



Ecosystems Strategies, Inc.

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February 10, 2012

New York City Office of Environmental Remediation
City Brownfield Cleanup Program
c/o Shaminder Chawla
100 Gold Street, 2nd Floor
New York, NY 10038

**Re: 12CBCP033M & 12CBCP034M
23 West 116th Street
Remedial Action Work Plan (RAWP) Stipulation List**

Dear Mr. Chawla:

Ecosystems Strategies, Inc. (ESI) in conjunction with the project's Remedial Engineer, Morris Associates, PLLC (Morris), hereby submits a Remedial Action Work Plan (RAWP) Stipulation List for the subject site to the New York City Office of Environmental Remediation (NYCOER) on behalf of West 116 Residential LLC. This letter serves as an addendum to the RAWP to stipulate additional content, requirements and procedures that will be followed during the site remediation. The contents of this list are added to the RAWP and will supersede the content in the RAWP where there is a conflict in purpose or intent. The additional requirements/procedures include the following:

Stipulation List

1. The criterion attached in **Addendum 1** will be utilized if petroleum containing tank or vessel is identified during the remedial action or subsequent redevelopment excavation activities. All petroleum spills will be reported to the New York State Department of Environmental Conservation (NYSDEC) hotline as required by applicable laws and regulations. This contingency plan is designed for heating oil tanks and other small or moderately sized storage vessels. If larger tanks, such as gasoline storage tanks are identified, OER will be notified before this criterion is utilized.
2. The remedial action will apply Track 1 SCOs and a Site Management Plan is not required for Track 1 clean up. If a Track 1 cleanup is not achieved, a Site Management Plan (SMP) will be required for long-term management of residual contamination.

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3. The quality assurance/quality control program (QA/QC) for collection of end point samples for this remedial action will include the following provisions:
 - New York State ELAP certified labs will be utilized for chemical analysis
 - Data summary tables will be prepared that include all data entries (including non-detect results) and will be presented in the Remedial Action Report (RAR).
 - QA/QC sampler will be collected at a rate of 1 QA/QC sample for every 20 post-excavation samples. It is anticipated that 1 QA/QC sample will be collected at this Site.
 - Full chain of custody for analytical samples will be maintained and forms will be reported in the RAR.
 - Collection of QA/QC samples including blanks and duplicates will be incorporated.
4. Collection and analysis of End Point Samples will be conducted to evaluate the performance of the remedy with respect to attainment of Track 1 and/or Track 4 SCOs. Endpoint samples will be taken for parameters of concern. A map indicating minimum post-remedial End Point Sampling Locations is attached as **Addendum 2**. If hotspots are encountered, procedures discussed in RAWP section 4.2 End-Point Sampling will be followed.
5. The Final Cover Slab will be considered a remedial action in the event that the Site does not achieve a Track 1 cleanup. The Final Cover Slab will be constructed in accordance with the requirements of the NYC Department of Buildings (NYCDOB) but in no way will be less than 6” thick of concrete.
6. The vapor barrier planned for this project is Vapor Block 15 with an effective thickness of 15 mil barrier to be installed beneath the building slab. This barrier is an impermeable membrane that is capable of preventing the migration of soil vapor into the new building. Relevant information on the vapor barrier and installation guidelines from the manufacturer is provided in **Addendum 3** including a schematic drawing showing the lateral extent of the vapor barrier.
7. This NYC BCP project currently anticipates the removal and transport of non-hazardous waste. In the event that laboratory data document that hazardous wastes are present at this Site, it is understood that the Site may be subject to the New York State Department of Environmental Conservation’s Special Assessment Tax (ECL 27-0923) and Hazardous Waste Regulatory Fees (ECL 72-00402). See DEC’s website for more information:
<http://www.dec.ny.gov/chemical/9099.html>.

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8. Development Plans/Foundation Plans for the cellar floor and ground floor will be provided under separate cover. Final cellar floor plans as approved by Department of Building will be provided to NYCOER once approved.
9. Certified letter/ project description from architect/ engineer of record describing the development, including plans to install a vapor barrier is included in **Addendum 4**.
10. A CD containing the final RAWP including this approved Stipulation List will be placed in the library that constitutes the primary public repository for project documents.
11. Signage for the project will include a sturdy placard mounted in a publically accessible right of way to building and other permits signage will consist of the NYC BCP Information Sheet (attached **Addendum 5**) announcing the remedial action. The Information sheet will be laminated and permanently affixed to the placard.
12. Signed and stamped RAWP certification page is provided in **Addendum 6**.

Sincerely,

ECOSYSTEMS STRATEGIES, INC.



Paul H. Ciminello
President

PHC:cpr

cc: W. Wong
J. Dennis
P. Setaro
T. Metzger



Addendum 1

Generic Procedures for Management of Underground Storage Tanks identified under the NYC BCP

Prior to Tank removal, the following procedures should be followed:

- Remove all fluid to its lowest draw-off point.
- Drain and flush piping into the tank.
- Vacuum out the “tank bottom” consisting of water product and sludge.
- Dig down to the top of the tank and expose the upper half.
- Remove the fill tube and disconnect the fill, gauge, product, vent lines and pumps. Cap and plug open ends of lines.
- Temporarily plug all tank openings, complete the excavation, remove the tank and place it in a secure location.
- Render the tank safe and check the tank atmosphere to ensure that petroleum vapors have been satisfactorily purged from the tank.
- Clean tank or remove to storage yard for cleaning.
- If the tank is to be moved, it must be transported by licensed waste transporter. Plug and cap all holes prior to transport leaving a 1/8 inch vent hole located at the top of the tank during transport.
- After cleaning, the tank must be made acceptable for disposal at a scrap yard, cleaning the tanks interior with a high-pressure rinse and cutting the tank in several pieces.

During the tank and pipeline removal, the following field observations should be made and recorded:

- A description and photographic documentation of the tank and pipe line condition (pitting, holes, staining, leak points, evidence of repairs, etc.).
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation, with a calibrated photoionization detector (PID).

Impacted Soil Excavation Methods

The excavation of the impacted soil will be performed following the removal of the existing tanks. Soil excavation will be performed in accordance with the procedures described under Section 5.5 of Draft DER-10 as follows:

- A description and photographic documentation of the excavation.
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).

Addendum 1 - continued

- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation, with calibrated photoionization detector (PID).
- Final excavation depth, length, and width will be determined in the field, and will depend on the horizontal and vertical extent of contaminated soils as identified through physical examination (PID response, odor, staining, etc.). Collection of verification samples will be performed to evaluate the success of the removal action as specified in this document.

The following procedure will be used for the excavation of impacted soil (as necessary and appropriate):

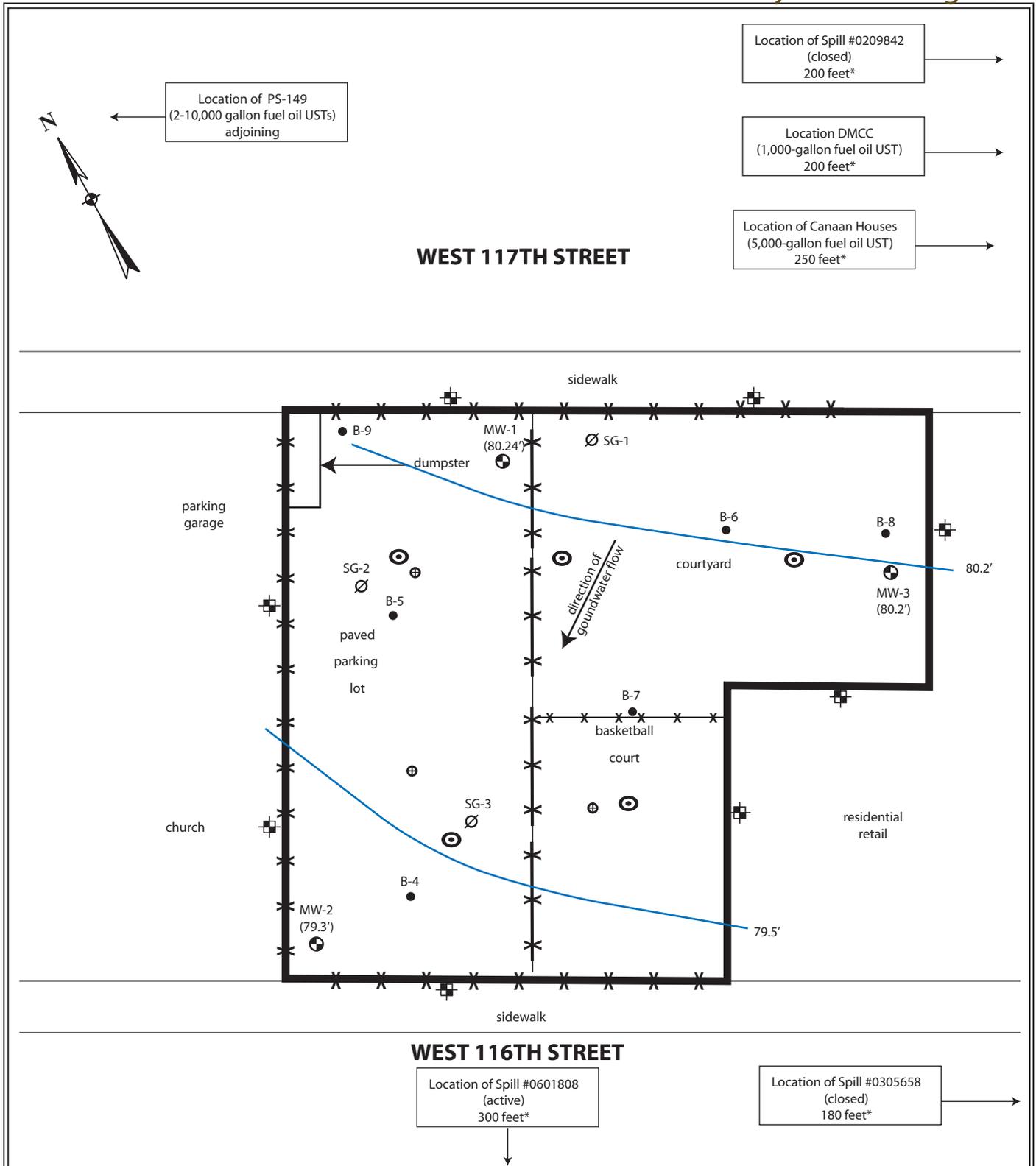
- Wear appropriate health and safety equipment as outlined in the Health and Safety Plan.
- Prior to excavation, ensure that the area is clear of utility lines or other obstructions. Lay plastic sheeting on the ground next to the area to be excavated.
- Using a rubber-tired backhoe or track-mounted excavator, remove overburden soils and stockpile, or dispose of, separate from the impacted soil.
- If additional UST's are discovered, the NYSDEC will be notified and the best course of action to remove the structure should be determined in the field. This may involve the continued trenching around the perimeter to minimize its disturbance.
- If physically contaminated soil is present (e.g., staining, odors, sheen, PID response, etc.) an attempt will be made to remove it, to the extent not limited by the site boundaries or the bedrock surface. If possible, physically impacted soil will be removed using the backhoe or excavator, segregated from clean soils and overburden, and staged on separated dedicated plastic sheeting or live loaded into trucks from the disposal facility. Removal of the impacted soils will continue until visibly clean material is encountered and monitoring instruments indicate that no contaminants are present.
- Excavated soils, which are temporarily stockpiled on-site, will be covered with tarp material while disposal options are determined. Tarp will be checked on a daily basis and replaced, repaired or adjusted as needed to provide full coverage. The sheeting will be shaped and secured in such a manner as to drain runoff and direct it toward the interior of the property.

Once the site representative and regulatory personnel are satisfied with the removal effort, verification of confirmatory samples will be collected from the excavation in accordance with DER-10.



Ecosystems Strategies, Inc.

Addendum 2
End Point Sampling Plan



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

End Point Sampling Plan

23 West 116th Street
Borough of Manhattan, New York

- Legend:**
- Wall Sampling Locations
 - Base Sampling Locations
 - subject property border
 - chain link fence
 - exterior drains
 - boring location
 - borings completed as monitoring wells (soil and groundwater sample locations)
 - soil gas sample locations
 - groundwater contours

*Distances are from the nearest Site border.

ESI File: LM09015.50

FEBRUARY 2012

Scale: 1" = 50' approx.

Addendum 2



Ecosystems Strategies, Inc.

Addendum 3
Vapor Barrier Specifications

UNDER-SLAB GAS BARRIER / VAPOR RETARDER (Class A)

PART 1 – GENERAL

1.1 SUMMARY

- A. Products Supplied Under This Section
 - 1. Gas Barrier / Vapor Retarder, Seam Tape, and Pipe Boots

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM E 1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil Or Granular Fill Under Concrete Slabs
 - 2. ASTM E 154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs
 - 3. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials
 - 4. ASTM E 1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
 - 5. ASTM D 1434 Standard Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting
- B. SP Technical Research Institute of Sweden
- C. American Concrete Institute (ACI)
 - 1. ACI 302.1R-6 & 7 Section 3.2.3 Vapor Retarder

1.3 SUBMITTALS

- A. Testing/Specifications
 - 1. Laboratory test results showing compliance with ASTM & ACI Standards.
 - 2. Manufacturer's samples, literature.
 - 3. Manufacturer's installation instructions for placement and seaming.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Provide a Gas Barrier / Vapor Retarder that meets the following:

- 1. ASTM E-1745 Standard for Plastic Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs
 - a) Must meet all Class "A" criteria.
 - 2. ASTM D 1434 Standard Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting
 - a) Methane Permeability: $< 5 \times 10^{-10} \text{ m}^2/\text{d}\cdot\text{atm}$
 - b) Radon Diffusion Coefficient: $< 0.25 \times 10^{-12} \text{ m}^2/\text{s}$
- VaporBlock[®] Plus[™] 20

Other Manufacturer accepted meeting the above specification:

- CETCO Liquid Boot Company - 714-384-0111

2.2 ACCESSORIES

A. Seam Tape

1. VaporBond Plus or other 4" wide gas barrier tape approved by the gas barrier / vapor retarder manufacturer.
2. Butyl Seal Tape by Raven Industries, or other 2" wide double -sided reinforced butyl rubber tape.

B. Pipe Boots

1. VaporBoot Plus System or other manufacturer's supplied pipe boot system.

PART 3 – EXECUTION

3.1 PREPARATION

A. Ensure that subsoil is approved by architect

1. Level and tamp or roll aggregate, sand or tamped earth base.

3.2 INSTALLATION

A. Install Gas Barrier / Vapor Retarder:

1. Installation shall be in accordance with manufacturer's instructions and ASTM E 1643. (Instructions on architectural or structural drawings should be reviewed and followed.)
 - A. Unroll VaporBlock Plus with the longest dimension parallel with the direction of the pour and pull open all folds to full width.
 - B. Lap VaporBlock Plus over footings and seal to the vertical foundation walls with 2-Sided Butyl Seal tape.
 - C. Overlap joints a minimum of 12 inches and seal in-between overlap with 2-Sided Butyl Seal tape then seal overlap with VaporBond Plus Tape or other 4" wide barrier tape approved by gas barrier / vapor retarder manufacturer.
 - D. Seal around sewer pipes, support columns or any other penetration with the VaporBoot System or at minimum a combination of VaporBlock Plus and VaporBond Plus Tape, creating a monolithic membrane between the surface of the slab and moisture sources below as well as at the slab perimeter.
 - E. When VaporBlock Plus gas barrier is used as a part of an active control system for radon gas and other VOCs, a ventilation system will be required. When installed as a passive system it is still recommended to include a ventilation system that could be converted to an active system later.
 - F. Repair damaged areas by cutting patches of VaporBlock Plus, overlapping damaged area 12 inches and taping all four sides with VaporBond Plus Tape or other 4" wide barrier tape approved by vapor retarder / gas barrier manufacturer.

07/08 EFD1133

GLOBAL PLASTIC SHEETING
1331 Specialty Drive
Vista, CA 92081
760-597-9298 866-597-9298
Fax: 760-597-9574
www.globalplasticsheeting.com

PRODUCT DESCRIPTION

VaporBlock® is a high performance underslab vapor retarder designed to retard moisture migration through concrete slabs-on-grade. This product is made from state-of-the-art polyethylene resins that provide superior physical and performance properties that far exceed ASTM E-1745 (Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs) Class A, B and C requirements.

High tensile strength, unequaled puncture resistance, ultra-low moisture vapor permeability as well as resistance to decay make VaporBlock one of the most effective underslab vapor retarders on the market today! Available in 6,10 and 15 mil thicknesses to best meet required performance specifications.

PRODUCT USE

VaporBlock impedes the transmission of water vapor from traveling upward through a concrete slab-on-grade or through a concrete wall when properly installed. It is extremely important to avoid puncturing a vapor retarder during installation to assure proper performance. VaporBlock's puncture strength is second to none, withstanding even the most demanding installation conditions.

VaporBlock vapor retarders protect your flooring and other moisture sensitive furnishings in your building's interior from moisture migration. VaporBlock vapor retarders can also greatly reduce condensation, mold and degradation by controlling water vapor migration.

SIZE & PACKAGING

VaporBlock 6 & 10 are available in 15' wide rolls by 200' long for ease of installation and maximum coverage.

VaporBlock 15 is available in 12' wide rolls by 200' long. Other custom sizes are available depending upon size and volume requirements. All rolls are folded and rolled on heavy-duty cores for ease in handling and installation. Installation instructions and ASTM E-1745 classifications accompany each roll.

Global Plastic Sheeting

1331 Specialty Drive

Vista, CA 92081

760.597.9298 866.597.9298 Fax: 760.597.9574

www.globalplasticsheeting.com

PRODUCT	PART NUMBER
VaporBlock	VB 6
VaporBlock	VB 10
VaporBlock	VB 15

COMMON APPLICATIONS

- Under-Slab Vapor Retarder
- Foundation Wall Vapor Retarder
- Radon Retarder



PROPERTIES	TEST METHOD	VAPORBLOCK 6		VAPORBLOCK 10		VAPORBLOCK 15	
		English	Metric	English	Metric	English	Metric
APPEARANCE		Blue		Blue		Blue	
THICKNESS, NOMINAL		6 mil	0.15 mm	10 mil	0.25 mm	15 mil	0.38 mm
WEIGHT		29 lbs/MSF	141 g/m ²	49 lbs/MSF	240 g/m ²	73 lbs/MSF	356 g/m ²
CLASSIFICATION	ASTM E 1745	CLASS C		CLASS A, B & C		CLASS A, B & C	
TENSILE STRENGTH Average MD & TD (New Material)	ASTM E 154 Section 9 (D882)	30 lbs/in	130 N	52 lbs/in	230 N	74 lbs/in	325 N
PUNCTURE RESISTANCE	ASTM D 1709 Method B	1500 g		2600 g		4000 g	
MAXIMUM USE TEMPERATURE		180°F	82°C	180°F	82°C	180°F	82°C
MINIMUM USE TEMPERATURE		-70°F	-57°C	-70°F	-57°C	-70°F	-57°C
PERMEANCE (New Material)	ASTM E 154 Section 7 ASTM E 96 Procedure B	0.090 U.S. Perms	0.060 Metric Perms	0.005 U.S. Perms	0.003 Metric Perms	0.004 U.S. Perms	0.002 Metric Perms
WVTR	ASTM E 96 Procedure B	0.080 grain/hr-ft ²	0.056 gm/hr-m ²	0.002 grain/hr-ft ²	0.001 gm/hr-m ²	0.001 grain/hr-ft ²	0.001 gm/hr-m ²

VaporBlock® Placement

All instructions on architectural or structural drawings should be reviewed and followed.

Detailed installation instructions accompany each roll of VaporBlock® and can also be located on our website.

ASTM E-1643 also provides general installation information for vapor retarders.



VaporBlock® high-performance vapor retarder/barriers are made from state-of-the-art polyolefin resins (virgin-grade) to provide unmatched impact strength and ultra-low water vapor permeance. VaporBlock vapor retarders can be identified as blue in color and are printed with the VaporBlock logo and the conformance information listing ASTM E 1745, classifications.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. NO WARRANTIES ARE MADE AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and we disclaim all liability for resulting loss or damage.

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www.globalplasticsheeting.com



ISO 9001:2000
 CERTIFIED MANAGEMENT SYSTEM

VaporBlock®

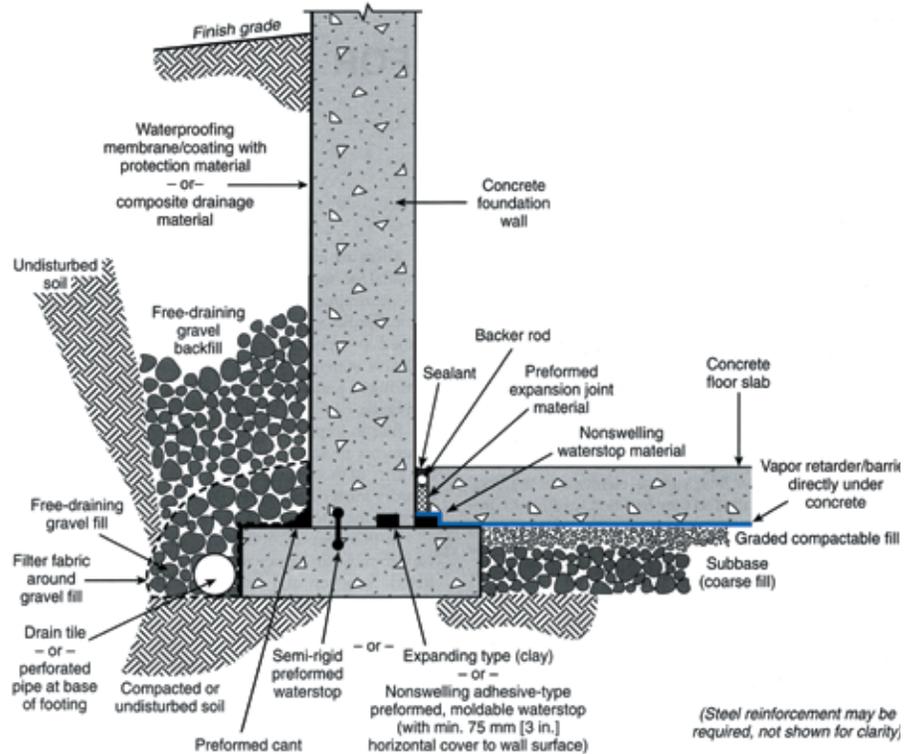
UNDERSLAB VAPOR RETARDER

INSTALLATION GUIDELINES

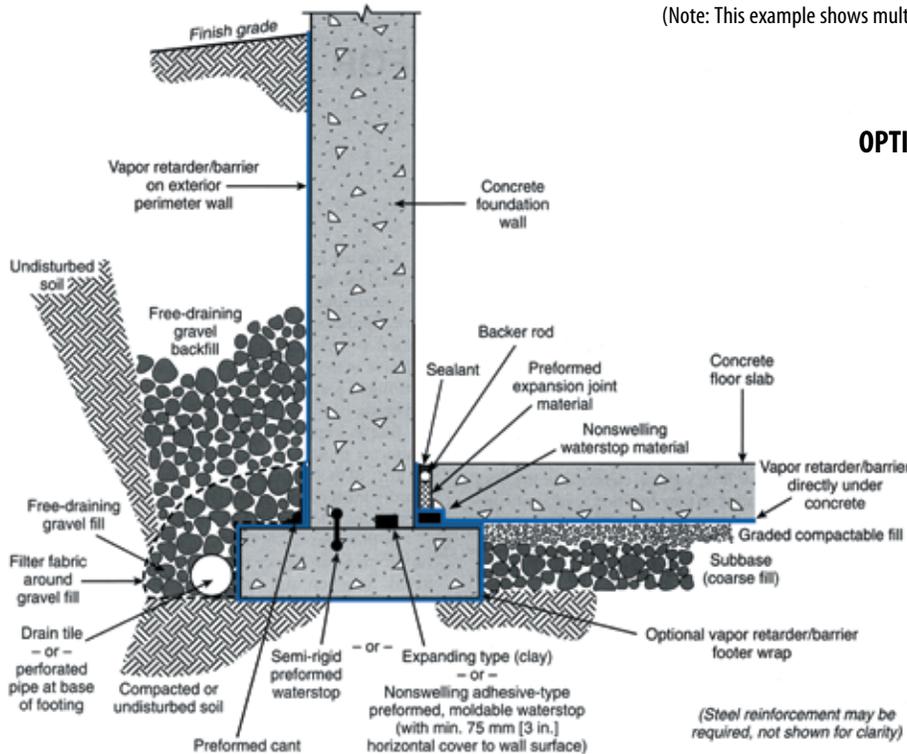
Please Note: Read these instructions thoroughly before installation to ensure proper use of VaporBlock®. ASTM E 1643 can also provide valuable information regarding the installation of vapor retarders. When installing this product, contractors shall conform to all applicable local, state and federal regulations and laws pertaining to residential and commercial building construction.

Materials List:

VaporBlock® Vapor Retarder (Barrier)
 VaporBond 4" Seaming Tape
 Butyl Seal 2-Sided Tape
 VaporBoot Pipe Boot System 25/Tube plus Tape
 VaporBoot Tape (optional)



Elements of a moisture-resistant floor system. General illustration only.
 (Note: This example shows multiple options for waterstop placement.)



Elements of a moisture-resistant floor system. General illustration only.
 (Note: This example shows multiple options for waterstop placement.)

OPTIONAL PERIMETER WALL & FOOTER METHODS

An optional perimeter wall class "A" vapor retarder can be installed with or without a bituminous coating applied to the concrete.

Raven VaporBlock® 10 or 15 mil (Class A) vapor retarders can be sealed to the perimeter wall with Raven Butyl Seal Tape. An optional footer wrap may also be applied.

Original diagrams on this page were reprinted with permission by the Portland Cement Association. Reference: Kanare, Howard M., Concrete Floors and Moisture, EB119, Portland Cement Association, Skokie, Illinois, and National Ready Mixed Concrete Association, Silver Spring, Maryland, USA, 2008, 176 pages.

VAPORBLOCK® PLACEMENT

- 1.1. Level and tamp or roll granular base as specified by your architectural or structural drawings. If sharp crushed rock is used, a 1/2" layer of fine grade compactable fill is required between the base and the vapor retarder.
- 1.2. Unroll **VaporBlock** running the longest dimension parallel with the direction of the pour and pull open all folds to full width. (Fig. 1)
- 1.3. Lap **VaporBlock** over the footings and seal with Raven 2-sided Butyl Seal tape. Prime concrete surfaces and assure they are dry and clean prior to applying Raven Butyl Seal Tape. Apply even and firm pressure with a rubber roller.

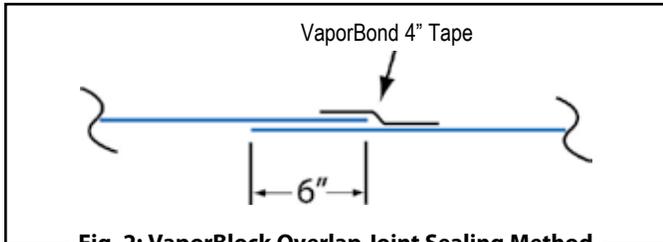


Fig. 2: VaporBlock Overlap Joint Sealing Method

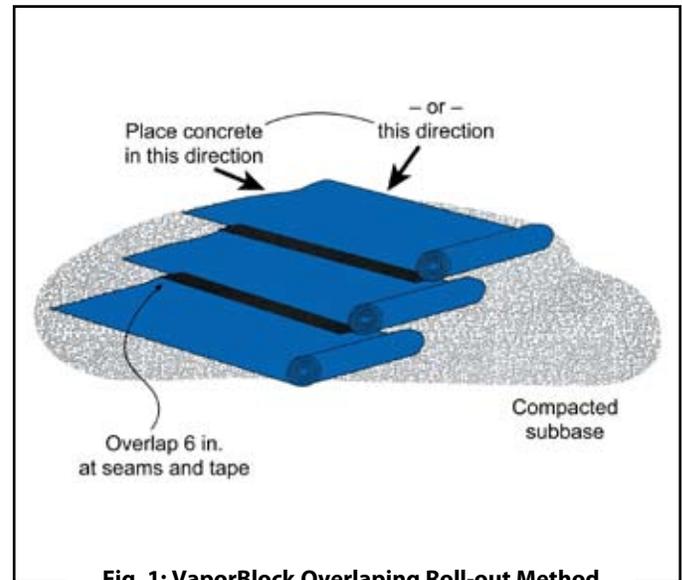


Fig. 1: VaporBlock Overlapping Roll-out Method

SINGLE PENETRATION PIPE BOOT INSTALLATION

Overlap joints a minimum of 6" and seal overlap with Raven VaporBond Tape.

- 1.4. Seal around all plumbing, conduit, support columns or other penetrations that come through the **VaporBlock** membrane. The Raven VaporBoot Pipe Boot System is the recommended sealing method. (Includes 25 pre-cut VaporBlock pipe boots along with 2 rolls of VaporBoot Tape). (Fig. 3 & 4)

Pipe boots may also be fabricated from excess **VaporBlock** membrane (Fig. 3 & 4) and sealed with VaporBoot Tape or VaporBond Tape (sold separately).

Reminder Note: All holes or penetrations through the membrane will need a patch cut to a minimum of 6" from the opening in all directions.

To fabricate pipe boots from **VaporBlock** excess material (see Fig. 3 & 4 for A-E):

A) Cut a square large enough to overlap 6" in all directions.

B) Mark where to cut opening on the center of the square and cut four to eight slices about 3/8" less than the diameter of the pipe.

C) Force the square over the pipe leaving the tightly stretched cut area around the bottom of the pipe with approximately a 1/2" of the boot material running vertically up the pipe.

(no more than a 1/2" of stretched boot material is recommended)

D) Use VaporBoot Tape or VaporBond Tape to secure the boot to the pipe.

VaporBoot Tape (option) – fold tape in half lengthwise, remove half of the release liner and wrap around the pipe allowing 1" extra for overlap sealing. Peel off the second half of the release liner and work the tape outward gradually forming a complete seal.

VaporBond Tape (option) - Tape completely around the pipe overlapping the to get a tight seal against the pipe.

- E) Complete the process by taping over the boot perimeter edge with VaporBond Tape to create a monolithic membrane between the surface of the slab and moisture sources below and at the slab perimeter. (Fig. 3 & 4)

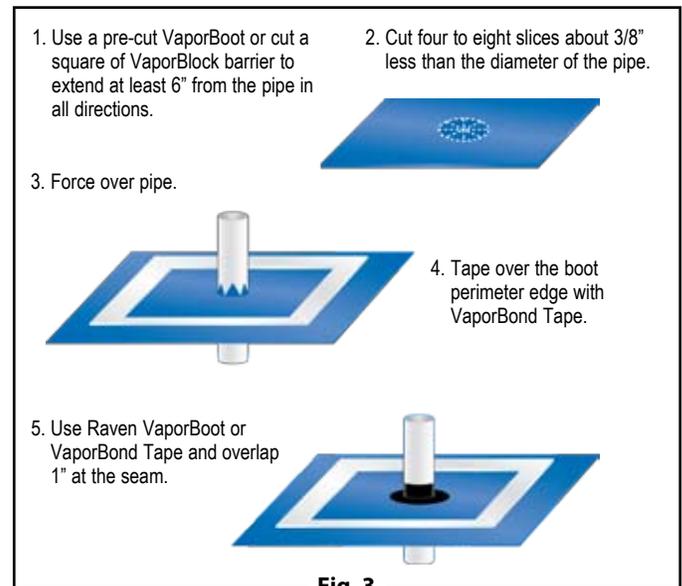


Fig. 3

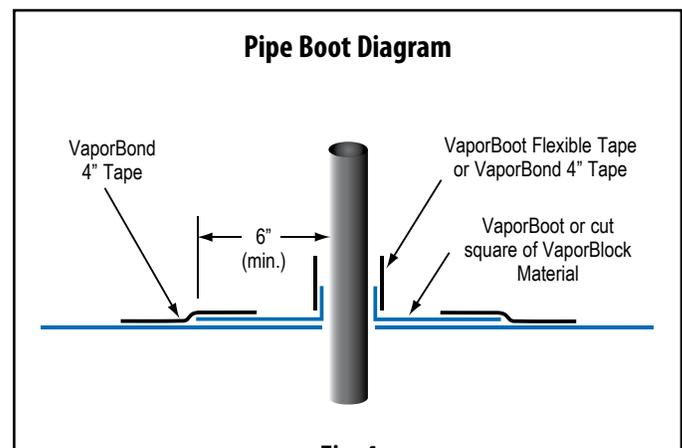


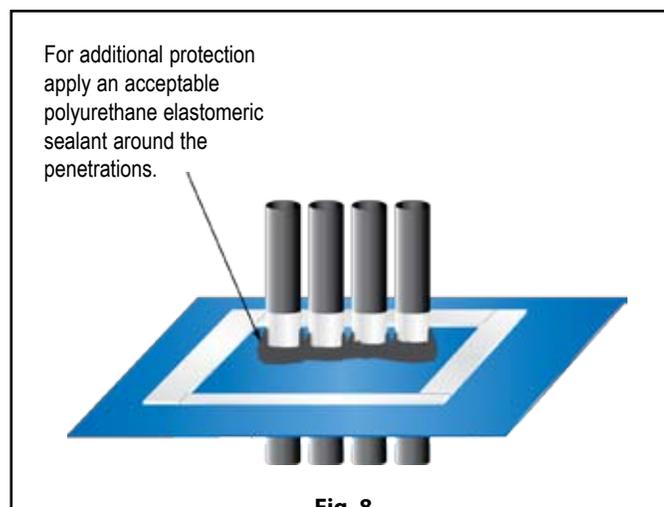
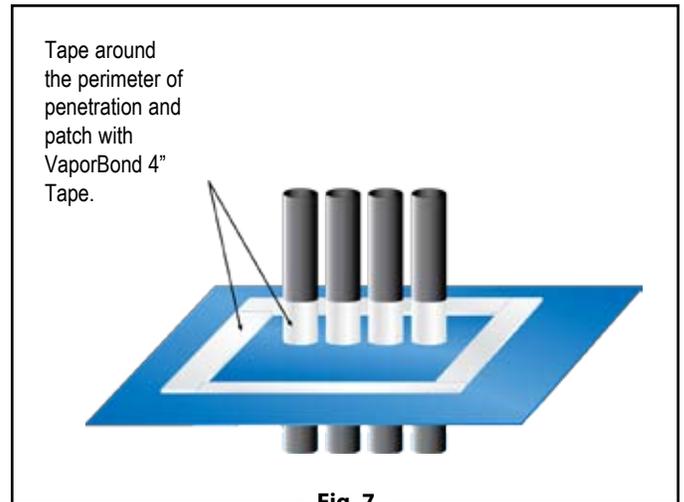
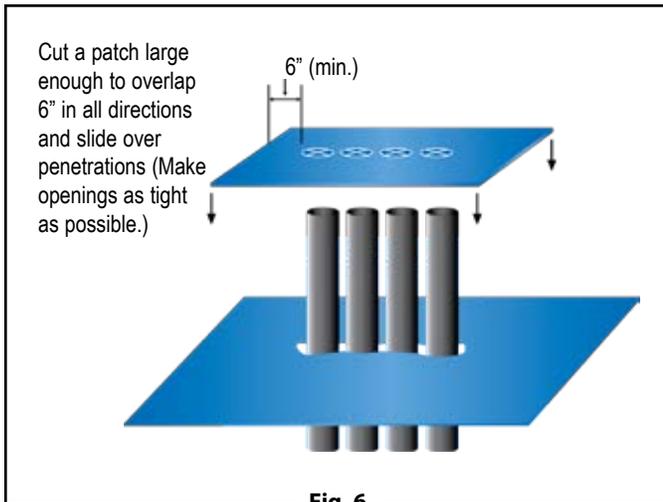
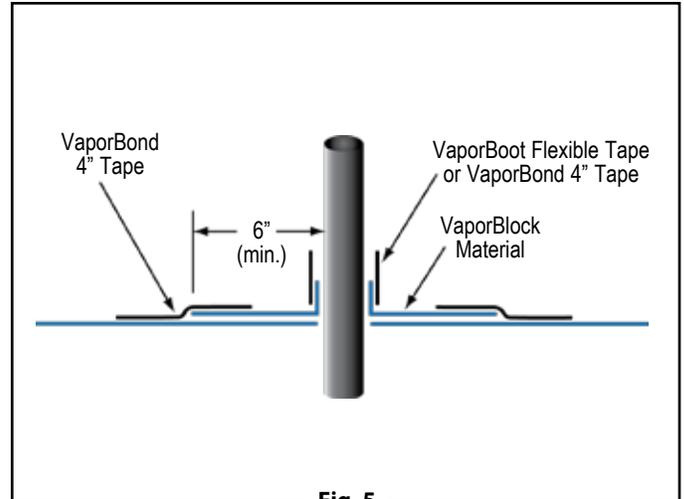
Fig. 4

MULTIPLE PENETRATION PIPE BOOT INSTALLATION

1.5. For side-by-side multiple penetrations;

- A) Cut a patch large enough to overlap 6" in all directions (Fig. 6) of penetrations.
- B) Mark where to cut openings and cut four to eight slices about 3/8" less than the diameter of the penetration for each.
- C) Slide patch material over penetration to achieve a tight fit.
- D) Tape around each of the penetrations and the patch with VaporBond 4" Tape. (Fig. 7) For additional protection apply an acceptable polyurethane elastomeric sealant around the penetrations. (Fig. 8)

1.6. Holes or openings through **VaporBlock** are to be repaired by cutting a piece of **VaporBlock** 6" larger in all directions from the opening. Seal the edges of the patch with VaporBond Tape.



VAPORBLOCK® PROTECTION

- 2.1. When installing reinforcing steel and utilities, in addition to the placement of concrete, take precaution to protect **VaporBlock**. Carelessness during installation can damage the most puncture-resistant membrane. Sheets of plywood cushioned with geotextile fabric temporarily placed on **VaporBlock** provide for additional protection in high traffic areas including concrete buggies.
- 2.2. Use only brick-type or chair-type reinforcing bar supports to protect **VaporBlock** from puncture.
- 2.3. Avoid driving stakes through **VaporBlock**. If this cannot be avoided, each individual hole must be repaired.
- 2.4. If a cushion or blotter layer is required in the design between **VaporBlock** and the slab, additional care should be given if sharp crushed rock is used. Washed rock will provide less chance of damage during placement. Care must be taken to protect blotter layer from precipitation before concrete is placed.



Note: To the best of our knowledge, these are typical installation procedures and are intended as guidelines only. Architectural or structural drawings must be reviewed and followed as well as on a project basis. NO WARRANTIES ARE MADE AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS OR GUIDELINES REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and we disclaim all liability for resulting loss or damage.

RAVEN
INDUSTRIES

RAVEN INDUSTRIES, INC. / Engineered Films Division
P.O. Box 5107 • Sioux Falls, SD 57117-5107
Ph: (605) 335-0174 • Fx: (605) 331-0333
Toll Free: 800-635-3456



ISO 9001:2000
CERTIFIED MANAGEMENT SYSTEM

www.vaporblock.com

06/09 EFD 1156



WEST 117TH STREET

sidewalk

parking garage

church

residential retail

sidewalk

WEST 116TH STREET

All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Schematic of Vapor Barrier

23 West 116th Street
Borough of Manhattan, New York

Legend:

 subject property border

 lateral extent of vapor barrier

ESI File: LM09015.50

FEBRUARY 2012

Scale: 1" = 50' approx.

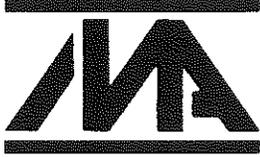
Addendum 3



Ecosystems Strategies, Inc.

Addendum 4

Certified Letter / Project Description



MORRIS ASSOCIATES

ENGINEERING CONSULTANTS, PLLC

9 Elks Lane, Poughkeepsie, New York 12601 Tel: (845) 454-3411 Fax: (845) 473-1962
 64 Green Street, Suite 1, Hudson, New York 12534 Tel: (518) 828-2300 Fax: (518) 828-3963

February 9, 2012

New York City Office of Environmental Remediation
City Brownfield Cleanup Program
100 Gold Street, 2nd Floor
New York, NY 10038

Attn: Shaminder Chawla

Re: 12CBCP033M & 12CBCP034M
23 West 116th Street
Remedial Action Work Plan (RAWP) Stipulation List
MA# 212002.00

Dear Mr. Chawla:

In regard to the above, West 116 Residential LLC has enrolled in the New York City Brownfield Cleanup Program (NYC BCP) to investigate and remediate a 37,303-square foot site located at Block 1600, Lot 20 in Borough of Manhattan, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop the Remedial Action Work Plan (RAWP). The remedial action described in these documents provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Current Usage

The Site is located at the rear (western) portion of the property located at 1428 Fifth Avenue in the Harlem section in Manhattan, New York and is identified as Block 1600 and Lot 20 on the New York City Tax Map. The Site is 37,303-square feet and is bounded by West 117th Street to the north, West 116th Street to the south, multi-

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family residential structures to the east, and a multi-family residential structure to the west. Currently, the Site is utilized as an ancillary property associated with the eastern adjoining residential structure located at 1428 Fifth Avenue. It contains a courtyard, a private basketball court, and a paved parking area.

Summary of Proposed Redevelopment Plan

The current zoning designation is C4-5X, which is part of the contextual zoning districts. The proposed use is consistent with current zoning for the property. The proposed future use of the Site will consist of a 9-story and 12-story mixed-use building (north and south buildings) with a total of 251,600 gross square footage (SF), containing approximately 221,149 SF of residential space (194 units), approximately 20,000 SF of commercial retail space, and approximately 10,418 SF of community facility space on 23 West 116th Street (project site). In addition, the proposed action would also include approximately 112 accessory parking spaces located in the basement.

According to proposed development plans provided by West 116 Residential LLC, the 9-story north building and 12-story south building are planned to be built over the entire lot of the Site and will be approximately 100 (North building) and 125 (South building) feet tall, respectively. The north and south buildings will include a contiguous cellar used for parking space and a contiguous first story used for commercial retail space in both the North and South buildings, community facility space in the North building and a central portion open space. It is estimated that the basement area will be excavated to a depth of approximately 11 feet below surface grade (bsg). Final excavation depth may vary; however, excavation below the water table and related dewatering is not anticipated. An estimated 16,600 cubic yards of soil is anticipated to be excavated as part of construction activities. No demolition activities are included in the plans for development.

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The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

Summary of the Remedy

The proposed remedial action achieves protection of public health and the environment for the intended use of the property. The proposed remedial action achieves all of the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance; is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants; is cost effective and implementable; and uses standard methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of a Citizen Participation Plan.
2. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establish Track 1 Soil Cleanup Objectives (SCOs). Excavation and removal of soil/fill exceeding SCOs.
4. Construction and maintenance of an engineered composite cover consisting of a reinforced concrete building slab (minimum 6" thick) to prevent human exposure to residual soil/fill remaining under the Site, if Track 1 is not achieved.
5. Installation of a Vapor Barrier with a minimum thickness of 15 mil.
6. The Building will include sub-grade parking which will include ventilation required by the NYC Building Code.

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7. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
8. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
9. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
10. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
11. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
12. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
13. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from this RAWP.
14. If Track 1 cleanup is not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.

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15. If Track 1 cleanup is not achieved, recording of a Declaration of Covenants and Restrictions that includes a listing of Engineering Controls and a requirement that management of these controls must be in compliance with an approved SMP; and Institutional Controls including prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

If you have any questions, please do not hesitate to contact Joseph Dennis, PE at (845) 454-3411, extension 47.

Very truly yours,
MORRIS ASSOCIATES
Engineering Consultants, PLLC



Peter D. Setaro, PE
Partner

JPD/PDS/dm

cc: Paul Ciminello, ESI



Ecosystems Strategies, Inc.

Addendum 5
Signage



NYC Brownfield Cleanup Program

23 West 116th Street Site

Site #: 12CBCP033M & 12CBCP034M

This property is enrolled in the New York City Brownfield Cleanup Program for environmental remediation. This is a voluntary program administered by the NYC Office of Environmental Remediation.

For more information, log on to:
www.nyc.gov/oer



If you have questions or would like more information, please contact:

Shaminder Chawla at (212) 788-8841
or email us at brownfields@cityhall.nyc.gov



Ecosystems Strategies, Inc.

Addendum 6
RAWP Certification Page

CERTIFICATION

I, Peter Setaro, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 23 West 116th Street Site 12RH-A116M.

I, Paul H. Ciminello am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for 23 West 116th Street (Block 1600, Lot 20), NYC BCP Number: 12CBCP033M & 12CBCP034MNYC, OER E-Designation Project Number: 12RH-A116M

I certify that this Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site will be in accordance with all applicable City, State and Federal laws and requirements. This RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

Peter D. Setaro

Name

077008

NYS PE License Number

Signature

1-13-12

Date

Paul H. Ciminello

QEP Name

Signature

1-13-12

Date

