT NOT ACCESSED DURING SITE WALK)
- COLUMN FOOTING

NOTES

1. SITE PLAN ADAPTED FROM SURVEY PREPARED BY MONTROSE SURVEYING CO., LLP (SURVEY NO. 64991-1).
2. BASEMENT ELEVATION IS APPROXIMATELY 10 FEET BELOW LAND SURFACE.
3. FOR EXCEEDANCES OF THE PROTECTION OF GROUNDWATER OR RESTRICTED RESIDENTIAL SCOs, REFER TO PLATE 4.
4. IN SITU GROUNDWATER TREATMENT WILL CONSIST OF POTASSIUM PERMANGANATE INJECTIONS INTO 12 CHEMICAL INJECTION WELLS. ADDITIONAL INJECTION ROUNDS MAY BE REQUIRED DEPENDING UPON POST-INJECTION GROUNDWATER SAMPLING RESULTS. LOCATIONS OF INJECTION WELLS ARE APPROXIMATE AND MAY NEED TO BE MOVED DUE TO OBSTRUCTIONS ENCOUNTERED DURING FIELD IMPLEMENTATION.
5. REFER TO DETAILS FOR SITE COVER SYSTEM TYPES.
6. THE SUB-SLAB DEPRESSURIZATION SYSTEM INSTALLED AT THE SITE IS SHOWN ON DRAWING H-1 IN APPENDIX H OF THE RIR/RAWP.
7. BACKFILL WILL MEET THE LOWER OF PART 375 PROTECTION OF GROUNDWATER OR RESTRICTED RESIDENTIAL USE CRITERIA.

FT BLS – FEET BELOW LAND SURFACE
FT BBS – FEET BELOW BASEMENT SLAB (SEE NOTE 2)
SEP – SIDEWALL ENDPOINT SAMPLE
BEP – BOTTOM ENDPOINT SAMPLE



1 SITE COVER SYSTEM: EXISTING CONCRETE
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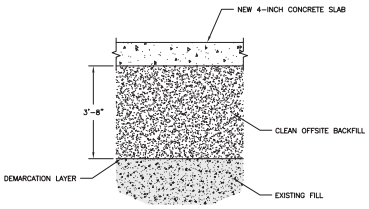
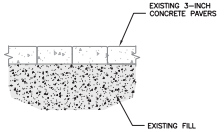


NOTE
DEMARCATION LAYER MAY BE ORANGE SNOW FENCE, FILTER FABRIC OR APPROVED EQUIVALENT

2 SITE COVER SYSTEM: REPAIRED CONCRETE (IN HOT SPOT AREA)
SCALE: NOT TO SCALE



3 SITE COVER SYSTEM: EXISTING CONCRETE PAVERS
SCALE: NOT TO SCALE

10' 0 10'

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Remedial
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209 Shafter Street
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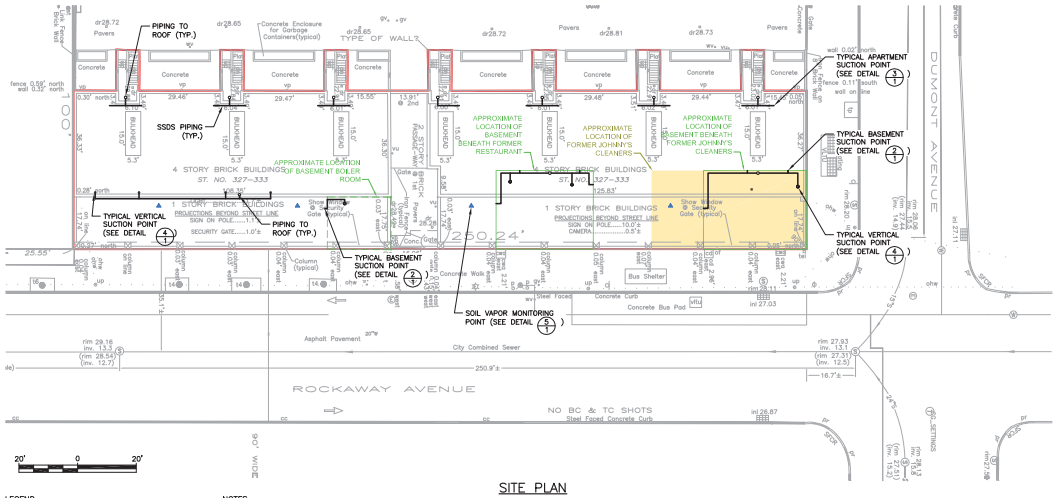
PROJECT NAME:
MARCUS GARVEY APARTMENTS
650 ROCKAWAY AVE., BROOKLYN, NY
PROJECT FOR:
MARCUS GARVEY PRESERVATION LLC

TITLE:
REMEDIAL ALTERNATIVE 2:
TRACK 4 RESTRICTED
RESIDENTIAL USE CLEANUP

PLATE
8

Decision Document Figure 3: Elements of the selected remedy

Sub-Slab Depressurization System installed by applicant. Continued operation of this system is part of the remedy.



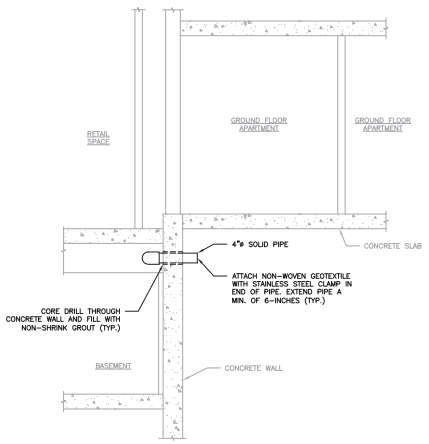
SITE PLAN
SCALE: 1"=20'

LEGEND

- APPROXIMATE FOOTPRINT OF FORMER JOHNNY'S CLEANERS
- BCP SITE BOUNDARY
- APPROXIMATE LOCATION OF BASEMENT

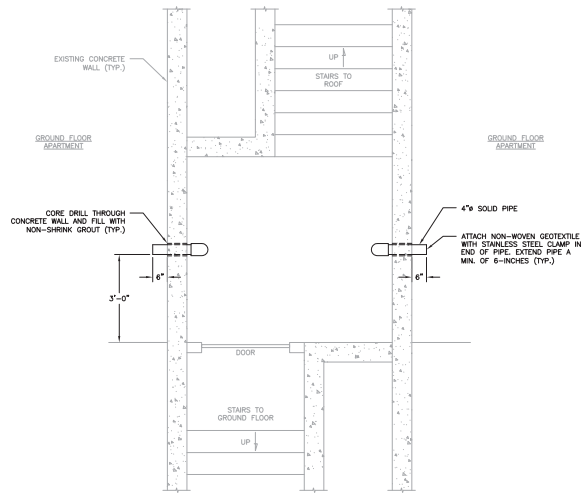
NOTES

1. SITE PLAN ADAPTED FROM SURVEY PREPARED BY MONTROSE SURVEYING CO., LLP (SURVEY NO. 64991-1)
2. NOT ALL SSDS PIPING IS SHOWN FOR CLARITY REASONS. THE SSDS PIPING LAYOUT MAY REQUIRE FIELD CONDITION MODIFICATION TO AVOID UTILITIES, BUILDING FEATURES, ETC. ALL MODIFICATIONS SHALL BE APPROVED BY THE ENGINEER



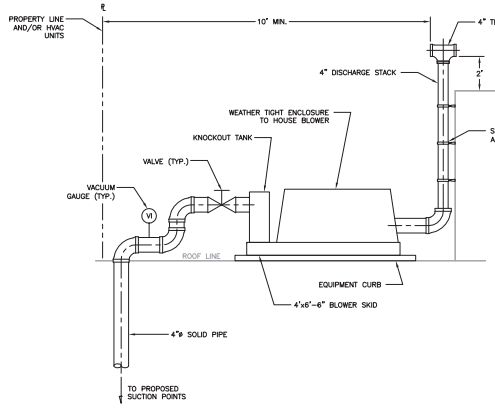
SECTION VIEW

2/1 TYPICAL PROPOSED BASEMENT SUCTION POINT DETAIL
SCALE: NOT TO SCALE



PLAN VIEW

3/1 TYPICAL PROPOSED APARTMENT SUCTION POINT DETAIL
SCALE: NOT TO SCALE



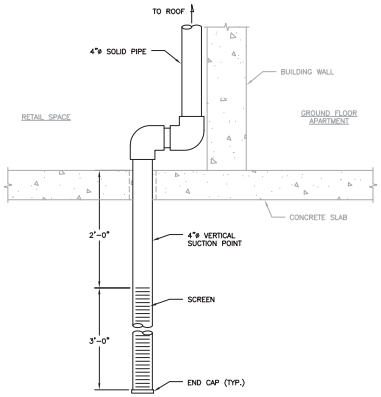
1/1 TYPICAL PROPOSED BLOWER DETAIL
SCALE: NOT TO SCALE

BLOWER NOTES

1. PROVIDE ELECTRICAL CONDUIT TO LOCATION OF THE BLOWERS ON THE ROOF.
2. ELECTRICAL CONDUIT SHALL BE SIZED FOR 230/460, THREE PHASE, 100 AMPS FOR EACH BLOWER MOTOR.
3. THE BLOWERS SHALL BE AS FOLLOWS:

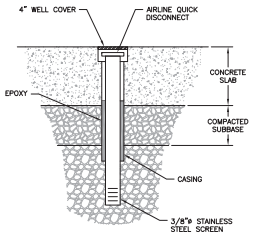
   BLOWER A FOR SSDS LOCATED SOUTH OF THE PASSAGE WAY SHALL BE AMETEK ROTRON MODEL NO. EN858BA72WL.

   BLOWER B FOR SSDS LOCATED NORTH OF THE PASSAGE WAY SHALL BE AMETEK ROTRON MODEL NO. EN909BG72WL.
4. BLOWER SKID A SHALL INCLUDE WEATHER TIGHT ENCLOSURE, AMETEK ROTRON MODEL MS350BS KNOCKOUT TANK (WITH HIGH LEVEL ALARM), VACUUM RELIEF VALVE, GAUGES AND INTERCONNECTING PIPING/FITTINGS (INCLUDING A MANUAL DILLUTION VALVE).
5. BLOWER SKID B SHALL INCLUDE WEATHER TIGHT ENCLOSURE, AMETEK ROTRON MODEL MS500BS KNOCKOUT TANK (WITH HIGH LEVEL ALARM), VACUUM RELIEF VALVE, GAUGES AND INTERCONNECTING PIPING/FITTINGS (INCLUDING A MANUAL DILLUTION VALVE).
6. WARNING LIGHTS SHALL BE PROVIDED FOR EACH BLOWER TO NOTIFY BUILDING SUPERINTENDENT IF BLOWERS ARE SHUT DOWN. THE WARNING LIGHTS SHALL BE INSTALLED IN AN APPROPRIATE LOCATION.



SECTION VIEW

4/1 TYPICAL PROPOSED VERTICAL SUCTION POINT DETAIL
SCALE: NOT TO SCALE



5/1 TYPICAL PROPOSED SOIL VAPOR MONITORING POINT DETAIL
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PROJECT NAME:
MARCUS GARVEY APARTMENTS
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PROJECT FOR:
MARCUS GARVEY PRESERVATION LLC

TITLE:
SUB-SLAB DEPRESSURIZATION SYSTEM

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I-1
DRAWING 1 of 1

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Decision Document Figure 4