

**627 Greenwich Street
MANHATTAN, NEW YORK**

Remedial Action Work Plan & STIP List (11/23/2015)

**NYC VCP Project Number 16CVCP032M
OER Project Number 15RHAZ138M**

Prepared For:

BCRE Services
885 Third Ave, Suite 2401
New York, NY 10022
Attn: Mr. Igor Sebo
isebo@bcreusa.com

Prepared By:

WCD Group, LLC
1350 Broadway, Suite 1904
New York, NY 10018
212.631.9000
jblaney@wcdgroup.com

November 2015



November 23, 2015

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

Re: VCP # 16CVCP032M
E-Designation # 15RHAZ138M
627 Greenwich Street, New York, NY 10014
Remedial Action Work Plan (RAWP) Stipulation List

Dear Mr. Chawla:

WCD Group, LLC hereby submits a Remedial Action Plan (RAWP) Stipulation List for the Site to the New York City Office of Environmental Remediation (OER) on behalf of BCRE Services. 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 below:

1. The criterion attached in **Appendix 1** will be utilized if additional petroleum containing tank or vessel is identified during the remedial action or subsequent redevelopment excavation activities. All petroleum spills will be reported to the 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. A pre-construction meeting is required prior to start of remedial excavation work at the site. A pre-construction meeting will be held at the site and will be attended by OER, the developer or developer representative, the consultant, excavation/general contractor, and if applicable, the soil broker.
3. A Historic Fill Transfer and Disposal Notification Form to each disposal facility and a pre-approval letter from all disposal facilities will be provided to OER prior to any soil/fill material removal from the site. The Historic Fill Transfer and Disposal Notification Form template is attached in **Appendix 2**. Documentation specified in the RAWP - Appendix 3 - Section 1.6 "Materials Disposal Off-Site" will be provided to OER. If a different disposal facility for the soil/fill material is selected, OER will be notified immediately.

4. 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 VCP Information Sheet (attached **Appendix 3**) announcing the remedial action. The Information sheet will be laminated and permanently affixed to the placard.
5. If your site contains hazardous waste that will be excavated and disposed of offsite, OER can work with your development team to seek an exemption for your property from the \$130/ton state Hazardous Waste Program Fee. To qualify for an exemption, your site must be enrolled in the city Voluntary Cleanup Program; hazardous waste must result from remedial action set forth in a cleanup plan approved by OER; and OER must oversee the cleanup. It is the applicant's responsibility to notify your OER Project Manager, copying supervising Project Manager and Shaminder Chawla, before hazardous waste is shipped from your site. Unless the Department of Environmental Conservation is notified before waste is shipped from your site, you may not receive an exemption from the fee. The exemption does not cover, and you remain liable for, the Special Assessment on Hazardous Waste (established by ECL§ 27-0923) which charges a fee of up to \$27 per ton for hazardous waste generated that is due at the State Department of Taxation and Finance 30 days after the end of the quarter in which the waste was generated. **Appendix 4** includes additional information about the Exemption for Hazardous Waste Program Fee.
6. Collection and analysis of seven post-excavation end-point samples from the bottom of the excavation will be collected to evaluate the performance of the remedy with respect to attainment of Track 4 SCOs. Samples will be analyzed for contaminants of concern SVOCs.
7. OER requires parties seeking City Brownfield Incentive Grants to carry insurance. For a cleanup grant, both the excavator and the trucking firm(s) that handle removal of soil must carry or be covered under a commercial general liability (CGL) policy that provides \$1 million per claim in coverage. OER recommends that excavators and truckers also carry contractors pollution liability (CPL) coverage, also providing \$1 million per claim in coverage. The CGL policy, and the CPL policy if obtained, must name the City of New York, the NYC Economic Development Corporation, and Brownfield Redevelopment Solutions as additional insured. For an investigation grant, an environmental consultant must be a qualified vendor in the BIG program and carry \$1 million of professional liability (PL) coverage. A fact sheet regarding insurance is attached as **Appendix 5**.
8. Daily reports will be provided during active excavation work. If no work is performed for extended time period, daily report frequency will be reduced to weekly basis. Daily report template is attached in **Appendix 6**.
9. Monthly reports will be provided by the owner/developer after excavation work is completed for the duration of the construction period. Monthly report template is attached in **Appendix 7**.

10. A vapor barrier system consisting of GRACE Preprufe 300R (or similar product) vapor/moisture barrier system (47 mil thick) beneath the new portions of the building slab and a GRACE Preprufe 160 (or similar product) vapor/moisture barrier system (31 mil thick) along foundation sidewall will be installed. A 20-mil vapor barrier coating consisting of Retro-Coat Vapor Intrusion Coating System will be applied to the remaining existing portions of the slab that will not be disturbed during development.
11. Truck route is included in **Appendix 8**.
12. The stamped/signed RAWP certification page is included in **Appendix 9**.
13. Trucking log sheets will be utilized as trucks are transported from sites, and completed logs should be attached to the Remedial Action Report (RAR) as an appendix. The goal of this log is to clearly document the destination of material leaving the site, the parties responsible for its transfer, and other pertinent details. The trucking log template is provided in **Appendix 10**.

Sincerely,
WCD Group, LLC



Jim Blaney, CHMM
Operations Manager, Environmental

Cc: Sarah Pong, NYCOER

Appendix 1
Generic Procedures for Management of Underground Storage Tanks
Identified under the NYC VCP

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 pipe line 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.).
- 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 indentified 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.

Appendix 2
Historic Fill Transfer and Disposal Notification Form

Historic Fill & Soil Disposal Notification Form
New York City Office of Environmental Remediation

Date:

To operators and representatives of disposal facilities:

The New York City Office of Environmental Remediation (OER) operates several environmental remediation regulatory programs in New York City that manage light to moderately contaminated properties that are planned for redevelopment. These projects commonly involve the removal of historical fill and soil from properties for development and other purposes. As with any environmental regulatory program, lawful transport and disposal of historic fill and soil is mandatory. It is also our highest priority.

Disposal facilities, recycling facilities and clean fill facilities (collectively, “receiving facilities”) for historic fill and soil may be located in New York or neighboring states. Our research has indicated that a wide range of facility types and a complex set of regulatory requirements and obligations for a receiving facility operation exist within each jurisdiction. Receiving facilities are required to comply with applicable laws and regulations and may operate under state and local authority via permits, licenses, registrations, agreements and other legal instruments that dictate requirements for the material they can receive. Operating requirements may include adherence to applicable chemical standards, guidance levels, criteria, policy or other bases to determine the suitability for receipt of historical fill or soil at a receiving facility. Such requirements may also specify sample frequency, location, sampling method, chemical analytes, or analytical methods. Receiving facility soil/fill sampling requirements often differ from standard remedial investigation protocol performed in the original environmental study of the property.

Given the variability of data requirements for receiving facilities, the wide range of receiving facility types, and the complexity of regulatory requirements and obligations, OER is seeking to assist government regulators and facility operators and their technical representatives to achieve compliance with regulatory requirements for disposal of historic fill and soil at receiving facilities for projects we administer. Further, we seek to ensure that all of the data and information that is developed in OER’s regulatory programs (for instance, site environmental history and soil chemistry) is available to government regulators and to facility managers when making decisions on suitability for disposal to a receiving facility.

This document provides formal notification from OER of the availability of environmental information regarding the physical and chemical content of historical fill and soil that is proposed for transfer to a disposal, recycling or clean fill facility from a property located at:

627 Greenwich Street, New York, NY
OER Site# 16CVCP032M

The above referenced property has undergone regulated environmental investigation and is the subject of remedial action work plan under the authority of OER. All environmental data and information generated during this regulatory process is available online in OER’s Document Repository listed below. Be advised that many properties are also regulated under state environmental law, and additional data may be available from state agencies. OER reserves the right to share this information with applicable state regulators.

<http://www.nyc.gov/html/oer/html/document-repository/document-repository.shtml>

Note: when logged on, select the borough for the site (listed in the address above) and scroll through the list and select the address for the site (listed above). All documents are available in PDF format.

According to New York State DER-10 Technical Guidance for Site Investigation and Remediation, historical fill is non-indigenous fill material deposited on a property to raise its topographic elevation. The origin of historical fill is unknown but it is commonly known to contain ash from wood and coal combustion, slag, clinker, construction debris, dredge spoils, incinerator residue, and demolition debris. Historic fill is a regulated solid waste in the State of New York. Prior to making a determination regarding the suitability of historic fill and/or soil from this property for disposal at this receiving facility, **we strongly recommend that you review all of the data and information available for this property in our Document Repository** listed above. The repository includes:

- A Phase 1 history of use of the property;
- A Remedial Investigation Report for the property which includes:
 - Boring logs that describe physical observations of the historical fill material made by a trained environmental professional;
 - Chemical data for grab samples of historical fill collected during the remedial investigation;
- A Remedial Action Work Plan for the property.

If you have any questions, please contact Horace Zhang at (212) 788-8484 or H Zhang@dep.nyc.gov for more information.

Appendix 3
NYC VCP Signage



NYC Voluntary Cleanup Program

**627 Greenwich Street
Site #: 16CVCP032M**

This property is enrolled in the New York City Voluntary 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

Or scan with smart phone:



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

Shaminder Chawla at (212) 442-3007
or email us at brownfields@cityhall.nyc.gov

Appendix 4 Hazardous Waste Fee Exemption Fact Sheet



Exemption from the Hazardous Waste Program Fee

If your site is enrolled in the city Voluntary Cleanup Program and contains hazardous waste that will be excavated and disposed of offsite, OER can work with your development team to exempt your property from the \$130/ton state Hazardous Waste Program fee. This exemption does not cover, and you remain liable for, the Special Assessment on Hazardous Waste (established by ECL§ 27-0923).

To qualify for an exemption from the Hazardous Waste Program Fee:

1. A site must be enrolled in the city Voluntary Cleanup Program;
2. Hazardous waste must result from remedial action set forth in a cleanup plan approved by OER; and
3. OER must oversee the cleanup.

Process for obtaining a Hazardous Waste Program Fee exemption:

For each VCP site, OER will submit three certifications to the New York State Department of Environmental Conservation (DEC):

1. OER will prepare a Notice of Potential Generation after a soil test shows a site contains hazardous waste. To prepare this Notice, you must provide your OER project manager with:
 - the site's EPA generator ID number;
 - the date of the soil test confirming hazardous waste;
 - the amount of hazardous waste in tons that you anticipate shipping offsite; and
 - the anticipated dates for the start and completion of remediation.

DEC must receive this form **before** hazardous waste is shipped from your site. Otherwise your claim for an exemption may be denied.

2. After hazardous waste has been removed from the site, OER will distribute a Certification of Hazardous Waste Generation to your project team which when filled out documents how the hazardous waste was managed. Once completed, it must be signed by the generator (or site owner) and the site's Qualified Environmental Professional and returned to your OER project manager with a copy to Shana Holberston sholbertson@dep.nyc.gov and Mark McIntyre mmcintyre@cityhall.nyc.gov.

3. OER will then issue a Certification of Remedial Action that Generated Hazardous Waste to DEC representing OER's approval of how a site managed its hazardous waste.

Upon OER's submission of the last two certifications to DEC, the agency will issue a written statement exempting an individual site from the Hazardous Waste Program Fee. OER will then notify the project of the exemption.

For further information, please contact:

Shana Holberton
Program Manager
(212) 788-3220
SHolberton@dep.nyc.gov

or

Mark McIntyre
General Counsel
(212) 788-3015
MMcintyre@cityhall.nyc.gov

Contact OER to confirm that you are using the most updated version of this guidance.



NYC Office of Environmental
Remediation

**Exemption from the
Hazardous Waste Program
Fee**

Ongoing Obligations:

Regardless of the Hazardous Waste Program Fee exemption, parties must:

- File a Hazardous Waste Annual Report with DEC by March 1 of each year if your site generated 15 tons of hazardous waste or more in the relevant calendar year. For details, see <http://www.dec.ny.gov/chemical/8770.html> To set forth the basis for an exemption from the Hazardous Waste Program Fee, put an X in the Exempt Remedial box in Box H of Section 1 of the Waste Generation and Management (GM) form and in the Comments Box (at the bottom of the form) include "New York City Voluntary Cleanup Program, VCP Site Number _____"; and
- Make quarterly payments of the Special Assessment on Hazardous Waste to the state Department of Taxation and Finance. For details see: <http://www.tax.ny.gov/bus/haz/hzrdwste.htm>

Appendix 5
BIG Program Insurance Fact Sheet



FACT SHEET – BIG PROGRAM INSURANCE REQUIREMENTS

Investigation Grants – for a developer or site owner to be eligible for a BIG investigation grant, its environmental consultant(s) must be:

- a Qualified Vendor in the BIG Program; and
- maintain Professional Liability (PL) insurance of \$1M per claim and annual aggregate.

Cleanup Grants – for a developer or site owner to be eligible for a BIG cleanup grant:

- Its general contractor or excavation/foundation contractor hired to perform remedial work must maintain Commercial General Liability (CGL) insurance of at least \$1M per occurrence and \$2M in the general aggregate. It is recommended that the general contractor or excavation/foundation contractor also maintain a Contractors Pollution Liability policy (CPL) of at least \$1M per occurrence.
- Its subcontractors who are hired by the general contractor etc. to perform remedial work at a site, including soil brokers and truckers, must also maintain a CGL policy in the amount and with the terms set forth above. It is recommended that subcontractors also maintain a CPL policy in the amount and with the terms set forth above.

The CGL policy, and the CPL policy if in force, must list the city, EDC and BRS as additional insureds, include completed operations coverage and be primary and non-contributory to any other insurance the additional insureds may have.

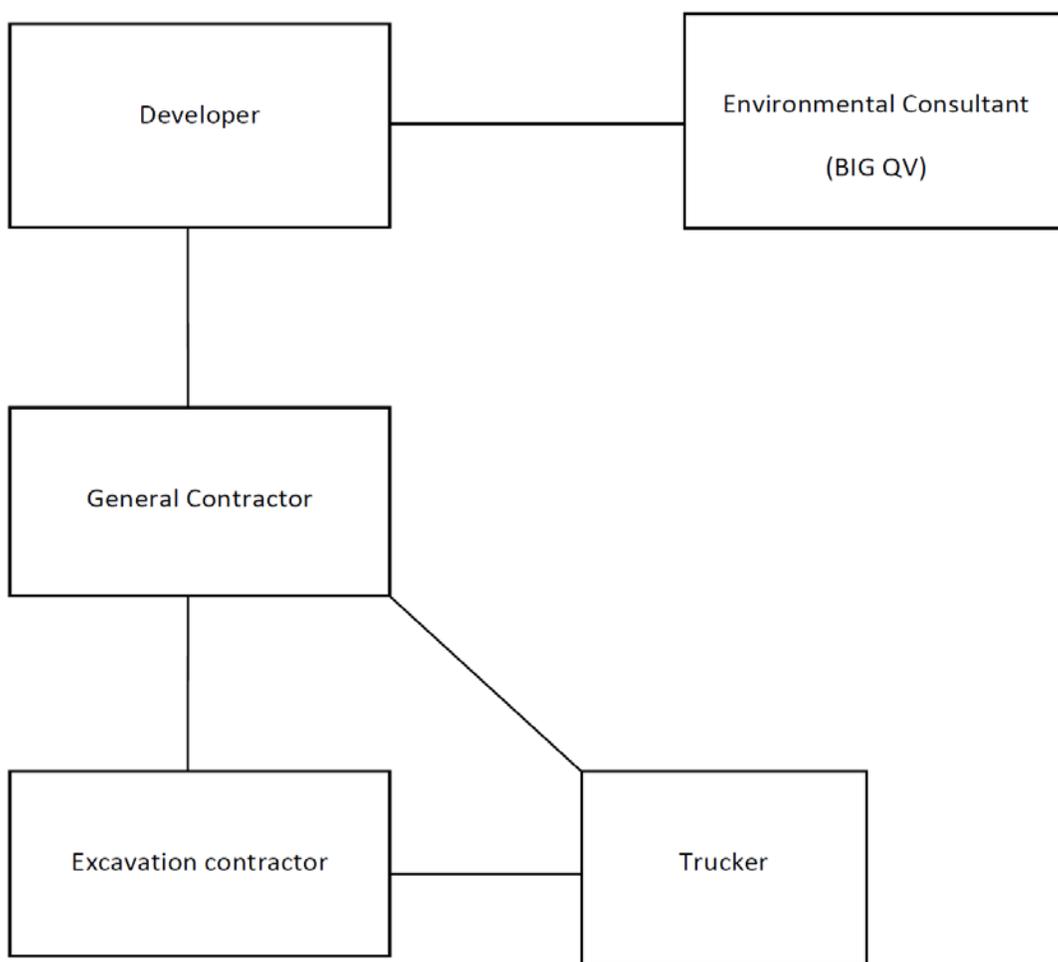
- Its environmental consultant(s) hired to oversee the cleanup must be:
 - a. a BIG Qualified Vendor; and
 - b. maintain Professional Liability (PL) insurance of \$1M per claim and annual aggregate.

If, in the alternative, the developer hires its environmental consultant to perform the cleanup, the environmental consultant must maintain CGL insurance in the amount and with the terms set forth above. It is recommended that the environmental consultant also maintain CPL coverage in the amount and with the terms set forth in the first two bulleted items listed above.

A schematic presenting the contractual relationships described above appears on page 2. Parties who must be named as Additional Insureds on Cleanup Grant insurance policies (CGL and CPL) are presented on page 3.

Example of Contractual Relationships for Cleanup Work

The Office of Environmental Remediation’s Voluntary Cleanup Plan program requires applicants to identify the parties who are engaged in active remediation of their sites including: the General Contractor hired to remediate and/or the excavation contractor hired to excavate soil from the site and the trucking firm(s) that remove soil from the site for disposal at approved facilit(ies).



The chart above shows contractual relationships that typically exist for projects that are enrolled in the Voluntary Cleanup Program.

BIG Program Additional Insureds

The full names and addresses of the additional insureds required under the Required CGL Policy and recommended CPL Policy are as follows:

“City and its officials and employees”

New York City Mayor’s Office of Environmental Remediation
253 Broadway, 14th Floor
New York, NY 10007

“NYC EDC and its officials and employees”

New York City Economic Development Corporation
110 William Street
New York, NY 10038

“BIG Grant Administrator and its officials and employees”

Brownfield Redevelopment Solutions, Inc.
739 Stokes Road, Units A & B
Medford, NJ 08055

Appendix 6
Daily Report Template

Generic Template for Daily Status Report

Instructions

The Daily Status Report submitted to OER should adhere to the following conventions:

- Remove this cover sheet prior to editing.
- Remove all the **red text** and replace with site-specific information.
- Submit the final version as a Word or PDF file.

Daily Status Reports

Daily status reports providing a general summary of activities for each day of *active remedial work* will be emailed to the OER Project Manager by the end of the following day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP excursions, if any;
- Photograph of notable Site conditions and activities.

The frequency of the reporting period may be revised in consultation with OER project manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the Remedial Action Report.

DAILY STATUS REPORT

Prepared By: Enter Your Name Here

WEATHER	Snow		Rain		Overcast		Partly Cloudy	X	Bright Sun	
TEMP.	< 32		32-50		50-70	X	70-85		>85	

VCP Project No.:	14CVCP000M	E-Number Project No.:	14EHAN000M	Date:	01/01/2014
Project Name:	Name or Address				

Consultant: Person(s) Name and Company Name	Safety Officer: Person(s) Name and Company Name
General Contractor: Person(s) Name and Company Name	Site Manager/ Supervisor: Person(s) Name and Company Name

Work Activities Performed (Since Last Report):
Provide details about the work activities performed.

Working In Grid #: A1, B1, C1

Samples Collected (Since Last Report):
No samples collected or provide details

Air Monitoring (Since Last Report):
No air monitoring performed or provide details
Prestart Conditions – PID = 0.0 ppm, Dust = 0.000
High Conditions – PID = 0.0 ppm, Dust = 0.000

Problems Encountered:
No problems encountered or provide details

Planned Activities for the Next Day/ Week:
Provide details about the work activities planned for the next day/ week.

									Example:	
Facility # Name/ Location Type of Waste Solid <u>Or</u> Liquid	Facility # Name Location Type of Waste Solid <u>Or</u> Liquid		##### Clean Earth Carteret, NJ petroleum soils Solid							
(Trucks, Cu.Yds. <u>Or</u> Gallons)	Trucks	Cu. Yds. <u>Or</u> Gallons	Trucks	Cu. Yds.						
Today									5	120
Total									25	600

NYC Clean Soil Bank		Receiving Facility: Name/ Address (Approved by OER)			
Tracking No.:	13CCSB000				
Today	Trucks 5	Cu. Yds. 25	Total	Trucks 120	Cu. Yds. 600

Site Grid Map
 Insert the site grid map here

Photo Log

Photo 1 – provide a caption	Insert Photo Here – Photo of the entire site
Photo 2 – provide a caption	Insert Photo Here – Photo of the work activities performed
Photo 3 – provide a caption	Insert Photo Here – Photo of the work activities performed

Appendix 7
Monthly Report Template

WEEKLY/MONTHLY STATUS REPORT

Prepared By: **Enter Your Name Here**

VCP Project No.:	14CVCP000M	E-Number Project No.:	14EHAN000M	Date:	01/01/2014
------------------	-------------------	-----------------------	-------------------	-------	-------------------

Project Name:	Name or Address
Project Updates (Since Last Report): Provide details about the work activities performed.	

Problems Encountered: No problems encountered or provide details
--

Planned Activities for the Next three months: Provide details about the future work activities.

Photo Log

Photo 1 – provide a caption

Insert Photo Here – Photo of the entire site

Photo 2 – provide a caption

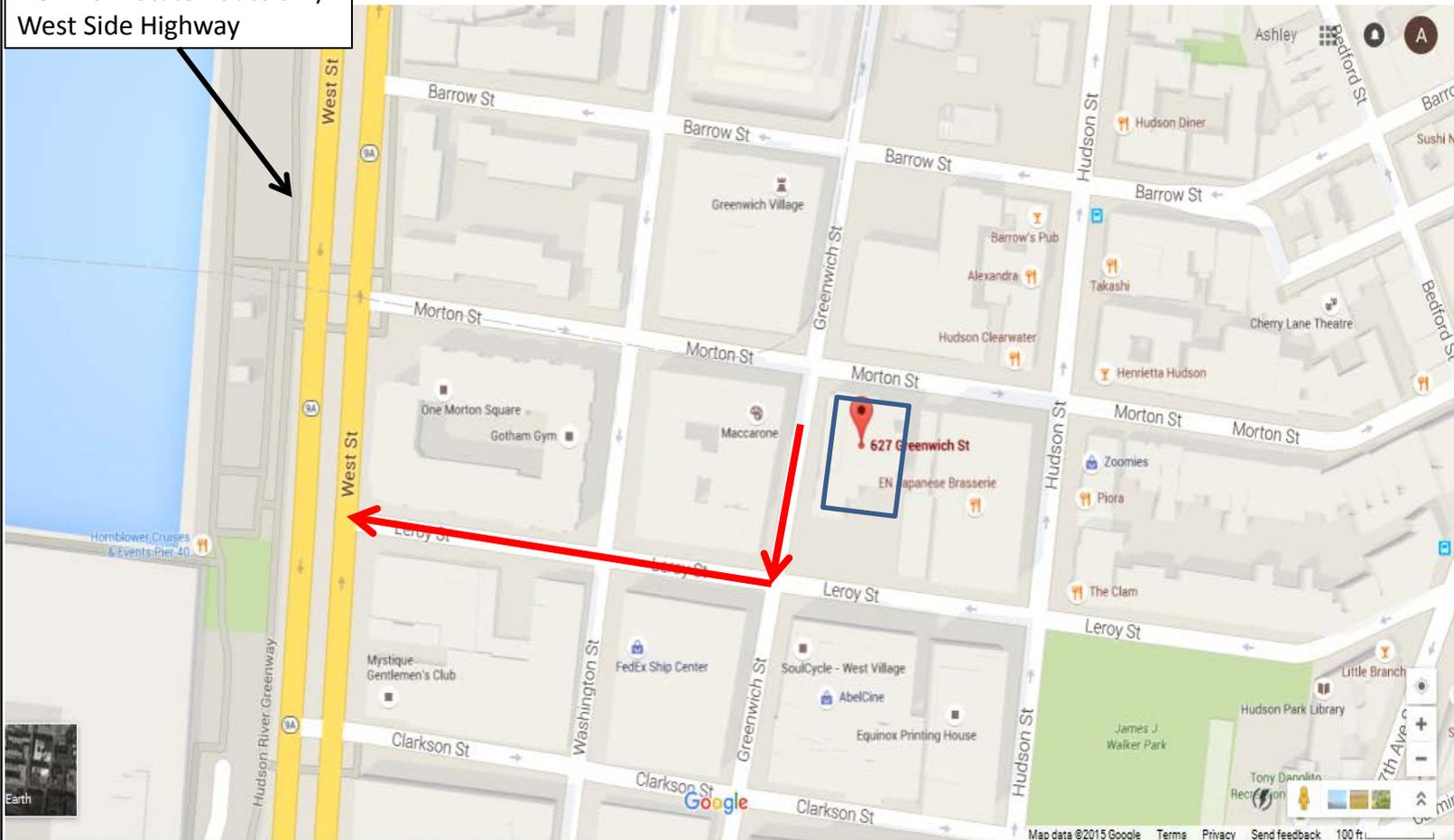
Insert Photo Here – Photo of the work activities performed

Photo 3 – provide a caption

Insert Photo Here – Photo of the work activities performed

Appendix 8
Truck Route

New York State Route 9A /
West Side Highway



WCD Group LLC
1350 Broadway, Suite 1904
New York, NY 10018
P: 212.631.9000
F: 212.631.8066

Client:
BCRE Services LLC
885 Third Avenue,
Suite 2401
New York, NY 10022

Project Location:
627 Greenwich Street
New York, NY 10014
Block 602, Lot 58

Scale:
Not to Scale

Project No.:
14-7143

Title:
Route to Highway

Appendix 9
Stamped/Signed RAWP Certification Page

627 Greenwich Street
MANHATTAN, NEW YORK

Remedial Action Work Plan

NYC VCP Project Number 16CVCP032M
OER Project Number 15RHAZ138M

Prepared For:

BCRE Services
885 Third Ave, Suite 2401
New York, NY 10022
Attn: Mr. Igor Sebo
isebo@bcreusa.com

Prepared By:

WCD Group, LLC
1350 Broadway, Suite 1904
New York, NY 10018
212.631.9000
jblaney@wcdgroup.com

Reviewed By:

Applemon Corporation
151 South Mountain Road, New City, NY

November 2015

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Figure 2: Site Excavation Diagram

Figure 3: Site-wide Cover System Plan

Figure 4: Vapor Barrier Waterproofing Membrane Diagrams

Figure 5: Post Excavation Confirmation Sampling Plan

APPENDICES

Appendix 1: Proposed Development Plans

Appendix 2: Soil/Materials Management Plan

Appendix 3: Construction Health and Safety Plan

Appendix 4: Citizen Participation Plan

Appendix 5: Sustainability Statement

Appendix 6: Sub-Slab Depressurization Design Diagrams

Appendix 7: Vapor Barrier Products

Appendix 8: Prior Environmental Reports

LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C&D	Construction and Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/Ics	Engineering Controls and Institutional Controls
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IRM	Interim Remedial Measure
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYS DEC	New York State Department of Environmental Conservation
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
NYC VCP	New York City Voluntary Cleanup Program
NYCRR	New York Codes Rules and Regulations
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of

	Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
USGS	United States Geological Survey
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VOC	Volatile Organic Compound

CERTIFICATION

I, Fuad F. Adib, Ph.D., P.E. am currently a registered professional engineer licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for designing the remedial program for the 627 Greenwich Street, New York, NY site, OER Project Number 15RHAZ138M/16CVCP032M. I certify to the following:

- I have reviewed this document and the Stipulation List, to which my signature and seal are affixed.
- Engineering Controls developed for this remedial action were designed by me or a person under my direct supervision and designed to achieve the goals established in this Remedial Action Work Plan for this site.
- The Engineering Controls to be constructed during this remedial action are accurately reflected in the text and drawings of the Remedial Action Work Plan and are of sufficient detail to enable proper construction.
- 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.

Fuad F. Adib, Ph.D., P.E.

Name

078921

PE License Number

Fuad F Adib

Signature

November 25, 2015

Date



I, James Blaney, am a qualified Environmental Professional. I will have primary direct responsibility for implementation of the remedial program for the 627 Greenwich Street, New York, NY site, OER Project Number 15RHAZ138M/16CVCP032M. I certify to the following:

- 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.

James Blaney, CHMM

QEP Name

James Blaney

QEP Signature

16 October 2015

Date

EXECUTIVE SUMMARY

BCRE Services is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 10,800-square foot site located at 627 Greenwich Street in Manhattan, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document 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 Background

The Site is located at 627 Greenwich Street in the West Village section of Manhattan, New York and is identified as Block 602 and Lot 58 on the New York City Tax Map. The property is assigned restrictive declaration R-141 for hazardous materials. Figure 1 shows the Site location. The Site is 10,800-square feet and is bounded by Morton Street to the north, Leroy Street to the south, a three-story commercial building to the east, and Greenwich Street to the west. A map of the site boundary is shown in Figure 1. Currently, the Site is occupied by a vacant 12-story building that was previously used for single-family residences, professional offices, metal products, mailing services, and warehousing.

The Site is supplied electricity and natural gas from Consolidated Edison. Potable water and sanitary sewer services are provided by the City of New York. The Site was historically heated by a fuel oil fired boiler. Fuel was supplied by two (2) No. 2 fuel oil above ground storage tanks (ASTs), removed in 2008, and potentially one (1) No. 2 fuel oil underground storage tank (UST). The Site is registered with the NYSDEC PBS as 2-607348 listed for one active 10,000-gallon No. 2 fuel oil AST and one active 3,500-gallon No. 2 fuel oil AST.

Summary of Redevelopment Plan

The proposed future use of the Site will consist of the redevelopment of the existing twelve-story structure into a mixed-use building with commercial use and potential residential use. The proposed mixed-use building will consist of the existing twelve (12) floors above grade and the one-story cellar. The existing structure encompasses an approximately 10,041-square foot

footprint. The cellar will house technical spaces, resident storage, commercial retail, as well as a potential pool and gym. The proposed redevelopment plan for the basement also includes excavation of 1-3 feet in portions of the basement in the area of the proposed pool and elevator pit. Less than 3,000 tons of soil may be excavated during the redevelopment. The water table is present at a depth of approximately 9 feet below the basement top of slab; therefore, groundwater is not anticipated to be encountered during the redevelopment. The first floor use will include retail space and potential residential facility lobbies. The second to the twelfth floors use will include commercial or residential space.

The proposed new building layout of the proposed Site development is presented in Appendix 1. The current zoning designation is a M1-5/R7X manufacturing and residential mixed use. The proposed use is consistent with existing zoning for the property.

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

Summary of Surrounding Property

The Site is located in a developed urban area of Manhattan consisting primarily of residential, commercial, and institutional buildings. The Site is bounded to the north by Morton Street followed by high-rise commercial, residential, and institutional buildings; to the south by a residential apartment building and surface level parking lot followed by Leroy Street, to the east by high-rise commercial and residential structures, and to the west by Greenwich Street followed by high-rise commercial and residential structures. No hospitals, schools or daycare facilities are located within a 500 foot radius of the Site.

Summary of Past Site Uses and Areas of Concern

The Site is an approximately 10,800-square foot lot occupied by a twelve-story vacant commercial structure constructed in 1910 and 1982 encompassing an approximately 10,041-square foot footprint. Historical records indicate the Site was developed prior to 1910 with multiple single-family residences. The historic commercial use of the Site includes printing companies, professional offices, metal products, mailing services, and warehousing. The existing Site structure up to the eighth-floor was built in 1910 and the ninth through twelfth

floors of the existing structure were constructed in 1982. The existing building has been vacant since late 2007, and most interior finishes have since been removed.

The Site is supplied electricity and natural gas from Consolidated Edison. Potable water and sanitary sewer services are provided by the City of New York. There are currently no heating or cooling systems within the site building. The Site was historically heated by a fuel oil fired boiler. Fuel was supplied by two (2) No. 2 fuel oil above ground storage tanks (ASTs), removed in 2008, and potentially one (1) No. 2 fuel oil underground storage tank (UST). The Site is registered with the NYSDEC PBS as 2-607348 listed for one active 10,000-gallon No. 2 fuel oil AST and one active 3,500-gallon No. 2 fuel oil AST.

A prior Phase I Environmental Site Assessment of the Site indicated the potential presence of a 3,500-gallon UST located in the northern portion of the basement foundation. No evidence of the 3,500-gallon-tank was observed at the time of the site visit. The prior Phase I ESA Report is presented in Appendix 7.

A Geophysical Survey was performed by Nova Geophysical Inc. on March 23rd, 2015 under subcontract and supervision of WCD, for the purpose of locating and identifying anomalies, utilities and other substructures, and to clear and mark proposed environmental boring areas. NOVA identified a large anomaly beneath the basement foundation in the south-east corner, indicating the potential presence of an UST.

The AOCs identified for this site include:

1. Historic use of the Site including printing companies and metal products.
2. Registered with the NYSDEC PBS as 2-607348 and lists two active fuel oil tanks.
3. An anomaly located beneath the basement foundation in the south-east corner.

Summary of Work Performed under the Remedial Investigation

The Remedial Investigation activities were performed by WCD from March 23rd to March 24, 2015 and consisted of the following work:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);

2. Performed a Geophysical Survey to clear proposed sample locations of subsurface structures and utilities;
3. Installed five (5) soil borings across the entire project Site, and collected seven (7) soil samples for chemical analysis from the soil borings to evaluate soil quality;
4. Installed one (1) groundwater monitoring well throughout the Site to establish groundwater flow and collected one (1) groundwater sample for chemical analysis to evaluate groundwater quality; and
5. Installed five (5) soil vapor probes around Site perimeter and collected five (5) samples for chemical analysis.

Summary of Findings of Remedial Investigation

1. Elevation of the property is approximately 13 feet above mean sea level (amsl).
2. Depth to groundwater was encountered at approximately 9 feet below the basement level top of slab.
3. Groundwater flow is expected to occur from an east to west direction towards the Hudson River.
4. The depth to bedrock is estimated to be encountered at approximately 50 ft below the basement slab (i.e., approximately 65 ft below exterior ground surface). This is based on the Haley & Aldrich of New York Report dated April 3, 2015.
5. During the remedial investigation fill material consisting of red/brown sand, silts with fine gravel, wood fragments and ash was encountered at the Site to a maximum depth of 11 feet bgs, the maximum sample depth during the remedial investigation.
6. The geophysical survey did not reveal evidence of buried utilities or structures in the vicinity of the sampling locations. Evidence of an anomaly was identified in the southeastern portion of the basement area at the Site during the geophysical survey.
7. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. Soil/fill samples collected during the RI showed no PCBs in any

samples. Trace concentrations of several VOCs were detected, but none above Unrestricted Use SCOs. Trace concentrations of tetrachloroethylene (max of 0.0015 ppm) and trichloroethylene (max of 0.044 ppm) were detected in three samples. Several SVOCs consisting of Polycyclic Aromatic Hydrocarbons (PAHs) were detected with benz(a)anthracene (max of 5 ppm), benzo(a)pyrene (max of 3.4 ppm), benzo(b)fluoranthene (max of 5.1 ppm), chrysene (max of 4.5 ppm), dibenzo(a,h)anthracene (max of 0.64 ppm), and indeno(1,2,3-cd)pyrene (max of 2.3 ppm) exceeding Restricted Residential Use SCOs in two samples with benzo(k)fluoranthene (max of 1.6 ppm) exceeding Unrestricted Use SCOs in the same two samples. Two pesticides; 4,4'-DDE (max of 0.0127 ppm) and 4,4'-DDT (max of 0.0123 ppm) exceeded Unrestricted Use SCOs in two samples. Several metals including lead (max of 120 ppm), nickel (max of 49 ppm), and zinc (max of 110 ppm) exceeded Unrestricted Use SCOs. Overall, the findings were consistent with observations for historic fill sites in areas throughout NYC.

8. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during the investigations showed no SVOCs, PCBs or pesticides in any sample. Trace concentrations of VOCs were detected, with PCE (6.7 µg/L) detected above GQS. TCE (3.5 µg/L) was also detected in groundwater below its respective GQS. Several metals were identified in groundwater but only magnesium (max of 103,000 µg/L), manganese (max of 349.2 µg/L), and sodium (max of 214,000 µg/L) exceeded their respective GQS.
9. Soil vapor results collected during the RI were compared to the compounds listed by the NYSDOH located in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor samples showed high levels of petroleum-related and chlorinated VOCs. Total concentrations of petroleum-related VOCs (BTEX) ranged from 24.3 µg/m³ to 837.1 µg/m³. Chlorinated VOCs tetrachloroethylene (PCE) ranging from 26.4 µg/m³ to 205 µg/m³ and trichloroethylene (TCE) ranging from 15.6 µg/m³ to 504 µg/m³, were detected in all five soil vapor samples. Carbon tetrachloride and 1,1,1-trichloroethane (TCA) were not

detected in any samples. Concentrations for PCE and TCE were above the monitoring level ranges established within the State DOH soil vapor guidance matrix.

Summary of the Remedial Action

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 standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s). A Waste Characterization Report documenting sample procedures, location, analytical results shall be submitted to NYCOER prior to start of remedial action.
6. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. For development purposes, 1-3 foot of soil up to 6.8 feet below the top of the existing slab will be excavated for a pool, underground MEP, elevator pit(s) and stairwell foundation. It is estimated that less than 3,000 tons of soil will be removed.

7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at licensed or 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 on-Site.
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Construction of an engineered composite cover consisting of the existing six-inch thick reinforced concrete cellar slab and vertical walls and a minimum 6-inch and maximum 12-inch thick concrete new building slab reinforced with welded wire fabric.
13. Installation of a vapor barrier system consisting of vapor barrier beneath the portions of the building slab that will be demolished and a vapor barrier coating applied to the remaining portions of the building slab. The vapor barrier system will consist of a GRACE Preprufe 300R (or similar product) vapor/moisture barrier system (47 mil thick) installed beneath the new portions of the building slab and a GRACE Preprufe 160 (or similar product) vapor/moisture barrier system (31 mil thick) installed along foundation sidewalls. A vapor barrier coating consisting of application of a 20 mil coating will be applied to the remaining existing portions of the slab that will not be disturbed during development. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system is an Engineering Control for the remedial action. The remedial engineer will certify

- in the RAR that the vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building.
14. Installation and operation of an active sub-slab depressurization system (SSDS). The SSDS will consist of 4” sub-slab cast iron pipes leading from each of five suction pits to the nearest structural column which then run horizontally overhead along the ceiling to the 6” riser pipe. There are also two suction points that follow a similar schematic. The active SSDS is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the active SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building.
 15. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
 16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
 17. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
 18. 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.
 19. The property will continue to be registered with a Restrictive Declaration at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include 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.

COMMUNITY PROTECTION STATEMENT

The NYC Office of Environmental Remediation (OER) provides governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies, shows the location of identified contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

This cleanup plan provides a very high level of protection for neighboring communities and also includes many other elements that address common community concerns, such as community air monitoring, odor, dust and noise controls, hours of operation, good housekeeping and cleanliness, truck management and routing, and opportunities for community participation. The purpose of this Community Protection Statement is to explain these community protection measures in non-technical language to simplify community review.

Project Information:

- Site Address: 627 Greenwich Street, New York, NY 10014
- NYC Voluntary Cleanup Program Project Number: 16CVCP032M

Project Contacts:

- OER Project Manager: Sarah Pong, 212-788-8841
- Site Project Manager: Igor Sebo, 212-308-7200
- Site Safety Officer: Igor Sebo, 212-308-7200

Online Document Repository:

<http://www.nyc.gov/html/oer/html/document-repository/document-repository.shtml>

Remedial Investigation and Cleanup Plan: Under the oversight of the NYC OER, a thorough study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and to identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

Identification of Sensitive Land Uses: Prior to selecting a cleanup, the neighborhood was evaluated to identify sensitive land uses nearby, such as schools, day care facilities, hospitals and residential areas. The cleanup program was then tailored to address the special conditions of this community.

Qualitative Human Health Exposure Assessment: An important part of the cleanup planning for the Site is a study to find all of the ways that people might come in contact with contaminants at the Site now or in the future. This study is called a Qualitative Human Health Exposure Assessment (QHHEA). A QHHEA was performed for this project. This assessment has considered all known contamination at the Site and evaluated the potential for people to come in contact with this contamination. All identified public exposures will be addressed under this cleanup plan.

Health and Safety Plan: This cleanup plan includes a Construction Health and Safety Plan (CHASP) that is designed to protect community residents and on-Site workers. The elements of this RAWP are in compliance with applicable safety requirements of the United States Occupational Safety and Health Administration (OSHA). This RAWP includes many protective elements including those discussed below.

Site Safety Coordinator: This project has a designated Site safety coordinator to implement the CHASP. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is identified at the beginning of this Community Protection Statement.

Worker Training: Workers participating in cleanup of contaminated material on this project are required to be trained in a 40-hour hazardous waste operators training course and to take annual refresher training. This pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

Community Air Monitoring Plan: Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan or CAMP. Results will be regularly reported to the NYC Office of Environmental Remediation. This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a ‘Contingency Plan’).

Odor, Dust and Noise Control: This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with applicable NYC noise control standards. If you observe problems in these areas, please contact the onsite Project Manager or NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document.

Quality Assurance: This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be summarized in the final report, called the Remedial Action Report. This report will be submitted to the NYC Office of Environmental Remediation and will be thoroughly reviewed.

Stormwater Management: To limit the potential for soil erosion and discharge, this cleanup plan has provisions for stormwater management. The main elements of the stormwater management include physical barriers such as tarp covers and erosion fencing, and a program for frequent inspection.

Hours of Operation: The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances

issued by that agency. For this cleanup project, the hours of operation will conform to requirements of the NYC Department of Buildings.

Signage: While the cleanup is in progress, a placard will be prominently posted at the main entrance of the property with a laminated project Fact Sheet that states that the project is in the NYC Voluntary Cleanup Program and provides project contact names and numbers, and a link to the document repository where project documents can be viewed.

Complaint Management: The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager or the NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

Utility Mark-outs: To promote safety during excavation in this cleanup, the contractor is required to first identify all utilities and must perform all excavation and construction work in compliance with NYC Department of Buildings regulations.

Soil and Liquid Disposal: All soil and liquid material removed from the Site as part of the cleanup will be transported and disposed of in accordance with all applicable City, State and Federal regulations, and required permits will be obtained.

Soil Chemical Testing and Screening: All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

Stockpile Management: Soil stockpiles will be kept covered with tarps to prevent dust, odor and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be

promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed, to protect storm water catch basins and other discharge points.

Trucks and Covers: Loaded trucks leaving the Site will be covered in compliance with applicable laws and regulations to prevent dust and odor. Trucks will be properly recorded in logs and records and placarded in compliance with applicable City, State and Federal laws, including those of the New York State Department of Transportation. If loads contain wet material that can leak, truck liners will be used. All transport of materials will be performed by licensed truckers and in compliance with applicable laws and regulations.

Imported Material: All fill materials proposed to be brought onto the Site will comply with rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on the Site. Waste materials will not be brought onto the Site. Trucks entering the Site with imported clean materials will be covered in compliance with applicable laws and regulations.

Equipment Decontamination: All equipment used for cleanup work will be inspected and washed, if needed, before it leaves the Site. Trucks will be cleaned at a truck inspection station on the property before leaving the Site.

Housekeeping: Locations where trucks enter or leave the Site will be inspected every day and cleaned regularly to ensure that they are free of dirt and other materials from the Site.

Truck Routing: Truck routes have / will be selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the property. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

Final Report: The results of all cleanup work will be fully documented in a final report (called the Remedial Action Report) that will be available for public review online. A link to the online document repository and the public library with Internet access nearest the Site are listed on the first page of this Community Protection Statement document

Long-Term Site Management: If long-term protection is needed after the cleanup is complete, the property owner will be required to comply with an ongoing Site Management Plan that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC Office of Environmental Remediation. Requirements that the property owner must comply with are defined either in the property's deed or established through a city environmental designation registered with the Department of Buildings. A certification of continued protectiveness of the cleanup will be required from time to time to show that the approved cleanup is still effective.

REMEDIAL ACTION WORK PLAN

1.0 Project Background

BCRE Services is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program (NYC VCP) and the Restrictive Declaration Program to investigate and remediate a property located at 627 Greenwich Street in the West Village section of Manhattan, New York (the “Site”). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, and complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Background

The Site is located at 627 Greenwich Street in the West Village section of Manhattan, New York and is identified as Block 602 and Lot 58 on the New York City Tax Map. The property is assigned restrictive declaration R-141 for hazardous materials. Figure 1 shows the Site location. The Site is 10,800-square feet and is bounded by Morton Street to the north, Leroy Street to the south, a three-story commercial building to the east, and Greenwich Street to the west. A map of the site boundary is shown in Figure 1. Currently, the Site is occupied by a vacant 12-story building that was previously used for single-family residences, professional offices, metal products, mailing services, and warehousing.

The Site is supplied electricity and natural gas from Consolidated Edison. Potable water and sanitary sewer services are provided by the City of New York. The Site was historically heated by a fuel oil fired boiler. Fuel was supplied by two (2) No. 2 fuel oil above ground storage tanks (ASTs) removed in 2008 and potentially one (1) No. 2 fuel oil underground storage tank (UST). The Site is registered with the NYSDEC PBS as 2-607348 listed for one active 10,000-gallon No. 2 fuel oil AST and one active 3,500-gallon No. 2 fuel oil AST.

1.2 Redevelopment Plan

The proposed future use of the Site will consist of the redevelopment of the existing twelve-story structure into a mixed-use building with commercial use and potential residential use. The proposed mixed-use building will consist of the existing twelve (12) floors above grade and the one-story cellar. The existing structure encompasses an approximately 10,041-square foot footprint. The cellar will house technical spaces, resident storage, commercial retail, as well as a potential pool and gym. The proposed redevelopment plan for the basement also includes excavation to lower the north portion of the basement approximately ranging from 1 foot (under MEP) to 6.8 feet (elevator pit) below slab. Approximately 3,000 tons of soil may be excavated during the redevelopment. The water table is present at a depth of approximately 9 feet below the basement top of slab; therefore, groundwater is not anticipated to be encountered during the redevelopment. The first floor use will include retail space and potential residential facility lobbies. The second to the twelfth floors use will include commercial or residential space.

The proposed new building layout of the proposed Site development is presented in Appendix 4. The current zoning designation is a M1-5/R7X manufacturing and residential mixed use. The proposed use is consistent with existing zoning for the property.

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

1.3 Description of Surrounding Property

The Site is located in a developed urban area of Manhattan consisting primarily of residential, commercial, and institutional buildings. The Site is bounded to the north by Morton Street followed by high-rise commercial, residential, and institutional buildings; to the south by a residential apartment building and surface level parking lot followed by Leroy Street, to the east by high-rise commercial and residential structures, and to the west by Greenwich Street followed by high-rise commercial and residential structures. No hospitals, schools or daycare facilities are located within a 500 foot radius of the Site.

1.4 Summary of Past Site Uses and Areas of Concern

The Site is an approximately 10,800-square foot lot occupied by a twelve-story vacant commercial structure constructed in 1910 and 1982 encompassing an approximately 10,041-

square foot footprint. The Site is bounded by Morton Street to the north, Leroy Street to the south, a three-story commercial building to the east, and Greenwich Street to the west. Historical records indicate the Site was developed prior to 1910 with multiple single-family residences. The historic commercial use of the Site includes printing companies, professional offices, metal products, mailing services, and warehousing. The existing Site structure up to the eighth-floor was built in 1910 and the ninth through twelfth floors of the existing structure were constructed in 1982. The existing building has been vacant since late 2007, and most interior finishes have since been removed.

The Site is supplied electricity and natural gas from Consolidated Edison. Potable water and sanitary sewer services are provided by the City of New York. There are currently no heating or cooling systems within the site building. The Site was historically heated by a fuel oil fired boiler. Fuel was supplied by two (2) No. 2 fuel oil above ground storage tanks (ASTs), removed in 2008, and potentially one (1) No. 2 fuel oil underground storage tank (UST). The Site is registered with the NYSDEC PBS as 2-607348 listed for one active 10,000-gallon No. 2 fuel oil AST and one active 3,500-gallon No. 2 fuel oil AST.

A prior Phase I Environmental Site Assessment of the Site indicated the potential presence of a 3,500-gallon UST located in the northern portion of the basement foundation. No evidence of the 3,500-gallon-tank was observed at the time of the site visit.

A Geophysical Survey was performed by Nova Geophysical Inc. on March 23rd, 2015 under subcontract and supervision of WCD, for the purpose of locating and identifying anomalies, utilities and other substructures, and to clear and mark proposed environmental boring areas. NOVA identified a large anomaly beneath the basement foundation in the south-east corner, indicating the potential presence of an UST.

The AOCs identified for this site include:

1. Historic use of the Site including printing companies and metal products.
2. Registered with the NYSDEC PBS as 2-607348 and lists two active fuel oil tanks.
3. An anomaly located beneath the basement foundation in the south-east corner.

1.5 Summary of Work Performed under the Remedial Investigation

The Remedial Investigation activities were performed by WCD from March 23rd to 24th and consisted of the following scope of work:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Performed a Geophysical Survey to clear proposed sample locations of subsurface structures and utilities and anomalies;
3. Installed five (5) soil borings across the entire project Site, and collected seven (7) soil samples for chemical analysis from the soil borings to evaluate soil quality;
4. Installed one (1) groundwater monitoring well to and collected one (1) groundwater sample for chemical analysis to evaluate groundwater quality; and
5. Installed five (5) soil vapor probes at the Site and collected five (5) samples for chemical analysis.

1.6 Summary of Environmental Findings

1. Elevation of the property is approximately 13 feet above mean sea level (amsl).
2. Depth to groundwater was encountered at approximately 9 feet below the basement level top of slab.
3. Groundwater flow is expected to occur from the west to east direction towards the Hudson River.
4. The depth to bedrock is estimated to be encountered at approximately 50 ft below the basement slab (i.e., approximately 65 ft below exterior ground surface). This is based on the Haley & Aldrich of New York Report dated April 3, 2015.
5. During the remedial investigation fill material consisting of red/brown sand, silt with fine gravel, wood fragments and ash was encountered at the Site to a maximum depth of 11 feet bgs, the maximum sample depth during the remedial investigation.
6. The geophysical survey did not reveal evidence of buried utilities or structures in the vicinity of the sampling locations. Evidence of a potential anomaly was identified in the southeastern portion of the basement area at the Site during the geophysical survey.

7. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. Soil/fill samples collected during the RI showed no PCBs in any samples. Trace concentrations of several VOCs were detected, but none above Unrestricted Use SCOs. Trace concentrations of tetrachloroethylene (max of 0.0015 ppm) and trichloroethylene (max of 0.044 ppm) were detected in three samples. Several SVOCs consisting of Polycyclic Aromatic Hydrocarbons (PAHs) were detected with benz(a)anthracene (max of 5 ppm), benzo(a)pyrene (max of 3.4 ppm), benzo(b)fluoranthene (max of 5.1 ppm), chrysene (max of 4.5 ppm), dibenzo(a,h)anthracene (max of 0.64 ppm), and indeno(1,2,3-cd)pyrene (max of 2.3 ppm) exceeding Restricted Residential Use SCOs in two samples with benzo(k)fluoranthene (max of 1.6 ppm) exceeding Unrestricted Use SCOs in the same two samples. Two pesticides; 4,4'-DDE (max of 0.0127 ppm) and 4,4'-DDT (max of 0.0123 ppm) exceeded Unrestricted Use SCOs in two samples. Several metals including lead (max of 120 ppm), nickel (max of 49 ppm), and zinc (max of 110 ppm) exceeded Unrestricted Use SCOs. Overall, the findings were consistent with observations for historic fill sites in areas throughout NYC.
8. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during the investigations showed no SVOCs, PCBs or pesticides in any sample. Trace concentrations of VOCs were detected, with PCE (6.7 µg/L) detected above GQS. TCE (3.5 µg/L) was also detected in groundwater below its respective GQS. Several metals were identified in groundwater but only magnesium (max of 103,000 µg/L), manganese (max of 349.2 µg/L), and sodium (max of 214,000 µg/L) exceeded their respective GQS.
9. Soil vapor results collected during the RI were compared to the compounds listed by the NYSDOH located in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor samples collected during the RI showed high levels of petroleum-related and chlorinated VOCs. Total concentrations of petroleum-related VOCs (BTEX) ranged from 24.3 µg/m³ to 837.1 µg/m³. Chlorinated VOCs tetrachloroethylene (PCE) ranging from 26.4 µg/m³ to

205 $\mu\text{g}/\text{m}^3$ and trichloroethylene (TCE) ranging from 15.6 $\mu\text{g}/\text{m}^3$ to 504 $\mu\text{g}/\text{m}^3$, were detected in all five soil vapor samples. Carbon tetrachloride and 1,1,1-trichloroethane (TCA) were not detected in any samples. Concentrations for PCE and TCE were above the monitoring level ranges established within the State DOH soil vapor guidance matrix.

For more detailed results, consult the RIR. Based on an evaluation of the data and information from the RIR and this RAWP, disposal of significant amounts of hazardous waste is not suspected at this site.

2.0 Remedial Action Objectives

Based on the results of the RI, the following Remedial Action Objectives (RAOs) have been identified for this Site:

Soil

- Prevent direct contact with contaminated soil.
- Prevent exposure to contaminants volatilizing from contaminated soil.

Groundwater

- Prevent direct exposure to contaminated groundwater.
- Prevent exposure to contaminants volatilizing from contaminated groundwater.

Soil Vapor

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into dwelling and other occupied structures.

3.0 Remedial Alternatives Analysis

The goal of the remedy selection process is to select a remedy that is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of applicable standards, criteria and guidance values (SCGs). Remedial alternatives are then developed and evaluated based on the following ten criteria:

- Protection of human health and the environment;
- Compliance with SCGs;
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community acceptance;
- Land use; and
- Sustainability.

As required, a Track 1 Unrestricted Use scenario is evaluated for the remedial action. The following is a detailed description of the alternatives analyzed to address impacted media at the Site:

Alternative 1:

- Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs);
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would be achieved by excavating the entire site to a depth of approximately 11 feet to remove all historic fill. If soil/fill containing analytes at concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for the redevelopment of the building's cellar level is

complete, additional excavation would be performed to ensure complete removal of soil/fill that does not meet Track 1 Unrestricted Use SCOs;

- No Engineering or Institutional Controls are required for a Track 1 cleanup, but a sub-slab depressurization system (SSDS) beneath the foundation and a soil vapor/moisture barrier along the building slab and along the vertical foundation walls would be installed as part of development to prevent potential exposures from soil vapor in the future; and
- As part of development, placement of a final cover over the entire Site.

Alternative 2:

- Establishment of Site-Specific (Track 4) SCOs;
- Removal of all soil/fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 Site-Specific SCOs have been achieved with post-excavation endpoint sampling.. Based on the results of the Remedial Investigation, it is expected that this alternative would be achieved by excavating the top 1 foot below the basement slab in some areas. As part of development, excavation will take place to approximately 1 foot (underground MEP) to 6.8 feet (elevator pit). If soil/ fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present at the base of the excavation after removal of all soil required for the development construction is complete, additional excavation will be performed to meet Track 4 Site-Specific SCOs;
- Placement of a composite cover system over the entire Site to prevent exposure to remaining soil/fill;
- Installation of a soil vapor/moisture barrier system along the building slab and along foundation side walls to prevent future potential exposures from soil vapor;
- Installation of an active Sub Slab Depressurization System (SSDS) beneath the foundation to prevent any potential future exposures from soil vapor;
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site; prohibitions of sensitive Site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without OER approval;
- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these Engineering and Institutional Controls including the performance of

periodic inspections and certification that the controls are performing as they were intended. The SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP; and

- Continued registration with a Restrictive Declaration to memorialize the remedial action and the Engineering and Institutional Controls required by this RAWP.

3.1 Threshold Criteria

Protection of Public Health and the Environment

This criterion is an evaluation of the remedy's ability to protect public health and the environment, and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled through removal, treatment, and implementation of Engineering Controls or Institutional Controls. Protection of public health and the environment must be achieved for all approved remedial actions.

Alternative 1 would be protective of human health and the environment by removing all soil/fill exceeding Track 1 Unrestricted Use SCO's and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contaminants leaching into groundwater.

Alternative 2 would achieve comparable protections of human health and the environment by excavation and removal of most of the historic fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCO's, as well as by placement of Institutional and Engineering Controls, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. The active SSDS system, along with the vapor barrier system would mitigate any vapor from entering the building. Implementing Institutional Controls including a Site Management Plan and continuing the Restrictive Declaration on the property would ensure that the composite cover system remains intact and protective of public health. Establishment of Track 4 Site-Specific SCO's would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan, and Community Air Monitoring Plan (CAMP).

Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier system and installation of an active SSDS.

3.2 Balancing Criteria

Compliance with Standards, Criteria and Guidance (SCGs)

This evaluation criterion assesses the ability of the alternative to achieve applicable standards, criteria and guidance.

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use SCOs and Protection of Groundwater SCOs. Compliance with SCGs for soil vapor would also be achieved by installing a vapor/moisture barrier system along the building's basement slab and continuing the vapor barrier along subgrade foundation walls, as part of development. In addition, Alternative 1 would include installation of an active SSDS as part of development.

Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCOs. Compliance with SCGs for soil vapor would also be achieved by installing a vapor/moisture barrier system along the building basement slab and along subgrade foundation walls, applying a vapor barrier to the interior cellar areas which will remain undisturbed, as well as installing an active SSDS. A Site Management Plan would ensure that these controls remained protective for the long term.

Health and safety measures contained in the CHASP and Community Air Monitoring Plan (CAMP) will be implemented during Site redevelopment under this RAWP. For both Alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs. These measures will protect on-site workers and the surrounding community from exposure to Site-related contaminants.

Short-Term Effectiveness and Impacts

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives

are evaluated with respect to their short term effects during the remedial action on public health and the environment during implementation of the remedial action, including protection of the community, protection of onsite workers and environmental impacts.

Short-term impacts would be higher for Alternative 1 as additional soils would be required to achieve Track 1 Unrestricted Use SCOs. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short-term impacts could potentially be higher for Alternative 1 since excavation of greater amounts of historical fill material would take place. However, focused attention to means and methods during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize the overall impact of these activities.

An additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. Approximately 120, 25-ton capacity truck trips would be necessary to transport fill and soil excavated during Site development. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flag persons will be used to protect pedestrians at Site entrances and exits.

The potential adverse impact to the community, workers and the environment for both alternatives would be minimized through implementation of control plans including a Construction Health and Safety Plan, a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would minimize the release of contaminants into the environment. Both alternatives provide short-term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a Construction Health and Safety Plan (CHASP) would provide protection from on-Site contaminants by using personal protective equipment would be worn consistent with the documented risks within the respective work zones.

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of

Engineering Controls/Institutional Controls (ECs/ICs) that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of ECs.

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill above Track 1 Unrestricted Use SCO's and enabling unrestricted usage of the property. Removal of on-Site contaminant sources will also prevent future groundwater contamination.

Alternative 2 would provide long-term effectiveness by removing on-Site contamination and attaining Track 4 Site-Specific SCOs; installing a composite cover system across the Site; maintaining use restrictions; establishing an SMP to ensure long-term management of ICs and ECs; and maintaining a Restrictive Declaration to memorialize these controls for the long term. The SMP would ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended, assuring that protections designed into the remedy continue to provide the required level of protection.

Both alternatives would result in removal of soil contamination exceeding the SCOs providing the highest level, most effective and permanent remedy over the long-term with respect to a remedy for contaminated soil, which will eliminate any migration to groundwater. Potential sources of soil vapor and groundwater contamination will also be eliminated as part of the remedy.

Reduction of toxicity, mobility, or volume of contaminated material

This evaluation criterion assesses the remedial alternative's use of remedial technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that are to be used to remediate a Site, ranked from most preferable to least preferable: removal and/or treatment, containment, elimination of exposure and treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

Alternative 1 will permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soil by removing all soil in excess of Track 1 Unrestricted Use SCO's.

Alternative 2 would remove some historic fill at the Site, and all remaining on-Site soil/fill beneath the building will meet Track 4 Site-Specific SCO's.

Alternative 1 would remove a greater total mass of contaminants from the Site. The removal of soil from 1 foot to 6.8 feet for the new development in both scenarios would lessen the difference in contaminant mass removal between these two alternatives.

Implementability

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g. obtaining permits for remedial activities), and availability of services and materials.

The techniques, materials and equipment to implement both Alternatives 1 and 2 are readily available and have been proven to be effective in remediating the contaminants present on the Site. They use standard equipment and technologies that are well established in the industry. The reliability of each remedy is also high. There are no special difficulties associated with any of the activities proposed.

Cost effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, engineering expenses) and site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

Since historic fill at the Site was found to extend to a depth of up to 11 feet below grade during the RI, and the building redevelopment plan will require excavation of portion of the basement to a depth from 1 to 6.8 feet, the initial costs associated with Alternative 1 would be higher than Alternative 2 as it involves substantial removal of soil/fill and disposal across the Site. Additional costs would include installation of additional shoring/underpinning, disposal of

additional soil, and import of clean soil for backfill. If additional soil/fill with analytes above Track 1 Unrestricted Use SCOs is encountered but below Track 4 Site-Specific SCOs remain after excavation required for development long-term costs for Alternative 2 would likely be higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

The remedial plan creates an approach that couples the remedial action with the redevelopment of the Site, lowering total costs. The remedial plan is also cost effective in that it will take into consideration the selection of the closest and most appropriate disposal facilities to reduce transportation and disposal costs during excavation of historic fill and other soils during redevelopment of the Site.

Community Acceptance

This evaluation criterion addresses community opinion and support for the remedial action. Observations here will be supplemented by public comment received on the RAWP.

This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix 4. Observations here will be supplemented by public comment received on the RAWP. Under both alternatives, the overall goals of the remedial program, to protect public health and the environment and eliminate potential contaminant exposures, have been broadly supported by citizens in NYC communities.

Land use

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; NYS Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law; applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts, Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the site to important cultural

resources and natural resources, potential vulnerability of groundwater to contamination that might emanate from the site, proximity to flood plains, geography and geology; and current Institutional Controls applicable to the site.

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy of soil remediation. The proposed future use of the Site includes renovation of the existing structure into a mixed-use residential and commercial building consisting of the existing twelve (12) floors above grade and the one-story cellar. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are protective of public health and the environment for its planned residential and/or commercial use. The proposed use is compliant with the property's zoning and is consistent with recent development patterns. The Site is located in a developed urban area of Manhattan consisting primarily of residential, commercial, and institutional buildings. The development would remediate a vacant contaminated lot and provide a modern residential and/or commercial building. The proposed development would clean up the property and make it safer, create new employment opportunities, living and working space and associated societal benefits to the community, and other economic benefits from land revitalization.

Temporary short-term project impacts are being mitigated through site management controls and truck traffic controls during remediation activities. Following remediation, the Site will meet either Track 1 Unrestricted Use SCOs or Track 4 Site-Specific SCOs, both of which are protective of public health and the environmental for its planned use.

The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites, natural resources, waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species. The Site is located in an urban area and not in proximity to fish or wildlife and neither alternative would result in any potential exposure pathways of contaminant migration affecting fish or wildlife. The remedial action is also protective of groundwater natural resources. The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Both alternatives are equally protective of natural resources and cultural resources. Improvements in the current environmental condition of the property achieved by both alternatives considered in this plan are consistent with the City's goals for cleanup of contaminated land.

Sustainability of the Remedial Action

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including those that take into consideration NYC's sustainability goals defined in PlaNYC: A Greener, Greater New York. Sustainability goals may include: maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

While Alternative 2 would potentially result in lower energy usage based on reducing the volume of material transported off-Site, both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. The remedial plan for either alternative would take into consideration the shortest trucking routes during off-Site disposal of historic fill and other soils, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. The New York City Clean Soil Bank program is available for reuse of any clean native soils under either alternative. To the extent practicable, energy efficient building materials, appliances, and equipment will be utilized to complete the development. A complete list of green remedial activities considered as part of the NYC VCP is included in the Sustainability Statement, included as **Appendix 5**.

4.0 Remedial Action

4.1 Summary of Preferred Remedial Action

The preferred remedial action alternative is Alternative 2, the Track 4 remedial action. The preferred remedial action achieves protection of public health and the environment for the intended use of the property. The preferred remedial action will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s). A Waste Characterization Report documenting sample procedures, location, analytical results shall be submitted to NYCOER prior to start of remedial action.
6. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. For development purposes, 1 foot of soil up to 6.8 feet below the top of the existing slab will be excavated for a pool, underground MEP, elevator pit(s) and stairwell foundation. An estimated 3,000 tons of soil will be removed.

7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at licensed or 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 on-Site.
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Construction of an engineered composite cover consisting of the existing six-inch thick reinforced concrete cellar slab and vertical walls and a minimum 6-inch and maximum 12-inch thick concrete new building slab reinforced with welded wire fabric.
13. Installation of a vapor barrier system consisting of vapor barrier beneath the portions of the building slab that will be demolished and a with a minimum 20 mil. thickness applied to the remaining portions of the building slab. The vapor barrier system will consist of a GRACE Preprufe 300R (or similar product) vapor/moisture barrier system (47 mil thick) installed beneath the new portions of the building slab and a GRACE Preprufe 160 (or similar product) vapor/moisture barrier system (31 mil thick) installed along foundation sidewalls. A vapor barrier coating consisting of application of a 20 mil coating will be applied to the remaining existing portions of the slab that will not be disturbed during development. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system is an Engineering Control for the remedial

- action. The remedial engineer will certify in the RAR that the vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building.
14. Installation and operation of an active sub-slab depressurization system (SSDS). The SSDS will consist of 4” sub-slab cast iron pipes leading from each of five suction pits to the nearest structural column which then run horizontally overhead along the ceiling to the 6” riser pipe. There are also two suction points that follow a similar schematic. The active SSDS is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the active SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building.
 15. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
 16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
 17. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
 18. 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.
 19. The property will continue to be registered with a Restrictive Declaration at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include 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.

Selection of the Preferred Remedy

The preferred remedy for the site is Alternative 2. Data generated during the site investigation support the conclusion that Alternative 1 is not achievable because an active SSDS is required to be operated at this Site to mitigate elevated chlorinated compounds in soil vapors.

The Alternative 2 remedy will remove all soil/fill exceeding Track 4 Site Specific SCOs throughout the Site, which will be confirmed with post-excavation sampling.

Engineering Controls are required for a Track 4 cleanup. A concrete slab covering the entire site and vapor barrier/waterproofing membrane would be installed as part of standard building development. Additional soil vapor management would include active SSDS to address soil vapor contamination.

Use restrictions will be imposed on the site (including prohibitions on any use higher than Restricted Residential, e.g. the use of groundwater from the Site; prohibitions of restricted Site uses, such as farming or vegetable gardening, to prevent future exposure pathways. The Site would continue to be encumbered with an E-designation for hazardous material.

4.2 Soil Cleanup Objectives and Soil/ Fill Management

The following Track 4 Site-Specific SCO's will be utilized for this project:

<u>Contaminant</u>	<u>Site-Specific SCO's</u>
Total SVOCs	100 ppm

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil Materials Management Plan included as Appendix 2. Discrete contaminant sources (such as hotspots) identified during the remedial

action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report.

Soil/Fill Excavation and Removal

Limited excavation under the current basement slab will occur to a depth of 1 foot to 6.8 feet below the top of slab for underground MEP, the pool, elevator pit(s) and stairwell foundation. The location of planned excavations is shown in Figure 2. The total quantity of soil/fill expected to be excavated and disposed off-Site is no more than 3,000 tons. For each disposal facility to be used in the remedial action, a letter from the developer/QEP to the receiving facility requesting approval for disposal and a letter back to the developer/QEP providing approval for disposal will be submitted to OER prior to any transport and disposal of soil at a facility.

Disposal facilities will be reported to OER when they are identified and prior to the start of remedial action.

End-point Sampling

End-point samples will be analyzed for compounds and elements as described below utilizing the following methodology:

- Volatile organic compounds by EPA Method 8260;
- Semi-volatile organic compounds by EPA Method 8270;
- Target Analyte List metals; and
- Pesticides/PCBs by EPA Method 8081/8082.

New York State ELAP certified labs will be used for all end-point sample analyses. Labs performing end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all end-point sample results and will include all data including non-detects and applicable standards and/or guidance values.

Confirmation End-point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation end-point soil sampling. Confirmation samples and testing will be performed promptly following materials removal and completed prior to Site development activities. To

evaluate attainment of Track 4 Site-Specific SCOs, seven (7) post-excavation confirmation soil samples will be collected and analyzed for SVOCs according to analytical methods described above. The approximate collection location of the endpoint soil samples is shown on Figure 5.

Hotspot End-point Sampling

For any hotspots identified during this remedial program, including any hotspots identified during the remedial action, hotspot removal actions will be performed to ensure that hotspots are fully removed and end-point samples will be collected at the following frequency:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:
 - For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
 - For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation, and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches.
4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to bullets 1-3 above.

Post-remediation end-point sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

If either LNAPL and/or DNAPL are detected, appropriate samples will be collected for characterization and “finger print analysis” and required regulatory reporting (i.e. spills hotline) will be performed.

Quality Assurance/Quality Control

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

One blind duplicate sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters. Trip blanks will be used whenever samples are transported to the laboratory for analysis of VOCs. One trip blank will be submitted to the laboratory with each shipment of soil samples. Trip blanks will not be used for samples to be analyzed for metals, SVOCs or pesticides.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or “cold-paks” to maintain a temperature of 4°C.

Dedicated disposable sampling materials will be used for the collection endpoint samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every eight samples collected. Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil
- Rinse with tap water
- Wash withalconox® detergent solution and scrub
- Rinse with tap water
- Rinse with distilled or deionized water

Field blanks will be prepared by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will be used whenever samples are transported to the laboratory for analysis of VOCs.

Import of Soils

Import of soils onto the property, if any, will be performed in conformance with the Soil/Materials Management Plan in Appendix 1. Imported soil will meet the lower of:

- Track 2 Restricted Residential Use SCO's, and
- Groundwater Protection Standards in Part 375-6.8.

Soil import is not planned on this project.

Reuse of Onsite Soils

Reuse of onsite soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix 1. The estimated quantity of soil to be reused on this project is 1,000 tons. Reuse soils will meet the SCO's established for this project. A map of soil backfill placement locations is shown in Figure 2.

4.3 Engineering Controls

The excavation required for the proposed Site development will achieve Track 4 Site-Specific SCOs. The following features will be incorporated into the foundation design: composite cover system consisting of 6-inch thick reinforced concrete slab, a soil vapor barrier, and an active SSDS. These elements will constitute Engineering Controls that will be employed in the remedial action to address residual contamination remaining at the Site.

Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system will be comprised of the existing building slab and the areas of new slab consisting of no less than 6 inches of reinforced concrete slab.

Figure 3 shows the typical design for each remedial cover type used on this Site. The composite cover system will be a permanent engineering control. The system will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management

Plan. A Soil and Materials Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the Remedial Action Report.

Vapor Barrier System

Migration of soil vapor from onsite or offsite sources into the building will be mitigated with a combination of building slab and vapor barrier. The vapor barrier will consist of a GRACE Preprufe 300R (or similar product) vapor/moisture barrier system (47 mil thick) installed beneath the areas of the building's basement concrete slab which is being removed and replaced as part of the renovation (excluding the pool area) and a GRACE Preprufe 160 (or similar product) vapor/moisture barrier system (31 mil thick) installed along foundation sidewalls. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration.

In those areas where the existing slab is to remain a vapor barrier coating will be applied to the existing slab. The vapor coating applied to the existing slab will consist of Retro-Coat Vapor Intrusion Coating System (or similar product).

The vapor barrier system is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building. The extent of the proposed vapor barrier membrane is provided in Figure 4. Installation details (penetrations, joints, etc.) with respect to the proposed building foundation, footings, slab, and sidewalls are provided in Figure 4. Product specification sheets are provided in Appendix 7.

The Remedial Action Report will include as-built drawings and diagrams; photographs (maximum of two photos per page) of the installation process; PE/RA certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections; and a copy of the manufacturer's certificate of warranty.

The Vapor Barrier System is a permanent engineering control and will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. A Soil and Materials Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying vapor barrier system is disturbed after the remedial action is complete. Maintenance of these systems will be described in the Site Management Plan in the Remedial Action Report.

Sub-Slab Depressurization System

Migration of soil vapor into the building will also be mitigated with the construction of an active Sub-Slab Depressurization System (SSDS). The SSDS will be comprised of 4" sub-slab cast iron pipes leading from each of five suction pits to the nearest structural column which then run horizontally overhead along the ceiling to the 6" riser pipe. There are also two suction points that follow a similar schematic. The gas permeable layer will consist of a 6-inch thick layer of aggregate ASTM size #5. The active SSDS will be hardwired and will include a Radon Away Model HS2000 or approval equal) blower installed on the roof line and a pressure gauge and alarm located in an accessible area in the basement. The exhaust will be placed at a minimum distance of 15 ft from all air intakes.

The active SSDS is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the active SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building. The SSDS is a permanent engineering control. The system will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. Maintenance of this SSDS will be described in the Site Management Plan in the Remedial Action Report. The location and layout of the SSDS is shown in Appendix 6. A typical section of the system is shown in Appendix 6.

4.4 Institutional Controls

A series of Institutional Controls (ICs) are required under this Remedial Action to assure permanent protection of public health by elimination of exposure to residual materials. These ICs

define the program to operate, maintain, inspect and certify the performance of Engineering Controls and Institutional Controls on this property. Institutional Controls would be implemented in accordance with a Site Management Plan included in the final Remedial Action Report (RAR).

Institutional Controls for this remedial action are:

- Continued registration of the Restrictive Declaration for the property. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the SMP which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- Submittal of a Site Management Plan in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs and ICs. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted on an annual basis and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP; and
- The Site will be used for commercial and residential use and will not be used for a higher level of use without prior approval by OER.

4.5 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. The Site Management Plan is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the Site Management Plan are implemented.

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Voluntary Cleanup Agreement with OER. This includes a plan for: (1) implementation of ECs and ICs; (2) operation and maintenance of ECs; and (3) inspection and certification of ICs and ECs.

Site management activities and EC/IC certification will be scheduled by OER on a periodic basis to be established in the RAR and SMP and will be subject to review and modification by OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by July 30 of the year following the reporting period.

4.6 Qualitative Human Health Exposure Assessment

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the contaminants of concern (COC) that are present at, or migrating from, the Site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

Data and information reported in the Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA) for this project. As part of the VCP process, a QHHEA was performed to determine whether the Site poses an existing or

future health hazard to the Site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk under current and future conditions by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This QHHEA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation.

Known and Potential Contaminant Sources

Based on the results of the Remedial Investigation Report, historic fill was encountered at the Site to a depth of approximately 11 feet. The following contaminants of concern were detected within the historic fill:

Soil

- Metals including lead, nickel, and zinc exceeding Unrestricted Use SCOs;
- Pesticides including 4,4'-DDE and 4,4'-DDT were detected, but did not exceed Unrestricted Use SCOs; and
- SVOCs including PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene exceeding Restricted Residential Use SCO.

Groundwater

- VOC tetrachloroethene (max. of 6.7 µg/L) exceeding its respective GQS; and
- Dissolved metals including manganese, magnesium, and sodium exceeding GQS.

Soil vapor

- High levels of chlorinated VOCs PCE and TCE detected at concentrations above NYS DOH Soil Vapor Matrix; and
- Moderate levels of petroleum-related VOCs including benzene, toluene, ethyl-benzene and xylene.

Nature, Extent, Fate and Transport of Contaminants

The information compiled during previous investigations has confirmed the presence of contaminated fill material to an approximate depth of 11 feet bgs. Pesticides and metals above

Unrestricted Use SCOs and Polycyclic Aromatic Hydrocarbon (PAH) SVOCs above Restricted Residential Use SCOs were present in all shallow samples representing the historic fill materials throughout the Site. Three dissolved metals and one VOC were detected in the groundwater samples at concentrations above their respective GQSs. Metals detected above Unrestricted Use SCOs in soils were not detected in dissolved water above GQS. Soil vapor samples exhibited moderate levels of petroleum-related BTEX compounds and high levels of chlorinated VOCs. The chlorinated VOC PCE identified in the soil vapor samples was also found in the groundwater samples collected.

Receptor Populations

On-Site Receptors – The Site is currently improved with a vacant 12-story commercial building. The Site is fully capped. On-Site receptors are limited to trespassers, site representatives, and visitors granted access to the property. During construction, on-Site potential receptors will include construction workers, Site representatives, and visitors. Under proposed future conditions, the on-Site potential sensitive receptors will include adult and child building residents, workers and visitors.

Off-Site Receptors - Potential off-Site receptors within a 500 foot radius of the Site include: adult and child residents; commercial and construction workers; pedestrians; and trespassers based on the following land uses within 500 feet of the Site:

1. Commercial Businesses– existing and future
2. Residential Buildings– existing and future
3. Building Construction/Renovation– existing and future
4. Pedestrians, Trespassers, Cyclists– existing and future
5. Schools– existing and future

Potential Routes of Exposure

Three potential primary routes exist by which chemicals can enter the body: ingestion, inhalation, and dermal absorption. Exposure can occur based on the following potential media:

- Ingestion of water, fill, or soil;
- Inhalation of vapors and particulates; and

- Dermal contact with water, fill, or soil.

Potential Points of Exposure

Current Conditions: Exposure to historic fill is not possible and there are no potential exposure pathways from ingestion, inhalation, or dermal absorption of soil/ fill as the site is fully capped. Access to the property includes owner representatives and visitors. Groundwater is not accessible at the Site, and because the Site is served by the public water supply and groundwater use for potable supply is prohibited, groundwater is not used at the Site so there is no potential for exposure. Based upon data collected from the RI, soil vapor is accumulating beneath the current building slab.

Construction/Remediation Activities: During the remedial action, construction workers will come into direct contact with surface and subsurface soils, as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with exposed impacted soil and fill. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. Due to the depth of groundwater, direct contact with groundwater is not expected. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through the Soil/Materials Management Plan, dust controls, and through the implementation of the Community Air-Monitoring Program and a Construction Health and Safety Plan.

Proposed Future Conditions: Under future remediated conditions, all soil in excess of Track 4 Site-Specific SCOs will be removed. The site will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place, and engineering controls (active SSDS and vapor barrier system) will prevent any potential exposure due to inhalation by preventing soil vapor intrusion. The Site is served by a public water supply, and groundwater is not used at the Site for potable supply. There are no plausible off-site pathways for ingestion, inhalation, or dermal exposure to contaminants derived from the Site under future conditions.

Overall Human Health Exposure Assessment

There are potential complete exposure pathways for the current site condition. There are potential complete exposure pathways that require mitigation during implementation of the remedy. There are no complete exposure pathways under future conditions after the site is developed. This assessment takes into consideration the reasonably anticipated use of the site, which includes a residential structure, site-wide surface cover, and a subsurface vapor barrier and active sub-slab depressurization system for the building. Under current conditions, on-Site exposure pathways exist for those with access to the Site and trespassers. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

5.0 Remedial Action Management

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include Igor Sabo, Project Manager for BCRE. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are James Blaney (QEP) and Fuad F. Adib, Ph.D (P.E.).

5.2 Site Security

Site access will be controlled by fencing with access through gated entrances to the fenced property.

5.3 Work Hours

The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. The hours of operation will be conveyed to OER during the pre-construction meeting.

5.4 Construction Health and Safety Plan

The Health and Safety Plan is included in Appendix 3. The Site Safety Coordinator will be Igor Sabo. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, such as 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and will comply with all requirements of 29 CFR 1910.120. Site-specific training will be provided to

field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

An emergency contact sheet with names and phone numbers is included in the CHASP. That document will define the specific project contacts for use in case of emergency.

5.5 Community Air Monitoring Plan

Real-time air monitoring for volatile organic compounds (VOCs) and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedences of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings must be recorded and be available for OER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring

particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m³) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m³ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for OER personnel to review.

5.6 Agency Approvals

All permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction. Approval of this RAWP by OER does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

5.7 Site Preparation

Pre-Construction Meeting

OER will be invited to attend the pre-construction meeting at the Site with all parties involved in the remedial process prior to the start of remedial construction activities.

Mobilization

Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling

equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

Utility Marker Layouts, Easement Layouts

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed in compliance with applicable laws and regulations including NYC Building Code to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Mark-Out Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations will be employed during invasive and other work contemplated under this RAWP. The integrity and safety of on-Site and off-Site structures will be maintained during all invasive, excavation or other remedial activity performed under the RAWP.

Dewatering

Due to the depth of groundwater, dewatering is not anticipated during remediation and construction. In the event that dewatering of groundwater or surface water during construction will be necessary, the water will be disposed into the New York City combined sanitary/storm sewer system. A permit to discharge will be obtained from the New York City Department of Environmental Protection (NYCDEP). As part of the permit to discharge, the location of discharge will be based on the Site-Specific requirements of the DEP. The need for pretreatment will be determined by DEP's requirements for the discharge permit. If pretreatment is required by the DEP, it will be performed in accordance with the requirements of the DEP.

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations.

Stabilized Construction Entrance

Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-Site. Such actions may include use of cleaned asphalt or concrete pads or use of stone or other aggregate-based egress paths between the truck inspection station and the property exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

Truck Inspection Station

An outbound-truck inspection station will be set up close to the Site exit. Before exiting the Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Brooms, shovels and clean water will be utilized for the removal of soil from vehicles and equipment, as necessary.

Extreme Storm Preparedness and Response Contingency Plan

Damage from flooding or storm surge can include dislocation of soil and stockpiled materials, dislocation of site structures and construction materials and equipment, and dislocation of support of excavation structures. Damage from wind during an extreme storm event can create unsafe or unstable structures, damage safety structures and cause downed power lines creating dangerous site conditions and loss of power. In the event of emergency conditions caused by an extreme storm event, the enrollee will undertake the following steps for site preparedness prior to the event and response after the event.

Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and

generators will be removed from excavated areas, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, hay bales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYS DEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Stormwater control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the

discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362 within statutory defined timelines. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

Storm Response Reporting

A site inspection report will be submitted to OER at the completion of site inspection. An inspection report established by OER is available on OER's website (www.nyc.gov/oer) and will be used for this purpose. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. The site inspection report will be sent to the OER project manager and will include the site name, address, tax block and lot, site primary and alternate contact name and phone number. Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the site was dislocated and whether any of the soil left the site; estimates of the volume of soil that left the site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYS DEC; description of corrective actions; schedule for corrective actions. This report should be completed and submitted to OER project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.8 Traffic Control

Drivers of trucks leaving the Site with soil/fill will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is not yet determined but will be provided to OER prior to start of Remedial Action.

5.9 Demobilization

Demobilization will include:

- As necessary, restoration of temporary access areas and areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management areas, and access area);
- Removal of sediment from erosion control measures and truck wash and disposal of materials in accordance with applicable laws and regulations;
- Equipment decontamination, and;
- General refuse disposal.

Equipment will be decontaminated and demobilized at the completion of all field activities. Investigation equipment and large equipment (e.g., soil excavators) will be washed at the truck inspection station as necessary. In addition, all investigation and remediation derived waste will be appropriately disposed.

5.10 Reporting and Record Keeping

Daily reports

Daily reports providing a general summary of activities for each day of active remedial work will be emailed to the OER Project Manager by the end of the following business day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of excavation and other remedial work performed;
- Quantities of material imported and exported from the Site and the disposal locations of exported materials;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP results noting all excursions;
- Photograph of notable Site conditions and activities.

The frequency of the reporting period may be revised in consultation with OER project manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the Remedial Action Report.

Record Keeping and Photo Documentation

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site during the project and will be available for inspection by OER staff. Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RAR in digital format (i.e. jpeg files).

5.11 Complaint Management

All complaints from citizens will be promptly reported to OER. Complaints will be addressed and outcomes will also be reported to OER in daily reports. Notices to OER will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

5.12 Deviations From The Remedial Action Work Plan

All changes to the RAWP will be reported to, and approved by, the OER Project Manager and will be documented in daily reports and reported in the Remedial Action Report. The process to be followed if there are any deviations from the RAWP will include a request for approval for the change from OER noting the following:

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy; and
- Determination with basis that the remedial action with the deviation(s) is protective of public health and the environment.

6.0 Remedial Action Report

A Remedial Action Report (RAR) will be submitted to OER following implementation of the remedial action defined in this RAWP. The RAR will document that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The RAR will include:

- Information required by this RAWP;
- Text description with thorough detail of all engineering and institutional controls;
- As-built drawings for all constructed remedial elements;
- Manifests for all soil or fill disposal;
- Photographic documentation of remedial work performed under this remedy;
- Site Management Plan;
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results (including all soil test results from the remedial investigation for soil that will remain on site) and all soil/fill waste characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all soil or fill material removed from the Site including a map showing the location of these excavations and hotspots, tanks or other contaminant source areas;
- Full accounting of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material;
- Account of the origin and required chemical quality testing for material imported onto the Site;
- Continue registration of the property with an Restrictive Declaration by the NYC Department of Buildings;
- The RAWP and Remedial Investigation Report will be included as appendices to the RAR;

- Reports and supporting material will be submitted in digital form and final PDF's will include bookmarks for each appendix.

Remedial Action Report Certification

I, [name], am currently a registered professional engineer licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for implementation of the remedial program for the [site name (address)] site, site number [VCP site number]. I certify to the following:

- I have reviewed this document, to which my signature and seal are affixed.
- Engineering Controls implemented during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the Remedial Action Work Plan for this site.
- The Engineering Controls constructed during this remedial action were professionally observed by me or by a person under my direct supervision and (1) are consistent with the Engineering Control design established in the Remedial action Work Plan and (2) are accurately reflected in the text and drawings for as-built design reported in this Remedial Action Report.
- The OER-approved Remedial Action Work Plan dated [date] and Stipulations in a letter dated [date] were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

Name

PE License Number

Signature

Date

PE Stamp

I, [name], am a Qualified Environmental Professional. I had primary direct responsibility for implementation of the remedial program for the [site name (address)] site, site number [VCP site number]. I certify to the following:

- The OER-approved Remedial Action Work Plan dated August 15, 2012 and Stipulations in a letter dated September 10, 2014 were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

QEP Name

QEP Signature

Date

7.0 Schedule

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a three month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	8
Mobilization	12	1
Remedial Excavation	13	2
Demobilization	15	1
Submit Remedial Action Report	20	4



WCD Group LLC
 1350 Broadway, Suite 1904
 New York, NY 10018
 P: 212.631.9000
 F: 212.631.8066

Client:
 BCRC Services LLC
 885 Third Avenue,
 Suite 2401
 New York, NY 10022

Project Location:

 627 Greenwich Street
 New York, NY 10014
 Block 602, Lot 58

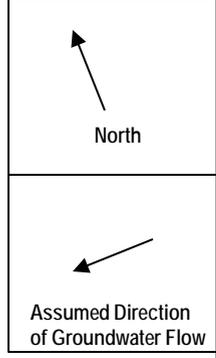
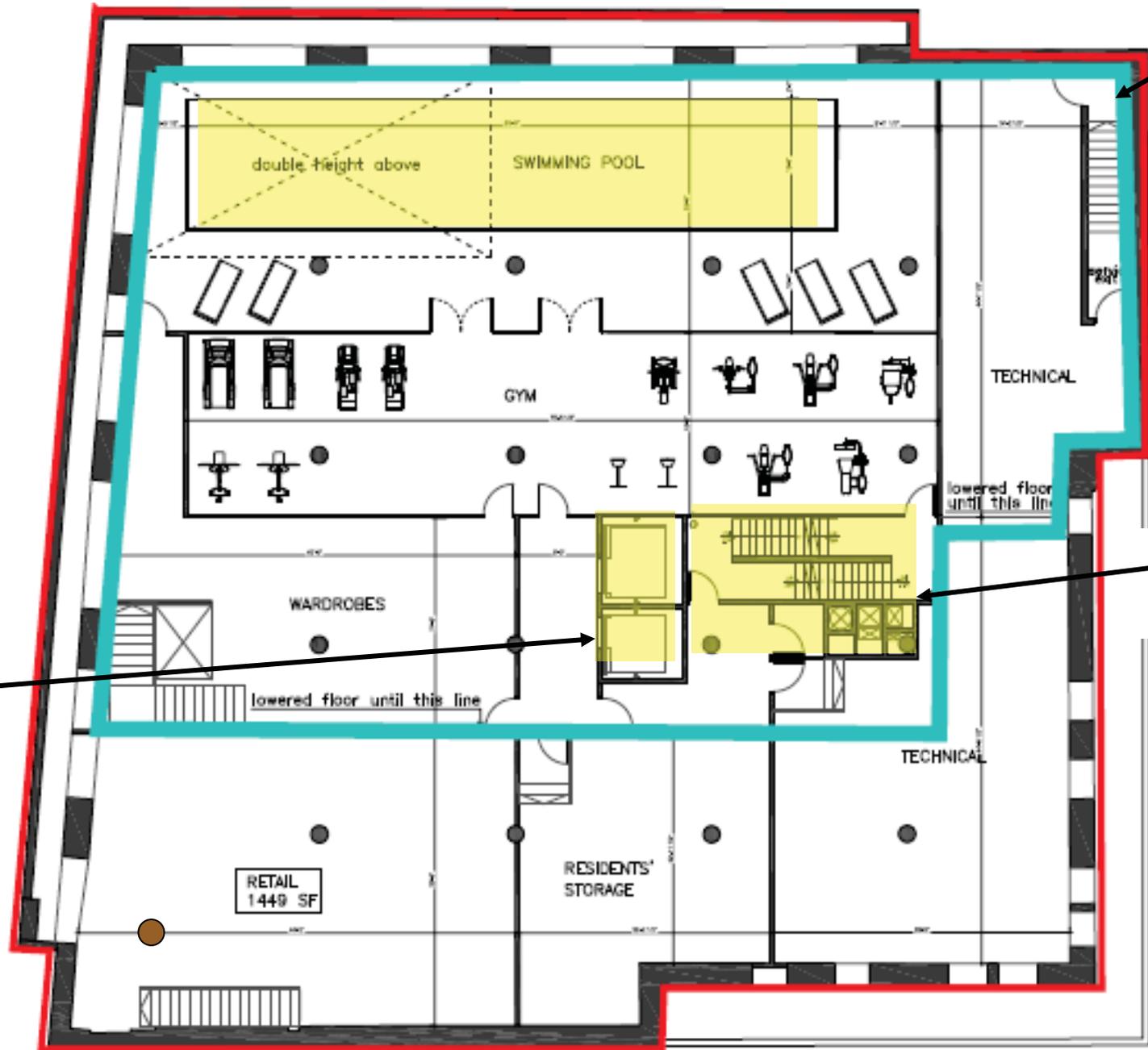
Scale:
 Not to Scale

Project No.:
 14-7143

Date:
 October 2015

Title:
 Site Location Map

FIGURE 1



WCD Group LLC
 1350 Broadway, Suite 1904
 New York, NY 10018
 P: 212.631.9000
 F: 212.631.8066

Client:
 BCRE Services LLC
 885 Third Avenue,
 Suite 2401
 New York, NY 10022

Project Location:
 627 Greenwich Street
 New York, NY 10014
 Block 602, Lot 58

Scale:
 Not to Scale

Project No.:
 14-7143

Date:
 October, 2015

Title:
 Site Excavation Diagram

FIGURE 2

LEGEND

- Area of proposed excavation
- Boundary of Excavation
- Site Boundary

NOTES

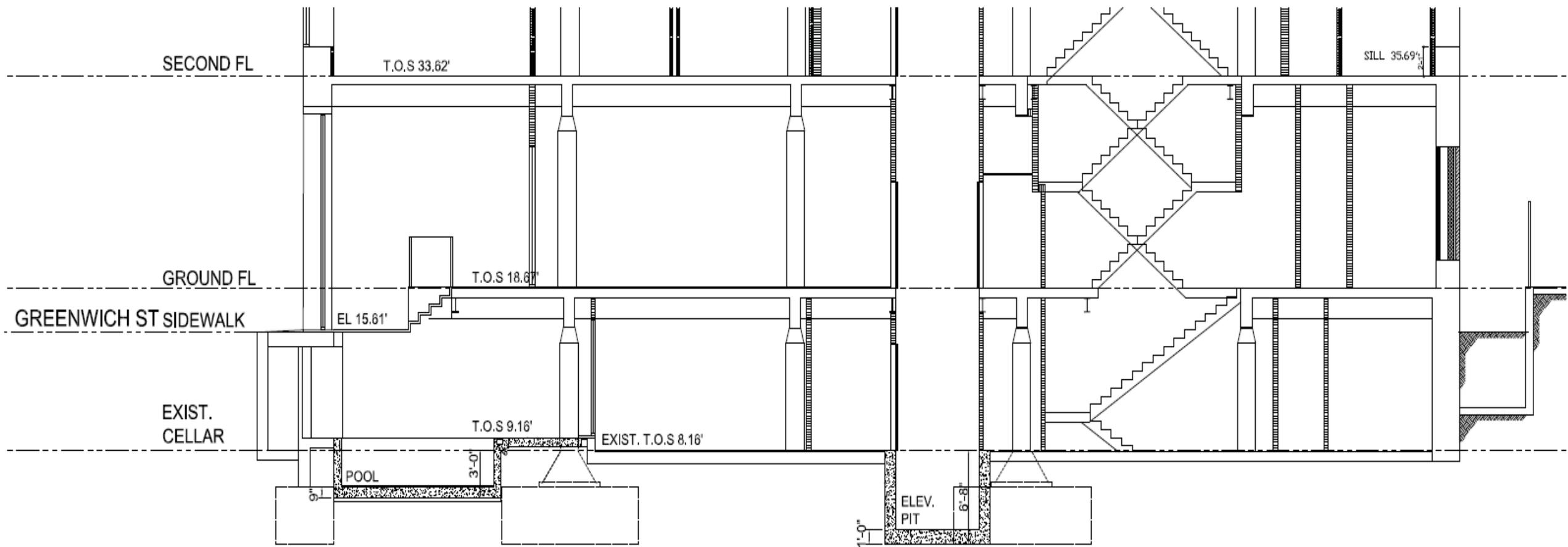
- Site elevation is approximately 20 ft above mean sea level (amsl)

WCD Group LLC
1350 Broadway, Suite 1904
New York, NY 10018
P: 212.631.9000
F: 212.631.8066

Client:
BCRE Services LLC
885 Third Avenue,
Suite 2401
New York, NY 10022

Project Location:

627 Greenwich Street
New York, NY 10014
Block 602, Lot 58



① CROSS SECTION
SCALE: N.T.S.

Scale:
Not to Scale

Project No.:
14-7143

Date:
October 2015

Title:
Site Wide Cover System Plan

WCD Group LLC
 1350 Broadway, Suite 1904
 New York, NY 10018
 P: 212.631.9000
 F: 212.631.8066

Client:
 BCRE Services LLC
 885 Third Avenue,
 Suite 2401
 New York, NY 10022

Project Location:
 627 Greenwich Street
 New York, NY 10014
 Block 602, Lot 58

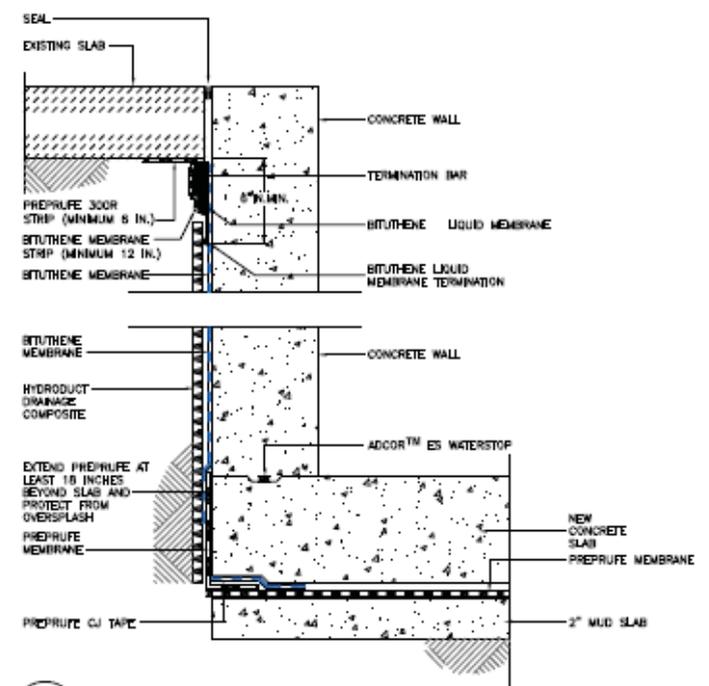
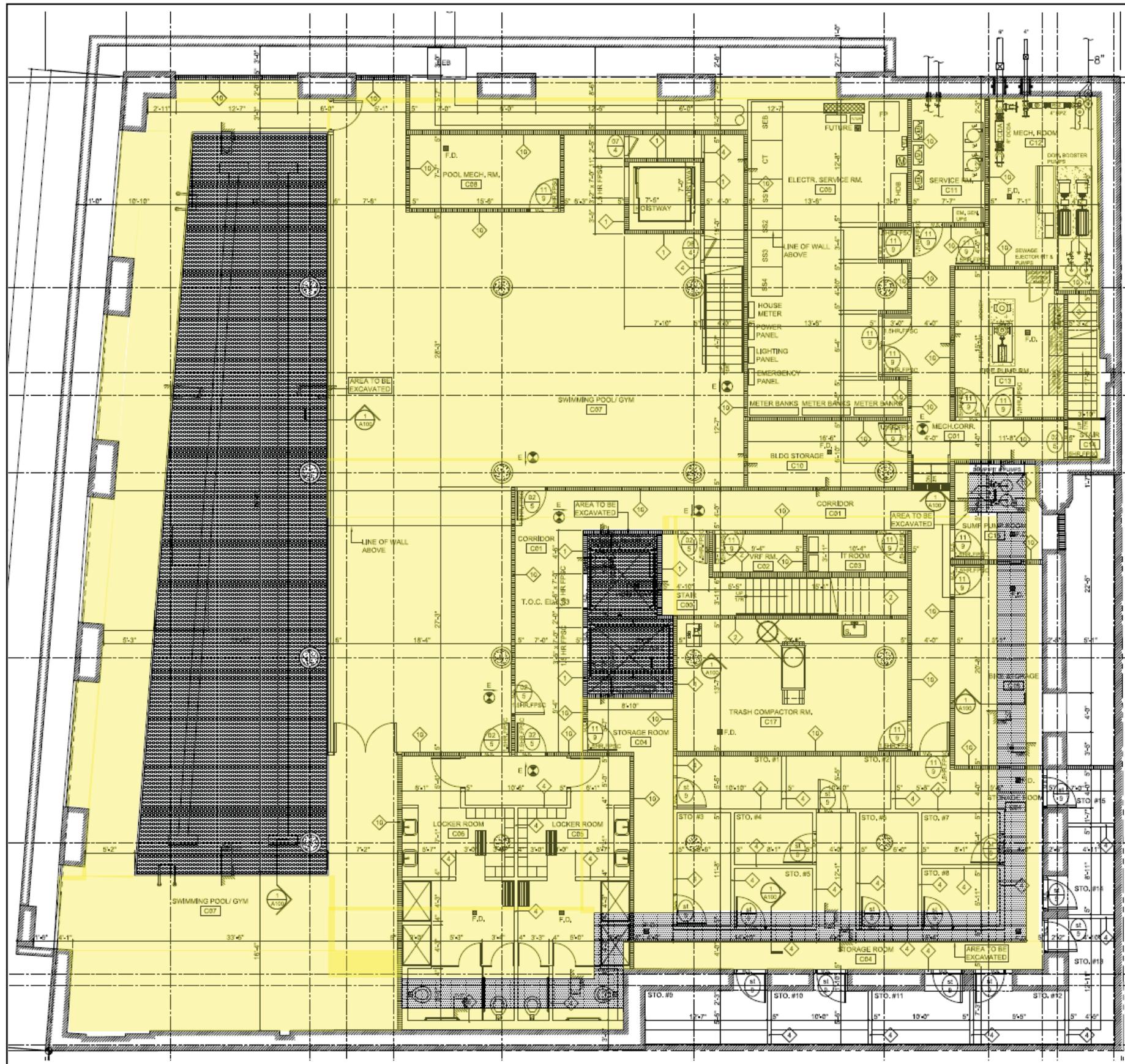
Scale:
 Not to Scale

Project No.:
 14-7143

Date:
 November 2015

Title:
 Vapor Barrier Waterproofing
 Membrane Diagrams

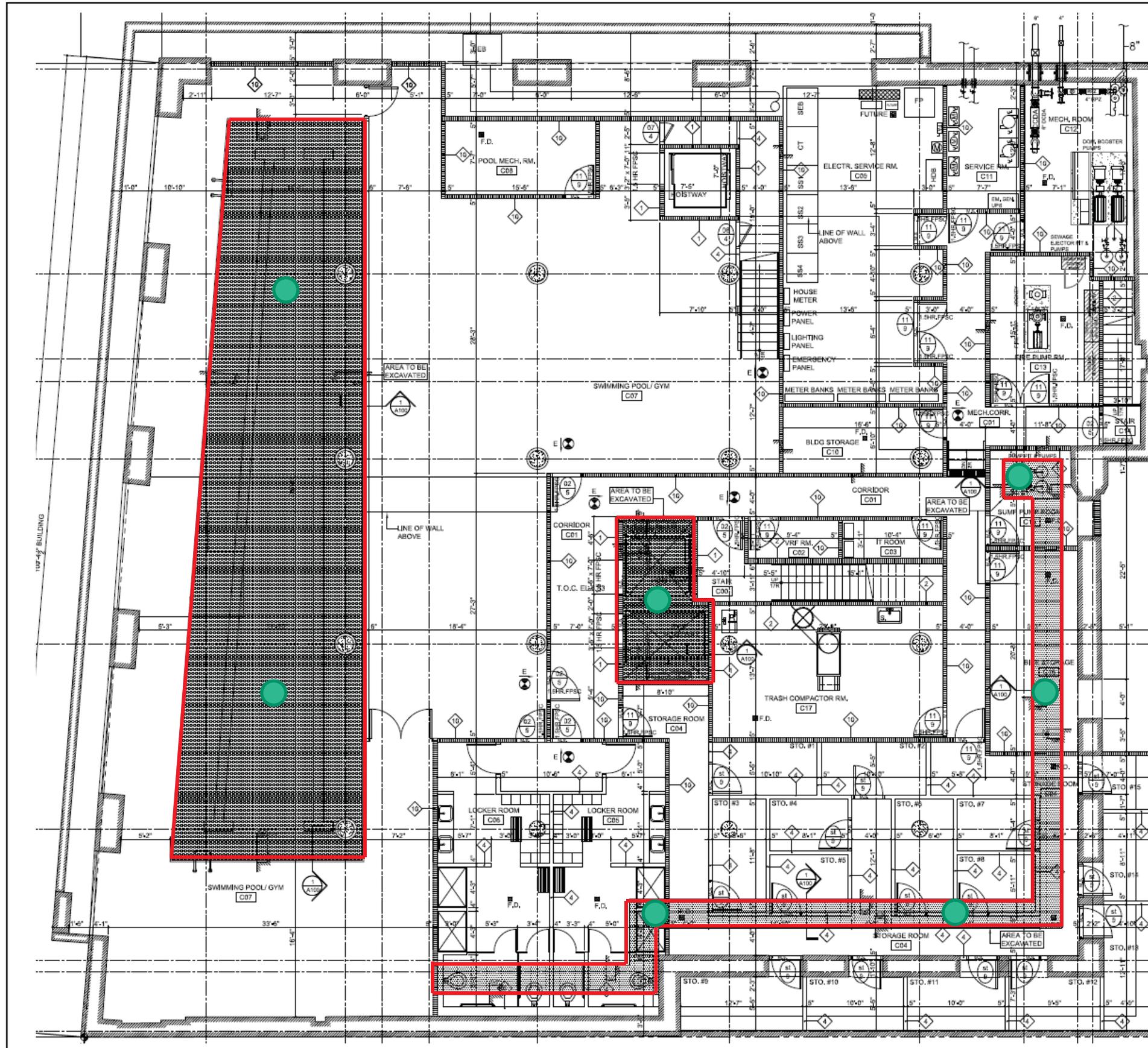
FIGURE 4



1 SECTION DETAIL AT NEW SLAB
 SCALE 3" = 1'-0"

Sub-Slab Waterproofing

- Legend:**
- Areas to have vapor coating applied
 - Areas to be excavated



Please Note:

- Confirmation end-point sample locations are based on the following:
 - Excavation of pool approximately 1,361-SF
 - Excavation of elevator pit approximately 129-SF
 - Excavation of trench approximately 22-LF
- Samples will be analyzed for SVOCs by EPA method 8720

Legend:

- - Confirmation End Point Sample Locations
- - Limits of Excavation



WCD Group LLC
 1350 Broadway, Suite 1904
 New York, NY 10018
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Client:
 BCRE Services LLC
 885 Third Avenue,
 Suite 2401
 New York, NY 10022

Project Location:
 627 Greenwich Street
 New York, NY 10014
 Block 602, Lot 58

Scale:
 Not to Scale

Project No.:
 14-7143

Date:
 November 2015

Title:
 Post Excavation
 Confirmation Sampling Plan

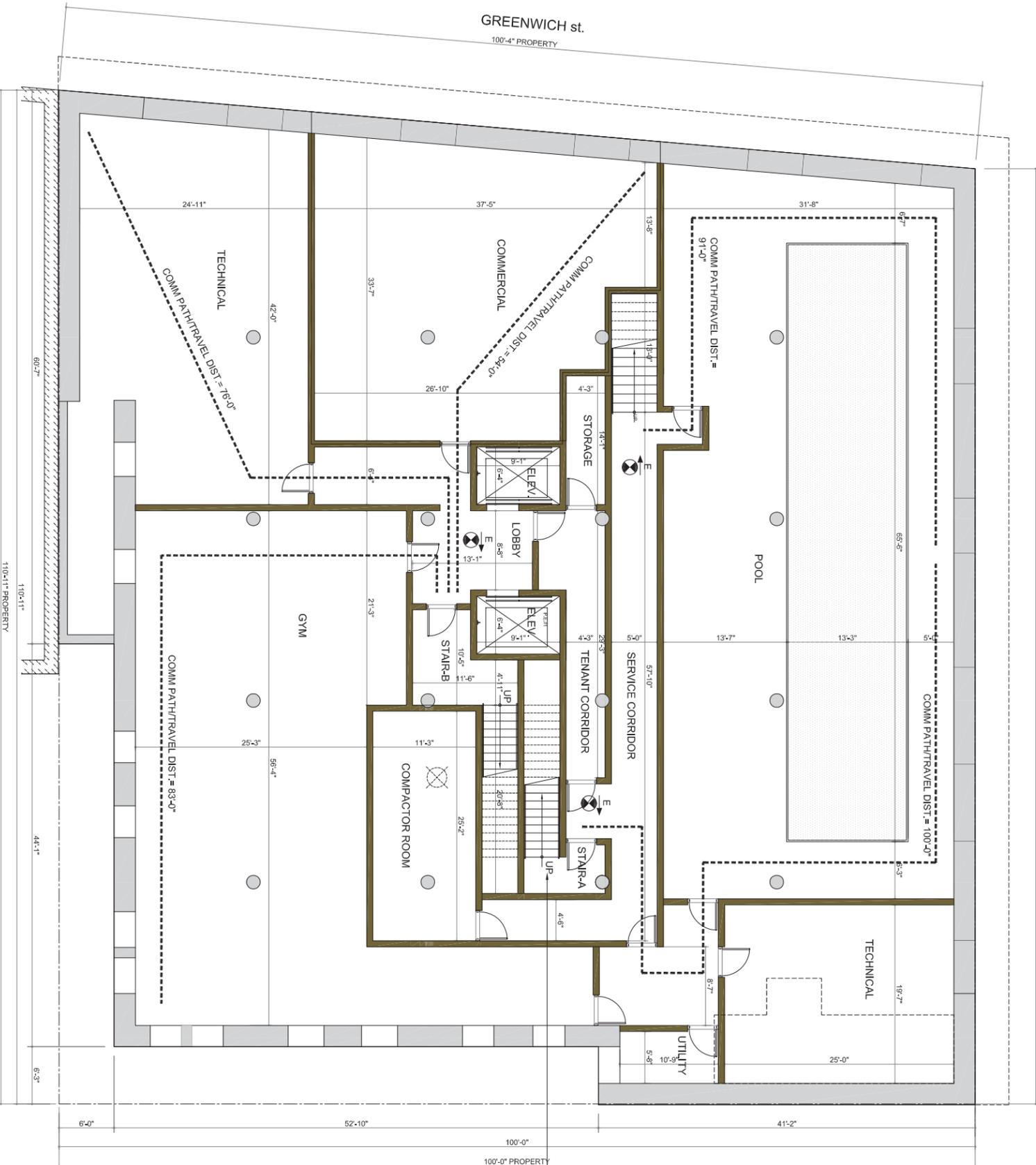
FIGURE 5

APPENDIX 1

PROPOSED DEVELOPMENT PLANS



MORTON st.
102'-4" PROPERTY

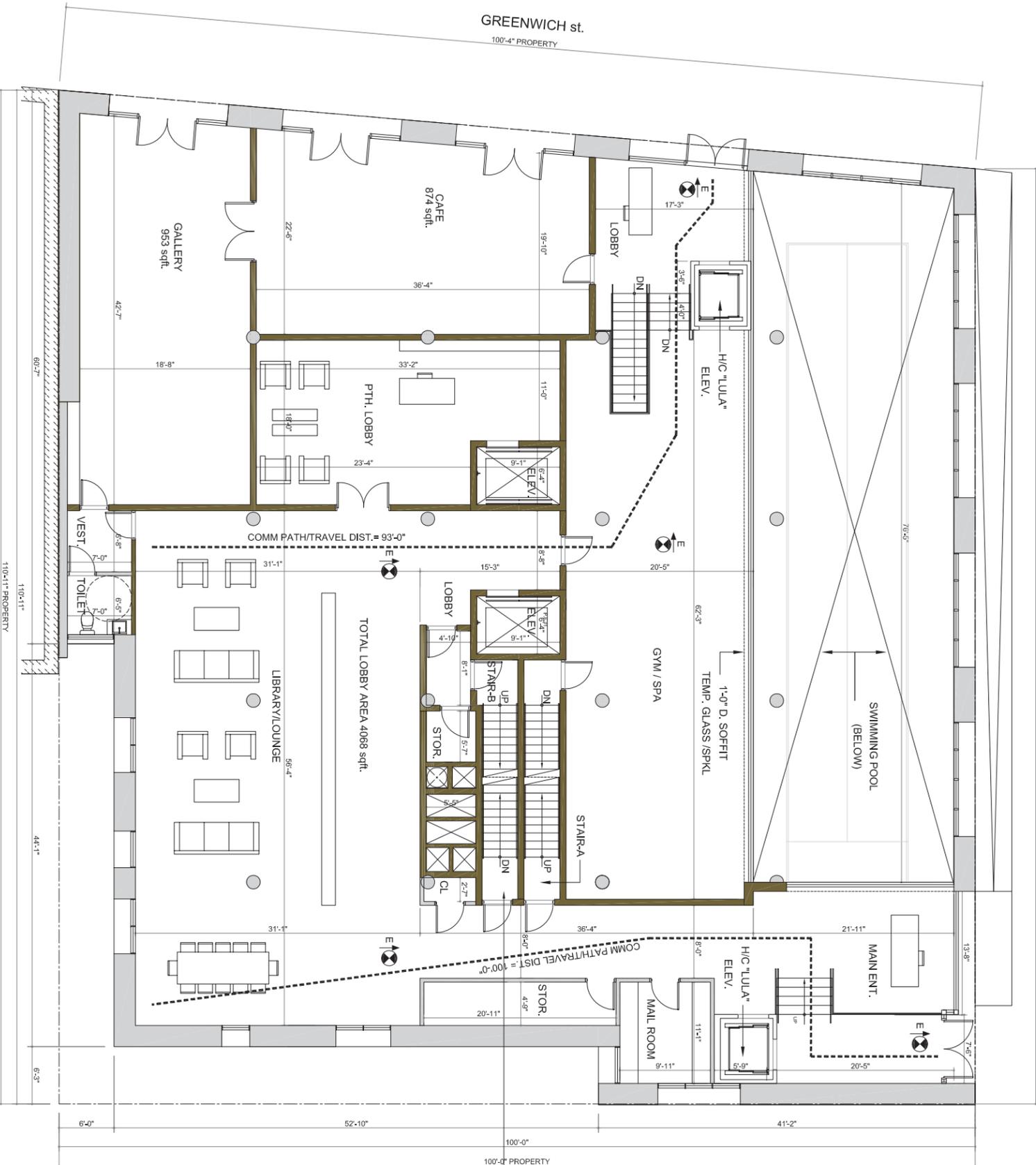


STAIR "A" AND "B" (RES)
 AS PER BC, TABLE 1005.1
 INCH PER OCCUPANT = 3"
 MAX CAPACITY: 44' / 3 = 147 PER.

CELLAR FLOOR PLAN
 SCALE 1/8"=1'-0"
 GROSS AREA = 10,041.0 S.F.



MORTON st.
102'-4" PROPERTY

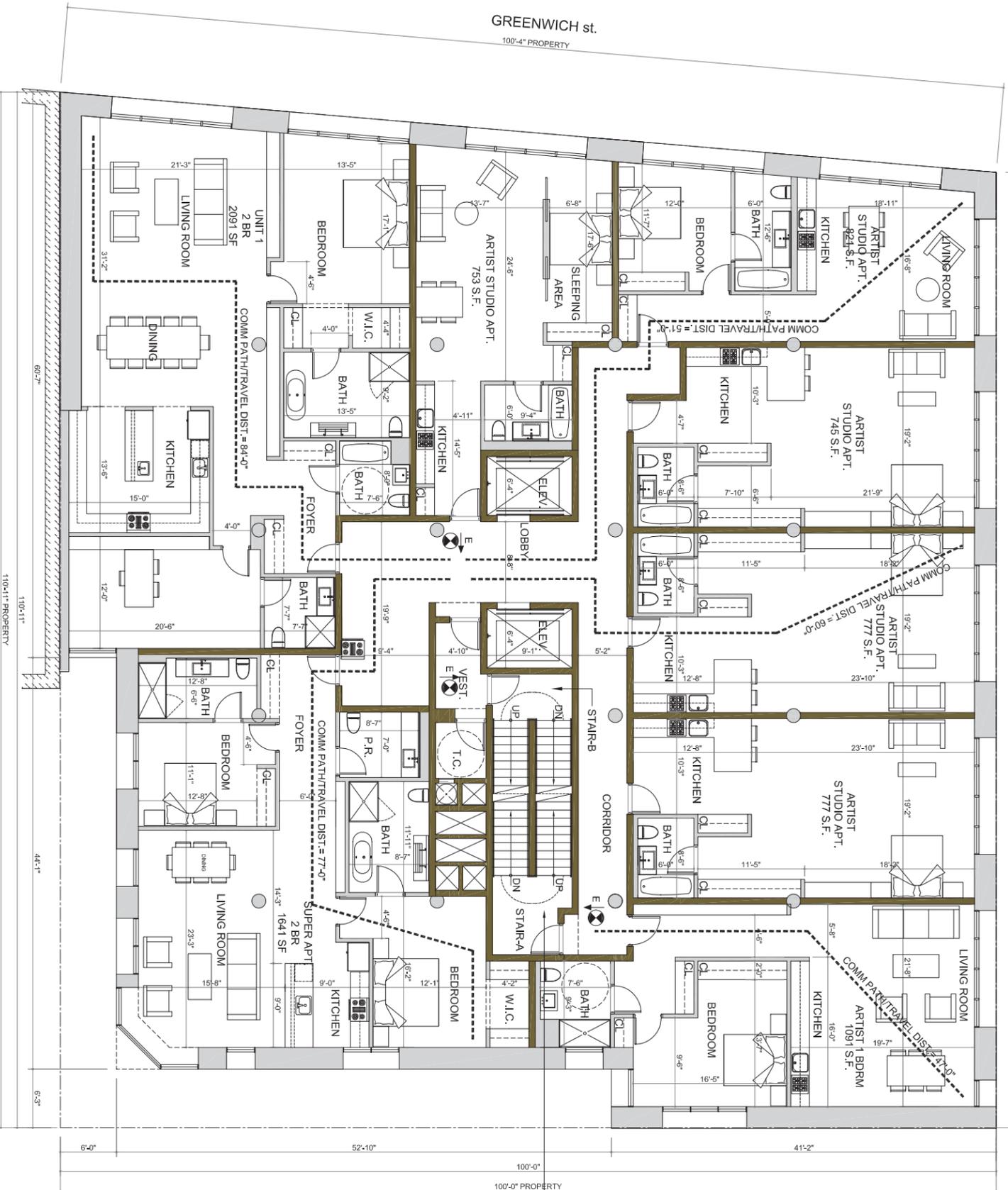


STAIR "A" AND "B" (RES)
 AS PER BC. TABLE 1005.1
 INCH PER OCCUPANT = 3"
 MAX CAPACITY: 44' / 3 = 147 PER.

1ST FLOOR PLAN
 SCALE 1/8"=1'-0"
 GROSS AREA = 10,041.0 S.F.



MORTON ST.
102'-4" PROPERTY

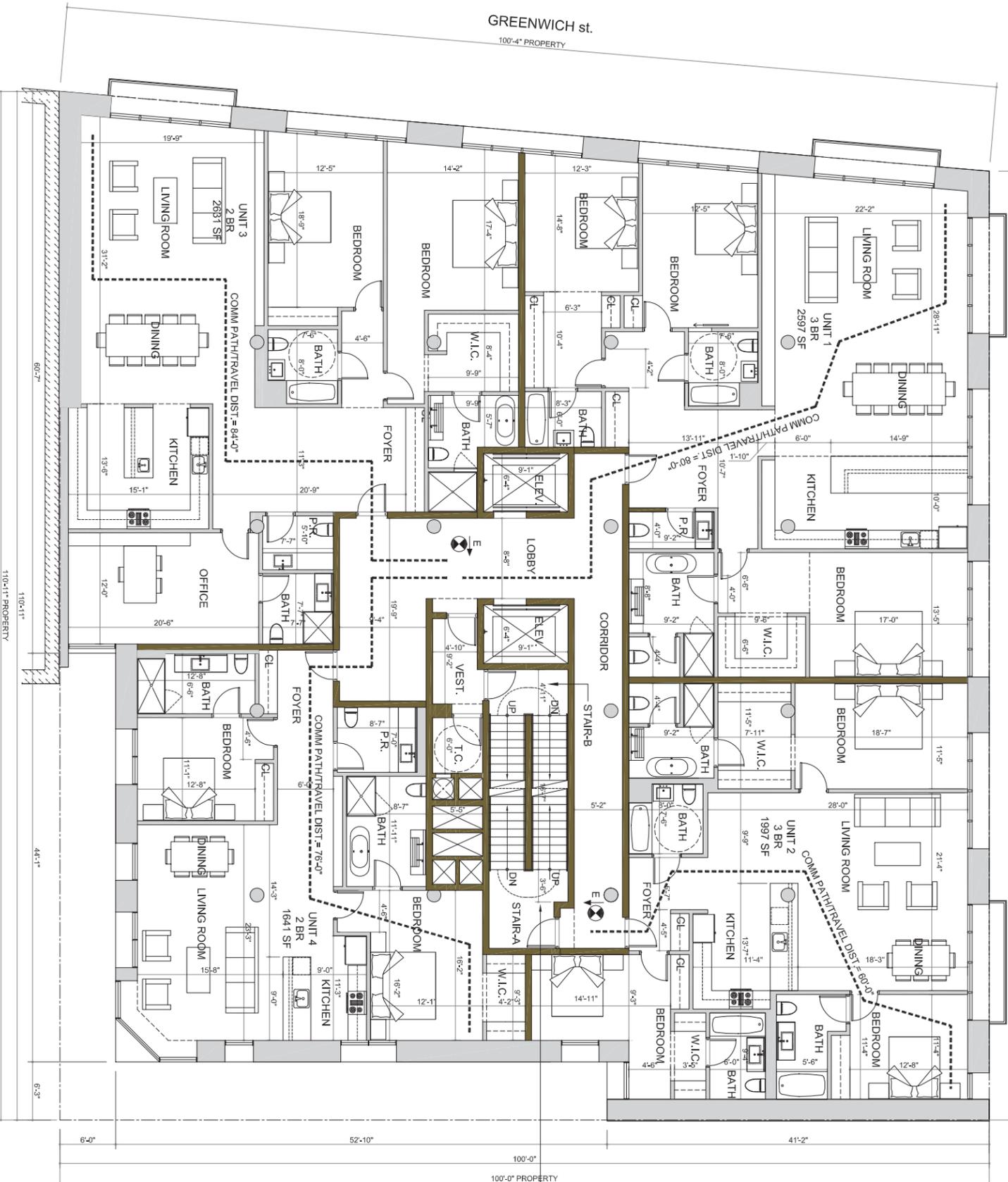


STAIR 'A' AND 'B' (RES)
 AS PER B.C. TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 44' / 3 = 147 PER.

2ND FLOOR PLAN
 SCALE 1/8"=1'-0"
 GROSS AREA = 10,041.0 S.F.



MORTON ST.
102'-4" PROPERTY



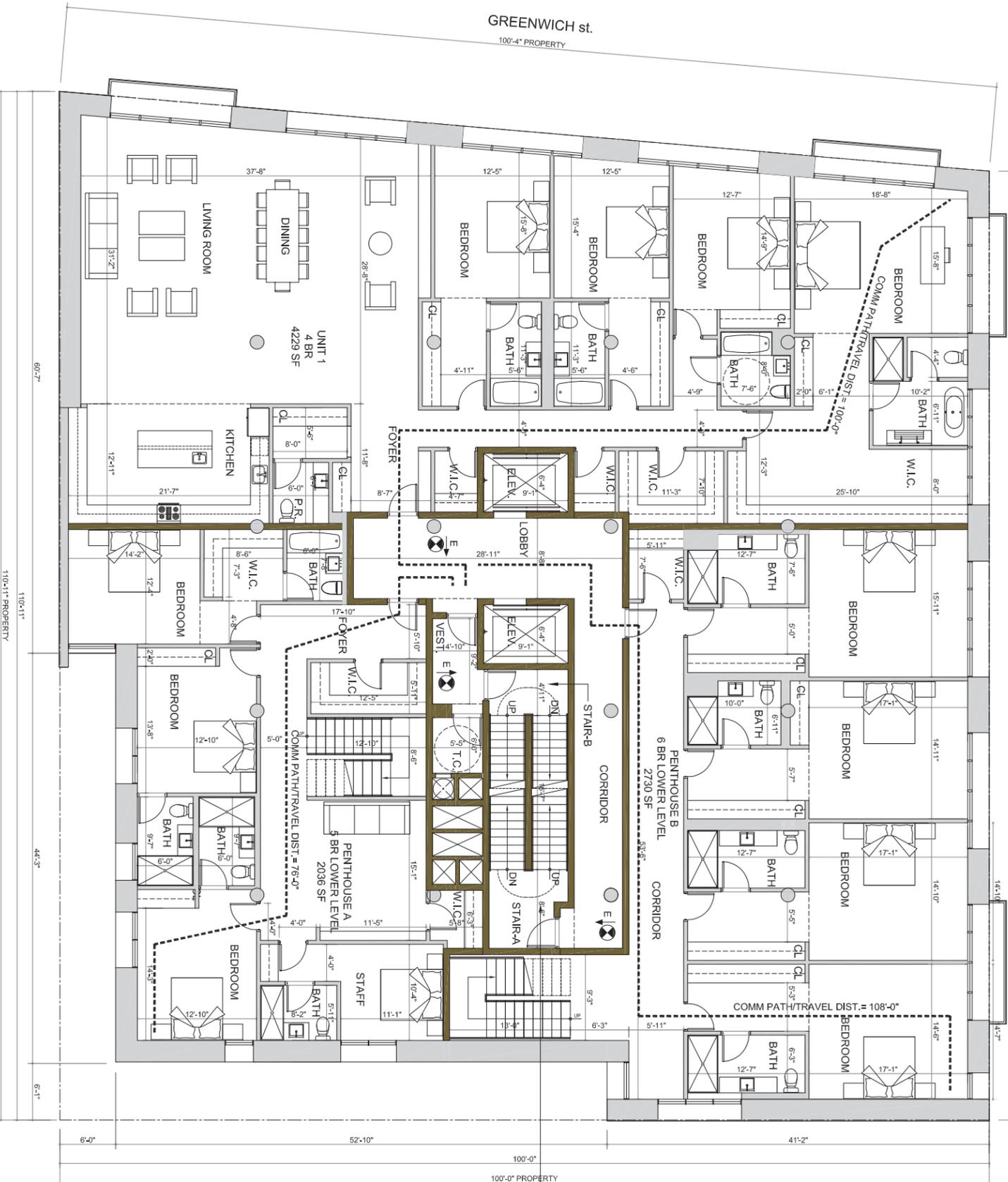
STAIR 'A' AND 'B' (RES)
 AS PER BC, TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 44' / .3 = 147 PER.

3RD THRU 7TH FLOOR PLAN
 SCALE 1/8"=1'-0"
 GROSS AREA = 10,041.0 S.F.





MORTON ST.
102'-4" PROPERTY



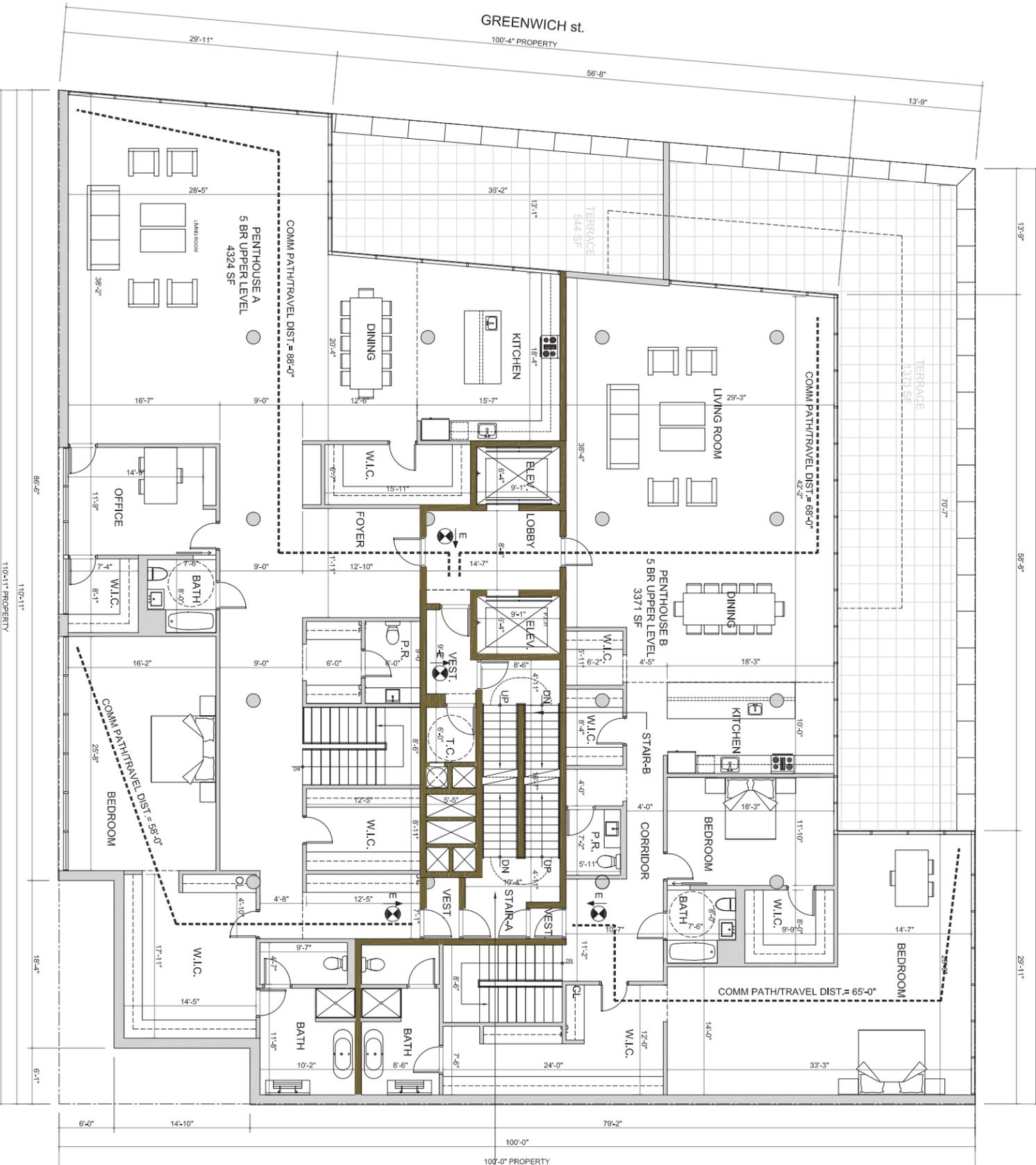
STAIR 'A' AND 'B' (RES)
 AS PER BC. TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 44' / .3 = 147 PER.

8TH FLOOR PLAN
 SCALE 1/8"=1'-0"
 GROSS AREA = 10,041.0 S.F.



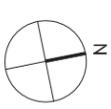


MORTON ST.
102'-4" PROPERTY

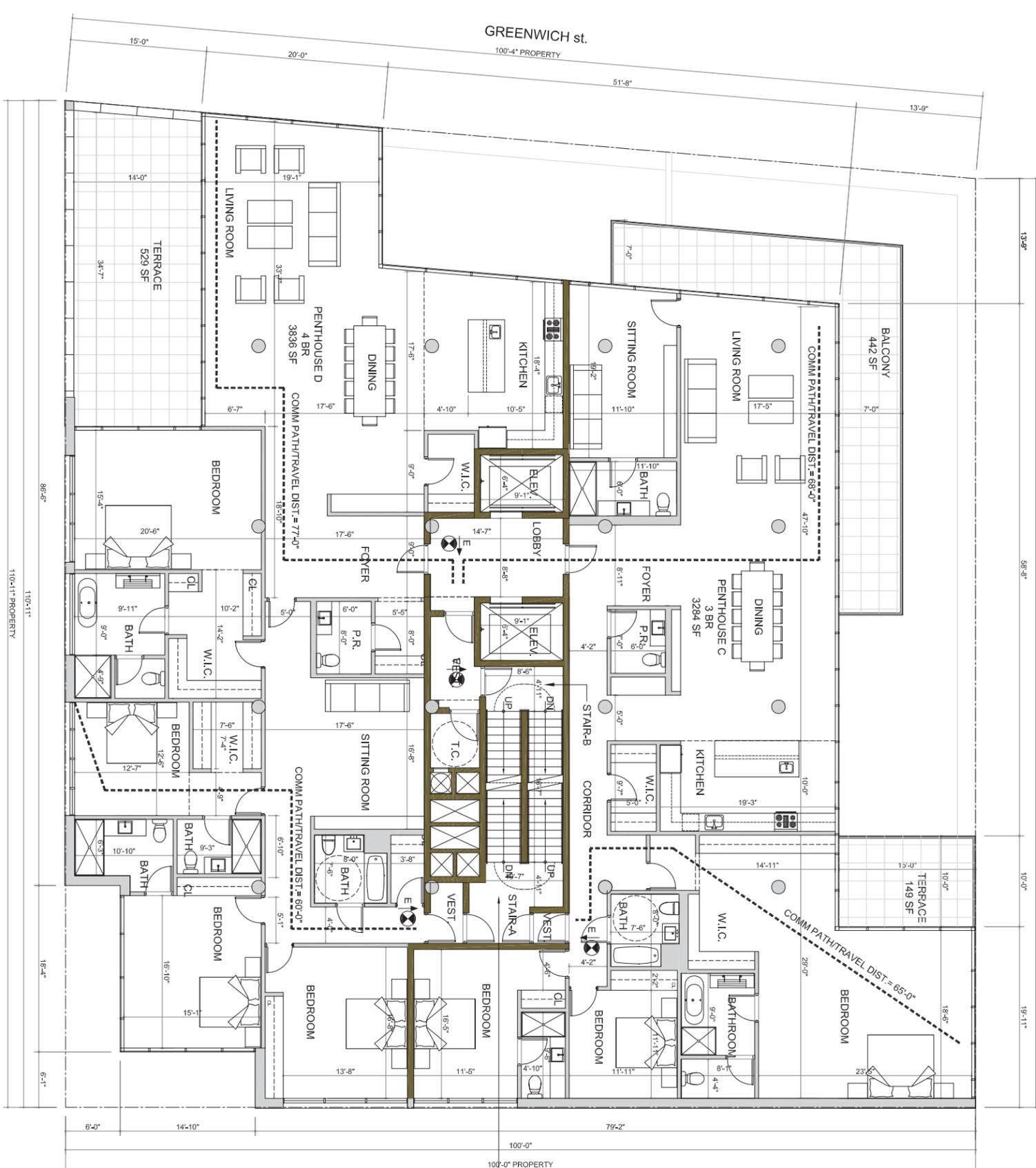


STAIR "A" AND "B" (RES)
 AS PER BC, TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 44' / .3 = 147 PER.

9TH FLOOR PLAN
 SCALE 1/8"=1'-0"
 GROSS AREA = 8514.0 S.F.



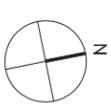
MORTON st.
102'-4" PROPERTY



STAIR "A" AND "B" (RES)
 AS PER B.C. TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 44" / .3 = 147 PER.

10TH FLOOR PLAN
 SCALE 1/8"=1'-0"
 GROSS AREA = 7,910.0 S.F.



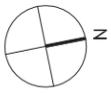


MORTON st.
102'-4" PROPERTY

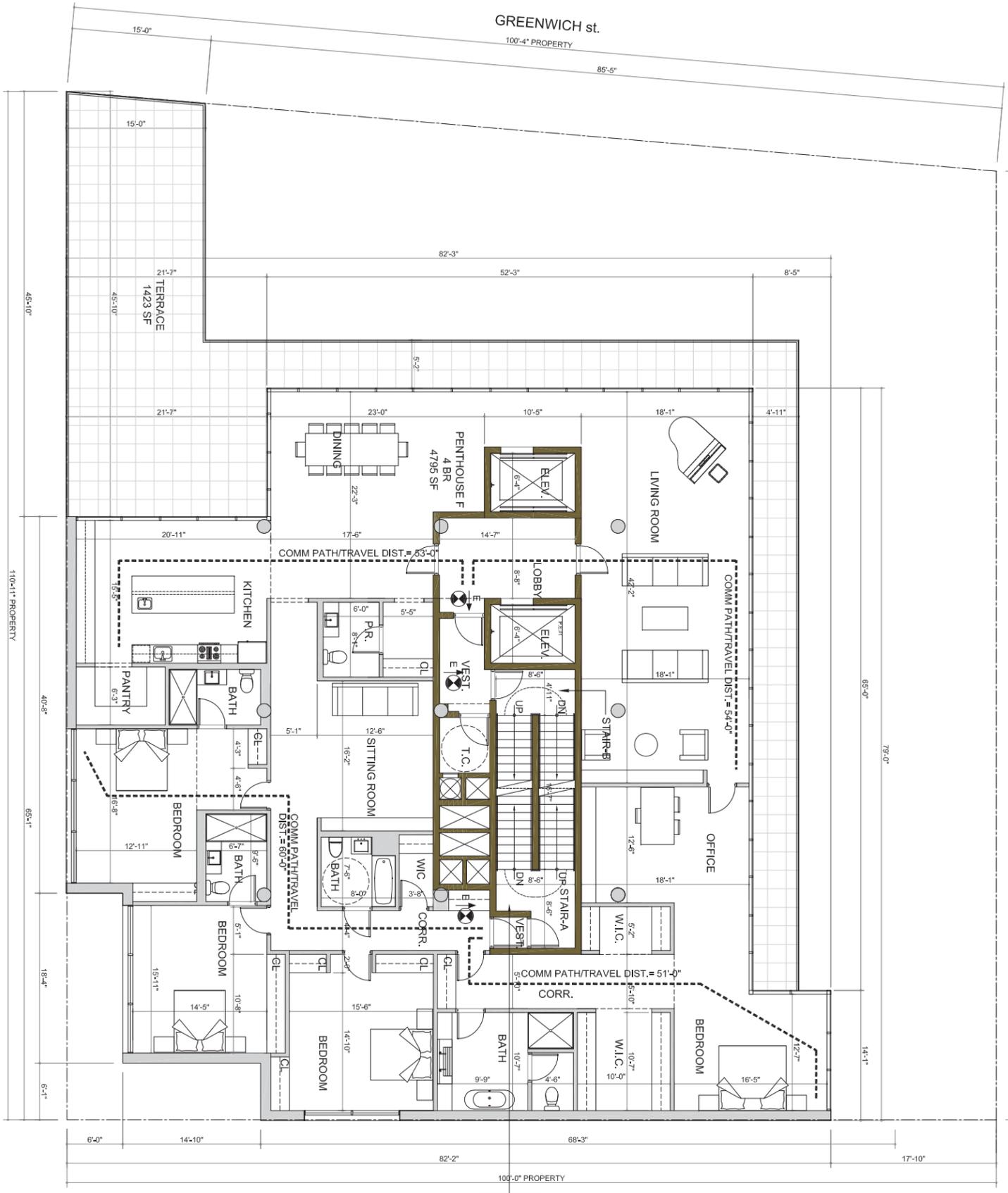


STAIR "A" AND "B" (RES)
 AS PER B.C. TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 44' / 3 = 147 PER.

11TH FLOOR PLAN
 SCALE 1/8"=1'-0"
 GROSS AREA = 68390 S.F.



MORTON st.
102'-4" PROPERTY



STAIR *A* AND *B* (RES)
 AS PER B.C. TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 44' / .3 = 147 PER.

12TH FLOOR PLAN
 SCALE 1/8"=1'-0"
 GROSS AREA = 5,416.0 S.F.

APPENDIX 2 SOIL/MATERIALS MANAGEMENT PLAN

1.1 SOIL SCREENING METHODS

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the RAR. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of final signoff by OER.

1.2 STOCKPILE METHODS

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

1.3 CHARACTERIZATION OF EXCAVATED MATERIALS

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-Site will be managed as defined in this plan.

1.4 MATERIALS EXCAVATION, LOAD-OUT AND DEPARTURE

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site; and
- ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior OER approval.

1.5 OFF-SITE MATERIALS TRANSPORT

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized. The outbound truck transport route will be provided in the Stipulation letter.

This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site queuing of

trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

1.6 MATERIALS DISPOSAL OFF-SITE

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) a letter from the PE/QEP or BCRE Services LLC to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in Brooklyn, New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or BCRE Services LLC. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the RAR.

The Remedial Action Report will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all material will include records and approvals for receipt of the material. This information will be presented in the RAR.

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RAR. A manifest system for off-Site transportation of exported materials will be

employed. Manifest information will be reported in the RAR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, a formal request will be made for approval by OER with an associated plan compliant with 6NYCRR Part 360-16. This request and plan will include the location, volume and a description of the material to be recycled, including verification that the material is not impacted by site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-Site to prevent mixing with impacted material.

1.7 MATERIALS REUSE ON-SITE

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. The soil cleanup objectives for on-Site reuse are listed in Section 4.2. 'Reuse on-Site' means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this RAWP are followed.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing of the Site will not be buried on-Site. Soil or fill excavated from the site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms.

1.8 DEMARCATION

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the

SMP; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR.

This demarcation will constitute the top of the site management horizon. Materials within this horizon require adherence to special conditions during future invasive activities as defined in the Site Management Plan.

1.9 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in Section 4.2.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

The following potential sources may be used pending attainment of backfill and cover soil quality objectives:

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC.
- All materials received for import to the Site will be approved by a PE/QEP and will be in

compliance with provisions in this RAWP. The RAR will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.

Source Screening and Testing

Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material will be taken at a minimum frequency of one sample for every 500 cubic yards of material. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the RAR. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

1.10 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of

Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a SPDES permit issued by New York State Department of Environmental Conservation.

1.11 STORM-WATER POLLUTION PREVENTION

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this RAWP (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

1.12 CONTINGENCY PLAN

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYS DEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found

during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

1.13 ODOR, DUST AND NUISANCE CONTROL

Odor Control

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP's certifying this remedial plan.

Dust Control

Dust management during invasive on-Site work will include, at a minimum:

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the

responsibility of the PE/QEP's responsible for certifying this remedial plan.

Other Nuisances

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

Rodent control will be provided, during Site clearing and grubbing, and during the remedial program, as necessary, to prevent nuisances.

APPENDIX 3

CONSTRUCTION HEALTH AND SAFETY PLAN



CONSTRUCTION HEALTH AND SAFETY PLAN

PROJECT:

627 Greenwich Street
New York, NY 10014
OER Project Number 15RHAZ138M

PREPARED FOR:

BCRE Services
885 Third Ave, Suite 2401
New York, NY 10022
Attn: Mr. Igor Sebo
isebo@bcreusa.com

PREPARED BY:

WCD Group LLC
1350 Broadway, Suite 1904
New York, NY 10018
Project No. 14-7143
jblaney@wcdgroup.com

November 2015

This document is provided for the exclusive use of WCD Group LLC and affiliates and BCRE Services personnel, for the specific site and project herein designated, and supplements the health and safety plans implemented for other contractors or entities at the site. Use of this document or any portion thereof for work outside the scope of this project is inappropriate.

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1.0 PURPOSE

The purpose of this Construction Health and Safety Plan (CHASP) is to assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide for contingencies that may arise during excavation for reconstruction of the current building at the property located at 627 Greenwich Street, New York, NY, herein referred to as the “subject property”. The CHASP is intended to minimize health and safety risks resulting from the known and potential presence of hazardous materials on site.

2.0 APPLICABILITY

Work subject to this CHASP shall be all activities that disturb the existing soil on-site. The contractors and their subcontractors involved in the construction project shall provide a copy of this CHASP for their employees whose work involves any potential exposure to the on-site chemical hazards in the soils, and shall complete all work in accordance with this CHASP. Soils excavation and off-site disposal will occur during the completion of the foundation work and the foundation work waterproofing.

3.0 SITE DESCRIPTION

3.1 General Information

The Site is located at 627 Greenwich Street in the West Village section of Manhattan, New York and is identified as Block 602 and Lot 58 on the New York City Tax Map. The property is assigned restrictive declaration R-141 for hazardous materials. Figure 1 shows the Site location. The Site is bounded by Morton Street to the north, Leroy Street to the south, a three-story commercial building to the east, and Greenwich Street to the west. A map of the site boundary is shown in Figure 2. Currently, the Site is occupied by a vacant 12-story building that was previously used for single-family residences, professional offices, metal products, mailing services, and warehousing.

The Site was historically heated by a fuel oil fired boiler. Fuel was supplied by two (2) No. 2 fuel oil above ground storage tanks (ASTs), removed in 2008, and potentially one (1) No. 2 fuel oil underground storage tank (UST). The Site is registered with the NYSDEC PBS as 2-607348 listed for one active 10,000-gallon No. 2 fuel oil AST and one active 3,500-gallon No. 2 fuel oil AST.

The proposed future use of the Site will consist of the redevelopment, via renovation, of the existing twelve-story structure into a mixed-use building with commercial use and potential residential use. The proposed mixed-use building will consist of the existing twelve (12) floors above grade and the one-story cellar. The existing structure encompasses an approximately 10,041-square foot footprint. The cellar will house technical spaces, resident storage, commercial retail, as well as a potential pool and gym. Layout of the proposed site development is presented in Figure 3. The proposed redevelopment plan for the basement also includes the excavation to lower the north portion of the existing basement floor by approximately 3 feet. Less than 3,000 tons of soil is expected to be excavated during the redevelopment. The water table is present at a depth of approximately 9 feet below the basement top of slab; therefore, groundwater is not anticipated to be encountered during the redevelopment. The first floor use will include retail space and potential residential facility lobbies. The second to the twelfth floors use will include commercial or residential space. The proposed new building layout of the proposed Site development is presented in Appendix A. The current zoning designation is a M1-5/R7X

manufacturing and residential mixed use. The proposed use is consistent with existing zoning for the property.

Hazard Evaluation

The most likely routes of exposure are breathing of volatile and semi-volatile compounds and metals or particulate-laden air released through soil disturbing activities and dermal contact. Appendix A includes specific health effects from the known on-site chemicals. The remaining sections of this CHASP address procedures (including training, air monitoring, work practices and emergency response) to reduce the potential for unnecessary and unacceptable exposure to these contaminants. The potential adverse health effects from these detected contaminants are diverse. Many of these compounds are known or suspected to result in chronic illness from long-term exposures. However, due to the limited nature of the proposed construction, acute effects are a potential concern.

This Construction Health and Safety Plan addresses potential environmental hazards from the presence of hazardous materials. It is not intended to address the normal hazards of construction work, which are separately covered by federal local and state construction codes and regulations.

4.0 HEALTH AND SAFETY OFFICER

Safety Officer (Name TBD) will serve as the Environmental Health and Safety Officer on the Site. The Safety Officer will be a competent person responsible for the implementation of this plan. Safety Officer (Name TBD) will have completed a 40-hour training course training (up-dated by an annual refresher) that meets OSHA requirements of 29 CFR Part 1910, Occupational Safety and Health Standards. Safety Officer (Name TBD) will have stop-work authorization, which he will execute on his determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If Safety Officer (Name TBD), is absent from the Site, Name (TBD), the Site Safety Manager will serve as the qualified replacement to ensure Environmental Health and Safety at the Site.

4.1 Training

All those who enter the work area while intrusive activities are being performed must recognize and understand the potential hazards to health and safety. All construction personnel upon entering the site must attend a brief training meeting, its purpose to:

- Make workers aware of potential hazards they may encounter;
- Provide the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- Make workers aware of the purpose and limitations of safety equipment; and
- Ensure that they can safely avoid or escape from emergencies.

Each member of the construction crew will be instructed in these objectives before he/she goes onto the Site. The HSO or other suitably trained individuals will be responsible for conducting the training program. Others who enter the site must be accompanied by a suitably trained construction worker.

5.0 SOIL MANAGEMENT PLAN

The purpose of the Soil Management Plan is to present measures for managing known or potentially contaminated soils in accordance with the NYC Mayor's Office of Environmental Remediation (OER) and potentially New York State Department of Environmental Conservation (NYSDEC) requirements.

This plan is not designed to address potential geotechnical, mechanical or structural safety concerns, nor to supersede or replace any OSHA regulation and/or local and state construction code regulations.

5.1 Dust Control

Off-site dust emissions are not anticipated as all soil excavation activities will occur within the basement of the existing building. However, to prevent the potential off-site transport of dust that may contain above-background levels of contaminants, the following dust control measures will be implemented:

- Water will be available (and used) on-site for sprinkling/wetting to suppress dust in dry weather or as necessary;
- All work that involves soil disturbance, or otherwise generates dust, will be performed utilizing methods to minimize dust generation to the extent practicable.
- In addition, to meet the particulate air monitoring requirements under the Hazardous Materials Contingencies section of this Plan, water will be available on site at all times to be used for dust suppression both indoors and outdoors.

5.2 Erosion Control/Stormwater Management

There is no exterior soil excavation proposed for this remediation as all soil excavation will occur within the existing structure's basement. If exterior soils are to be excavated at any time during the remediation of this Site then soil erosion and sediment control measures will be implemented in accordance with an approved Soil Erosion and Sediment Control Plan which is to be prepared by the on-site soil excavation contractor. The plan will include a stabilized construction entrance and perimeter controls.

5.3 Soil Stockpiling

Site stockpiles, if required, shall be minimized to the extent practicable and located to eliminate the potential for off-site runoff.

5.4 Soil Testing

The soil on-site was sampled by WCD Group. Trace concentrations of VOCs, SVOCs and pesticides were discovered.

5.5 Transportation and Disposal

Any proposed disposal facility will be pre-approved by WCD. All permits will be reviewed and material will be approved by WCD for the proposed disposal facilities.

A remedial contractor and Transportation and Disposal (T&D) contractor have yet to be selected for this project. WCD will review and approved proposed Trucking Co. to ensure that they are a licensed to haul the anticipated waste streams.

6.0 HAZARDOUS MATERIALS CONTINGENCIES

6.1 Hazardous Materials Contingency Response

In the event that previously unidentified hazardous materials are discovered during excavation, the following contingency procedures will be followed:

- All excavation will be continuously monitored for the presence of buried tanks, drums, or other containers, sludge’s, or soil which shows evidence of potential contamination, such as discoloration, staining, or odors. If any of these are detected, excavation in the area will be halted, and the HSO will notify the following:

Company	Name	Phone	Cell
BCRE	Igor Sebo		646.529.4548
WCD Group	Jim Blaney	212-631-9000	609-613-2004
WCD Group	Eric Telemaque	212.631.9000	646.529.6526
WCD Group	Chris Spicer, CIH, CHMM	609.730.0007	609.792.5754

- The affected area will be cordoned off and no further work will be performed at that location until the appropriate contingency response plan described in section 6.2 is implemented. All contingency response actions will be carried out in accordance with the contingency Health and Safety procedures specified in Section 6.5.

6.2 Soil Contamination Plan

Contaminated soils which may be discovered during any subsequent subgrade work will be treated as follows:

1. Soils will be excavated and stockpiled on-site, either in a container or in a stockpile placed on plastic sheeting and securely covered by plastic sheeting. Composite samples of the soil will be collected and analyzed for disposal. The excavated soil will then be disposed of in accordance with all applicable regulations.
2. In the event that contaminated soils are noted, post excavation samples will be collected from the sides and bottom of the excavated area. All soil samples will be properly containerized, labeled, sealed, and placed in a chilled cooler for shipment to the laboratory. A chain-of-custody will be maintained throughout the field sampling, transport of samples to the laboratory, and during lab analysis. Analytical parameters for post excavation soil samples will be determined based on the original analysis of the contaminated soil. If post-excavation samples exceed action levels, then additional excavation will be performed.

6.3 Contingency Health and Safety Procedures

6.3.1 Site Work Zones for Contaminated Areas

During any activities involving disturbance of contaminated areas, the work area must be divided into various zones to prevent the spread of contamination, ensure that proper protective equipment is donned, and provide an area for decontamination. The Exclusion Zone is defined as the area where potentially contaminated materials are located. The Contamination Reduction Zone (CR2) is the area where decontamination procedures take place and is located next to the Exclusion Zone. The Support Zone is the zone area where support facilities, such as vehicles, a field phone, fire extinguisher, and first aid supplies are located. The emergency staging area (part of the Support Zone) is the area where all workers on-site would assemble in the event of an emergency. These zones shall be designated daily, depending on that day's activities. All field personnel will be informed of the location of these zones before work begins.

Control measures such as "Caution" tape and traffic cones will be placed around the perimeter of the work area when work is being done in the areas of concern to prevent entrance onto the area with exposed soil.

6.3.2 Air Monitoring in Contaminated Areas

An Organic Vapor Meter (OVM), a type of photo ionization detector (PID), will be used to perform air monitoring during sampling and excavation work at areas where VOCs have been detected. A Dustrak® dust monitor or equivalent will be used to measure concentration of total particulate matter during the excavation in contaminated areas. Results of the air monitoring will be used to determine the appropriate response action, if needed.

Real time air monitoring for volatile organic compounds will be done with the OVM/PTD whenever soil removal or sampling is performed in areas contaminated with VOCs. Measurements will be taken prior to the commencement of work and for at least 1 minute every 60 minutes during the work. The OVM will be calibrated with isobutylene in accordance with the manufacturer's recommendations. These measurements will be made as close to the workers as practicable and at the breathing height of the workers. The HSO shall set up the equipment and confirm that they are working properly. His/her designee may oversee the air measurements during the day. The initial measurement for the day will be performed before the start of work and will establish the background level for that day. The final measurement for the day will be performed after the end of work. The action levels and required responses are listed in Table 1 below.

Table 1 – Action Levels and Required Responses

Instrument	Action Level (Note 1)	Response Action
OVM	<10 ppm in breathing zone.	Level D or D-Modified (Requires coveralls and steel toe boots). (As applicable: chemical resistant gloves, chemical resistant boot covers, hard hat, safety glasses, face shield or escape mask).
	10 - 20 ppm	Level C (Requires full face or half face respirator, hooded chemical resistant two piece Tyvek suit or overalls, chemical resistant inner and outer gloves, chemical resistant boot covers, steel toe and shank boots) (As applicable: hardhat, face shield or escape mask)
	>20 ppm	Stop work. Resume work when source of vapors is abated and readings are less than 20 ppm above background
Particulate monitor	<5 mg/m ³	Level D
	5 - 125 mg/m ³	Level C Apply dust suppression measures. If less than 2.5 mg/m ³ , resume work using Level D. Otherwise, upgrade, Level C.
	>125 mg/m ³	Stop work. Apply additional dust suppression measures. Resume work when less than 125 mg/m ³ and maintain Level C.

7.0 EMERGENCY RESPONSE

The construction crew will be equipped with emergency equipment, such as a first aid kit and disposable eye washes. In the case of a medical emergency, the HSO will determine the nature of the emergency and he/she will have someone call for an ambulance, if needed. If the nature of the injury is not serious i.e. the person can be moved without expert emergency medical personnel he/she should be driven to a hospital by on-site personnel. There will be an on-site field phone. In the event of an on-site emergency, the Environmental Site Safety Officer shall contact the Site Safety Manager (TBD) and notify Igor Sebo, Site Project Manager. The on-site supervisor shall make all arrangements to evacuate injured personnel from the site.

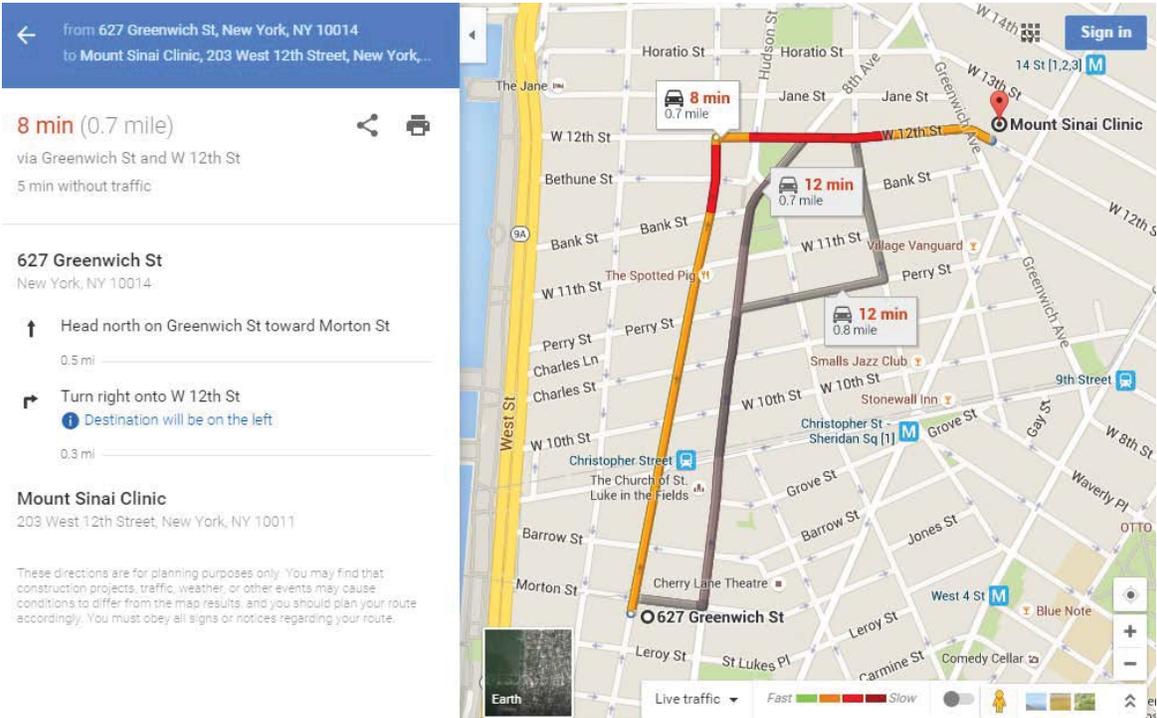
The location of the nearest hospital (see Appendix E), is Mount Sinai Clinic 203 West 12th Street, New York, NY 10011.

PERTINENT CHASP INFORMATION

Mount Sinai Clinic	212.241.6500 or 212.590.3300
Ambulance, Fire and Police Department	911
Local Poison Control	212.447.8224 1.800.222.1222
NYSDEC Spill Hotline	800.457.7362
NYCDEP Hotline	718.DEP.HELP

DIRECTIONS TO Mount Sinai Clinic

By Car



8.0 ACKNOWLEDGEMENT OF THE CHASP

Below is an affidavit that must be signed by all workers who enter the site. A copy of the CHASP must be on-site at all times and will be kept by the HSO.

AFFIDAVIT

I, _____ (name), of _____ (company), have read The Construction Health and Safety Plan (CHASP) for 627 Greenwich Street, New York, NY. I agree to conduct all on-site work in accordance with the requirements set forth in this CHASP and understand that failure to comply with this CHASP could lead to my injury/ and/ or removal from the site.

Signed:		Company:		Date:	
Signed:		Company:		Date:	
Signed:		Company:		Date:	
Signed:		Company:		Date:	
Signed:		Company:		Date:	
Signed:		Company:		Date:	

APPENDIX 4

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and BCRE Services LLC have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, BCRE Services LLC will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Sarah Pong, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841.

Project Contact List. OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community. Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site Contact List on request. A copy of the Site Contact List is maintained by OER's project manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at

brownfields@cityhall.nyc.gov.

Repositories. A document repository is maintained online. Internet access to view OER's document repositories is available at public libraries. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. The library nearest the Site is:

New York Public Library

Hudson Park Branch

Address: 66 Leroy Street, New York, NY 10014

Telephone Number: 212-243-6876

Hours of Operation:

Mon	11:00 AM - 6:00 PM
Tue	12:00 PM - 7:00 PM
Wed	11:00 AM - 6:00 PM
Thu	12:00 PM - 7:00 PM
Fri	10:00 AM - 5:00 PM
Sat	10:00 AM - 5:00 PM
Sun	closed

Digital Documentation. NYC OER strongly encourages the use of digital documents in our repository as a means of minimizing paper use while also increasing convenience in access and ease of use.

Identify Issues of Public Concern. The major issues of concern to the public will be potential impacts of nuisance odors and dust during the disturbance of historic fill soils at the Site. This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future

residents of the property and those on adjacent properties during construction. Detailed plans to monitor the potential for exposure including a Construction Health and Safety Plan and a Community Air Monitoring Plan are required components of the remedial program. Implementation of these plans will be under the direct oversight of the New York City Department of Environmental Remediation (NYCOER).

These plans will specify the following worker and community health and safety activities during remedial activity at the Site:

- On-Site air monitoring for worker protection,
- Perimeter air monitoring for community protection.

The Health and Safety Plan and the Community Air Monitoring Plan prepared as part of the Remedial Action Work Plan will be available for public review at the document repository.

Public Notice and Public Comment. Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be prepared by BCRES Services LLC, reviewed and approved by OER prior to distribution and mailed by BCRES Services LLC. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

Citizen Participation Milestones. Public notice and public comment activities occur at several steps during a typical NYC VCP project. See flow chart on the following page, which identifies when during the NYC VCP public notices are issued: These steps include:

- **Public Notice of the availability of the Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Remedial Action Work Plan.**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Remedial Action Work Plan. The Fact Sheet summarizes the findings of the RIR and provides details of the RAWP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.

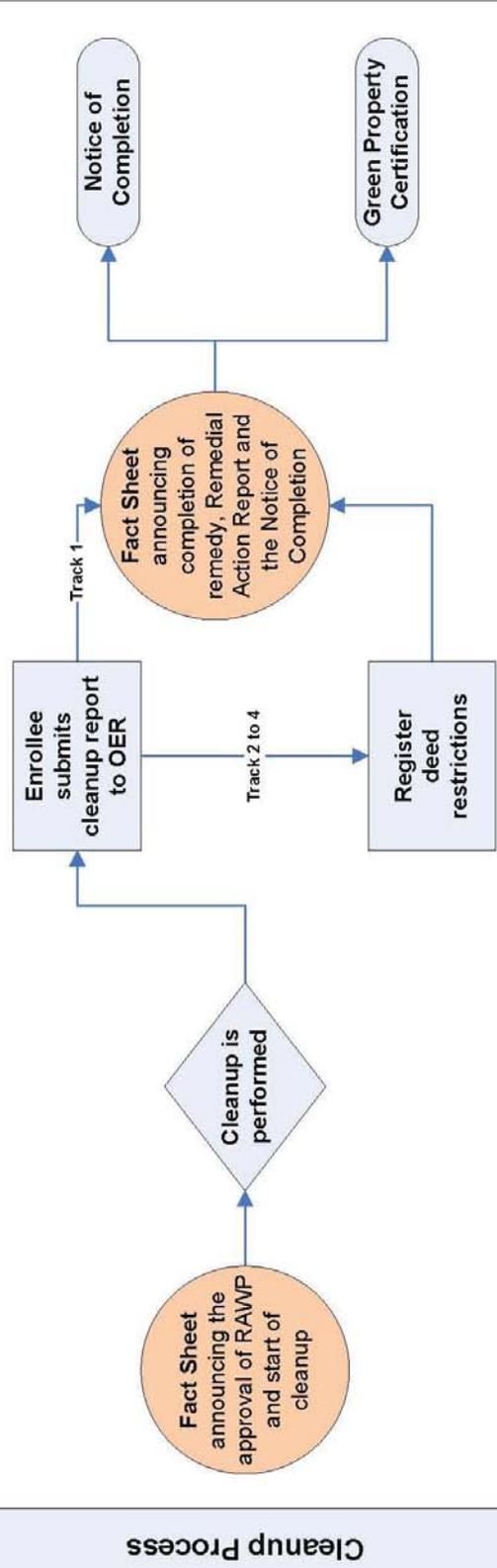
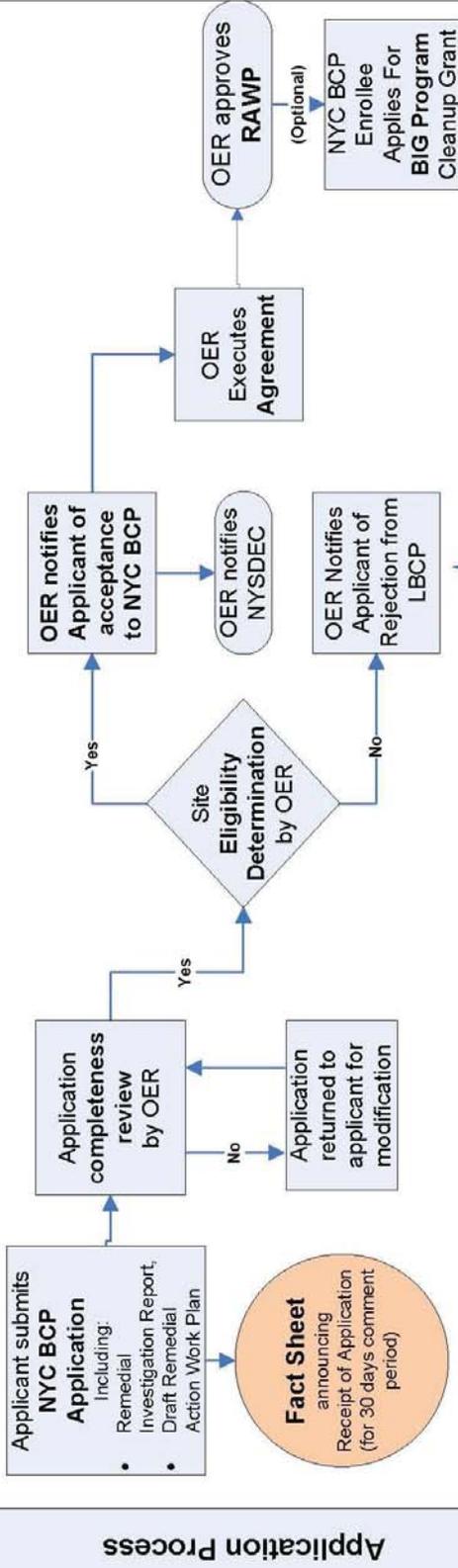
- **Public Notice announcing the approval of the RAWP and the start of remediation**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the approval of the RAWP and the start of remediation.

- **Public Notice announcing the completion of remediation, designation of Institutional and Engineering Controls and issuance of the Notice of Completion**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the completion of remediation, providing a list of all Institutional and Engineering Controls implemented for to the Site and announcing the issuance of the Notice of Completion

Flow Chart For NYC Brownfield Cleanup Program (NYC BCP)



APPENDIX 5 SUSTAINABILITY STATEMENT

This Sustainability Statement documents sustainable activities and green remediation efforts planned under this remedial action.

Reuse of Clean, Recyclable Materials and Reduced Consumption of Non-Renewable Resources. Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR.

Reduced Energy Consumption and Promotion of Greater Energy Efficiency. Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, can lower traffic congestion, and provides substantial cost savings.

Best efforts will be made to quantify energy efficiencies achieved during the remediation and will be reported in the Remedial Action Report (RAR). Where energy savings cannot be easily quantified, a gross indicator of the amount of energy saved or the means by which energy savings was achieved will be reported.

Conversion to Clean Fuels. Use of clean fuel improves NYC's air quality by reducing harmful emissions.

An estimate of the volume of clean fuels used during remedial activities will be quantified and reported in the RAR.

Recontamination Control. Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public health or the environment, and may necessitate additional cleanup work later or impede future redevelopment. Recontamination can arise from future releases that occur within the property or by influx of contamination from off-Site.

An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

Stormwater Retention. Stormwater retention improves water quality by lowering the rate of combined stormwater and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters.

An estimate of the enhanced stormwater retention capability of the redevelopment project will be included in the RAR.

Linkage with Green Building. Green buildings provide a multitude of benefits to the city across a broad range of areas, such as reduction of energy consumption, conservation of resources, and reduction in toxic materials use.

The number of Green Buildings that are associated with this brownfield redevelopment property will be reported in the RAR. The total square footage of green building space created as a function of this brownfield redevelopment will be quantified for residential, commercial and industrial/manufacturing uses.

Paperless Voluntary Cleanup Program. BCRE Services LLC is participating in OER's Paperless Voluntary Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

Low-Energy Project Management Program. BCRE Services LLC is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

Trees and Plantings. Trees and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance.

An estimate of the land area that will be vegetated, including the number of trees planted or preserved, will be reported in square feet in the RAR.

APPENDIX 6
SUB_SLAB DEPRESSURIZATION DIAGRAMS



CERTIFICATION

I, Jolanda G. Jansen, certify that I am currently a NYS registered professional engineer and that this Sub-Slab Depressurization System (SSDS) Design Document (November 2015) detailing the design elements of the proposed SSDS at the property located at 627 Greenwich Street, Borough of Manhattan, New York was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation and the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

Jolanda G. Jansen

11/24/2015

NYS Professional Engineer #068972-1

Date

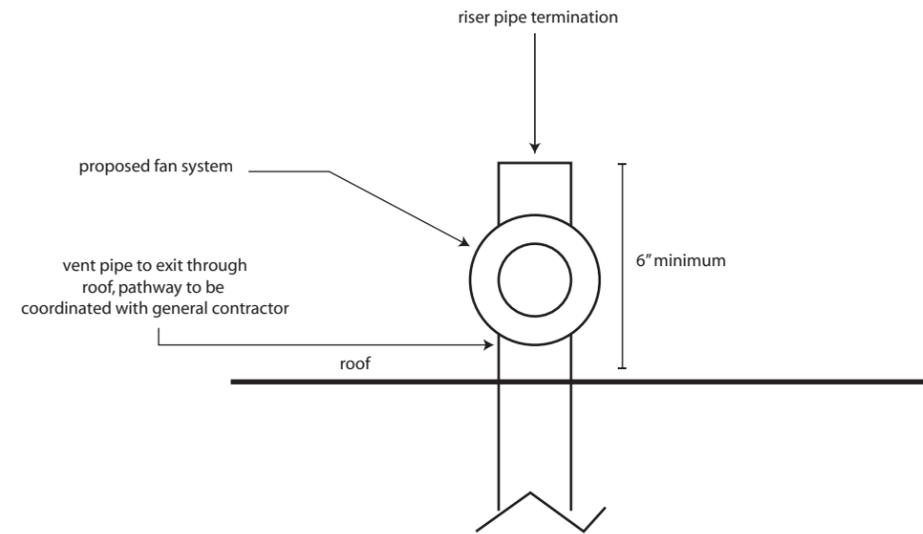


Jolanda G. Jansen

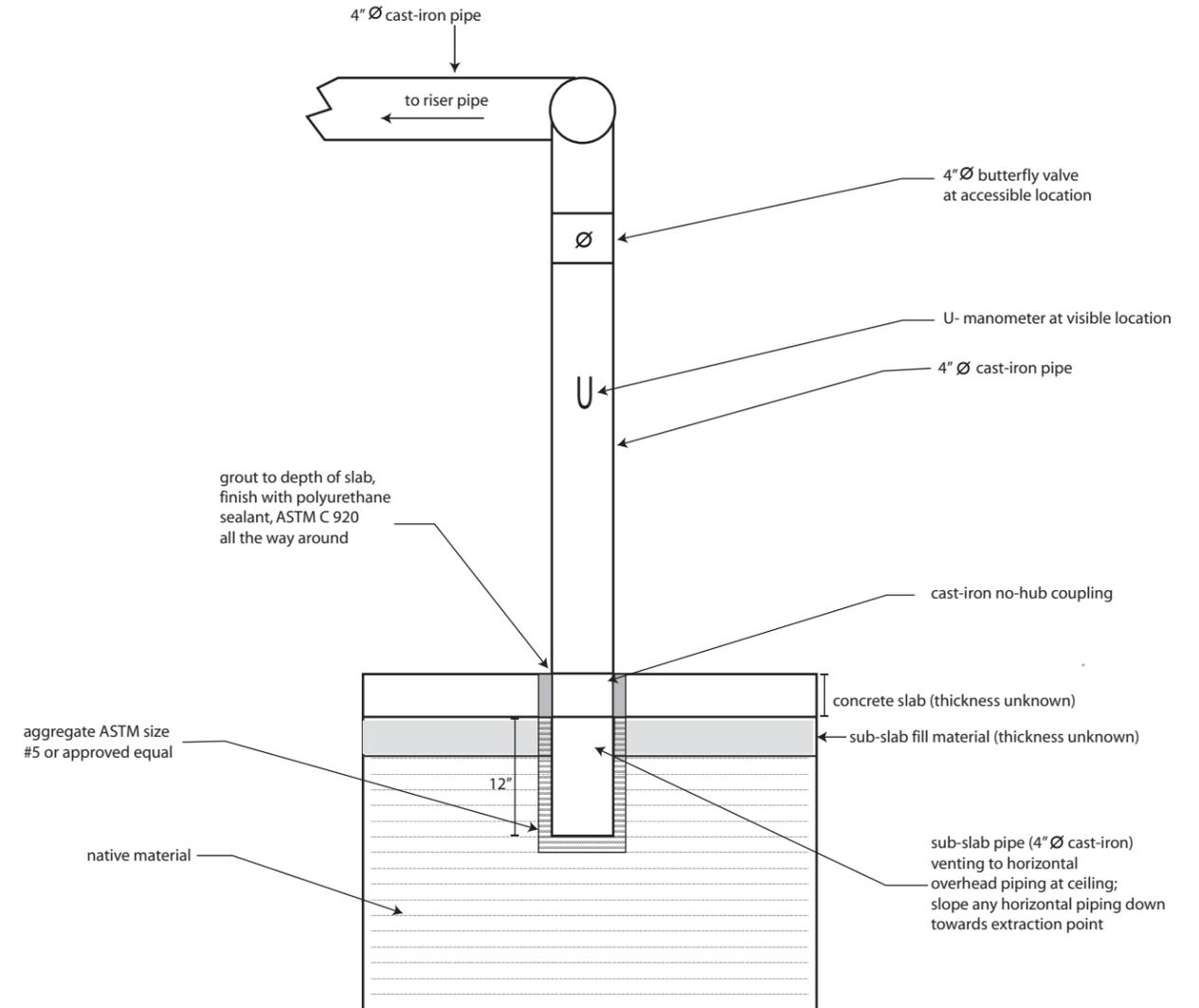
Signature Stamp

DETAIL #1 - ROOF PENETRATION AND RISER PIPE TERMINATION

FINAL 11-24-2015



**DETAIL #2 - SUB-SLAB EXTRACTION POINT - CROSS-SECTION
(at portion of cellar with lower elevation)**



Note:
Cast-iron pipe may be substituted with PVC Schedule 40 pipe if a variance is secured from NYC DOB. If PVC piping is permitted, appropriate fire stop details shall be installed at any location in which the riser pipe penetrates a fire rated wall and all joints shall be sealed with plumber's cement (or similar product) to be applied according to the manufacturer's specifications.

Figure 1A: Sub-Slab Depressurization Systems Details #1 and #2

627 Greenwich Street Borough of Manhattan, New York	ESI File: WM15105.30	
	Not to Scale	
	November 2015	Attachment B