

West 108th Street WSFSSH Development

Chapter 6: Hazardous Materials

A. INTRODUCTION

This chapter assesses the potential of the Proposed Actions to result in hazardous materials impacts and identifies any potential issues of concern that could pose a hazard to workers, the community, and/or the environment during or after development of the Proposed Project. As described in Chapter 1, "Project Description," the Proposed Actions consists of a series of land use actions that would facilitate the redevelopment of Block 1863, Lots 5, 10, 13, and 26 (the "Development Site") with affordable and supportive housing and community facility uses. Specifically, the Proposed Project would consist of two buildings: the Western Development ("Building 1," on Lots 5, 10, and 13) would be developed with a 193,000 gross square foot (gsf) building consisting of 1995 affordable housing units and 37,400 gsf of community facility uses (including 110 shelter beds and 6,4000 gsf of other community facility uses); and the Eastern Development ("Building 2," on Lot 26) would be developed with a 45,000 gsf building consisting of 82 affordable housing units.

Many sites in urban areas contain soil and/or groundwater that are known to be contaminated. The presence or likely presence of any hazardous substance or petroleum on a site under conditions that indicate an existing release, past release, or a material threat of release of any hazardous substance or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property is known as a Recognized Environmental Condition (REC), as defined by the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments (ESA): Phase I ESA Process (ASTM E-1527). An REC should be disclosed under City Environmental Quality Review (CEQR).

As described in the 2014 *CEQR Technical Manual*, the goal of a hazardous materials assessment is to determine whether a proposed project would potentially increase exposure of hazardous materials to people or the environment, or whether the increased exposure would lead to significant public health impacts or environmental damage. The objective of the hazardous materials assessment is to determine if the project site may have been adversely affected by current or historical uses at or adjacent to the project site, such that the property would require remedial or environmental control measures.

B. PRINCIPAL CONCLUSIONS

The ~~Proposed Project~~ would not result in significant adverse impacts related to hazardous materials. A Phase I ESA was prepared in June 2015 in order to evaluate potential contamination of the project site. The Phase I ESA identified RECs associated with current and former uses of the Project Area and surrounding properties. Based on the findings of the Phase I ESA, it was determined that a Phase II Environmental Site Investigation (ESI) was necessary to adequately identify/characterize the surface and subsurface soils of the project site. The ~~Proposed Project sponsor is actively working with OER, and the project sponsor intends to formally enroll~~ was accepted into New York City's Voluntary Cleanup Program (NYCVCP) (18CVCP017M) to fully address the testing and remediation requirements at the site. The NYCVCP is a voluntary environmental remediation program administered by the New York City Mayor's Office of Environmental Remediation (OER) that has requirements for the methods of remediation,

including a construction health and safety plan (CHASP), to address safety during the remediation process. As part of the NYCVCPC, ~~OER would need to approve~~ a Remedial Investigation Report (RIR), a Remedial Action Plan (RAP), and a Remedial Action Report (RAR) for the Development Site, including Engineering and Institutional Controls and a Site Management Plan (SMP) are prepared and are subject to OER review and approval, before any demolition or construction can commence at the site. A Phase II ESI was prepared under OER oversight in January 2017. ~~Similar to many sites in urban areas that contain soil and/or groundwater that are known to be contaminated, t~~The Phase II ESI confirmed the presence of hazardous materials on the Development Site in a degree that is not dissimilar to many other urban sites. During the Phase II, field evidence of suspect petroleum contamination was observed, the New York State Department of Environmental Conservation (NYSDEC) was notified, and ~~There are two open petroleum spills, numbers 16-03624 and 16-03667, were assigned to this property by the New York State Department of Environmental Conservation (NYSDEC).~~ As hazardous materials were identified at the Development Site, remedial measures are required to adequately address the contamination and properly close NYSDEC spills. The project sponsor submitted a draft RAP to OER in October 2017, which was subsequently posted for public comment. Public comments on the RAP were accepted through November 8, 2017, and the RAP was approved by OER on January 31, 2018. Additional sampling may also be directed by OER prior to finalizing the RAP. Required remediation pursuant to the OER-reviewed and ~~approved~~ RAP would be enforced through the Land Disposition Agreement (LDA) between HPD and the project sponsor. Additional sampling will also be required following demolition as part of the RAP. As noted above, the NYCVCPC is a voluntary program. Should the project sponsor elect to withdraw from the NYCVCPC prior to the conveyance of the Development Site by the City, allocation of City funding and start of any demolition or construction activity, the New York City Department of Environmental Protection (DEP) would assume the lead role in approving the final remediation ~~plan~~ developed for the site, in coordination with OER and HPD. Under either scenario, the LDA would serve as the mechanism to ensure the approved site remedy is implemented to appropriately address the hazardous materials on the site.

In addition, a limited asbestos, lead paint, and polychlorinated biphenyl (PCB) caulk survey report was prepared March 2017 to confirm the presence of asbestos-containing materials (ACMs) and lead-based paint (LBP) in the existing Development Site buildings.¹ As is common for building structures built at the time of the existing Development Site structures, the survey report identified the presence of ACM and LBP in the existing Development Sites building materials. As such, and in accordance with regulatory requirements mandated by local, state, and federal law, ~~ACM and LBP would be removed prior to demolition of the existing Development Site buildings, and LBP would be addressed prior to and/or during demolition.~~

With adherence to the requirements of OER's NYCVCPC (which may also be enforced by DEP, should the project sponsor elect to withdraw from the OER program), to be required of the project sponsor in accordance with the LDA, in addition to the ACM and LBP regulatory requirements mandated by local, state, and federal law, no significant adverse hazardous materials impacts would occur during construction or upon completion of the Proposed Project. The remediation of the existing structures and underground contamination would leave the Development Site cleaner and safer than in its current state.

¹ The limited survey is a first step conducted for buildings that are occupied; once the existing Development Site buildings are fully vacated, additional surveys will be conducted.

C. METHODOLOGY

As outlined in the *CEQR Technical Manual*, a hazardous materials assessment generally begins with a Phase I ESA, which is a qualitative evaluation of the environmental conditions present at a site, based on a review of available information, site observations, and interviews. The Phase I ESA is conducted in accordance with the standards established by the current ASTM Phase I ESA Standard and includes research and field observations (but typically not subsurface or building testing results) to determine whether the site may contain contamination from either past or present activities on the site or as a result of activities on adjacent or nearby properties. If a potential REC is identified during this assessment, then building and subsurface investigations are usually conducted as part of a Phase II ESI to confirm the presence and extent of contamination.

Phase II ESIs can include the following elements (although, not all elements are necessary for all projects): a geophysical survey to help locate buried metallic objects or material, characterize the subsurface conditions and geology, identify subsurface utility infrastructure, or determine the presence or extent of a groundwater contaminant plume; a soil-gas survey to test the soil area above the water table for the presence of volatile organic compounds (VOCs) or methane; shallow test probes to assist in the characterization of the site; subsurface excavations (test pits and trenching) to allow for the inspection and sampling of subsurface materials, equipment, and structures; surface oil and waste sampling; soil and groundwater probe investigations; soil borings and monitoring wells; and/or the testing of buildings and structures. The specific components of the Phase II ESI are outlined in a Phase II ESI Work Plan, which is tailored to each specific project and is reviewed and approved by DEP and/or OER prior to commencing the Phase II ESI. This typically does not include the existing structures on the site, which are tested and remediated separately.

The results of the Phase II ESI are interpreted to characterize the extent of hazardous materials and the ranges of soil, groundwater, or soil gas contaminant concentrations. If hazardous materials are identified at the site and it appears that remedial measures would likely be required to adequately address the contamination, a RAP and site-specific CHASP are prepared, which outline how the hazardous materials present on the site will be remediated to avoid potential significant adverse impacts on future site users, as well as on sensitive receptors in the vicinity of the site.

D. EXISTING CONDITIONS

The potential for hazardous materials on the Development Site was evaluated based on three reports: (1) a Phase I ESA prepared by AKRF in June 2015, in accordance with ASTM Standard E1527-13; (2) a Phase II ESI prepared by AKRF in September 2016 and revised in January 2017; and (3) an asbestos, lead paint, and PCB caulk survey report on the existing structures (which was limited in scope due to the fact that the buildings are still in use) prepared by AKRF in March 2017. All three documents are included in Appendix II of this EIS.

Phase I ESA

The scope of the Phase I ESA included a reconnaissance of the Development Site and surrounding area and a review of a variety of informational sources, including historical Sanborn fire insurance maps and environmental regulatory agency databases identifying state- and federally-listed lists. Based upon the available information, an evaluation was made regarding the presence of potential RECs from either current or historical land uses. As detailed in ASTM E 1527-13, RECs are “the presence or likely presence

of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property. The term is not intended to include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.” Controlled RECs are “a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that have been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.”

The Phase I ESA identified the following RECs:

- Potential underground storage tanks (USTs) and former aboveground storage tanks (ASTs);
- Historical uses of the existing Development Site buildings included auto repair and vehicle maintenance facilities and the potential presence of additional tanks and hydraulic lifts where the vehicle maintenance may have been performed;
- Chemical and material storage, undocumented discharges from which may have affected subsurface conditions in the Development Site;
- A sump with unconfirmed discharge point in the basement of the existing Lot 13 building;
- Factories, Con Edison substations, auto repair, and garages with gasoline USTs historically present in the surrounding area; and
- Potential buried debris from former on-site structure that could contain historic fill of unknown origin and/or abandoned USTs; and

In addition, outside the scope of ASTM E1527-13, sSuspect ACM and LBP present in building materials were identified in the Phase I ESA.

Phase II ESI

Based on the findings of the Phase I ESA, which identified RECs for the Development Site, a Phase II ESI was prepared in September 2016 and revised in January 2017. The Phase II ESI consisted of a geophysical survey and utility mark-outs; installing 17 soil borings throughout the Development Site and collecting 22 soil samples from the borings for chemical analysis; installing eight temporary soil vapor monitoring points throughout the Development Site and collecting eight soil vapor samples from the points and one ambient air sample for chemical analysis; and installing three groundwater monitoring wells in basements throughout the Development Site and collecting three groundwater samples from the wells for chemical analysis.

The subsurface investigation showed the following:

- Elevation of the Development Site ranges from 90 to 105 feet above mean sea level (msl), sloping slightly down toward the east. The stratigraphy of the Development Site, from the surface down, consisted of up to seven feet of historic fill comprising sand, silt, brick, and concrete, underlain by native soil consisting of fine to medium sand, silt, followed by weathered bedrock. The depth to apparent bedrock varied from approximately five to 22 feet below basement grade.

- Groundwater elevation ranged from 84 to 89 feet (North American Vertical Datum of 1988 (NAVD88)), and groundwater flow is generally easterly beneath the Development Site.
- The results of the soil sampling completed during the investigation showed volatile organic compounds (VOCs) were detected in 12 of the 22 soil samples, as well as in QA/QC samples, two trip blanks and the two associated aqueous field blanks. Three VOCs (benzene, m,p-xylene, and toluene) were detected at concentrations exceeding the Unrestricted Soil Clean Objective (USCO); no VOCs were detected at concentrations exceeding the Restricted Residential Soil Cleanup Objective (RRSCO).² Up to 18 semi-volatile organic compounds (SVOCs) were detected in all 22 soil samples. Five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-c,3')pyrene) exceeding the USCO and RRSCO were detected in one soil sample; two SVOCs exceeding the USCO only were detected in one soil sample; all SVOC detections in the remaining soil samples were at concentrations below both the USCOs and RRSCOs. A review of the analytical results indicates that a number of target analyte list (TAL) metals were detected in all 22 soil samples analyzed. Nine metals exceeded their respective USCOs, with four metals exceeding their RRSCOs. Up to four pesticides were detected in four of the 22 soil samples: dieldrin exceeded the USCO in one sample, P,P'-DDT exceeded its USCO in three samples, P,P'-DDD exceeded its USCO in three samples, and P,P'-DDE exceeded its USCO in one sample. No pesticides exceeded their respective RRSCOs in any samples. There were no detections of PCBs, with the exception of one sample, which was detected at a concentration below the USCO and RRSCO for PCBs.
- The results of the groundwater sampling showed one VOC detected at a concentration exceeding the Class GA Ambient Water Quality Standards (AWQS) at one location; no other VOCs were detected at concentrations exceeding AWQS. Seven SVOCs were detected at concentrations above their respective AWQS in one or more groundwater sample. The metals manganese and sodium were also detected above the AWQS in all three dissolved samples, and magnesium was detected above the AWQS in one dissolved sample; these metals are indicative of groundwater quality in Manhattan. No PCBs or pesticides were detected in the groundwater samples.
- The results of the soil vapor sampling showed that up to 27 VOCs were detected in the eight samples; however, no VOCs were detected above the (indoor) air guideline values (AGVs) established by the New York State Department of Health (NYSDOH). PCE was detected in six of the eight soil vapor samples at levels below the AGV. Trichloroethene (TCE) was not detected in any of the soil vapor samples. VOCs associated with petroleum were detected. Other solvent-related VOCs detected. Low level VOC concentrations were also noted in the ambient air sample.
- The investigation findings identified the presence of petroleum contamination in both the western and eastern portions of the Development Site, likely attributed to former on-site uses. Stained soil and high photoionization detector (PID) readings were observed, the NYSDEC was notified, and Spill Numbers 1603624 and 603667 were provided for Lot 5 and Lot 26, respectively. While elevated PID readings were observed at Lot 13, no other evidence of petroleum contamination (such as staining, odors, or elevated VOC and SVOC analytical results) was observed at this location.

² USCO and RRSCO as defined by 6NYCRR Part 375.

Recommendations

Based on an evaluation of the data and information from the ESI, AKRF recommended that, prior to any soil disturbance or change in land use, including redevelopment of the Development Site, additional investigation and/or remedial activities be conducted. Specifically, the Phase II ESI recommended that spill investigation and/or remediation plans be developed and implemented under the oversight of NYSDEC for Spill Numbers 1603624 and 603667. In addition to any spill remediation required by NYSDEC, the Phase II ESI recommended that a RAP be prepared in conjunction with any future development on the Development Site to address any residual petroleum contamination, soil excavation and stockpiling, soil disposal and transportation; groundwater handling/treatment; dust control; and contingency measures, should petroleum storage tanks or other contamination be unexpectedly encountered. The Phase II ESI also recommended that the plan include measures for worker and community health and safety monitoring/protection during remedial activities requiring ground disturbance, including personal protective equipment, dust control, air monitoring, and emergency response procedures.

Asbestos, Lead Paint, and PCB Caulk Survey Report

As outlined in the *CEQR Technical Manual*, it is common for building structures to contain hazardous materials, either introduced as components of construction materials or discharged as a result of poor operational practices on the part of an industrial occupant. The Phase I ESA identified the potential presence of ACM and LBP present in the existing Development Sites building materials. Asbestos is commonly found in insulation/fireproofing products, roofing materials, floor tiles, vinyl flooring, gaskets, mastics, caulks, plaster, joint compound, ceiling tiles, and a range of other building materials. LBP, while generally not allowed to be applied in residential buildings in New York City after 1960 and further restricted for indoor use after 1977, may still be used outdoors.

To confirm the presence of ACM and LBP in the Development Site buildings, an asbestos, lead paint, and PCB caulk survey report was prepared by AKRF in March 2017. The survey was limited in scope as the existing Development Site buildings are still in use, and is a first step survey, with additional surveys conducted once the buildings are vacated. The scope of work of the survey included: (1) inspection of the Development Site to identify suspect ACM, lead-containing paint (LCB), and PCB caulk; (2) collection of limited representative samples of suspect ACM, LCB, and PCB caulk; (3) documentation of sampling locations; and (4) analysis of samples at a NYSDOH-approved laboratory. Based upon laboratory analysis of suspect ACMs, floor tiles and associated mastics, ceramic tile grout, window caulk, and pipe and pipe elbow insulations were determined to be ACM. Transit_u electrical panels and elevator brake pads were not tested, but were determined to be Presumed ACM (PACM). Lead was also detected in 38 of 45 paint_u chip samples, with all paint throughout the Development Site buildings considered LCP. PCB caulk samples were all non-detect for total PCBs. As noted above, as the existing Development Site buildings are in use, additional surveys will be conducted once the buildings are vacated (prior to site development).

Recommendations

The survey report indicated that all ACM must be removed by a licensed asbestos abatement contractor prior to any disturbance, unless tested and found to be non-ACM, and that additional destructive testing must be completed prior to renovation or demolition. Renovation and demolition activities with the potential to disturb LBP and LCP must also be performed in accordance with the applicable Occupational Safety and Health Administration (OSHA) regulations.

E. THE FUTURE WITHOUT THE PROPOSED PROJECT (NO-ACTION CONDITION)

In the 2025 No-Action condition, the Development Site would continue to be occupied by three off-street public parking garages and a transitional shelter for older adults. As there are two spill numbers associated with the Development Site (Spill Numbers 1603624 and 603667), these spills would need to be remediated by the property owner in the No-Action condition, under the oversight of the NYSDEC. Specifically, in the No-Action condition, the extent of contamination would be further investigated and a RAP would be developed and approved by the NYSDEC. While the scope of the RAP would be dependent on review and approval of the NYSDEC, the remediation would likely involve the removal of associated tanks and contaminated fill; all spill remediation work would be completed without demolition of the existing Development Site buildings. As the buildings would not be demolished, the existing ACM and LBP present in the buildings would remain.

F. THE FUTURE WITH THE PROPOSED PROJECT (WITH-ACTION CONDITION)

In the 2025 With-Action condition, the proposed discretionary actions would be approved, facilitating redevelopment of the Development Site. The existing Development Site buildings (three garages and one shelter) would be demolished, and two new buildings would be constructed containing a combined total of approximately ~~28177~~ affordable units (including family and supportive senior housing units), approximately 110 transitional shelter beds for older adults, and an additional approximately 6,400 gsf of community facility uses.

~~Similar to many sites in urban areas that contain soil and/or groundwater that are known to be contaminated, t~~The Phase II ESI confirmed the presence of hazardous materials on the Development Site in a degree that is not dissimilar to many other urban sites. In addition, and as is common for building structures built at the time of the existing Development Site buildings, the limited asbestos, lead paint, and PCB caulk survey report identified the presence of ACM and LBP in the existing Development Sites building materials. As hazardous materials were identified at the Development Site, remedial measures are required to adequately address the contamination and to avoid potential significant adverse impacts on future site users, as well as on sensitive receptors in the vicinity of the site (including nearby schools, residential buildings, and open space users).

The ~~Proposed P~~project sponsor ~~intends to formally enroll~~was accepted into the NYCVC (18CVCP017M) to fully address the ~~t~~resting and remediation requirements at the site. The NYCVC is a voluntary environmental remediation program administered by OER and has requirements for the methods of remediation, including a CHASP, to address safety during the remediation process. The program was established to ensure that any property in New York City with light to moderate levels of contamination can be cleaned up to New York State standards with government support to protect public health and the environment and be redeveloped in a timely manner.

The NYCVC process typically begins with a pre-application meeting with OER, which typically includes a discussion of the development plan, the project schedule, available information on the site history and environmental data, and a scoping session to define the elements of any required environmental field investigation. A Phase II or subsurface/remedial investigation work plan that describes the proposed scope of work is prepared and approved by OER. After the subsurface/remedial investigation is conducted, an RIR is prepared and submitted to OER for review and approval. The basic goals of the RIR include identifying all potential sources of contamination based on investigation of past uses; defining the nature and extent of contamination in all media, both laterally and vertically; performing a human health

exposure assessment; assessing contaminant fate and transport, including the existing and potential impacts on groundwater, soil, and soil vapor; and producing data of sufficient quantity and quality to support the development of a RAP, if required. Once OER approves the RIR, a RAP scoping session is held, during which the field data and proposed building design and property use are assessed, and a conceptual cleanup plan is established for the project. This conceptual cleanup plan is the foundation of the RAP. A pre-application meeting and remedial plan scoping session for the Proposed Project was held with OER in November 2016.

Once a volunteer decides to enroll in the VCP, a NYCVCP application and NYCVCP agreement are prepared and submitted to OER along with the RAP. The RAP describes the remedial actions that are necessary to render a site protective of public health and the environment for the intended use. The RAP includes a remedial alternatives analysis that provides a basis for selecting the proposed remedial action and explains why the remedial action is protective of public health and the environment for the intended use. The RAP also includes a proposed remedial work schedule, a health and safety plan, a description of all engineering and institutional controls³, and an explanation of site management requirements that make sure that any remaining contamination does not pose any exposure risk in the future. The RAP also includes a Community Protection Statement that summarizes community protections to be implemented during the remedial process, summarizing such issues as the community air monitoring plan, all odor, dust, and noise control measures, hours of operation, and other good housekeeping practices that will be implemented at the NYCVCP site. The RAP is subject to a 30-day public comment period that begins shortly after submission of the plan to OER.

The project sponsor submitted the ~~d~~Draft RAP to OER in October 2017, which was subsequently posted for public comment. Public comments on the RAP were accepted through November 8, 2017, and the RAP was approved by OER on January 31, 2018. The ~~draft~~ RAP (included in Appendix II) is intended to make the Development Site protective of human health and the environment, consistent with the contemplated end use. The ~~draft~~ RAP (~~currently under OER review~~) includes the following remedial action objectives (RAOs) established for the Proposed Project: (1) prevent direct contact with contaminated soil; (2) prevent exposure to contaminants volatilizing from contaminated soil; (3) prevent migration of contaminants that would result in groundwater contamination; (4) remove contaminated sources causing impact to groundwater; (5) prevent direct exposure to contaminated groundwater; (6) prevent exposure to contaminants volatilizing from contaminated groundwater; (7) prevent exposure to contaminants in soil vapor; and (8) prevent migration of soil vapor into welling and other occupied structures. The proposed remedy will achieve all of the above-listed RAOs. As outlined in the ~~draft~~ RAP, the proposed remedial action would include the following:

- A supplemental subsurface investigation will be conducted upon demolition of all Development Site buildings to delineate petroleum contamination associated with NYSDEC Spill Numbers 1603624 and 1603667. A Supplemental Phase II Environmental Site Investigation Work Plan (approved by NYSDEC and OER) is provided as Appendix B of the RAP.
- Site mobilization, including Development Site security setup, equipment mobilization, utility mark-outs, and marking and staking excavation areas.

³ Engineering and institutional controls are physical and non-physical controls commonly used to enable long-term management of residual contamination at remedial sites after completions of the approved remedial actions; not all cleanups leave residuals behind.

- Implementation of stormwater pollution prevention measures, in compliance with applicable laws and regulations.
- Establishment of Site-Specific Soil Cleanup Objectives (SSSCOs) for contaminants of concern.
- 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).
- Performance of a Community Air Monitoring Program (CAMP) for particulates and VOCs.
- Preparation of a Community Protection Statement and performance of all required NYCVCPC Citizen Participation activities according to an approved Citizen Participation Plan.
- Excavation and off-site disposal of soil/fill exceeding the SSSCOs. Portions of the Development Site will be excavated from grade to bedrock (varies from approximately two to eight feet below grade). The total quantity of soil/fill expected to be excavated and disposed off-site is approximately 4,500 cubic yards (6,750 tons).
- Screening of excavated soil/fill during intrusive work for indicators of contamination by visual means, odor, and monitoring with a PID.
- 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
- Removal of USTs and closure of petroleum spills in compliance with applicable local, State, and Federal laws and regulations.
- ~~Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.~~
- Performance of a remedial action for the petroleum Spill Numbers 1603624 and 1603667 under the NYSDEC Spill program-. A separate RAP addendum may be required by NYSDEC.
- Transportation and off-site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and the RAP. Sampling and analysis of excavated media, as required by disposal facilities. Appropriate segregation of excavated media on-site.
- Collection and analysis of 11 end-point samples to determine the performance of the remedy with respect to attainment of SCOs. End point samples for tank removal and spill remediation will be conducted per NYSDEC guidance contained in DER-10.
- Construction and maintenance of an engineered composite cover at each building, consisting of six inches of concrete building foundation slabs/walls and a two-foot clean soil cap in any landscaped areas to prevent human exposure to residual soil/fill remaining under the Development Site.
- Installation of a vapor barrier system beneath the buildings' slab and along foundation sidewalls to prevent soil vapor migration into the building. The vapor barrier system will consist of the Stego Wrap® 20-mil vapor barrier or an OER-approved equivalent. 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.
- Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

- Submission of an approved 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.
- Recording of a Declaration of Covenants and Restrictions that includes a listing of Engineering Controls and Institutional Controls 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.
- Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, describes all Engineering Controls and Institutional Controls (ECs/ICs) to be implemented at the Development Sites, and lists all deviations from the RAP.

All remedial and mitigation measures would be performed in accordance with applicable laws and regulations and the site-specific ~~construction health and safety plan (CHASP)~~. The CHASP includes work zone air monitoring and community air monitoring to protect both workers on-site and the community at large. As part of the community air monitoring plan, continuous air monitoring will be conducted at the upwind and downwind perimeter of the exclusion zone and, regardless of wind conditions, on West 108th Street across from Booker T. Washington Middle School. As noted above, the RAP ~~is currently under review~~ is reviewed and approved by OER ~~and the specific components of the RAP may change prior to approval on January 31, 2018.~~

Required remediation pursuant to the OER-reviewed and –approved RAP would be enforced through the LDA between HPD and the project sponsor. Additional sampling will also be required as part of the RAP. As noted above, the NYCVPC is a voluntary program. Should the project sponsor elect to withdraw from the NYCVPC prior to the conveyance of the Development Site by the City, allocation of City funding and start of any demolition or construction activity, DEP would assume the lead role in approving the final remedy developed for the site, in coordination with OER and HPD. Under either scenario, the LDA would serve as the mechanism to ensure the approved site remedy is implemented. Upon completion of the remedial action, the applicant will submit an RAR to OER, which includes documentation showing that the remedial actions have been achieved and a description of engineering and institutional controls, as applicable. If engineering and institutional controls are included as part of the site cleanup plan (i.e., if residual contamination remains at the Development Site), the RAR would include an SMP, which would provide for periodic inspection of the engineering and institutional controls to ensure that the remedy remains protective for the long-term.

In the existing Development Sites building structures, the limited asbestos, lead paint, and PCB caulk survey report identified the presence of ACM and LBP. Once the existing Development Site buildings are vacated, a full survey will be conducted. The project sponsor will then prepare asbestos abatement specifications for inclusion in the bid package/contract documents, which will present the necessary work practices for removing asbestos, consistent with applicable local, state, and federal regulations. The bid package/contract documents will also include general lead specification section with lead-safe work practices, a PCB caulk section, and a hazardous materials scope of work. The asbestos abatement specifications will be prepared by a New York State Department of Labor-licensed (NYSDOL-licensed) asbestos project designer, and the asbestos would be removed by a NYSDOL-licensed abatement contractor prior to building demolition. Asbestos abatement is strictly regulated by DEP, the NYSDOL, the United States Environmental Protection Agency (EPA), and OSHA to protect the health and safety of construction workers and nearby residents and workers. DEP, the NYSDOL, and EPA (depending on the extent of asbestos that is ultimately present) would be notified of the asbestos removal project and DEP

may inspect the abatement site to ensure that work is being performed in accordance with applicable regulations. At the same time that the ACMs are being abated, removal of other materials that could be hazardous could take place; disposal of waste with lead paint is regulated by the NYSDEC under Chapter IV Subchapter B – Solid Wastes.

With adherence to the remedial requirements of OER's NYCVCP (which may also be enforced by DEP, should the project sponsor elect to withdraw from the OER program), to be required of the project sponsor in accordance with the LDA, in addition to the ACM and LBP regulatory requirements mandated by local, state, and federal law, no significant adverse hazardous materials impacts would occur during construction of, or upon completion of, the Proposed Project. The remediation of the existing structures and underground contamination would leave the Development Site cleaner and safer than in its current state.