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# **HAZARDOUS MATERIALS7 REMEDIAL ACTION REPORT**

for

**572 ELEVENTH AVENUE**

**BLOCK 1072, LOT 1**

**OER PROJECT NUMBER 15EH-N557M**

**VOLUNTARY CLEANUP NUMBER 16CVCP051M**

**E-DESIGNATION E-268**

**CEQR NUMBER 110177ZMM**

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**March 27, 2018**

**Langan Project No. 170372101**

***LANGAN***

# REMEDIAL CLOSURE REPORT

## TABLE OF CONTENTS

<b>TABLE OF CONTENTS .....</b>	<b>II</b>
<b>LIST OF ACRONYMS .....</b>	<b>V</b>
<b>CERTIFICATION .....</b>	<b>VIII</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>REMEDIAL ACTION REPORT .....</b>	<b>9</b>
<b>1.0 SITE BACKGROUND .....</b>	<b>9</b>
1.1 Site Location and Prior Usage.....	9
1.2 Redevelopment Plan .....	9
1.3 Description of Surrounding Property .....	10
1.4 Summary of Past Site Uses and Areas of Concern .....	11
1.5 Summary of Work Completed During the RI .....	11
1.6 Summary of Environmental Findings.....	13
<b>2.0 DESCRIPTION OF REMEDIAL ACTIONS .....</b>	<b>15</b>
<b>3.0 COMPLIANCE WITH REMEDIAL ACTION PLAN .....</b>	<b>19</b>
3.1 Construction Health and Safety Plan .....	19
3.2 Community Air Monitoring Plan.....	19
3.3 Soil/Materials Management Plan .....	19
3.4 Storm-Water Pollution Prevention .....	19
3.5 Deviations from the Remedial Action Plan .....	19
<b>4.0 REMEDIAL PROGRAM .....</b>	<b>20</b>
4.1 Project Organization .....	20
4.2 Site Controls.....	20
4.3 Materials Excavation and Removal .....	22

4.4 Materials Disposal ..... 22

4.5 Backfill Import..... 23

4.6 Demarcation ..... 24

**5.0 ENGINEERING CONTROLS ..... 25**

5.1 Composite Cover System..... 25

5.2 Vapor Barrier/Waterproofing System ..... 25

**6.0 SUSTAINABILITY REPORT ..... 25**

**FIGURES**

- Figure 1 - Site Location Map
- Figure 2 - Excavation Plan
- Figure 3 - Map of Cover System

**TABLES**

- Table 1 – Unrestricted Use Soil Cleanup Objectives
- Table 2 - Disposal Facility and Trucking Log

## **APPENDICES**

Appendix A	Proposed Architectural Plans
Appendix B	Remedial Action Plan
Appendix C	Project Photographs
Appendix D	Community Air Monitoring Data
Appendix E	Daily Reports
Appendix F	Disposal Facility Approval and Notification Letters
Appendix G	Disposal Manifests
Appendix H	Material Import Tickets
Appendix I	Vapor Barrier Specifications
Appendix J	Vapor Barrier As-Built Drawings

## LIST OF ACRONYMS

<b>Acronym</b>	<b>Definition</b>
AST	Aboveground Storage Tank
CAMP	Community Air Monitoring Plan
C&D	Construction & Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
CO	Certificate of Occupancy
CPC	City Planning Commission
DSNY	Department of Sanitation
"E"	E-Designation
EAS	Environmental Assessment Statement
EIS	Environmental Impact Statement
ESA	Environmental Site Assessment
EC/IC	Engineering Control and Institutional Control
ELAP	Environmental Laboratory Accreditation Program
FDNY	New York City Fire Department
GPR	Ground Penetrating Radar
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IDW	Investigation Derived Waste
Notice - NNO	Notice of No Objection
Notice - NTP	Notice to Proceed
Notice - NOS	Notice of Satisfaction
Notice - FNOS	Final Notice of Satisfaction
NYC BSA	New York City Board of Standards and Appeals
NYC DCP	New York City Department of City Planning
NYC DEP	New York City Department of Environmental Protection
NYC DOB	New York City Department of Buildings
NYC DOF	New York City Department of Finance
NYC HPD	New York City Housing Preservation and Development

NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DEC PBS	New York State Department of Environmental Conservation Petroleum Bulk Storage
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
OSHA	United States Occupational Health and Safety Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PID	Photo Ionization Detector
PM	Particulate Matter
QEP	Qualified Environmental Professional
RA	Register Architect
RAP	Remedial Action Plan
RCA	Recycled Concrete Aggregate
RCR	Remedial Closure Report
RD	Restrictive Declaration
RI	Remedial Investigation
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOCs	Semi-Volatile Organic Compounds
USCS	Unified Soil Classification System
USGS	United States Geological Survey
UST	Underground Storage Tank
TAL	Target Analyte List
TCL	Target Compound List

TCO	Temporary Certificate of Occupancy
VB	Vapor Barrier
VOCs	Volatile Organic Compounds

## CERTIFICATION

I, Jason Hayes, 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 572 Eleventh Avenue Site (OER Project No. 15EH-N557M). 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 May 2015 Remedial Action Work Plan (RAWP) 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 RAWP and (2) are accurately reflected in the text and drawings for as-built design reported in this Remedial Action Report (RAR).
- The NYC OER-approved May 2015 RAWP and May 23, 2016 RAWP Stipulation List were implemented and all requirements in those documents have been substantively complied with. I certify that, to the best of my knowledge, in my function as a remedial engineer, contaminated soil, fill, liquids or other material from the site were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

I

Jason J. Hayes

Name

089491-1

PE License Number

Signature

Date

3/27/2018





## EXECUTIVE SUMMARY

Mezuyon LLC performed this remedial action to remediate a 17,000-square-foot site located at 572 Eleventh Avenue in the Clinton neighborhood of Manhattan, New York (the site). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop a Remedial Action Plan (RAP). The remedial action described in this document fulfills the remedial objectives defined in the RAP, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

### **Site Location and Prior Usage**

The site is located at 572 Eleventh Avenue in the Clinton neighborhood of Manhattan, New York and is identified as Block 1072, Lot 1 (merged with former Lot 61 in July 2015) on the New York City Borough of Manhattan Tax Map. The site encompasses an area of about 17,000 square feet and is bound by West 44th Street to the north, two- and seven-story commercial buildings to the east, West 43rd Street to the south, and Eleventh Avenue to the west. A Site Location Map is included as Figure 1. Former Lot 1 was most recently used by Market Diner, a former one-story building with a cellar that occupied about 75 percent of the lot. Concrete covered the remaining portions of former Lot 1 that were not within the building footprint. Former Lot 61 was most recently occupied by Chelsea Garden Center. A single-story wooden building occupied the eastern portion of former Lot 61 that was used for retail sales. Site buildings were demolished in 2016 prior to the remedial action. Both tax lots were merged in July 2015 and are now referred to as Lot 1.

According to the list of City Environmental Quality Review (CEQR) Environmental Designations available on the New York City Department of City Planning website, the site is assigned an E-designation (E-268) for Hazardous Materials, and Window Wall Attenuation and Alternate Means of Ventilation. E-Designations prevent the issuance of Department of Buildings (DOB) construction permits and Certificates of Occupancy without NYC Office of Environmental Remediation (OER) approval of the remediation.

## Summary of Proposed Redevelopment Plan

The redevelopment, which is in progress, includes construction of a 13-story mixed-use (residential/commercial) building with a full cellar level and a partial sub-cellar. The development required excavation of soil and bedrock, which was encountered at about 3.5 to 13.5 feet below grade surface (bgs). Excavation depths vary from about 16 feet to 30 bgs in the northwestern and southern portions of the site, respectively, and resulted in about 2,350 cubic yards of excavated soil and about 9,200 cubic yards of excavated bedrock. Foundations are complete and the superstructure is in progress.

According to the New York City Planning Commission Zoning Map 8c, the site is located within an R9 – residential district with a C2-5 overlay. The proposed use is consistent with existing zoning for the property.

## Summary of Surrounding Property

The site is located in an area generally characterized by multi-story residential, commercial, light industrial and educational buildings consistent with the area's zoning. The adjoining and surrounding property uses are summarized in the following table:

DIRECTION	ADJOINING PROPERTIES	SURROUNDING PROPERTIES
North	West 44 <sup>th</sup> Street followed by a 31-story mixed residential/commercial building (550 West 45 <sup>th</sup> Street)	Multiple-story residential, commercial, institutional, and industrial buildings
East	Two-story (556 West 44 <sup>th</sup> Street) and seven-story (543 West 43 <sup>rd</sup> Street) commercial buildings followed by a construction site for a residential building.	Multiple-story residential, commercial, institutional, and industrial buildings
South	West 43 <sup>rd</sup> Street followed by a 44-story residential building (555 West 42 <sup>nd</sup> Street)	Multiple-story residential, commercial, and industrial buildings

West	Eleventh Avenue followed by a one-story industrial building (571 Eleventh Avenue, a UPS distribution facility)	12 <sup>th</sup> Avenue, Pier 84, and the Hudson River
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Nearby sensitive receptors include PS 51 Elias Howe School, located about 375 feet northeast of the site.

### **Summary of Past Site Uses and Areas of Concern**

According to a Sanborn Map search conducted during the Phase I Environmental Site Assessment (ESA), the site was developed around 1890 with seven four-story and five five-story buildings with basements. Since 1890, the site has been used for various commercial purposes including a gasoline filling station and a sheet metal works. The current owner of both lots is Mezuyon LLC. Owners of former Lot 1 between 1973 and 2004 included Benjamin Ind Matas, David Matas, Barbara R. Matas, and Matas Associates, LLC. Owners of former Lot 61 between 1966 and 2004 included West Side Realty Associates, W S Realty Corp., Seamens Bank For Savings, Marvin Mitchell, S&S Properties, Midtown Market Diner, Inc., 558 West 44th Street Property, HYB Associates, and JRL Associates, LLC.

The identified areas of concern (AOCs) that could have impacted site soil, groundwater and soil vapor, included:

- Historical use of the site, including a gasoline filling station with eight gasoline tanks and manufacturing businesses on Lot 1, and a sheet metal works facility on former Lot 61
- Historic fill material beneath the building slabs and paved areas - Historic fill in New York City is commonly impacted with metals and semivolatile organic compounds (SVOCs)
- Adjoining and/or surrounding properties with an open spill and historical use by gasoline filling stations, a taxi terminal with gasoline storage, a trucking company, automobile repair facilities, manufacturing facilities, and garages with gasoline tanks

### **Summary of the Work Performed under the Remedial Investigation (RI)**

The following was completed during the October 2015 RI:

1. Inspected the Site to confirm AOCs and access considerations (i.e. structures, buildings, etc.);
2. Conducted a geophysical survey to evaluate the presence of underground storage tanks (USTs) and subsurface utilities;
3. Installed eight soil borings across the site and collected fifteen soil samples (including one duplicate sample) for chemical analysis from the soil borings to evaluate soil quality;
4. Collected two samples (including one duplicate) of groundwater from a preexisting geotechnical site well for chemical analysis to evaluate groundwater quality; and
5. Installed four soil vapor probes and collected five subsurface soil vapor samples (including one duplicate sample) for chemical analysis.

### **Summary of Findings of Remedial Investigation**

The following is a summary of the RI results:

1. Surface grade elevation ranges from about 13.25 feet<sup>1</sup> to about 16.5 feet.
2. Perched groundwater was detected in one geotechnical observation well at about 10.74 feet bgs.
3. Groundwater is generally expected to flow from east to west.
4. Depth to bedrock varied from about 3.5 feet to 13.5 feet bgs (about elevation 0.8 feet to elevation 12.3 feet), and appears to generally dip towards the southwest.
5. Site geology was characterized by 1.5 to 11 feet of historic fill material consisting of brown to grey to black, fine-to-medium-grained sand, with silt, gravel, mica, and brick and concrete fragments underlain by light brown, orange, brown, grey, and black, fine-to-medium-grained native sand, with silt, gravel, and clay. In some locations, the historic fill material extended to bedrock. The native sand layer was underlain by bedrock comprising 0.5 feet to 1 foot of decomposed granite underlain by granite bedrock, which contained interbedded layers of quartz and muscovite, with intrusions of feldspar.

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<sup>1</sup> Datum refers to the North American Vertical Datum of 1988 (NAVD88), which is approximately 1.1 feet above mean sea level datum at Sandy Hook New Jersey as defined by the United States Geologic Survey (USGS NGVD 1929).

6. Soil/fill sample results were compared to NYSDEC Part 375 Table 375-6.8 Unrestricted Use and Restricted Residential Use Soil Cleanup Objectives (SCOs). Volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), herbicides, pesticides, or polychlorinated biphenyls (PCB) were not detected in any of the 15 samples at concentrations above Track 1 Unrestricted Use SCOs. The metals, including barium (maximum 1,570 milligrams per kilogram [mg/kg]), lead (maximum 3,860 mg/kg), and mercury (maximum 2.35 mg/kg) exceeded Restricted Residential Use SCOs in most of samples. Zinc exceeded Unrestricted Use SCOs. Overall, soil chemistry is similar to sites with historic fill material in New York City.
7. The results of groundwater samples collected during the RI were compared to NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Class GA Ambient Water Quality Standards and Guidance Values (AWQS). Groundwater was not encountered in temporary wells installed during the RI. Two samples of perched groundwater (on bedrock) were collected from a monitoring well installed during a geotechnical investigation. No VOCs, SVOCs, herbicides, pesticides, or PCBs were detected above their respective AWQSs. Two metals, lead and manganese, were identified but only manganese was reported at concentrations above its AWQS in filtered groundwater samples.
8. Soil vapor analytical results were compared to New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion Decision Matrices 1 and 2, which list sub-slab soil vapor concentrations at which monitoring and/or mitigation is recommended. Petroleum-related compounds were detected in all samples and chlorinated VOCs were detected in one sample. Petroleum-related compounds were detected at a maximum concentration of 1,858 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). Overall, the highest reported concentrations were for acetone (maximum of 1,400  $\mu\text{g}/\text{m}^3$ ). In soil vapor sample SV4\_072815, a tetrachloroethene (PCE) concentration of 180  $\mu\text{g}/\text{m}^3$  and a trichloroethene (TCE) concentration of 22  $\mu\text{g}/\text{m}^3$  were detected above their respective Decision Matrix concentrations of 100 and 5  $\mu\text{g}/\text{m}^3$ , respectively. Matrix recommendations for these concentrations range from monitoring to mitigation. These chlorinated VOCs were found in a single soil vapor sample (SV4) near the north end of the site. A site source of these VOCs was not identified. Other VOCs were detected in soil vapor, but there are no regulatory criteria for which to compare.

## **Summary of the Remedial Action**

The Remedial Action achieved protection of public health and the environment for the intended use of the property. The Remedial Action achieved all of the Remedial Action Objectives established for the project; addressed applicable standards, criteria, and guidance; reduced mobility, toxicity and volume of contaminants; was cost effective and implementable; and used standard methods that are well established in the industry. The remedial action is effective in the short-term and long-term.

A summary of the milestones achieved in the Remedial Action is as follows:

- A Pre-Application Meeting was held on June 4, 2015.
- An RI was performed and an RI Report dated September 2015 was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP).
- A Site Contact List was established and a draft RAWP dated December 2015 was prepared and released with a Fact Sheet on January 27, 2016 for a 30-day public comment period.
- The May 2015 RAWP and Stipulation List dated May 23, 2016 was approved by the OER on May 25, 2016.
- Site briefings were conducted with NYSDEC and NYCDOH in September 2015.
- Factsheet 2, announcing start of construction, was issued in June 2016.
- A pre-construction meeting was held on June 30, 2016. Remedial excavations began and completed in August 2015. New building construction is ongoing.
- Appendix B contains the RAP.

The following remedial actions were completed in this program:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan
2. Site mobilization, including site security setup (June 2016), equipment mobilization, utility mark outs and marking and staking excavation areas
3. Prepared waste characterization studies, dated December 15, 2015 and February 18, 2017, prior to excavation - The waste characterization study consisted of the

collection of seven 5-point composite waste characterization soil samples and seven grab soil samples. Waste characterization samples were collected at a frequency dictated by disposal facility(s);

4. Implementation of stormwater pollution prevention measures in compliance with applicable laws and regulations;
5. Performed a Community Air Monitoring Program (CAMP) for particulates and volatile organic compounds - The CAMP involved two stations (upwind and downwind) equipped with dust and organic vapor monitoring devices. Work was modified on occasion to limit dust nuisance issues, and no community odor nuisance complaints were received during foundation work. Particulate action levels were exceeded and mitigated several times during cutting of the sidewalk and bedrock removal;
6. Selected NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs) for contaminants of concern;
7. Soil/fill was excavated and removed off-site to depths of between about 3.5 to 13.5 feet bgs - Excavation began on August 2, 2016 and extended into bedrock;
8. Transported and disposed of off-site all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and the RAWP. The Contractor (Mayrich) excavated and removed 3,549.16 tons (121 truckloads) of historic fill material and soil (between August 2 and August 17, 2016) and disposed of the material as follows:
  - 819.89 tons were handled as RCRA characteristic hazardous waste for lead and disposed of at Clean Earth of North Jersey facility in Kearny, New Jersey (CENJ);
  - 206.59 tons were handled as non-hazardous material with elevated total lead concentrations and disposed of at CENJ;
  - 955.63 tons were handled as non-hazardous material and disposed of at the Former New Jersey Zinc-West Plant facility in Palmerton, Pennsylvania (Palmerton); and

- 1,567.05 tons of odorous non-hazardous material was disposed of at the Former Griffin Pipe Products Site in Florence, New Jersey (Griffin).
9. Excavated materials were screened for visual and olfactory evidence of impacts (i.e., staining and odor) and a PID was used to screen for the presence of volatile organic vapors within the work zone – Excavated media was appropriately segregated on the Site;
  10. Excavation extended into bedrock and all soil was removed from the site; therefore, endpoint samples were not required – An Unrestricted Use remedy was achieved;
  11. Submitted daily reports during construction oversight activities - Daily status reports were submitted from August 5 to August 17, 2016;
  12. As part of new development, constructed a composite cover consisting of a 5-inch concrete building slab - The composite cover is part of general construction and is not considered a remedial measure because Unrestricted Use SCOs were achieved;
  13. As part of new development, installed of a waterproofing/vapor barrier system beneath the building/elevator vault slab and along foundation/elevator vault sidewalls - A Grace Preprufe® 300R Vapor/Waterproofing membrane sheet was installed below the concrete basement slab, including elevator and mechanical pits; and Grace Preprufe® 160R Vapor/Waterproofing membrane sheet was installed along the subgrade exterior of the foundation walls. Vapor barrier seams, penetrations, and repairs were sealed by Grace Preprufe Tape. Mayrich installed the Vapor Barrier System according to specifications;
  14. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations; and
  15. Preparation of this RAR, which describes the remediation, certifies that the remedial requirements have been achieved, and lists any deviations from the RAWP.



# REMEDIAL ACTION REPORT

## 1.0 SITE BACKGROUND

This Remedial Closure Report (RCR) has been developed for the site located at 572 Eleventh Avenue in the Clinton neighborhood of Manhattan, New York (OER project number 15EH-N557M) and describes the remediation and/or mitigation implemented in coordination with the New York City Office of Environmental Remediation (OER) for the purposes of satisfying the requirements of the Hazardous Materials E-Designation Program and obtaining a Notice of Satisfaction. An E-Designation for Hazardous Materials (E-268) was placed on the site by the New York City Department of City Planning (DCP) as part of the June 14, 2011 rezoning action (CEQR number 110177ZMM).

### 1.1 Site Location and Prior Usage

The site is located at 572 Eleventh Avenue in the Clinton neighborhood of Manhattan, New York and is identified as Block 1072, Lot 1 (merged with former Lot 61 in July 2015) on the New York City Tax Map. The site is about 17,000 square feet in size and is bound by West 44th Street to the north, two- and seven-story commercial buildings to the east, West 43rd Street to the south, and Eleventh Avenue to the west. A Site Location Map is included as Figure 1. Former Lot 1 was used by Market Diner, a one-story building with a cellar that occupied about 75 percent of the lot. Concrete covered the remaining portions of former Lot 1 that were not within the building footprint. Former Lot 61 was occupied by Chelsea Garden Center. A single-story wooden building occupied the eastern portion of former Lot 61 that was used for retail sales. Site buildings were demolished in 2016 prior to remedial action.

### 1.2 Redevelopment Plan

The redevelopment consists of a 13-story mixed-use (residential/commercial) building with a full cellar level and a partial sub-cellar. The development required excavation of soil and bedrock, which was encountered at about 3.5 to 13.5 feet below grade surface (bgs). Excavation depths varied from about 16 to 30 feet bgs in the northwestern and southern portions of the site, respectively, and resulted in about 2,350 cubic yards of excavated soil and about 9,200 cubic yards of excavated bedrock. The entire property is excavated for cellar and partials for a sub-

cellar. The sub-cellar footprint was limited to minimize rock removal. There are no landscaped areas. Foundations are complete and construction of the superstructure is in progress. It is estimated that construction will be completed early in 2018.

According to the New York City Planning Commission Zoning Map 8c, the site is located within a R9 – residential district with a C2-5 overlay. The proposed use is consistent with existing zoning for the property. Architectural plans are included in Appendix A.

### 1.3 Description of Surrounding Property

The site is located in an area generally characterized by multi-story residential, commercial, light industrial and educational buildings consistent with the area's zoning. The adjoining and surrounding property uses are summarized in the following table:

DIRECTION	ADJOINING PROPERTIES	SURROUNDING PROPERTIES
North	West 44 <sup>th</sup> Street followed by a 31-story mixed residential/commercial building (550 West 45 <sup>th</sup> Street)	Multiple-story residential, commercial, institutional, and industrial buildings
East	Two-story (556 West 44 <sup>th</sup> Street) and seven-story (543 West 43 <sup>rd</sup> Street) commercial buildings followed by a construction site for a residential building.	Multiple-story residential, commercial, institutional, and industrial buildings
South	West 43 <sup>rd</sup> Street followed by a 44-story residential building (555 West 42 <sup>nd</sup> Street)	Multiple-story residential, commercial, and industrial buildings
West	Eleventh Avenue followed by a one-story industrial building (571 Eleventh Avenue, a UPS distribution facility)	12 <sup>th</sup> Avenue, Pier 84, and the Hudson River

Nearby sensitive receptors include PS 51 Elias Howe School, located about 375 feet northeast of the site.

## **1.4 Summary of Past Site Uses and Areas of Concern**

According to a Sanborn Map search conducted during the Phase I ESA, the site was developed around 1890 with seven four-story and five five-story buildings with basements. Since 1890 the site has been used for various commercial purposes including a gasoline filling station and a sheet metal works. The current owner of both lots is Mezuyon LLC. Owners of former Lot 1 between 1973 and 2004 included Benjamin Ind Matas, David Matas, Barbara R. Matas, and Matas Associates, LLC. Owners of former Lot 61 between 1966 and 2004 included West Side Realty Associates, W S Realty Corp., Seamens Bank For Savings, Marvin Mitchell, S&S Properties, Midtown Market Diner, Inc., 558 West 44th Street Property, HYB Associates, and JRL Associates, LLC.

The identified areas of concern (AOCs) that could have impacted site soil, groundwater and soil vapor, included:

- Historical use of the site, including a gasoline filling station with eight gasoline tanks and manufacturing businesses on Lot 1, and a sheet metal works facility on former Lot 61;
- Historic fill material beneath the building slabs and paved areas. Historic fill in New York City is commonly impacted with metals and SVOCs; and
- Adjoining and/or surrounding properties with an open spill and historical use by gasoline filling stations, a taxi terminal with gasoline storage, a trucking company, automobile repair facilities, manufacturing facilities, and garages with gasoline tanks

## **1.5 Summary of Work Completed During the RI**

The following environmental reports were prepared for the site:

- *May 26, 2015, Phase I ESA, prepared by Langan*
- *August 2015, Remedial Investigation Report (RIR), prepared by Langan*

The following was completed during October 2015 RI:

1. Conducted a site inspection to confirm AOCs and access considerations (i.e. structures, buildings, etc.);
2. Geophysical survey to evaluate the presence of underground storage tanks (USTs) and sub-surface utilities.

3. Installed eight soil borings across the site and collected fifteen soil samples (including one duplicate sample) for chemical analysis from the soil borings to evaluate soil quality;
4. Collected two sample (including one duplicate) of groundwater , from a preexisting geotechnical site well for chemical analysis to evaluate groundwater quality; and
5. Installed four soil vapor probes and collected five subsurface soil vapor samples (including one duplicate sample) for chemical analysis.

## 1.6 Summary of Environmental Findings

9. Elevation ranges from about 13.25 feet<sup>2</sup> to about 16.5 feet;
1. Perched groundwater was detected in one geotechnical observation well at about 10.74 feet bgs;
2. Groundwater is generally expected to flow from east to west;
3. Depth to bedrock varied from about 3.5 feet to 13.5 feet bgs (about elevation 0.8 feet to elevation 12.3 feet), and appears to generally dip towards the southwest;
4. Site geology was characterized by 1.5 to 11 feet of historic fill material consisting of brown to grey to black, fine-to-medium-grained sand, with silt, gravel, mica, and brick and concrete fragments underlain by light brown, orange, brown, grey, and black, fine-to-medium-grained native sand, with silt, gravel, and clay. In some locations, the historic fill material extended to bedrock. The native sand layer was underlain by bedrock comprising 0.5 feet to 1 foot of decomposed granite underlain by granite bedrock, which contained interbedded layers of quartz and muscovite, with intrusions of feldspar;
5. Soil/fill sample results were compared to NYSDEC Part 375 Table 375-6.8 Unrestricted Use and Restricted Residential Use Soil Cleanup Objectives (SCOs). Volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), herbicides, pesticides, or polychlorinated biphenyls (PCB) were not detected in any of the 15 samples at concentrations above Track 1 Unrestricted Use (SCOs). The metals, including barium (maximum 1,570 milligrams per kilogram [mg/kg]), lead (maximum 3,860 mg/kg), and mercury (maximum 2.35 mg/kg) exceeded Restricted Residential Use SCOs in most of samples. Zinc exceeded Unrestricted Use SCOs. Overall, soil chemistry is unremarkable and is similar to sites with historic fill material in New York City;
6. The results of groundwater samples collected during the RI were compared to NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Class GA Ambient Water Quality Standards and Guidance Values (AWQS). Groundwater was not encountered in

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<sup>2</sup> Datum refers to the North American Vertical Datum of 1988 (NAVD88) which is approximately 1.1 feet above mean sea level datum at Sandy Hook New Jersey as defined by the United States Geologic Survey (USGS NGVD 1929).

temporary wells installed during the RI. Two samples of perched groundwater (on bedrock) were collected from a monitoring well installed during a geotechnical investigation. No VOCs, SVOCs, herbicides, pesticides, or PCBs were detected above their respective AWQs. Two metals, lead and manganese, were identified but only manganese was reported at concentrations above its AWQS in filtered groundwater samples; and

7. Soil vapor analytical results were compared to New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion Decision Matrices 1 and 2, which list sub-slab soil vapor concentrations at which monitoring and/or mitigation is recommended. Petroleum related compounds were detected in all samples and chlorinated VOCs in one sample. Petroleum related compounds were detected at a maximum concentration of 1,858 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). Overall, the highest reported concentrations were for acetone (maximum of 1,400  $\mu\text{g}/\text{m}^3$ ). In soil vapor sample SV4\_072815, a tetrachloroethene (PCE) concentration of 180  $\mu\text{g}/\text{m}^3$  and trichloroethylene (TCE) concentration of 22  $\mu\text{g}/\text{m}^3$  were detected, above their respective Decision Matrix concentrations of 100 and 5  $\mu\text{g}/\text{m}^3$ , respectively, at which monitoring and/or mitigation is recommended. These chlorinated VOCs were found in a single soil vapor sample (SV4) near the north end of the site. A site source of these VOCs was not identified. Other VOCs were detected in soil vapor, but there are no regulatory criteria for which to compare.

## **2.0 DESCRIPTION OF REMEDIAL ACTIONS**

The remedial action was performed in accordance with an OER approved Remedial Action Work Plan (Appendix B) and achieved the remedial action objectives established for the project. The remedial action was evaluated in an alternatives analysis and was determined to be protective of human health and the environment, compliant with standards, criteria, and guidelines (SCGs), effective in the short-term, effective in the long-term, capable of attaining appropriate levels of reduction of toxicity, mobility, or volume of contaminated material, implementable, cost effective, acceptable to the community, consistent with land uses, and sustainable. Photos of the remedial tasks are included in Appendix C.

A summary of the milestones achieved in the Remedial Action is as follows:

- A Pre-Application Meeting was held on June 4, 2015.
- A Remedial Investigation (RI) was performed and a RI Report dated September 2015 was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP).
- A Site Contact List was established and a draft RAWP dated December 2015 was prepared and released with a Fact Sheet on January 27, 2016 for a 30-day public comment period.
- The RAWP and Stipulation letter was approved by the New York City Office of Environmental Remediation (OER) on May 25, 2016.
- Site briefings were conducted with New York State Department of Environmental Conservation (NYSDEC) and NYC DOH in September 2015.
- Factsheet-2 announcing start of construction was issued in June 2016.
- A pre-construction meeting was held on June 30, 2016. Remedial action began in August 2015 and completed in December 2016.

The following remedial actions were completed in this program:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan;

2. Site mobilization, including site security setup (June 2016), equipment mobilization, utility mark outs and marking and staking excavation areas;
3. Prepared Waste Characterization Studies, dated December 15, 2015 and February 18, 2017, prior to excavation activities. The Waste Characterization Study consisted of the collection of seven 5-point composite waste characterization soil samples and seven grab soil samples. Waste characterization samples were collected at a frequency dictated by disposal facility(s);
4. Implementation of stormwater pollution prevention measures in compliance with applicable laws and regulations;
5. Performed a Community Air Monitoring Program (CAMP) for particulates and volatile organic compounds. The CAMP involved two stations (upwind and downwind) equipped with dust and organic vapor monitoring devices. Work was modified on occasion to limit dust nuisance issues, and no community odor nuisance complaints were received during foundation work. Particulate action levels were exceeded several times during cutting of the sidewalk and bedrock removal;
6. Selected NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs) for contaminants of concern;
7. Soil/fill was excavated and removed off-site to depths of between about 3.5 to 13.5 feet bgs. Excavation began on August 2, 2016. The excavation extended into bedrock;
8. Transported and disposed off-Site all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and the RAWP. Contractor (Mayrich) excavated and removed 3,549.16 tons (121 truckloads) of historic fill material and soil (between August 2 and August 17, 2016) and disposed them as:
  - o 819.89 tons were handled as RCRA characteristic hazardous waste for lead and disposed at Clean Earth of North Jersey facility in Kearny, New Jersey (CENJ);



- 206.59 tons were handled as non-hazardous material with elevated total lead concentrations and disposed at CENJ;
  - 955.63 tons were handled as non-hazardous material and disposed of at the Former New Jersey Zinc-West Plant facility in Palmerton, Pennsylvania (Palmerton); and
  - 1567.05 tons of odorous non-hazardous material was disposed of at the Former Griffin Pipe Products Site in Florence, New Jersey (Griffin).
9. Excavated materials were screened for visual and olfactory evidence of impacts (i.e., staining and odor) and a PID was used to screen for the presence of volatile organic vapors within the work zone. Appropriately segregated excavated media on Site;
10. Excavation extended into bedrock and all soil was removed from the site; therefore, endpoint samples were not required. Unrestricted Use remedy was achieved;
11. Submitted daily reports during construction oversight activities. Daily status reports were submitted from August 05, 2016 to August 17, 2016;
12. As part of new development, constructed a composite cover consisting of a 5-inch concrete building slab. The composite cover is part of general construction and is not considered a remedial measure because Unrestricted Use SCOs were achieved;
13. As part of new development, installed of a waterproofing/vapor barrier system beneath the building/elevator vault slab and along foundation/elevator vault sidewalls. A Grace Preprufe® 300R Vapor/Waterproofing membrane sheet was installed below the concrete basement slab, including elevator and mechanical pits; and Grace Preprufe® 160R Vapor/Waterproofing membrane sheet was installed along the sub-grade exterior of the foundation walls. Vapor barrier seams, penetrations, and repairs were sealed by Grace Preprufe Tape. Mayrich installed the Vapor Barrier System according to specifications;

14. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations; and
15. Preparation of this RAR, which describes the remediation, certifies that the remedial requirements have been achieved, and lists any deviations from the RAWP.

### **3.0 COMPLIANCE WITH REMEDIAL ACTION PLAN**

#### **3.1 Construction Health and Safety Plan**

The remedial construction performed under this program was in compliance with the site-specific CHASP, which can be found in the RAP Appendix B, and applicable laws and regulations. The Site Safety Coordinator was William Bohrer.

#### **3.2 Community Air Monitoring Plan**

The Community Air Monitoring Plan provided for the collection and analysis of air samples during remedial construction to ensure proper protections were employed to protect workers and the neighboring community. Monitoring was performed in compliance with the Community Air Monitoring Plan in the approved RAP. The results of Community Air monitoring are shown in Appendix D.

#### **3.3 Soil/Materials Management Plan**

The Soil/Materials Management Plan (SMMP) in the RAP provided detailed plans for managing all soils/materials that were disturbed at the site during excavation, handling, storage, and off-site transportation and disposal. It also included a series of controls to assure effective, nuisance free remedial activity in compliance with applicable laws and regulations. Remedial construction performed under this program were in compliance with the SMMP in the approved RAP.

#### **3.4 Storm-Water Pollution Prevention**

Storm water pollution prevention included physical methods and processes to control and/or divert surface water flows and to limit the potential for erosion and migration of site soil via wind or water. Remedial construction performed under this program was in compliance with applicable storm-water pollution prevention laws and regulations and the RAP.

#### **3.5 Deviations from the Remedial Action Plan**

Work performed was in accordance with the OER-approved May 2015 RAP without deviations.

## **4.0 REMEDIAL PROGRAM**

### **4.1 Project Organization**

The remedial action was performed concurrently with redevelopment. Mezuyon, LLC, the owner/developer, provided construction management for the project, including permitting and subcontracting for excavation and foundation work, which was completed by Mayrich Construction (Mayrich). Langan provided environmental engineering services, including documentation of earthwork, air quality monitoring, coordination with OER, and fulfillment of the OER-approved RAP objectives.

The New York State Professional Engineer (PE) responsible for overseeing the remedial action is Jason Hayes, a Principal at Langan. Langan field staff documented that the remedial actions were implemented in accordance with the RAP and CHASP.

### **4.2 Site Controls**

#### **Site Preparation**

OER approved the RAP and CHASP in a Notice to Proceed (NTP), dated May 4, 2016. A pre-construction meeting was held with earthwork/foundation contractors and OER on June 30, 2016. Prior to the initiation of the remediation, the site was secured with plywood fencing on 44<sup>th</sup> Street, 43<sup>rd</sup> Street and Eleventh Avenue. The Contractor obtained all appropriate NYCDOB permits and conducted a subsurface utility survey prior to excavation. All underground utilities were decommissioned prior to construction.

#### **Soil Screening**

Soil screening was conducted by Langan during soil excavation. Excavated materials were screened for visual and olfactory evidence of impacts (i.e., staining and odor) and a PID was used to screen for the presence of volatile organic vapors within the work zone.

#### **Stockpile Management**

Stockpiling was minimized and soil was generally directly loaded onto trucks. Material types were segregated as necessary to prevent comingling of waste streams.

## **Truck Inspection**

Before exiting the site, trucks were examined for evidence of soil on the undercarriage, body, and wheels. The contractor removed any soil and debris to the satisfaction of the on-site representative of the remedial engineer. Brooms were utilized for the removal of soil from vehicles and equipment, as necessary.

## **Site Security**

Site access points monitored by the Contractor prevented public access during construction work hours. Site security during off-work hours and on weekends was not provided, but site gates were closed and locked during this time.

## **Nuisance Controls**

The CAMP involved two stations (upwind and downwind) equipped with dust and organic vapor monitoring devices. The upwind station was installed to monitor air migrating onto the site and the downwind station was installed to monitor the air at the downwind perimeter of the site. In this configuration, the CAMP was established to monitor the dust and organic vapor impacts to the surrounding community while taking into account the potential for upwind off-site sources. As such, if the data recorded by the monitors indicated that site work was adversely affecting downwind off-site concentrations in air, then the developer performed appropriate mitigation measures, such as dust suppression using water, or ceased intrusive work until such appropriate mitigating measures could be undertaken. Work was modified on occasion to limit dust nuisance issues, and no community odor nuisance complaints were received during foundation work. CAMP data is included in Appendix D.

## **Reporting**

Daily reports that provided a general summary of work for each day of active remedial work were emailed to the OER Project Manager. Those reports included:

- Project number and statement of the work tasks 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 citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP excursions, if any; and
- Photographs of notable site conditions and work.

All daily reports are included in Appendix E. A photographic log of the remedial action is included in Appendix C.

### **4.3 Materials Excavation and Removal**

Excavation began on August 2, 2016. Mayrich excavated and removed 3,549.16 tons of historic fill material and soil. Of this total, 819.89 tons were handled as RCRA characteristic hazardous waste for lead (code D008); 206.59 tons were handled as non-hazardous material with elevated concentrations of total lead; and 2,522.68 tons were handled as non-hazardous material. Petroleum-like staining and odors and photoionization detector (PID) readings above background levels were apparent in soil excavated near the southwest corner of the site. Grossly impacted soil was not apparent and soil samples in this location (SB8 from the RI and waste class area WC05) did not indicate impacts from petroleum; therefore, a spill was not reported. This material was segregated and handled separately from non-odorous material.

The excavation extended into bedrock, which was encountered at about 3.5 to 13.5 feet bsg. The excavated fill and soil was transported off-site in 121 truckloads between August 2 and August 17, 2016. Excavation extended into bedrock and all soil was removed from the site; therefore, endpoint samples were not collected. A map showing the location where excavations were performed is shown on Figure 2.

### **4.4 Materials Disposal**

A total of 3,549.16 tons of historic fill material and soil were disposed of off-site between August 2 and August 17, 2016. Hazardous lead fill/soil and non-hazardous material with atypical concentrations of total lead were disposed of at the Clean Earth of North Jersey facility in Kearny, New Jersey (CENJ). Non-hazardous material was disposed of at the Former New Jersey Zinc-West Plant facility in Palmerton, Pennsylvania (Palmerton) and the Former Griffin

Pipe Products Site in Florence, New Jersey (Griffin). Odorous material was disposed of at Palmerton.

Correspondences relating to disposal facility approvals including facility acceptance letters and notification letters from Langan are included in Appendix F. Counter-signed manifests are included in Appendix G and a Disposal Facility and Trucking Log for material excavation is presented as Table 2.

A complete breakdown of off-site disposal of fill and soil, including destination, type of material, number of truck loads, and material quantity is provided in the following table.

<b>Disposal Facility</b>	<b>Material</b>	<b>Truck Loads</b>	<b>Quantity (tons)</b>
CENJ	Hazardous Lead Material (D008)	28	819.89
CENJ	Non-hazardous material with high total lead	7	206.59
Palmerton	Non-hazardous Material	32	955.63
Griffin	Non-hazardous Material	54	1,567.05
<b>TOTAL</b>		<b>121</b>	<b>3,549.16</b>

#### 4.5 Backfill Import

Imported material is summarized in the following table:

<b>Provider</b>	<b>Material/Source</b>	<b>Quantity (cubic yards)</b>	<b>Use</b>
Tilcon	Recycled Stone	6	Ramp – ultimately excavated and disposed off-site
Tilcon	Yard Stone	17	Stemming Material for Blasting - ultimately excavated and disposed off-site
Tilcon	Virgin Quarry	608	Under-slab Drainage

	Stone		
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Only the virgin quarry stone imported for the under-slab drainage system remained onsite. The other imported stone was eventually excavated and disposed of off-site to reach development grade. Import tickets and sieve testing for the virgin stone are included in Appendix H.

#### **4.6 Demarcation**

Considering the excavation extended to bedrock, all soil was removed from the site, and a Track 1 remedy was achieved, demarcation was not necessary.



## 5.0 ENGINEERING CONTROLS

A Track 1 Remedial Action was achieved and Engineering Controls are not required. However, as part of new development, several protective measures were installed. These are:

- (1) Composite Cover System consisting of the concrete building slab; and
- (2) A Waterproofing/Vapor Barrier System.

The composite cover system and vapor barrier/waterproofing system extents are shown on Figure 3.

### 5.1 Composite Cover System

The Composite Cover System was installed by Mayrich as part of development and is comprised of a 5-inch thick reinforced concrete slab underlain by the vapor barrier/waterproofing membrane.

### 5.2 Vapor Barrier/Waterproofing System

The Waterproofing/Vapor Barrier System was installed as part of development. A Grace Preprufe® 300R Vapor/Waterproofing membrane sheet was installed below the concrete basement slab, including elevator and mechanical pits; and Grace Preprufe® 160R Vapor/Waterproofing membrane sheet was installed along the sub-grade exterior of the foundation walls. Vapor barrier seams, penetrations, and repairs were sealed by Grace Preprufe Tape. Mayrich installed the Vapor Barrier System according to specifications. Product specifications for the barrier and as-built drawings are provided in Appendix I and J, respectively. Photographs of installation of the Vapor Barrier System are included in Appendix C.

## 6.0 SUSTAINABILITY REPORT

This RAR provides for sustainable remediation and redevelopment through a variety of means that are defined in this Sustainability Report.

**Reuse of Clean, Recyclable Materials.** Reuse of clean, recyclable materials reduced consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction since these materials were locally derived.

Recycled stone was used for temporary ramp construction.

**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. Locally derived backfill materials were used for this project to minimize truck transport.

**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 that could impede future redevelopment. Recontamination can arise from future releases that occur within the property or by influx of existing contamination from off-site.

Recontamination of the site from potential off-site sources will be prevented by capping the site with impermeable surfaces. The proportionate area of the Site that utilizes recontamination controls under this plan is 100% or about 17,000 square feet. Impermeable surface covering the site consists of a concrete floor slab (100%). In addition, a vapor barrier was installed as a precautionary measure to prevent migration of vapors into the structure in the future.

**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.

The area of the property for which enhanced stormwater retention capability has been established for the redevelopment project is 17,000 square feet.

**Paperless Brownfield Cleanup Program.** Mezuyon LLC participated in OER's Paperless Voluntary Cleanup Program. Under this program, submission of electronic documents replaced submission of hard copies for the review of project documents, communications and milestone reports. A best estimate of the mass (pounds) of paper saved under this plan is 30 pounds.

**Low-Energy Project Management Program.** Mezuyon LLC participated in OER's low-energy project management program. Under this program, whenever possible, meetings were held using remote communication technologies, such as videoconferencing and teleconferencing to

reduce energy consumption and traffic congestion associated with personal transportation. A gross estimate of the number of miles of personal transportation that was conserved in this process is 100 miles.