April 2024

NYS Brownfield Cleanup Program

Remedial Action Work Plan

Ridgeway Phase VI Site
23 Bishop W.J. Walls Place
City of Yonkers
Westchester County, New York
BCP Site No. C360231

Prepared for:

CPG PHASE VI LIMITED PARTNERSHIP
8 West 38th Street, Suite 1102
New York, New York 10018

Prepared by:

C.T. MALE ASSOCIATES
ENGINEERING, SURVEYING, ARCHITECTURE,
LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C.
12 Raymond Avenue
Poughkeepsie, New York 12603
(845) 454-4400

C.T. Male Associates Project No: 22.2208

CERTIFICATIONS
Ridgeway Phase VI Site (BCP Site No. C360231)
23 Bishop W.J. Walls Place
City of Yonkers, Westchester County

I, Rosaura Andújar-McNeil, P.E., certify that I am a New York State (NYS) registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) dated May 3, 2010.

097844	**8/12/2024**	
NYS Professional Engineer #	Date	Signature

REMEDIAL ACTION WORK PLAN
RIDGEWAY PHASE VI SITE
CITY OF YONKERS, WESTCHESTER COUNTY

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1.0 INTRODUCTION & PURPOSE

1.1 Introduction

On behalf of CPG Phase VI Limited Partnership, C.T. Male Associates Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C. (C.T. Male) has prepared this Remedial Action Work Plan (RAWP) pursuant to the New York State Department of Environmental Conservation (DEC) Brownfield Cleanup Program (BCP). This RAWP pertains to the property known as the Ridgeway Phase VI Site (Site No. C360231) located at 23 Bishop W.J. Walls Place in the City of Yonkers, Westchester County, New York (herein the "Site"). A Site Location Map is presented as Figure 1.

CPG Phase VI Limited Partnership entered into a Brownfield Cleanup Agreement (BCA) with the DEC in December 2022 (BCA Index No.: C360231-10-22), to complete the necessary investigations for delineating the nature and extent of contaminants of concern (COCs) and remediating the Site to Unrestricted Use as defined in 6 NYCRR Part 375. CPG Phase VI Limited Partnership is a Volunteer in the BCP. When redevelopment is completed, the Site will contain multi-family residential housing with landscaped and hardscape areas. A Site Plan of the proposed development is presented as Exhibit 1.

1.2 Purpose and Goal

The purpose of the RAWP is to provide a conceptual plan for the selected remedy for the Site. The remedial action (generally excavate and properly dispose) is considered to be a presumptive remedy, as defined at DER-10-1.3(b)46 and 6 NYCRR Part 375-1.2(ai).

The goal of this RAWP is to provide guidance to CPG Phase VI Limited Partnership's design and construction team to supplement the project's technical specifications, and bidding and construction documents. The remedial action plan requirements will be incorporated into the overall Site redevelopment project, as necessary, to comply with the BCP. It is the responsibility of the Volunteer to provide this RAWP to the general contractor in order to coordinate and integrate remedial and Site redevelopment activities and ensure adherence by the contractor to this RAWP. Prior to the start of Site redevelopment activities, the Contractor shall indicate in writing their receipt and review of the RAWP.

The proposed cleanup track for the Site is Track 1 for Unrestricted Use. In the event that Track 1 cleanup cannot be achieved, a Track 2 cleanup, which allows for short term institutional and engineering controls for soil and long term institutional and engineering controls for other media will be pursued.

1.3 Nature and Extent of Contamination

The nature and extent of Site contaminants was characterized through the completion of a DEC-approved Remedial Investigation (RI) of the Site conducted in June and July 2023. A RI Report was submitted to NYSDEC in November 2023 and it is currently under review.

The RI analytical data is supplemented with data obtained from Phase II Environmental Site Assessment (ESA) investigations conducted on the Site in 2015 and 2022, and Geotechnical Evaluations conducted on the Site in 2022 and 2023 completed by C.T. Male, as well as analytical data of fill/soil samples from confirmatory post-excavation sidewall samples collected along the Site's western property boundary as part of the remedial action of the Cottage Place Gardens (CPG) Phase 3A BCP Parcel (C360150) and the CPG Phase 5 BCP Parcel (C360161). The aforementioned sidewall samples are representative of fill material along the Site's western boundary.

The following sections summarizes the COCs encountered in the Site's media and potential source areas for the COCs.

1.3.1 Contaminants of Concern in Fill Material Mantling the Site

Analytical results of fill material samples collected within the Site identified one (1) volatile organic compound (VOC), seven (7) semi-volatile organic compounds (SVOCs), one (1) pesticide, and eight (8) metals at concentrations exceeding Soil Cleanup Objectives (SCOs) for Unrestricted Use Sites promulgated at 6 NYCRR Part 375.

The highest frequency of detections were for the SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene and indeno(1,2,3-cd)pyrene which were predominantly detected in northern and southern portions of the Site; and the metals lead, mercury and zinc which were detected across the Site. The sampling locations and concentration ranges for the COCs in fill material are depicted on Figure 2: Analytes in Subsurface Fill Material Exceeding SCGs.

Elevated PID readings (maximum photoionization detector [PID] reading in fill material of 6.9 parts per million [ppm]) and petroleum-type odors were encountered in fill material (and underlying native soil) at soil boring RI-SB-06 located in the southwestern portion of the Site, which is also in the footprint of a former commercial garage identified on a 1917 Sanborn Map (see Figure 2). No other field evidence of contamination was documented in fill material in remaining portions of the Site.

From a Remedial Action standpoint, fill material mantling the Site will be remediated via excavation and off-site disposal. See Sections 1.4.2 and 2.4 of this RAWP.

1.3.2 Contaminants of Concern in Native Soil Underlying the Fill Material

Analytical results of native soil samples collected identified one (1) metal (chromium, hexavalent and trivalent) at concentrations exceeding SCOs for Unrestricted Use Sites promulgated at 6 NYCRR Part 375. Chromium was confined to depths that ranged from five (5) to seven (7) feet bgs and 12.5 to 13.5 feet bgs in native soils. The concentrations of hexavalent and trivalent chromium only slightly exceeded Unrestricted Use SCOs, and did not exceed SCOs for Restricted-Residential Use Sites. The sampling locations and concentration ranges for the COCs in native soils are depicted on Figure 3: Analytes in Subsurface Native Soil Exceeding SCGs.

Elevated PID readings (maximum PID reading in native soils of 22.5 ppm) and petroleum-type odors were encountered in subsurface native soil at soil boring RI-SB-06 located in the southwestern portion of the Site in the footprint of a former commercial garage identified on a 1917 Sanborn Map (see Figure 2). No VOCs or SVOCs exceeding SCOs were documented in the native soils at this location from samples collected for laboratory analyses. Several low-level detections of Tentatively Identified Compounds (TICs) for VOCs and SVOCs were documented in the analytical data at this location. TICs detections are likely indicative of the presence of weathered petroleum product. No other field evidence of contamination was documented in native soil in remaining portions of the Site.

From a Remedial Action standpoint, isolated pockets of subsurface native soil may warrant remediation via excavation and off-site disposal to address documented impacts. See Sections 1.4.2 and 2.4 of this RAWP.

1.3.3 Contaminants of Concern in Groundwater

Analytical results of the groundwater sample collected identified one (1) VOC (benzene), two (2) metals (iron and sodium), and the Per- and Polyfluoroalkyl Substances (PFAS), Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) at concentrations exceeding regulatory criteria. The sampling location and concentration ranges for the COCs in groundwater are depicted on Figure 4: Analytes in Groundwater Exceeding SCGs.

Groundwater, either perched or otherwise, was not encountered within the depths explored at shallow boring locations completed during the RI or previous investigations. Groundwater occurrence is minimal within the upper, higher ground elevation eastern portions of the overall CPG complex (inclusive of CPG Phases 3, 4 and 5). Groundwater occurrence in the deep monitoring well (RI-MW-01) installed during the RI was identified in the lowest section of the boring, immediately above bedrock and below approximately 50 feet of dense glacial till which likely serves as an aquitard. The groundwater below the glacial till is therefore confined and under pressure. The hydro-stratigraphic pressure is likely developed in areas east of the Site that are at higher elevation and where groundwater recharge is occurring where higher permeable deposits and/ or bedrock is exposed at ground surface.

Furthermore, the Site and vicinity are provided with public water from the City of Yonkers. See Section 1.4.4. for additional information on groundwater use restrictions within the City of Yonkers and the City of Yonkers potable water source. Groundwater will not likely be encountered during Site redevelopment activities as Site development and remediation activities are not anticipated to extend beyond 15-feet bgs.

Based on the recorded depth of groundwater, existing groundwater conditions, absence of on-site activities with the potential to be a source for this type of contamination, and the general urban setting of the Site, the COC (benzene) in groundwater is likely to have originated off-site. Iron is naturally occurring, and sodium is likely related to application of road salt in the vicinity of the recharge areas. No groundwater remediation is proposed as part of the Remedial Action.

1.3.4 Contaminants of Concern in Soil Vapor

Analytical results of soil vapor samples collected identified two (2) organic compounds (trichloroethene and tetrachloroethene) exceeding SCGs in subsurface soil vapor. Trichloroethene was detected above its SCG (lowest sub-slab vapor concentration in Soil Vapor/Indoor Air Matrix) at one sampling location approximately 1.5-feet below the bottom of the concrete slab of the proposed building. No other exceedances of Trichloroethene were detected in the proposed building footprint. Tetrachloroethene was not detected above its SCG within the proposed building footprint. The sampling locations and concentration ranges for the COCs in soil vapor are depicted on Figure 5: Analytes in Soil Vapor Exceeding SCGs.

It is important to note that as per the NYS Department of Health (DOH) Soil Vapor Intrusion (SVI) Guidance, "matrices are intended to be used when evaluating the results from buildings with full slab foundations." Soil vapor samples collected throughout the Site were not collected beneath existing buildings. Therefore, the data evaluation process presented herein and in the RIR is limited and the use of the Soil Vapor/Indoor Air Matrices is preliminary and provided only for comparison purposes. Furthermore, the exceedance of the lowest sub-slab vapor concentration of compounds in Soil Vapor/Indoor Air Matrices, in the absence of indoor air data, is not prescriptive of a given response action.

The source for the levels of Tetrachloroethene and Trichloroethene detected is unknown. Levels of Trichloroethene in the southern portion of the Site could be associated with the former commercial garage and/or fill material in this area. The Remedial Action proposes the removal of fill material throughout the Site, potentially removing the source of soil vapor impacts. However, no chlorinated solvents were detected in fill material, native soils or groundwater samples collected during the RI or previous investigations. Levels of Tetrachloroethene and Trichloroethene detected are not indicative of an on-site source and could be associated with the general nature of the Site in an urban setting.

Based on the information presented herein and in the RIR, the potential soil vapor contamination identified may have originated off-site and/or will be addressed by the excavation and removal of fill material throughout the Site.

A SVI evaluation will be completed prior to the submission of the Final Engineering Report (FER). The SVI evaluation will include an assessment of pre- and post-

remediation soil data, pre-remediation groundwater data, evaluation of the effectiveness of the remedial action relative to SVI, and evaluation of the on-site building relative to SVI. A soil vapor intrusion evaluation will be completed at the Site which will include the collection of sub-slab soil vapor and indoor/outdoor air quality samples. The results will be evaluated in consultation with NYSDEC/NYSDOH to determine if mitigation efforts are required. No active vapor intrusion mitigation measures are anticipated at the Site pending on the remedial action achieving the Remedial Action Objectives (RAOs) for soil vapor.

1.3.5 Interim Remedial Measures

No interim remedial measures have been conducted at the Site.

1.3.6 Potential Sources for Contaminants of Concern

The primary source of Site COCs is the uncontrolled fill material that mantles the Site. VOCs, SVOCs, pesticides (one exceedance) and metals are present in fill material at concentrations exceeding Unrestricted Use SCOs.

A secondary source of Site COCs is the presence of a former commercial garage identified in the southwestern portion of the Site in the 1917 historic Sanborn map. Petroleum-type impacts were encountered in media samples collected in this area. No additional information is available regarding this former commercial garage.

1.3.7 Remedial Action Objectives

Based on the findings and results of the RI, RAOs have been identified for the Site as presented in the following table.

Affected Media	Remedial Action Objectives
Fill/Soil	<u>RAOs for Public Health Protection</u> • Prevent ingestion and direct contact with contaminated fill/soil. • Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated fill/soil.

Affected Media	Remedial Action Objectives
	RAOs for Environmental Protection • Prevent migration of contaminants that would result in groundwater contamination.
Groundwater	RAOs for Public Health Protection • Not Applicable. RAOs for Environmental Protection • Not Applicable.
Soil Vapor	RAOs for Public Health • Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the Site.
Surface Water	Not Applicable
Sediment	Not Applicable

1.4 Remedial Action Approach

The remedial action for the Site is generalized as decommissioning of monitoring wells; fill/soil excavation and off-site disposal, and backfilling with NYSDEC-approved imported fill materials.

No groundwater remediation is proposed as part of the Remedial Action. For informational purposes, the following bullets provide information regarding groundwater use restrictions within the City of Yonkers, and the City of Yonkers potable water source.

- The Site and surrounding community are provided with public water that is furnished by the City of Yonkers. Per Section 57-26 A: Water for Drinking or

Domestic Purposes of Part VI: Fire and Buildings of Article VII: Water Supply of the Code of the City of Yonkers, "All water supply used for drinking purposes or domestic purposes, except bottled water, shall be provided by the public water supply of the City of Yonkers, New York."

- Private potable and/or domestic water wells are not permitted within the City of Yonkers. Per Section 57-26 C: Water for Drinking or Domestic Purposes of Part VI: Fire and Buildings of Article VII: Water Supply of the Code of the City of Yonkers, "Wells are not permitted for drinking or domestic use and may not be physically connected in any way to the public water supply system of the City of Yonkers."
- The City of Yonkers obtains its drinking water from the New York City Water Supply System. Most of this water originates from two (2) protected watershed areas, the Catskill and Delaware, located west of the Hudson River in upstate New York.

A SVI evaluation will be completed prior to the submission of the FER. The SVI evaluation will include an assessment of pre- and post-remediation soil data, pre-remediation groundwater data, evaluation of the effectiveness of the remedial action relative to SVI, and evaluation of the on-site building relative to SVI. A soil vapor intrusion evaluation will be completed at the Site which will include the collection of sub-slab soil vapor and indoor/outdoor air quality samples. The results will be evaluated in consultation with NYSDEC/NYSDOH to determine if mitigation efforts are required. No active vapor intrusion mitigation measures are anticipated at the Site pending on the remedial action achieving the RAOs for soil vapor.

Support of excavation (i.e., sheeting/shoring) or alternative excavation methods (i.e., "hopscotch" excavation) along the northern and eastern property boundaries of the Site will likely be warranted to effectively remove the impacted fill/soil without compromising the structural integrity of an existing retaining wall within these areas.

1.4.1 Decommissioning of Monitoring Wells

Existing monitoring wells within the Site will be decommissioned in accordance with DEC Policy CP-43: Groundwater Monitoring Well Decommissioning Policy, dated November 3, 2009. The monitoring wells that will be decommissioned are depicted on

Figure 4 as MW-I, MW-J, MW2022-01, MW2022-02, MW2022-03, and RI-MW-01. Monitoring wells to be decommissioned will be tremi-grouted from the bottom of the monitoring well to the anticipated bottom of the remedial excavation. See Monitoring Well Construction Logs in Appendix C.

Alternatively, decommissioning will not be warranted for monitoring wells where the depth of the remedial and/or redevelopment excavations meet or exceed the bottom depths of the wells as the wells will be completely removed as a result of the excavations. Wells where well decommissioning will not be warranted will be identified prior to the beginning of the Remedial Action based on the excavation depths warranted for remediation and/or Site development purposes.

1.4.2 Remediation of Impacted Fill/Soil

The following general procedures will be followed for the remediation of impacted fill/soil mantling the Site.

-Excavation and off-site disposal of fill/soil mixtures mantling the Site from the ground surface to depths ranging to approximately two (2) to 9 feet bgs, with areas of deeper excavation (up to an estimated maximum of 14 feet bgs) likely to occur in the southwestern portion of the Site (area of the former commercial garage) based on field evidence of contamination and COCs (chromium) in native soil he Site is underlain by uncontrolled fill material that ranges in depth from the ground surface to approximately 1.5 feet to 8.5 feet in depth. The approximate depths of fill material are depicted on Figure 6: Approximate Depths of Fill Material. The remedial excavations may also include the additional excavation of native soils that do not meet SCOs for Unrestricted Use Sites based on laboratory analytical results of confirmatory post-excavation sampling. The generalized excavation depths across the Site are depicted on Figure 7: Remedial Action Implementation Plan and Details.

-The remedial excavation will extend horizontally to the Site boundaries or to the extent feasible without compromising the integrity of retaining walls, roadways and/or structures on adjacent properties and/or as limited by access restrictions from adjacent property owners. In the event of not being able to extend excavations to the property boundaries, the limits of the BCA will be adjusted accordingly via a BCA amendment.

-The vertical depths that COCs were encountered at each of the boring locations completed during the RI and previous investigations of the Site are depicted on Figures 2 and 3.

It should be noted that the COCs identified as part of the RI are intended to provide a general description of the COCs at the Site. The concentration ranges of COCs identified at the sampling locations may not be representative of COCs throughout the Site's media. Furthermore, both different types and different concentration ranges of COCs may be encountered during characterization of the Site's media for disposal facility purposes.

-Any concrete from existing building remains in contact with fill/soil requiring remediation will either be broken up and disposed of with the impacted fill/soil and/or the impacted fill/soil will be removed from the concrete and the concrete disposed of as a separate construction and demolition (C&D) waste stream. The disposal locations for both waste streams is required to the submitted to the certifying Remediation Engineer and DEC Project Manager for approval prior to removal from the Site.

-Other appurtenances that may be in contact with contaminated Site fill/soil include, but are not limited to, asphalt access-ways and parking lots; concrete walkways, stairways, retaining walls, bollards and curbing; subsurface portions of handrails, light posts and signage, and underground utilities. These appurtenances, and any other appurtenances encountered within the remedial excavation, may be disposed of as a separate C&D waste stream provided that any fill/soil adhering to the appurtenances are removed prior to the appurtenances leaving the Site for off-site disposal. The disposal location will be required to the submitted to the certifying Remediation Engineer and DEC Project Manager for approval prior to removal from the Site.

-Grossly impacted fill/soil, if any, (as defined at DER-10, Section 1.3, Item 23) encountered in the excavation floor at the depth limits of the excavations will be further excavated and staged on-site pending waste characterization and subsequent off-site disposal. The extent of the grossly impacted fill/soil will be subjectively assessed by the Remediation Engineer's field representative using PID headspace analysis and organoleptic (sight and smell) perception. Confirmatory post-excavation end-point samples will be collected for laboratory analysis to confirm removal of the material to the prescribed cleanup levels.

1.4.3 Contingency Procedures - Groundwater Evacuation and Treatment

Groundwater was measured at a depth of approximately 23.55 feet bgs in RI monitoring well RI-MW-01 on July 26, 2023. The anticipated depth of excavation for remediation purposes is anticipated to range from the ground surface to approximately two (2) to nine (9) feet bgs, with areas of deeper excavation (up to an estimated maximum depth of 14 feet bgs) likely to occur in the southwestern portion of the Site. Based on this information, groundwater will likely not be encountered during excavation of impacted fill/soil. No groundwater remediation is proposed as part of the Remedial Action.

As a contingency, the following general procedures will be followed for groundwater evacuation and treatment during the remedial action.

-Groundwater entering the excavations during fill/soil remediation will be evacuated and transferred into a temporary holding tank/containers to the extent necessary to remove impacted fill/soils. If limited in volume, the groundwater may be evacuated from the excavations as necessary via a vacuum (Vac) truck and transported for off-site disposal at a permitted treatment, storage and disposal facility (TSDF). The disposal location will be required to be approved by the certifying Remediation Engineer and DEC Project Manager prior to removal from the Site.

-On-site groundwater treatment will be implemented when one (1) or a combination of the following conditions are observed: a petroleum film/sheen is observed on the groundwater surface; petroleum odors are noted in the groundwater; groundwater comes into contact with petroleum contaminated soil; and/or testing for approval to discharge groundwater to the municipal storm/sewer system shows contaminants above applicable discharge limits.

-Treated groundwater will be discharged to the closest connection to the municipality's sanitary/storm water sewer collection system. Prior to discharge, the remediation contractor will be responsible for obtaining a wastewater discharge permit from the Westchester County Department of Environmental Facilities (DEF). Pre- and post-treatment sampling will be performed of the water treatment system prior to discharging to the sewer to confirm that the discharge meets the limits established by the Westchester County DEF. Subsequent sampling and analysis of the treatment system will be performed at sampling frequencies required by the Westchester County DEF. The

Remediation Engineer and DEC Project Manager will be provided with the dewatering and treatment system design and plan prior to its implementation.

1.4.4 Contingency Procedures - Closure of Bulk Storage Tanks

No bulk storage tanks have been identified at the Site. The following general procedures will be followed for closure by removal of unknown tank(s) that may be encountered during the remedial action.

-Notify NYSDEC of closure activities through the use of a "Pre-Work Notification for Bulk Storage (PBS or CBS) Tank Installation or Closure" form.

-Notify the Westchester County Department of Health of the tank closures.

-The tank closure contractor will need to obtain a Minor Alteration permit from the City of Yonkers Department of Housing and Buildings prior to the tank closures.

-Closure of the tanks and associated appurtenances (product, fill and vent piping, underground electric, concrete pump island, etc.) will conform to applicable sections of DER-10, NYSDEC Petroleum Bulk Storage regulations 6 NYCRR Part 613-2.6, Out-of-service UST Systems and Closure, and the City of Yonkers Department of Housing and Buildings.

-Any soil, fill, concrete and/or asphalt overlying and/or surrounding the tanks will be removed to allow access to the tanks. The contents of the tanks will be removed and transported to a permitted TSDF. If in small quantities, the liquids and tank bottoms may be temporarily stored in labeled DOT approved 55-gallon drums for disposal at a permitted TSDF. Oil soaked rags, clothing and polyethylene (i.e., PPE) will also be placed in a labeled DOT approved 55-gallon drum for off-site disposal at a permitted TSDF.

-The tanks will be accessed either through tank man-ways (if present) or a hole will be cut in the tank to allow access for removal of the tank contents and cleaning while the tanks remains in-place. Polyethylene will be placed on the ground adjacent to the tank openings to mitigate contamination of the ground surface when cleaning the tank interiors. Prior to opening, cutting or entering the tanks for cleaning, the tank removal contractor will assess and document the atmospheric conditions within the tanks. The

tank removal contractor will follow confined space entry procedures in accordance with 29 CFR Part 1910.146 for tank cleaning by appropriately trained personnel.

-The tanks will be cleaned and purged of any vapors in accordance with all applicable regulations in addition to 29 CFR Part 1910.146. The tanks will be rendered unusable on-site by cutting a hole in the end of the tank after removal from the ground and/or vault, if not already done so for access. The tank, distribution and vent piping, and associated equipment will be properly disposed of off-site at a steel recycling facility. Records of metal disposal/recycling will be provided to the Remediation Engineer.

-Fill/soil samples will be collected for laboratory analyses after removal of the tanks, as described in Section 5.1 of this document.

-The waste contents of the tanks and associated piping and equipment, and cleaning wastes will be properly managed and disposed of off-site at an approved and permitted TSDF. The wastes will be transported by a 6 NYCRR Part 364 transporter permitted to transport these wastes. Should out-of-state facilities be identified as proposed disposal facilities, permits for the facilities by the corresponding regulatory agency must be provided to the Remediation Engineer and NYSDEC Project Manager for review and approval prior to material exportation. The disposal facility and general type of waste will be specifically listed on the transporter's permit.

-Registration of the tanks as "closed-removed" in accordance with NYSDEC Petroleum Bulk Storage regulations, the City of Yonkers Department of Housing and Buildings, and the Westchester County Department of Health.

1.5 Remedial Treatment Units

The entire Site is to be considered as one (1) remedial treatment unit or area of concern.

The approximate vertical depths of fill material mantling the Site at each of the sampling locations completed during the RI and previous investigations are summarized on Figure 6.

The sampling locations, sampling depths and concentrations of COCs in fill/soil and native soil exceeding SCOs for Unrestricted Use Sites are summarized in Figures 2 and 3.

1.6 Applicable NYS Standards, Criteria and Guidance (SCGs)

The applicable SCGs for fill/soil media to be remediated during the remedial action are summarized in the following table. The table also includes applicable SCGs for other media that may be encountered during remediation.

Media	Regulation	SCGs
Fill Material and Native Soil	6 NYCRR Part 375 (December 14, 2007)	Table 375-6.8(a) Unrestricted Use Soil Cleanup Objectives
	Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs (April 2023)	Guidance Values for Unrestricted Use Sites
Groundwater (if warranted)	NYSDEC Division of Water TOGS 1.1.1	Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June 1998 and Addendums)
Treated Groundwater Discharge to the Public Works (if warranted)	WCDEF Wastewater Discharge Permit	Per Permit Requirements
Soil Vapor (if warranted)	NYSDOH Guidance for Evaluating Soil Vapor Intrusion (SVI Guidance)	Soil Vapor/Indoor Air Matrices A to C

Media	Regulation	SCGs
	(October 2006 and subsequent revisions)	Table 3.1 Air guideline values derived by the NYSDOH (and subsequent September 2013 update)

A copy of the December 14, 2007 6 NYCRR Part 375 Table 375-6.8(a) and an excerpt from Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs which includes Guidance Values for Unrestricted Use Sites is included in Appendix B for reference.

The NYSDEC Division of Water TOGS 1.1.1 document is not included, but the standards or guidance values for the remedial action are the ambient groundwater (GA class) values. Treated groundwater analytical results (if warranted) will be compared to the Local Sewer Limitations per the WCDEF Wastewater Discharge Permit.

In the absence of indoor air data, soil vapor analytical results will be compared to the lowest sub-slab vapor concentration of compounds in Soil Vapor/Indoor Air Matrices A to C. However, per the SVI Guidance, "matrices are intended to be used when evaluating the results from buildings with full slab foundations" and concurrent indoor air and sub-slab/soil gas samples are warranted to evaluate SVI utilizing the Matrices A, B and C. In the absence of indoor air data, the use of Matrices A to C is preliminary and provided only for comparison purposes. Furthermore, the exceedance of the lowest sub-slab vapor concentration of compounds in Soil Vapor/Indoor Air Matrices, in the absence of indoor air data, is not prescriptive of a given response action.

1.7 Remedial Action Schedule

It is expected that the remedial action will be completed in two (2) phases as follows:

Phase I: Asbestos Abatement and Building Demolition

To begin once all necessary HUD and other third-party approvals have been received, currently estimated to begin in mid-2024, with completion in Fall 2024. Phase I will include the following tasks.

-Asbestos abatement and demolition of Buildings No. 1 and No. 2 within the Site. Abatement of asbestos containing materials (ACM) will be in accordance with the New York State Department of Labor (NYSDOL) Industrial Code Rule (ICR) 56. The ACM abatement work activities will be managed under the requirements of the NYSDOL rather than NYSDEC.

-Building foundation concrete (footers, walls and slabs) in contact with Site fill/soil will either be addressed as part of the building demolition or will be left in place and addressed as part of the remedial excavation. If removed as part of the building demolition, methods will be employed to remove any fill/soil adhering to the concrete prior to the concrete leaving the Site for off-site disposal.

Phase II: Remedial Action

To follow Phase I, currently estimated to begin in Fall 2024, with completion in Spring/Summer 2025. Phase II will include the following tasks.

-Decommissioning of monitoring wells within the Site boundaries that were installed during previous investigations of the Site. These monitoring wells are identified as MW-I, MW-J, MW2022-01, MW2022-02, MW2022-03, and RI-MW-01 on Figure 4.

-Excavation and off-site disposal of impacted fill/soil mixtures mantling the Site, and the possible additional excavation of native soils that do not meet SCGs based on analytical results of confirmatory post-excavation sampling.. This phase of the remedial action is anticipated to be completed in Summer/Fall 2024.

-Backfilling of the Site with pre-approved imported fill meeting SCOs for Unrestricted Use Sites. It is anticipated backfilling activities in any given area will occur shortly after confirmatory end point samples meet Unrestricted Use SCOs and/or upon determination by NYSDEC. This phase of the remedial action is anticipated to be completed in Fall 2024.

-Preparation and submission of the FER, which is anticipated to be completed by the Winter of 2025. The time lapse for submission of the FER takes into account the time required for receipt of analytical results of remedial excavation end-point sampling, data validation of the analytical results, receipt and processing of waste disposal documentation, and review by the Volunteer. A more detailed remedial action schedule

will be provided to the DEC Project Manager after completion of field work associated with the remedial activities.

-A SVI evaluation will be completed prior to the submission of the FER. The SVI evaluation will include an assessment of pre- and post-remediation soil data, pre-remediation groundwater data, evaluation of the effectiveness of the remedial action relative to SVI, and evaluation of the proposed on-site buildings relative to SVI. A soil vapor intrusion evaluation will be completed at the Site which will include the collection of sub-slab soil vapor and indoor/outdoor air quality samples. The results will be evaluated in consultation with NYSDEC/NYSDOH to determine if mitigation efforts are required. No active vapor intrusion mitigation measures are anticipated for proposed buildings at the Site pending on the remedial action achieving the RAOs for soil vapor.

1.8 Miscellaneous General Requirements

A 60-day Advance Notification of Change of Use prior to the Remedial Action (inclusive of building demolition) is required by regulation (6NYCRR Part 375-1.11[d)] and 375 1-9[f]). Changes in site use include physical alterations. The Change of Use is needed due to the change in site use from a vacant lot to building demolition and remediation.

Furthermore, prior to beginning construction of the remedial action (excluding the asbestos abatement and building demolition phase), a pre-construction meeting will be held with the DEC Project Manager, the Volunteer, the Remediation Engineer (C.T. Male), the construction manager and the contractor/subcontractors designated to complete the remedial action related work.

The hours of operation of the remedial construction work will conform to the City of Yonkers construction codes. The DEC Project Manager will be notified of any variances issued by the City of Yonkers.

1.9 Citizen Participation

Citizen participation will continue on this project as follows:

- Once the RAWP has been finalized, a public notice fact sheet will be released by the DEC before the start of the remedial construction work. The Decision Document will be issued by DEC after the RAWP is finalized.

2.0 TEMPORARY CONSTRUCTION FACILITIES

2.1 Site Security

Temporary chain-link fencing with lockable gate(s) has been installed and is currently maintained around the perimeter of the Site. The fencing is anticipated to remain in-place throughout the remedial action.

2.2 Trailers/Office Space

A construction office trailer(s) or nearby office space will be provided by the contractor for use by the Remediation Engineer's field representative and DEC personnel. The space shall include a desk or table to work on and power to charge field monitoring equipment daily. A minimum area, generally six (6) feet by six (6) feet, should be sufficient.

2.3 Equipment Decontamination

Construction equipment that comes into contact with the Site's contaminated fill material and native soil, will require decontamination. Prior to the equipment being demobilized from the Site or prior to entering remediated areas of the Site, the equipment will be decontaminated in a manner that removes adhered fill/soils and residues. Fill/soils and residues generated from the decontamination procedures will be disposed of with the impacted fill/soil mixtures at the approved off-site disposal facilities. Water generated during the decontamination effort will either be transferred into 55 gallon drums or if in small volume, be incorporated into the impacted fill/soil mixtures for disposal at the approved off-site disposal facilities. Any wastes (soils or water) created at the Site will either be profiled, or assumed to be impacted, and then disposed of accordingly. Dry decontamination is anticipated to be the primary means of equipment decontamination. Wet decontamination will be implemented, if warranted.

Trucks entering and exiting the Site will be subject to the requirements of the Site specific erosion and sediment control measures outlined in this RAWP and site specific Stormwater Pollution Prevention Plan (SWPPP), which shall include the requirements of a stabilized construction entrance to mitigate fill/soil from being tracked off-site and onto roadways (see Section 2.6). The public roadway(s) where trucks exit the Site will be monitored by the Remediation Engineer's field representative. If fill/soil tracking is

observed, improvements to the erosion and sediment controls and fill/soil loading procedures will be required and implemented. Trucks entering and exiting the Site will also conform to the Site's State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity.

2.4 Impacted Soil Handling

Fill/soil within the Site boundaries commencing at the ground surface and extending vertically downwards to approximately two (2) to 9 feet bgs will be considered as contaminated and will require special handling. The Site is underlain by uncontrolled fill material that ranges in depth from the ground surface to 1.5 to 8.5 feet in depth. An area of deeper excavation (up to an estimated maximum depth of 14 feet bgs) was identified in the southwestern portion of the Site (area of the former commercial garage) based on field evidence of contamination and analytical data. The approximate vertical depths of fill material mantling the Site at each of the sampling locations completed during the RI and previous investigations are summarized on Figure 6.

Based on these assumptions, it is estimated that approximately 10,000 to 15,000 cubic yards (20,000 to 25,000 tons) of soil/fill mixtures will require remediation. The possibility exists for petroleum impacted soils to be present in the southwestern portion of the Site (area of former commercial garage). The volume of petroleum impacted soils is unknown, however, based on the soil delineation conducted, it appears the volume of soils is not likely to be significant. The total tonnage may vary depending on the material density, water/liquid content in the soils, and changes in excavation depths.

The overall excavation depths may be adjusted based on organic vapor screening with a PID and visual observations by the Remediation Engineer's field representative. Confirmatory end-point soil samples will be collected by the Remediation Engineer's field representative and analyzed in the laboratory to confirm that the soil that remains in-place meets applicable SCGs.

Should boulders be encountered during excavation activities, they will be segregated and stockpiled on-site and assessed by the Remediation Engineer's field representative to determine whether the boulders exhibit field evidence of contamination (odors, sheen, and/or discoloration). Boulders exhibiting field evidence of contamination (FEC) will not be reused on-site. Boulders with no FEC could be reused on-site, following a

determination by the project's design engineers that the reuse of this material is acceptable. Boulders to be reused as backfill will need to be free from excessive soil/fill prior to processing in order to prevent cross contamination.

Upon completion of the remedial action, excavation of additional native soil may be necessary to facilitate construction of deeper building foundations. If the confirmatory endpoint floor samples from the remedial excavation indicate that the native soils are not impacted above SCGs, these soils will be considered as clean soil and the reuse and/or disposition of these soils will no longer be regulated per the BCP, although approval to remove these soils from the Site will require approval from NYSDEC.

The handling of the contaminated fill/soil will involve direct loading into dump trucks or trailers, and if not directly loaded, temporarily stockpiled on-Site. For soil stockpiling, the fill/soil will be staged on a minimum of 12-mil plastic and covered with the same to mitigate washout by rainwater. For directly loaded fill/soil, the truck/tractor trailers will be covered during transport with solid covers (not mesh), and if high in moisture content where free-standing water will be released, the truck gates will be sealed and/or lined with plastic. Mesh tarps or covers will not be allowed for trucks hauling impacted fill/soil from the Site, unless approved by the NYSDEC Project Manager.

In order to dispose of the contaminated fill/soil at an off-site disposal facility (and to be able to directly load the material into dump trucks and/or trailers), waste characterization samples will be collected before the remedial action begins. This will be accomplished by advancing exploratory test pits and/or soil borings for collection of representative fill/soil samples for laboratory analysis. The number of samples and analytical requirements will be in accordance with the target disposal facility(ies) permit requirements.

It should be noted that the COCs identified as part of the RI are intended to provide a general description of the COCs at the Site. The concentration ranges of COCs identified at the sampling locations may not be representative of COCs throughout the Site's media. Furthermore, both different types and different concentration ranges of COCs may be encountered during characterization of the Site's media for disposal facility purposes.

Disposal facility approval letters and other related documentation will be submitted to the Remediation Engineer and the DEC Project Manager for review and approval prior to the exportation of contaminated fill/soil.

2.5 Utility Disconnects

The Site is serviced with electricity and natural gas from Con Edison. Potable water is provided by the City of Yonkers Water Bureau. The Westchester County DEF is responsible for sanitary sewer service to the Site. Additionally, several private utilities installed as part of the construction of the Cottage Place Gardens complex are present beneath the Site. These include steam lines, drainage and storm water piping, and fiber optic and cable lines. If not already addressed prior to the demolition of the Site buildings, the Contractor is responsible to locate all utilities and disconnect/terminate them per State, City, County, Cottage Place Gardens and Municipal Housing Authority for the City of Yonkers (MHACY) requirements, or properly reroute or protect them during excavation in cooperation with applicable utility providers.

2.6 Construction Entrance

A stabilized construction entrance(s) will be installed in accordance with a Site-specific SWPPP to mitigate the tracking of potentially contaminated fill/soil onto public rights-of-way from vehicle traffic exiting the Site.

2.7 Excavation Shoring/Sheeting

The anticipated horizontal and vertical remedial excavation depths may require sheeting/shoring to effectuate stable and safe excavation conditions. The need for and design of the sheeting/shoring systems will be the responsibility of the Contractor, and shall be designed by a NYS licensed professional engineer. Prior to commencement of the remedial action, excavation sheeting/shoring plans will be submitted to DEC for their information. Excavation sheeting/shoring plans for non-remedial needs are not required to be submitted to DEC.

3.0 SITE CONTROLS DURING REMEDIAL ACTION

3.1 Stormwater Management

The cumulative area of fill/soil disturbance for this project is greater than one (1) acre requiring CPG Phase VI Limited Partnership to obtain coverage under the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity before commencing construction activity.

In accordance with the New York State Stormwater Management Design Manual and the New York Standards and Specifications for Erosion and Sediment Control (aka The Blue Book), erosion and sediment control measures, pollution prevention measures, and if applicable, post-construction water quality treatment, shall be designed by CPG Phase VI Limited Partnership and presented in the form of a Stormwater Pollution Prevention Plan (SWPPP).

The following forms are needed to be completed and submitted to comply with the requirements of the General Permit for Stormwater Discharges from Construction Activity - GP-0-20-001:

- Notice of Intent (NOI) to DEC, which is a request for coverage under the General Construction Stormwater Permit;
- SWPPP Acceptance Form, which is required along with the NOI because the Site is located within the boundaries of an MS4. The SWPPP must be reviewed and accepted by the MS4 prior to submitting the NOI to the DEC; and
- Notice of Termination (NOT) to DEC, which is a notification that the construction project is complete and has met the requirements of the construction permit.

A copy of the blank Notice of Intent, Notice of Termination and SWPPP Acceptance forms are available through DEC's website. The SWPPP, NOI and SWPPP Acceptance forms will be provided to DEC under separate cover after approval from the City of Yonkers Engineering Department, but prior to the start of construction. The NOT will be provided to DEC upon completion of the Site disturbance portion of the project. Periodic SWPPP inspection reports will be provided to C.T. Male for review and inclusion in the FER.

3.2 Air Monitoring

A Community Air Monitoring Plan (CAMP) will be followed during ground intrusive remedial activities (i.e., excavation, disturbance and handling of site fill/soil). The intent of the CAMP is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of remedial work activities. The CAMP is not intended for use in establishing action levels for worker respiratory protection. The CAMP will monitor the air for dust (particulate air monitoring, see Section 3.2.1) and volatile organic compound vapors (VOC air monitoring, see Section 3.2.2) at the downwind perimeter of the work area and/or at occupied buildings within 20 feet of the work area. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown.

Remedial actions will not take place within occupied Site buildings. In areas where remedial actions will take place within 20 feet of occupied buildings, VOC and particulate monitoring will be conducted in accordance with the Special Requirements CAMP. The CAMP and Special Requirements CAMP are included in Appendix D.

3.2.1 Particulate Air Monitoring

Three (3) real-time particulate monitors capable of continuously measuring concentrations of particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) will be utilized. The instruments will be placed inside environmental enclosures at temporary monitoring stations based on the prevailing wind direction each work day, one (1) upwind and two (2) downwind of the designated work areas. If the remedial action is taking place within 20 feet of occupied structures, monitoring will be conducted opposite the walls of the occupied structures or next to the structures' air intake vents.

Each particulate monitor will be equipped with a telemetry unit capable of transmitting real-time particulate data to the Remediation Engineer and/or the Remediation Engineer's field representative. The particulate monitoring instruments will be capable of displaying and transmitting the short term exposure limit (STEL) or 15 minute averaging period, which will be compared to the NYSDOH Generic and Special

Requirements Community Air Monitoring Plan (see Appendix D) action levels for particulates, as listed below. Instrument alarms will be transmitted in real time to the Remediation Engineer and/or the Remediation Engineer's field representative via email and/or text message. The dust monitoring data for the remedial action will be stored in an electronic database and will be periodically downloaded and stored in C.T. Male's electronic project directory.

- If the downwind and/or occupied structures PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that the downwind and/or occupied structures PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, the downwind and/or occupied structures PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind and/or occupied structures PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

In the event of poor weather such as heavy rain, particulate monitoring will not be performed for protection of instrumentation. These weather conditions would limit the effectiveness of the sensitive monitoring equipment and likely suppress particulate generation. Work activities will be halted if fugitive dust migration is visually observed for a sustained period of time during poor weather conditions.

3.2.2 Volatile Organic Compound Air Monitoring

C.T. Male will continuously monitor for VOCs at the downwind perimeter of the immediate work areas and/or occupied structures with a MiniRAE 3000 VOC monitor or equal. The VOC monitors will be placed in the downwind and occupied structures environmental enclosures containing a particulate monitor. The downwind VOC monitors will be equipped with telemetry units capable of transmitting real-time VOC data to the Remediation Engineer and/or the Remediation Engineer's field

representative. The VOC monitoring instruments will be capable of displaying and transmitting the short term exposure limit (STEL) or 15 minute averaging period, which will be compared to the NYSDOH Generic and Special Requirements Community Air Monitoring Plan action levels for VOCs, as listed below. Instrument alarms will be transmitted in real time to the Remediation Engineer and/or the Remediation Engineer's field representative via email and/or text message. The VOC monitoring data for the remedial action will be stored in an electronic database and will be periodically downloaded and stored in C.T. Male's electronic project directory.

Upwind VOC STEL concentrations will be measured at the start of the work day and periodically thereafter employing a handheld MiniRae 3000 VOC monitor to evaluate the Site's background conditions. The upwind VOC STEL readings will be manually recorded for future reference and reporting.

- If the ambient air concentration of total organic vapors opposite the walls of occupied structures exceeds 1 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring will be conducted within the occupied structure.
- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone (not including the occupied structures) 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 can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone (not including the occupied structures) 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 can 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. Work activities will then be evaluated to determine

the source of the organic vapors and the engineering controls required to reduce/eliminate the organic vapors.

3.3 Noise and Vibration

There is potential for noise and vibration to be an issue depending on the means and methods selected by the construction contractor to excavate and load the Site fill/soil during the remedial action. If sheet piling is used to facilitate the excavation of Site fill/soil during the remedial excavation, the project plans and specifications will require the contractor to plan for and provide as necessary, controls to monitor and mitigate noise and vibration from adversely affecting nearby buildings, structures, improvements and the community.

3.4 Dust Control

Dust suppression techniques will be required, as necessary, to control fugitive dust to the extent practical during the remedial action. Such techniques must be employed, at a minimum, if the community air monitoring results indicate that particulate levels are above action levels. All reasonable attempts will be made to inhibit visible and/or fugitive dusts. Techniques to be utilized by the contractor may include one or more of the following:

- Applying water to haul roads.
- Wetting equipment and excavation faces.
- Spraying water on buckets during excavation and dumping.
- Hauling materials in containers or vehicles with solid tarp covers.
- Restricting vehicle speeds on-site.
- Covering excavated areas and materials after excavation immediately after activity ceases.

The contractor will be required to perform dust control measure in a manner consistent with the applicable portions of the New York State Stormwater Management Design Manual and the New York Standards and Specifications for Erosion and Sediment Control (aka The Blue Book).

3.5 Construction Observation and Certification

Phase I (preparation for the remedial action) work includes asbestos abatement followed by demolition of the Site buildings. A licensed asbestos project monitor will be retained during the ACM abatement work, as required by ICR-56. The asbestos project monitor will be responsible for collecting daily air samples in accordance with ICR-56. As air monitoring will be conducted per DOL requirements during the ACM abatement work, CAMP related air monitoring will not be performed during this portion of the work. Once the ACM has been abated, C.T. Male will provide a full-time construction observer to monitor the building demolition aspect of the project and conduct CAMP monitoring.

Phase II (remedial action) work includes excavation (disturbance) of existing fill/soil; decommissioning of monitoring wells; possible installation of sheeting and shoring within the remedial excavation; and the importation and placement of NYSDEC-approved backfill. C.T. Male will provide full-time construction observation during the remedial action. At the point in construction when the environmental related issues have been fully addressed (i.e., impacted fill/soil removed and off-site; importation and placement of backfill, and CAMP monitoring is no longer required, etc.), construction observation by C.T. Male will cease, unless an unforeseen condition is identified necessitating further observation. Periodic presence by the C.T. Male construction observer might be warranted during specific events (i.e. importation of topsoil) following the major components of the remedial actions.

Periodic observation during the remedial action will be conducted by a C.T. Male Remediation Engineer in order to provide the required certification of the FER. The Remediation Engineer will supervise the construction observer (field representative) during the remedial action to document that the project is implemented in accordance with the DEC approved RAWP. The Remediation Engineer will provide engineering review of remediation-related contractor submittals and field changes for the remediation related work.

3.6 Odor Control

If nuisance odors are identified to extend beyond the perimeter of the work area during remedial action ground intrusive activities, measures that may be implemented to abate the nuisance odors include limiting the area of open excavations, limiting the size of

fill/soil stockpiles, shrouding open excavations with tarps and other covers, direct load-out of fill/soils to trucks for off-site disposal, use of chemical odorants via spray or misting systems, and use of staff to monitor odors in surrounding neighborhoods.

4.0 HEALTH AND SAFETY PLAN (HASP)

Health and safety procedures to be followed by C.T. Male will be conducted in accordance with a site-specific Health and Safety Plan (HASP), which is included in Appendix E. The HASP will be available at the Site during the remedial action.

The contractor completing the remedial work will be required to provide a site specific HASP that is certified by a Certified Industrial Hygienist, Certified Safety Professional or Remediation Engineer determined equivalent safety professional. The contractor's employees will be required to have read and understood their company's site specific HASP prior to completing the work.

5.0 CONFIRMATION AND DOCUMENTATION SAMPLING

5.1 Post-Excavation Confirmation Sampling

Post-excavation confirmation soil samples will be collected for laboratory analysis after removal of impacted fill/soil to document that SCGs have been met. The samples will be analyzed for the Target Compound List (TCL) SVOCs, Target Analyte List (TAL) Metals (including mercury), and Hexavalent and Trivalent Chromium only. Furthermore, a reduced sampling frequency of one (1) in every four (4) samples will be submitted for laboratory analysis of PFAS. Additionally, samples collected in the area of the former commercial garage in the southwestern portion of the Site (area where slightly elevated PID readings and petroleum-type odors were documented) will be analyzed for TCL VOCs. If petroleum-type impacts are documented in other areas of the Site during the RA, these areas will also be sampled for VOCs.

The reasoning for this modified sampling program is:

- No PCBs or 1,4 Dioxane were detected in the fill material or native soils.
- Only one (1) pesticide and one (1) VOC (acetone, likely a laboratory artifact) exceedances were detected in the fill material. No exceedances above Unrestricted Use SCOs for Pesticides or VOCs were documented in native soils.
- PFOA and PFOS were not detected in native soils or in the fill material sample (RI-SB-06 [2.0]), which is considered the sample with the greatest likelihood to be impacted by PFAS due to the former Site use at this location (former commercial garage).
- Cyanide is not a COC for the Site.

If a certain parameter does not meet the project SCGs, that area will be further excavated and resampled. These samples will be analyzed for only those parameters that had exceedances in the initial samples.

Post-excavation verification soil samples will be collected at a frequency of one (1) grab sample per each approximately 900 square feet of excavation floor and one (1) sample from the bottom of the excavation sidewalls for every 30 linear feet of sidewall, pursuant to DEC DER-10. A proposed sampling grid is presented as Figure 8: Proposed Post Remediation Confirmatory Sampling Plan. Sidewall samples will not be collected from

the sidewall of the western Site boundary as this sidewall extends into the CPG Phase 3A and Phase 5 BCP Sites (BCP Site No.'s C360150 and C360161, respectively). Impacted soil/fill mixtures have been effectively remediated at the CPG Phase 3A and Phase 5 BCP Sites and the Sites have been backfilled with imported fill meeting SCOs for Unrestricted Use Sites. In the event that the excavations do not extend to the sidewalls of the CPG Phase 3A and Phase 5 BCP sites, confirmatory sidewall samples will be collected. Any proposed modifications to sampling type and frequency will be submitted to the DEC Project Manager for review and approval.

5.2 Tank Closure Sampling

No tanks have been identified at the Site. The following sampling is presented in the event an unknown tank is encountered. Upon removal of the tank(s) (following emptying and cleaning procedures), C.T. Male's field representative will assess the soils surrounding the tanks for organic vapors employing PID headspace analyses and organoleptic perception.

If the soils do not appear impacted and the bottoms of the tanks are in native soil, post-remediation confirmation samples will be collected per Section 5.1. If the soils do not appear impacted and the bottoms of the tanks are in fill material, the fill material will be excavated to native soils and post-remediation confirmation samples will be collected per Section 5.1.

If the soils appear impacted, additional excavation will be conducted until the soils no longer appear impacted employing the above field screening methods. Floor and sidewall samples will be collected from the tank excavation to document that the impacted soils have been sufficiently remediated. The impacted soils will be staged atop poly and covered pending waste characterization and off-site disposal.

The samples will be analyzed for the TCL VOCs, TCL SVOCs, TAL Metals (including mercury), and Hexavalent and Trivalent Chromium, which are the likely COCs when dealing with the presence of tanks. Furthermore, the reasoning for limiting other sampling parameters for tank closure sampling is presented in the bulleted items in Section 5.1.

5.3 Quality Assurance/Quality Control and Deliverables

Quality Control (QC) samples at a ratio of (one) 1 set of QC samples per 20 media samples will be collected and analyzed. The QC samples for fill/soil will include a blind field duplicate (FD), equipment blank, matrix spike (MS), matrix spike duplicate (MSD), and a field trip blank (for samples that are analyzed for PFAS).

The laboratory will provide the analytical results in DEC ASP Category B Data Deliverable format for subsequent third party data validation. Data validation will be performed in accordance with the USEPA National and Regional Validation Guidelines/Procedures to determine the applicable qualifications of the data. The validator will then prepare a Data Usability Summary Report (DUSR) for all post-excavation confirmatory samples in accordance with DEC guidance. All of the laboratory data will also be submitted electronically to NYSDEC in Version 4 EQuIS database format.

5.4 Imported Fill Testing

The source of the fill and the analytical data will be provided to the DEC Project Manager for review and approval prior to importing the fill to the Site. The sampling and analysis requirements for fill imported to the Site are set forth in section 5.4(e)10 of DEC DER-10, and under the "Testing for Imported Soil" header in Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs (April 2023). The following requirements must also be met:

- All materials proposed for import onto the Site will be approved by the certifying Remediation Engineer and the DEC Project Manager, and will be in compliance with provisions in 6 NYCRR Part 375 and DER-10 prior to delivery to the Site.

- Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

- All imported soils will meet the backfill quality standards established in 6 NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in the applicable tables presented (Table 375-6.8(a), Guidance Values for Anticipated Site Use – PFAS) in Appendix B.

- Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill objectives for this Site, will not be imported onto the Site without prior approval by DEC. Solid waste will not be imported onto the Site.

- Trucks entering the Site with imported soils will be securely covered with tight fitting solid covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases, as warranted, if release issues are identified.

6.0 APPLICABLE PERMITS

6.1 ACM Abatement/Building Demolition Work

Prior to starting asbestos abatement, there are two (2) required notifications, one (1) on the State level and one (1) on the Federal level (USEPA). There is a minimum 10 calendar day pre-notification of the ACM abatement activity from the NYSDOL (State), which will be sought by the asbestos abatement contractor. There is a 19 working day pre-notification of demolition and renovation from USEPA, which will be solicited by the asbestos abatement contractor. Each building shall be considered a separate project for the NYSDOL pre-notification requirements.

A Building Permit will be sought from the City of Yonkers by the Owner (or the contractor, as applicable) prior to the initiation of the demolition activities and construction activities.

A City of Yonkers Demolition Permit shall be prepared by and secured by the General Contractor. As part of the application, the applicant is required to engage a licensed firm to inspect the structure for the presence of asbestos, which was performed by C.T. Male. A copy of C.T. Male's Asbestos Survey will be made available to the General Contractor. The applicant shall file a certificate of finding with the City of Yonkers Department of Housing and Buildings (DHB) prior to the issuance of a Demolition permit. The asbestos removal project cannot be started unless, and until, satisfactory proof of compliance with Article 30 of Labor Law of the State of New York is filed with the City of Yonkers DHB and a permit has been obtained from the City of Yonkers DHB for any asbestos removal.

Copies of, or evidence of the DOL notification, the approved building permit, and the approved demolition permit will be made part of the FER.

6.2 Soil Remediation, UST Closures, and Groundwater Treatment

The remediation contractor will be responsible for obtaining applicable permits from the City of Yonkers DHB prior to the commencement of fill/soil remediation and/or tank closures (if warranted). The remediation contractor will be responsible for obtaining applicable permits from the City of Yonkers DHB and Westchester County DEF for groundwater treatment and disposal (if warranted).

7.0 SITE RESTORATION

7.1 General

The Site will be restored upon completion of work in accordance with the plans and specifications for new construction. Imported backfill will be tested in accordance with Section 5.4. Once the Site is backfilled to final grade or at some point prior to when existing Site soils have been fully remediated, CAMP monitoring will be discontinued with pre-approval from NYSDEC and the NYSDOH.

8.0 REPORTING AND CERTIFICATE OF COMPLETION

8.1 Weekly Progress Updates

Progress meeting minutes will be submitted to the NYSDEC Project Manager via email during the remedial action (Phase II only). The progress report will briefly summarize the remedial activities completed at the Site for the previous week. The progress report will be submitted at the beginning of the following week. The format will be in a bulleted style generally highlighting the major items accomplished during the previous week. Results of the CAMP will also be included in the weekly progress reports. Additionally, if there are any exceedances during the CAMP monitoring, NYSDEC and NYSDOH will be notified immediately (including the reason for the exceedance, corrective actions taken, and whether these were effective) via email and not solely in the weekly report.

8.2 Monthly Progress Reports

Monthly progress reports will report on the progress of the remedial actions accomplished during the reporting period. The reports will be submitted to NYSDEC, with a copy to the NYSDOH project manager and pertinent personnel representing the Volunteer. The progress reports will be submitted on or about the 10th day of each month. The progress reports will generally include the following information, where applicable

- Any request for modifications to the approved RAWP, and the status of previously requested modifications.
- A discussion of project progress and significant activities during the reporting period, including the status of any requisite permits.
- A discussion of pending/planned significant project activities during the next two months, unless another time frame is authorized by the Department.
- The approved remedial action schedule and proposed modifications to the remedial action schedule, resulting from new information and/or unforeseen conditions.
- A discussion of any problems or delays in the implementation of the remedial action relative to the work and/or remedial action schedule.

- Proposed actions to correct any identified problems, including how to mitigate any adverse schedule impacts.

- Any additional, pertinent documentation that is available (e.g., photographs) that helps communicate progress/issues facing the project.

- A tabulation of sample results received during the reporting period and submission of a report summarizing the data and presenting conclusions.

- A tabulation of waste classification and/or characterization samples collected including the physical state of the material (solid, liquid, sludge), the volume of material, number of samples collected, analyses performed and results.

- A listing of the types and quantities of contamination generated by the remedial action during the reporting period and to date, as well as the name of the disposal facilities, transporters' dates of disposal and, if appropriate, the manifest numbers of each waste load.

8.3 Final Engineering Report

Upon completion of the remedial action, a FER will be prepared that summarizes the work completed and results of the confirmation and documentation sampling. Any deviations from the RAWP will also be discussed in the FER. The FER will be prepared in general accordance with the FER requirements promulgated in Section 5.8 of DER-10, as summarized below.

- The final FER submitted to DEC for approval will be prepared, stamped, certified and signed by an individual licensed or otherwise authorized in accordance with article 145 of the Education Law to practice the profession of engineering using the appropriate certification provided in Table 1.5 of DER-10.

- A description of the remedy, as constructed, pursuant to the DEC-approved RAWP.

- A summary of the remedial actions completed, including description of problems encountered and resolved, summary of changes to the RAWP, listing of the waste

streams, the quantity of each waste stream, and the disposal location(s) for each waste stream.

- A list of the remedial action objectives applied to the remedial action.
- Tables and figures containing pre- and post-remedial data keyed appropriately so that completion of the remedial action is documented.
- A description of the applicable areas of remedial action compliance.
- Drawings showing the excavation limits and the excavation end-point soil sampling locations.
- Executed manifests documenting off-site transport of the waste materials.
- Analytical results of the excavation end-point soil samples, including laboratory data sheets and the required laboratory data deliverables.

8.4 Certificate of Completion

The Volunteer will be seeking a Certificate of Completion (COC) from NYSDEC upon completion of the remedial action and DEC approval of the FER. It is anticipated that completion of the remedial action and the Volunteer's receipt of the COC will likely occur prior to completion of the entire construction project at the Site.

9.0 GREEN AND SUSTAINABLE REMEDIATION

Green and sustainable remediation best management practices (BMPs) will be employed to the extent practicable during the course of the remedial action. Examples of BMPs are provided in a Fact Sheet and Program Policy prepared by NYSDEC, and Green Management BMPs provided by the US Environmental Protection Agency (USEPA), which are included as Exhibit 2 and are entitled as follows:

- NYSDEC Green and Sustainable Remediation and Climate Resiliency Fact Sheet, Released June 2023.
- NYSDEC DEC Program Policy DER-31/Green Remediation, date issued August 11, 2010, latest date revised January 20, 2011.
- USEPA Green Remediation Best Management Practices: Excavation and Surface Restoration, August 2019 Update.

C.T. Male field personnel and the environmental sub-contractor(s) will be responsible for perusing the aforementioned documents and implementing green and sustainable remediation BMPs to the extent practicable.

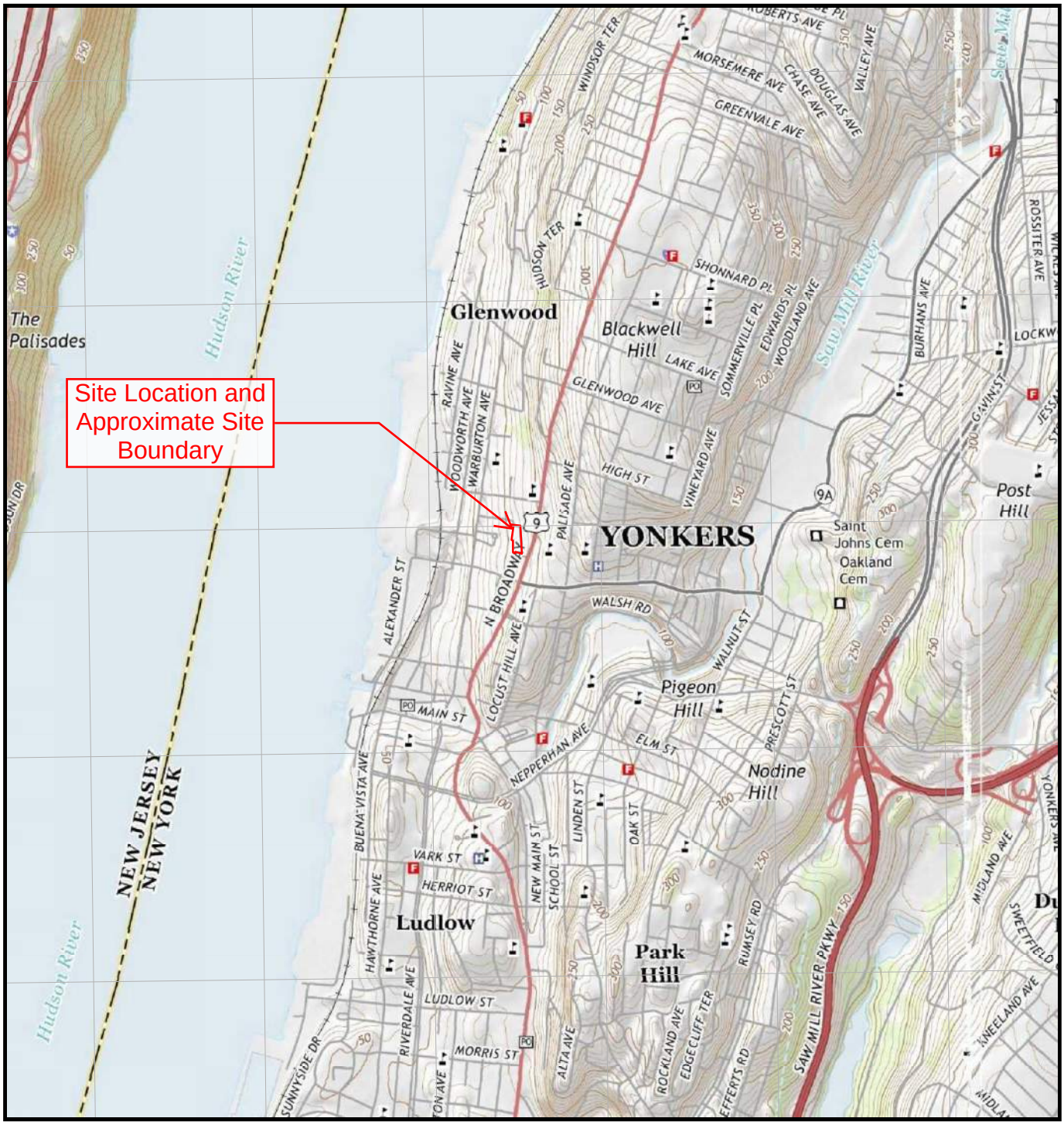
At a minimum, the following BMPs will be implemented:

- Monitoring of soil disposal trucks to reduce idle time when at/near the Site.
- Reuse on-site soils as backfill when the depth of the excavation for development purposes exceeds the depth of excavation for remediation purposes (reuse of surplus soils) per Section 2.4 of this RAWP.
- Utilize local or nearest soil disposal facilities, when possible, to minimize transportation and associated pollution.
- Cover soils with tarps/mats to control dust generation, per Section 3.4 of this RAWP.

It is noted that as a result of the proposed Site development, impervious surfaces will be reduced and landscaped areas will be increased, increasing overall stormwater infiltration and reducing runoff, which is one of the major causes of water pollution in urban areas. The Proposed Redevelopment Site Plan and Landscaping Plan are included in Exhibit 1.

APPENDIX A

FIGURES



MAP REFERENCE
United States Geological Survey
7.5 Minute Series Topographic Map
Quadrangles: Mount Vernon, NY and Yonkers, NY
Date: 2016

N

C.T.MALE ASSOCIATES
ENGINEERING, SURVEYING, ARCHITECTURE
LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C.
50 CENTURY HILL DRIVE
LATHAM, NY 12110

FIGURE 1 - SITE LOCATION MAP
RIDGEWAY PHASE VI SITE

CITY OF YONKERS	WESTCHESTER COUNTY, NY
SCALE: 1:24,000	The locations and features depicted on this map are approximate and do not represent an actual survey.
DRAFTER: RH/ML	
PROJECT No.: 22.2208	

XREFS: NONE

PROJECT NUMBER: 22.2208

CAD DWG. FILE NAME: BASE MAP PHASE VI SITE.dwg

	SAMPLE ID:	SW-3A-030
	LAB ID:	L1842316-04
	COLLECTION DATE:	10/17/2018
	SAMPLE DEPTH (Feet):	2.5
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Benzo(a)anthracene	1	1.1**
Benzo(b)fluoranthene	1	1.2**
Chrysene	1	1.1*
Indeno(1,2,3-cd)pyrene	0.5	0.65**
Lead, Total	63	97.4
Mercury, Total	0.18	0.217

	SAMPLE ID:	SW-3A-006
	LAB ID:	L1817959-03
	COLLECTION DATE:	5/16/2018
	SAMPLE DEPTH (Feet):	2.5
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Chromium, Total	30	56.4*
Copper, Total	50	53.7

	SAMPLE ID:	SW-3A-031
	LAB ID:	L1842986-01
	COLLECTION DATE:	10/22/2018
	SAMPLE DEPTH (Feet):	2.5
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Lead, Total	63	106
Mercury, Total	0.18	0.184

	SAMPLE ID:	RI-SB-01
	LAB ID:	L2337032-10
	COLLECTION DATE:	6/27/2023
	SAMPLE DEPTH (Feet):	0 - 4
	NY-UNRES[1]	
ANALYTE	(mg/kg)	Conc Q
Lead, Total	63	314

	SAMPLE ID:	SW-3A-029
	LAB ID:	L1842316-03
	COLLECTION DATE:	10/17/2018
	SAMPLE DEPTH (Feet):	2.5
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Chromium, Total	30	33.8

	SAMPLE ID:	SW-3A-26
	LAB ID:	L1841313-02
	COLLECTION DATE:	10/11/2018
	SAMPLE DEPTH (Feet):	4
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Lead, Total	63	199
Zinc, Total	109	138

	SAMPLE ID:	SW-3A-004
	LAB ID:	L1810958-01
	COLLECTION DATE:	3/29/2018
	SAMPLE DEPTH (Feet):	2.5
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Lead, Total	63	135
Mercury, Total	0.18	0.348

	SAMPLE ID:	SW-019-3-B17
	LAB ID:	L2126802-01
	COLLECTION DATE:	5/20/2021
	SAMPLE DEPTH (Feet):	3
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Lead, Total	63	703**
Mercury, Total	0.18	0.498
Zinc, Total	109	278

	SAMPLE ID:	SW-020-3-C17
	LAB ID:	L2126802-02
	COLLECTION DATE:	5/20/2021
	SAMPLE DEPTH (Feet):	3
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Lead, Total	63	495**
Mercury, Total	0.18	0.447
Zinc, Total	109	264

	SAMPLE ID:	SW-021-3-D17
	LAB ID:	L2126802-03
	COLLECTION DATE:	5/20/2021
	SAMPLE DEPTH (Feet):	3
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Benzo(a)anthracene	1	1.2**
Benzo(a)pyrene	1	1.2****
Benzo(b)fluoranthene	1	1.5**
Chrysene	1	1.1*
Indeno(1,2,3-cd)pyrene	0.5	0.92**
Lead, Total	63	351
Mercury, Total	0.18	0.497
Zinc, Total	109	236

	SAMPLE ID:	SW-022-3.5-E17
	LAB ID:	L2126802-04
	COLLECTION DATE:	5/20/2021
	SAMPLE DEPTH (Feet):	3.5
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Benzo(a)anthracene	1	4.2**
Benzo(a)pyrene	1	3.7****
Benzo(b)fluoranthene	1	4.6**
Benzo(k)fluoranthene	0.8	1.5*
Chrysene	1	3.6*
Dibenzo(a,h)anthracene	0.33	0.91***
Indeno(1,2,3-cd)pyrene	0.5	2.8**
4,4'-DDT	0.0033	0.00342 P
Chromium, Hexavalent	1	1.08
Barium, Total	350	499***
Lead, Total	63	741**
Mercury, Total	0.18	0.694
Zinc, Total	109	424

	SAMPLE ID:	SB-2022-10
	LAB ID:	L2207030-01
	COLLECTION DATE:	2/9/2022
	SAMPLE DEPTH (Feet):	0-4'
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Benzo(a)anthracene	1	1.1**
Benzo(a)pyrene	1	1.1***
Benzo(b)fluoranthene	1	1.4**
Chrysene	1	1.1*
Indeno(1,2,3-cd)pyrene	0.5	0.89**
Barium, Total	350	503***
Lead, Total	63	2680***
Mercury, Total	0.18	1.36**
Zinc, Total	109	863

	SAMPLE ID:	SB-2022-05
	LAB ID:	L2202943-03
	COLLECTION DATE:	1/18/2022
	SAMPLE DEPTH (Feet):	2-3'
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Lead, Total	63	171
Mercury, Total	0.18	0.356
Zinc, Total	109	194

	SAMPLE ID:	B-I / MW-I
	COLLECTION DATE:	12/5/2014
	NY-UNRES	RESULT
ANALYTE	(mg/kg)	Conc
Lead, Total	63	388
Mercury, Total	0.18	0.537
Zinc, Total	109	173

	SAMPLE ID:	SB-2022-03
	LAB ID:	L2202943-02
	COLLECTION DATE:	1/18/2022
	SAMPLE DEPTH (Feet):	3.0'
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Lead, Total	63	73.5

	SAMPLE ID:	B-J / MW-J
	COLLECTION DATE:	12/5/2014
	NY-UNRES	RESULT
ANALYTE	(mg/kg)	Conc
Lead, Total	63	82.3

	SAMPLE ID:	R1-SB-07
	LAB ID:	L2336635-01
	COLLECTION DATE:	6/26/2023
	SAMPLE DEPTH (Feet):	3.5
	NY-UNRES[1]	
ANALYTE	(mg/kg)	Conc Q
Lead, Total	63	261

	SAMPLE ID:	SB-2022-01
	LAB ID:	L2202943-04
	COLLECTION DATE:	1/18/2022
	SAMPLE DEPTH (Feet):	0-5'
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Lead, Total	63	65.3
Mercury, Total	0.18	0.59

	SAMPLE ID:	SW-023-3.5-F17
	LAB ID:	L2126802-05
	COLLECTION DATE:	5/20/2021
	SAMPLE DEPTH (Feet):	3.5
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Chromium, Hexavalent	1	1.4
Lead, Total	63	2660***
Mercury, Total	0.18	0.384
Zinc, Total	109	186

	SAMPLE ID:	SW-024-4-G17
	LAB ID:	L2126802-06
	COLLECTION DATE:	5/20/2021
	SAMPLE DEPTH (Feet):	4
	NY-UNRES	
ANALYTE	(mg/kg)	Conc Q
Chromium, Hexavalent	1	1.51
Lead, Total	63	91.7
Mercury, Total	0.18	0.334

	SAMPLE ID:	RI-SB-06
	LAB ID:	L2336635-02
	COLLECTION DATE:	6/26/2023
	SAMPLE DEPTH (Feet):	2
	NY-UNRES[1]	
ANALYTE	(mg/kg)	Conc Q
Acetone	0.05	0.085
Benzo(a)anthracene	1	2.4**
Benzo(a)pyrene	1	2.2***
Benzo(b)fluoranthene	1	2.3**
Benzo(k)fluoranthene	0.8	0.82
Chrysene	1	2.1*
Indeno(1,2,3-cd)pyrene	0.5	0.94**
Lead, Total	63	235
Zinc, Total	109	129
Chromium, Trivalent	30	31.2

W PLACE

4 STORY BRICK APARTMENT BUILDING NO. 1

4 STORY BRICK APARTMENT BUILDING NO. 2N

RIDGEWAY VI
AREA=43,[illegible]± SQ. FT.
OR 1.010± ACRES

4 STORY BRICK APARTMENT BUILDING NO. 2S

RI-SB-02
RI-SB-01
RI-SB-03
RI-SB-04
RI-SB-05
RI-SB-06_North
RI-SB-06
RI-SB-06_South
RI-SB-07
RI-SB-08
RI-SB-09

SB2022-06
MW2022-03
SB2022-10
SB2022-05
MW-2022-01
SB2022-04
B-I/MW-I
SB2022-03
SB2022-02
MW2022-02
B-J
MW-J
SB2022-07
SB2022-01

SW-3A-006(2.5')
SW-3A-031(2.5')
SW-3A-030(2.5')
SW-3A-029(2.5')
SW-3A-28(4')
SW-3A-27(4')
SW-3A-26(4')
SW-3A-004(2.5')
SW-019(3')
SW-020(3')
SW-021(3')
SW-022(3.5')
SW-023(3.5' BGS)
SW-024(4')

APPROXIMATE LOCATION OF THE NEW APARTMENT BUILDING

APPROXIMATE LOCATION OF FORMER COMMERCIAL GARAGE PER 1917 SANBORN MAP

2022 C.T. MALE PHASE II ESA SOIL BORING

2022 C.T. MALE PHASE II ESA SOIL BORING CONVERTED INTO A MONITORING WELL (NO GROUNDWATER)

2015 C.T. MALE PHASE II ESA SOIL BORING

2015 C.T. MALE PHASE II ESA SOIL BORING CONVERTED INTO A MONITORING WELL (NO GROUNDWATER)

CONFIRMATORY POST EXCAVATION SIDEWALL SAMPLING LOCATION FOR REMEDIATION OF THE CPG PHASE 5 PARCEL BCP SITE

CONFIRMATORY POST EXCAVATION SIDEWALL SAMPLING LOCATION FOR REMEDIATION OF THE CPG PHASE 3A PARCEL BCP SITE

RI SOIL BORING LOCATION

*The analyte has exceeded its Unrestricted and Residential Use SCOs.

**The analyte has exceeded its Unrestricted, Residential, and Restricted-Residential Use SCOs.

***The analyte has exceeded its Unrestricted, Residential, Restricted-Residential, and Commercial Use SCOs.

****The analyte has exceeded its Unrestricted, Residential, Restricted-Residential, Commercial, and Industrial Use SCOs.

BAR SCALE
30 0 15 30 60
1 inch = 30 ft.

DATE		REVISIONS RECORD/DESCRIPTION	DRAFTER	CHECK	APPR.
	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				

APPROVED:
DRAFTED : GLB/MDD
CHECKED :
PROJ. NO : 22.2208
SCALE : 1"=30'
DATE :

FIGURE 2: ANALYTES IN SUBSURFACE FILL MATERIAL EXCEEDING SCGs

RIDGEWAY PHASE VI SITE

PREPARED FOR CPG PHASE VI LIMITED PARTNERHIP

CITY OF YONKERS — WESTCHESTER COUNTY, NEW YORK

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110 PH 518.786.7400
COBLESKILL, NY • GLENS FALLS, NY • POUGHKEEPSIE, NY
JOHNSTOWN, NY • RED HOOK, NY • SYRACUSE, NY
www.ctmale.com

SHEET OF
DWG. NO:

CAD DWG. FILE NAME: K:\Projects\200736\Survey\Drawings-Maps\BASE MAP PHASE VI SITE.dwg

XREFS: NONE

PROJECT NUMBER: 22.2208

CAD DWG. FILE NAME: BASE MAP PHASE VI SITE.dwg

	SAMPLE ID:	RI-SB-03			
	LAB ID:	L2337032-03		L2337032-04	
	COLLECTION DATE:	6/28/2023		6/28/2023	
	SAMPLE DEPTH (Feet):	5 - 6		10 - 11	
	NY-UNRES[1]				
ANALYTE	(mg/kg)	Conc	Q	Conc	Q
Chromium, Trivalent	30	35.8		18.9	J
Chromium, Hexavalent	1	1.06		0.417	J

	SAMPLE ID:	RI-SB-04			
	LAB ID:	L2337032-05		L2337032-06	
	COLLECTION DATE:	6/28/2023		6/28/2023	
	SAMPLE DEPTH (Feet):	5 - 6		6 - 7	
	NY-UNRES[1]				
ANALYTE	(mg/kg)	Conc	Q	Conc	Q
Chromium, Trivalent	30	33		*42.8**	
Chromium, Hexavalent	1	1.34		*1.02*	

	SAMPLE ID:	RI-SB-06			
	LAB ID:	L2337910-01		L2337910-02	
	COLLECTION DATE:	6/30/2023		6/30/2023	
	SAMPLE DEPTH (Feet):	6 - 7		10.5 - 11.5	
	NY-UNRES[1]				
ANALYTE	(mg/kg)	Conc	Q	Conc	Q
Chromium, Trivalent	30	30.1	J	29.9	J

	SAMPLE ID:	RI-SB-07	
	LAB ID:	L2337378-08	
	COLLECTION DATE:	6/29/2023	
	SAMPLE DEPTH (Feet):	12.5 - 13.5	
	NY-UNRES[1]		
ANALYTE	(mg/kg)	Conc	Q
Chromium, Trivalent	30	42.9*	J

	SAMPLE ID:	RI-SB-05			
	LAB ID:	L2337378-09		L2337378-10	
	COLLECTION DATE:	6/29/2023		6/29/2023	
	SAMPLE DEPTH (Feet):	5.5 - 6.5		10.5 - 11.5	
	NY-UNRES[1]				
ANALYTE	(mg/kg)	Conc	Q	Conc	Q
Chromium, Trivalent	30	62.4*	J	14.4	J

WILLOW PLACE

RI-SB-02
SB2022-06
MW2022-03
SW-3A-006(2.5')
SW-3A-031(2.5')
RI-SB-01
SB2022-10
SW-3A-030(2.5')
4 STORY BRICK APARTMENT BUILDING NO. 1
SW-3A-029(2.5')
RI-SB-03
SB2022-05
MW-2022-01
SW-3A-28(4')
SB2022-04
SW-3A-27(4')
RI-SB-09
B-I/MW-I
SW-3A-26(4')
RI-SB-04
SW-3A-004(2.5')
4 STORY BRICK APARTMENT BUILDING NO. 2N
RIDGEWAY VI
AREA=43,973± SQ. FT.
OR 1.010± ACRES
SW-019(3')
RI-SB-08
SB2022-03
APPROXIMATE LOCATION OF THE NEW APARTMENT BUILDING
SW-020(3')
SW-021(3')
SB2022-02
MW2022-02
SW-022(3.5')
B-J
MW-J
4 STORY BRICK APARTMENT BUILDING NO. 2S
RI-SB-06_North
SB2022-07
RI-SB-07
SW-023(3.5' BGS)
RI-SB-06
APPROXIMATE LOCATION OF FORMER COMMERCIAL GARAGE PER 1917 SANBORN MAP
SW-024(4')
RI-SB-06_South
SB2022-01
RI-SB-05
BISHOP WM. WALLS PLACE
(40' WIDE PUBLIC RIGHT OF WAY)

2022 C.T. MALE PHASE II ESA SOIL BORING

2022 C.T. MALE PHASE II ESA SOIL BORING CONVERTED INTO A MONITORING WELL (NO GROUNDWATER)

2015 C.T. MALE PHASE II ESA SOIL BORING

2015 C.T. MALE PHASE II ESA SOIL BORING CONVERTED INTO A MONITORING WELL (NO GROUNDWATER)

CONFIRMATORY POST EXCAVATION SIDEWALL SAMPLING LOCATION FOR REMEDIATION OF THE CPG PHASE 5 PARCEL BCP SITE

CONFIRMATORY POST EXCAVATION SIDEWALL SAMPLING LOCATION FOR REMEDIATION OF THE CPG PHASE 3A PARCEL BCP SITE

RI-SB-01
RI SOIL BORING LOCATION

*The analyte has exceeded its Unrestricted and Residential Use SCOs.

**The analyte has exceeded its Unrestricted, Residential, and Restricted-Residential Use SCOs.

***The analyte has exceeded its Unrestricted, Residential, Restricted-Residential, and Commercial Use SCOs.

****The analyte has exceeded its Unrestricted, Residential, Restricted-Residential, Commercial, and Industrial Use SCOs.

BAR SCALE
30 0 15 30 60
1 inch = 30 ft.

DATE		REVISIONS RECORD/DESCRIPTION	DRAFTER	CHECK	APPR.
	1				
	2				
	3				
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	5				
	6				
	7				
	8				
	9				

APPROVED:
DRAFTED : GLB/MDD
CHECKED :
PROJ. NO : 22.2208
SCALE : 1"=30'
DATE :

FIGURE 3: ANALYTES IN SUBSURFACE NATIVE SOIL EXCEEDING SCGs

RIDGEWAY PHASE VI SITE

PREPARED FOR CPG PHASE VI LIMITED PARTNERHIP

CITY OF YONKERS — WESTCHESTER COUNTY, NEW YORK

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SHEET OF
DWG. NO:

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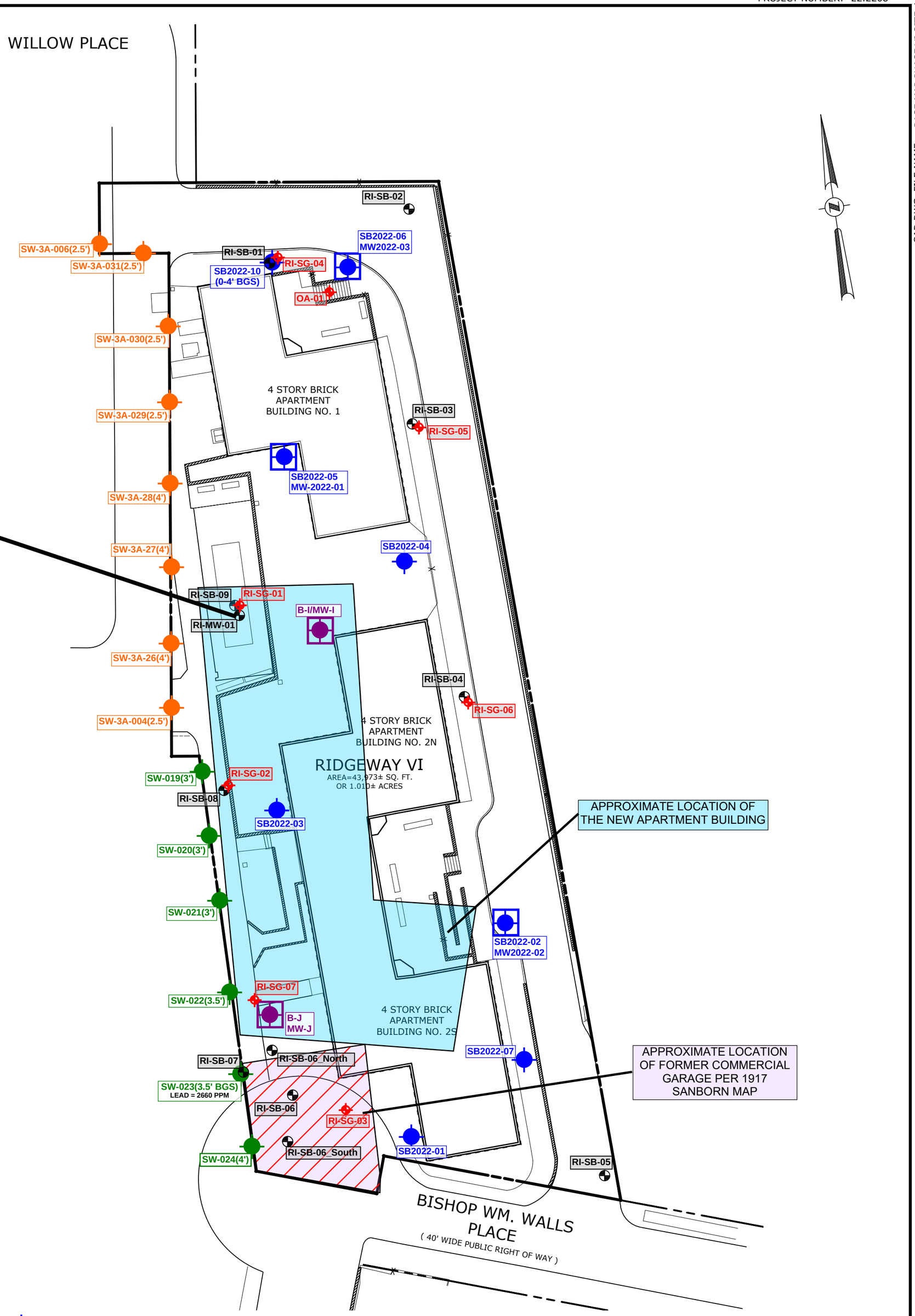
XREFS: NONE

PROJECT NUMBER: 22.2208

CAD DWG. FILE NAME: BASE MAP PHASE VI SITE.dwg

	SAMPLE ID:	RI-MW-01	
	LAB ID:	L2343197-01	
	COLLECTION DATE:	7/26/2023	
	SCG		
ANALYTE	(ug/l)	Conc	Q
Benzene	1	8.4	
Iron, Total	300	1290	
Sodium, Total	20,000	108,000	
PFOS	0.0027	0.0345	
PFOA	0.0067	0.0446	



2022 C.T. MALE PHASE II ESA SOIL BORING

2022 C.T. MALE PHASE II ESA SOIL BORING CONVERTED INTO A MONITORING WELL

2015 C.T. MALE PHASE II ESA SOIL BORING

2015 C.T. MALE PHASE II ESA SOIL BORING CONVERTED INTO A MONITORING WELL

CONFIRMATORY POST EXCAVATION SIDEWALL SAMPLING LOCATION FOR REMEDIATION OF THE CPG PHASE 5 PARCEL BCP SITE

CONFIRMATORY POST EXCAVATION SIDEWALL SAMPLING LOCATION FOR REMEDIATION OF THE CPG PHASE 3A PARCEL BCP SITE

RI-SB-01 — RI SOIL BORING LOCATION

RI-MW-01 — RI MONITORING WELL

RI-SG-01 — RI SOIL VAPOR SAMPLING LOCATION

BAR SCALE

30 0 15 30 60

1 inch = 30 ft.

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DRAFTED : GLB/MDD

CHECKED :

PROJ. NO : 22.2208

SCALE : 1"=30'

DATE :

FIGURE 4: ANALYTES IN GROUNDWATER EXCEEDING SCGs
RIDGEWAY PHASE VI SITE

PREPARED FOR
CPG PHASE VI LIMITED PARTNERHIP

CITY OF YONKERS — WESTCHESTER COUNTY, NEW YORK

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110 PH 518.786.7400
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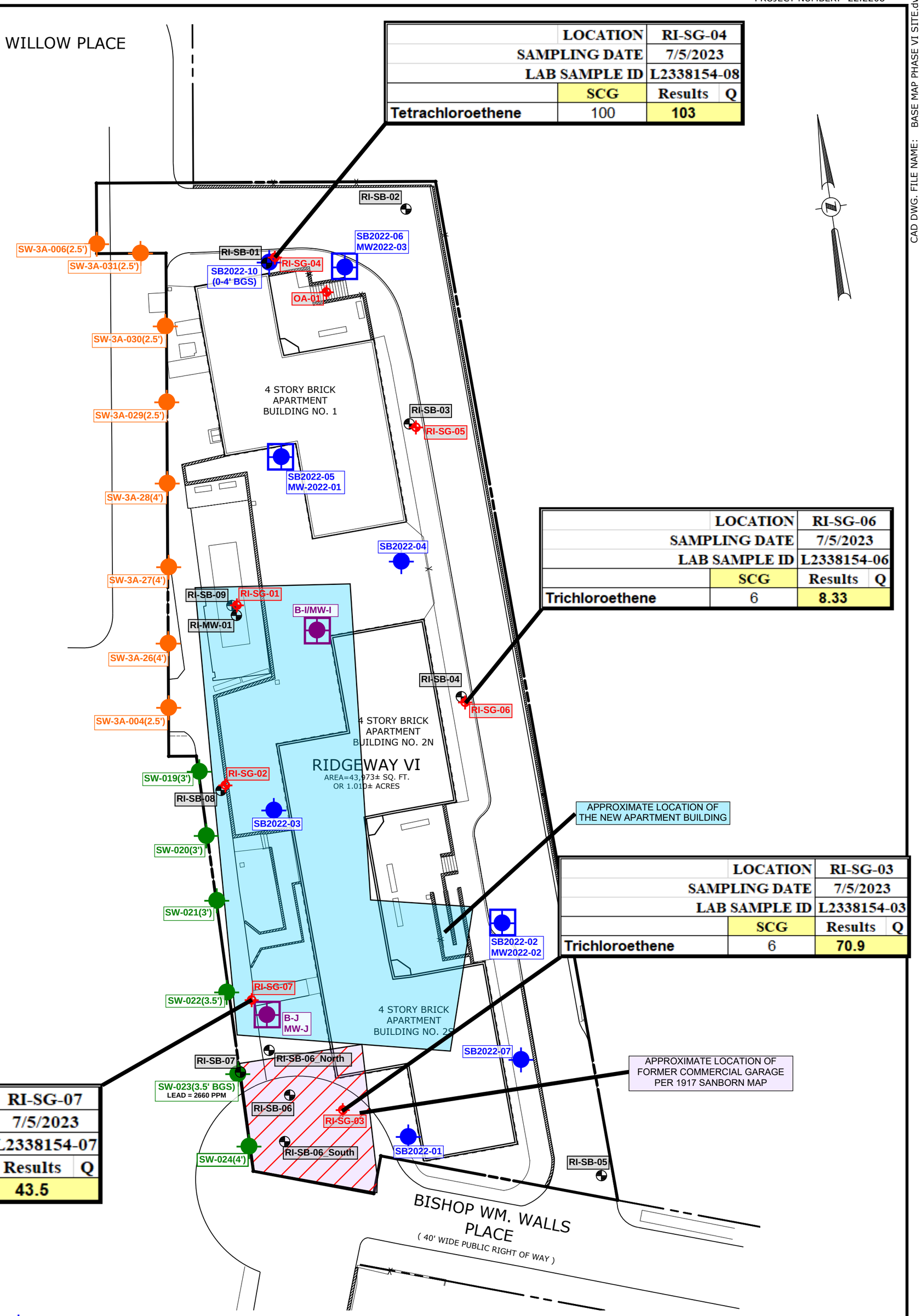
PROJECT NUMBER: 22.2208

CAD DWG. FILE NAME: BASE MAP PHASE VI SITE.dwg



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DRAFTED : GLB/MDD

CHECKED :

PROJ. NO : 22.2208

SCALE : 1"=30'

DATE :

FIGURE 5: ANALYTES IN SOIL VAPOR EXCEEDING SCGs
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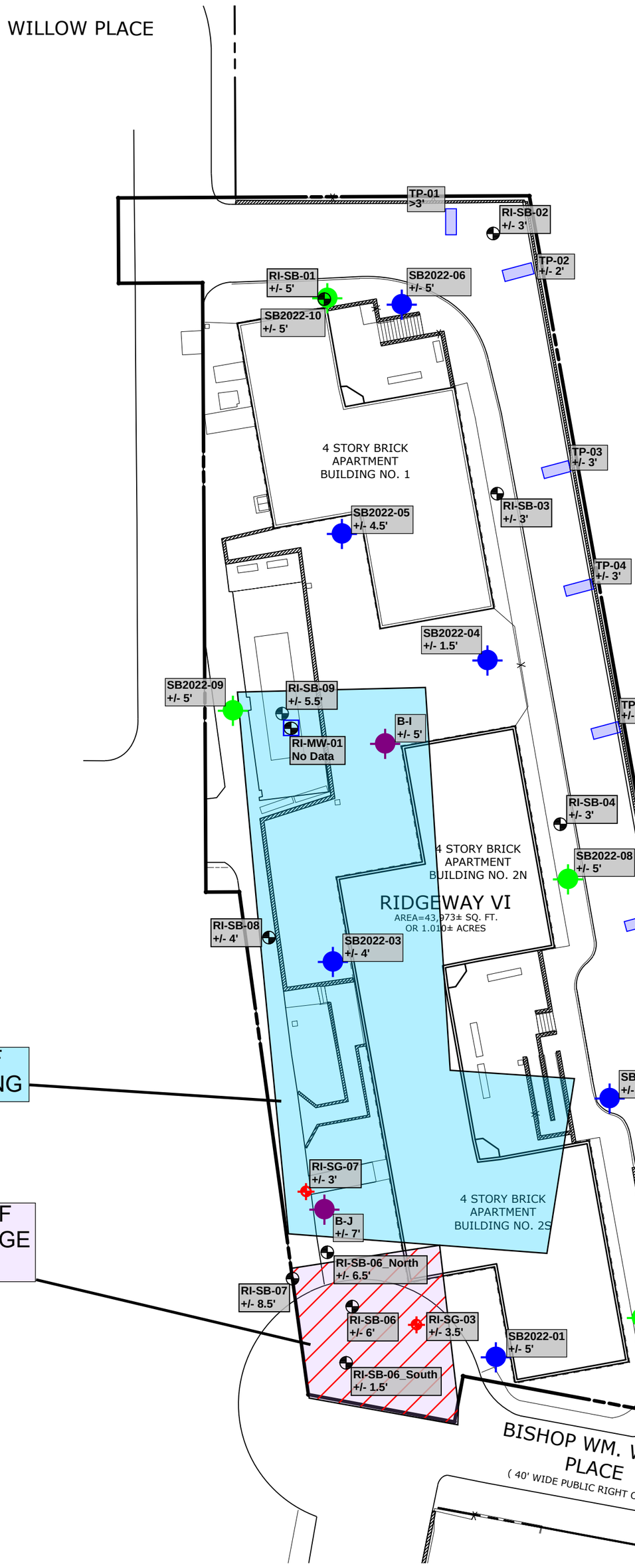
PROJECT NUMBER: 22.2208

CAD DWG. FILE NAME: BASE MAP PHASE VI SITE.dwg



APPROXIMATE LOCATION OF THE NEW APARTMENT BUILDING

APPROXIMATE LOCATION OF FORMER COMMERCIAL GARAGE PER 1917 SANBORN MAP

Excavation depth in the area underneath the building is anticipated to extend to a maximum depth of 9' bsg. For example, if the crawl space is anticipated to be 5' bsg, it can be anticipated that an additional 4' of excavation will be warranted. Please note this is an estimate and will be determined by field conditions, visual observations and endpoint laboratory results.

2022 C.T. MALE PHASE II ESA SOIL BORING

2015 C.T. MALE PHASE II ESA SOIL BORING

2022 C.T. MALE BORING LOCATION FOR GEOTECHNICAL EVALUATION

2023 C.T. MALE TEST PIT LOCATION FOR RETAINING WALL EVALUATION.

RI SOIL BORING LOCATION

RI SOIL GAS SAMPLING LOCATION

RI-SB-05 +/- 5.5' SAMPLING LOCATION IDENTIFICATION AND APPROXIMATE DEPTH OF FILL MATERIAL

** THE DEPTHS TO FILL AT EACH OF THE SAMPLING LOCATIONS ARE APPROXIMATE AND ONLY REFLECT CONDITIONS OBSERVED AT THE PARTICULAR SAMPLING LOCATIONS. THE INFORMATION PRESENTED SHOULD BE USED FOR INFORMATIONAL PURPOSES ONLY AND NOT FOR CONSTRUCTION PLANNING AND BIDDING.

BAR SCALE

30 0 15 30 60

1 inch = 30 ft.

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APPROVED:

DRAFTED : GLB/MDD

CHECKED :

PROJ. NO : 22.2208

SCALE : 1"=30'

DATE :

FIGURE 6: APPROXIMATE DEPTHS OF FILL MATERIAL
RIDGEWAY PHASE VI SITE

PREPARED FOR
CPG PHASE VI LIMITED PARTNERHIP

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DWG. NO:

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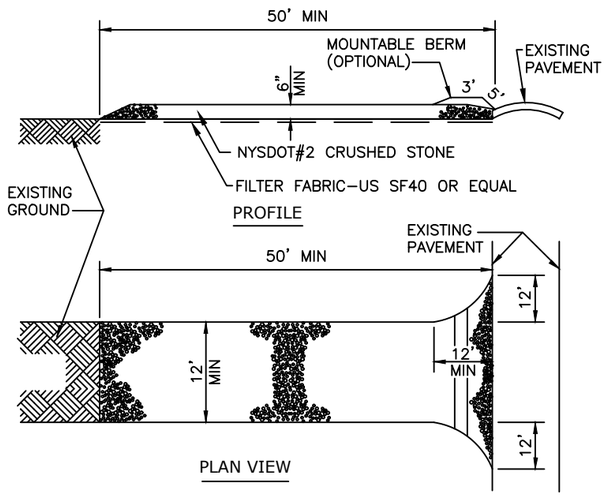
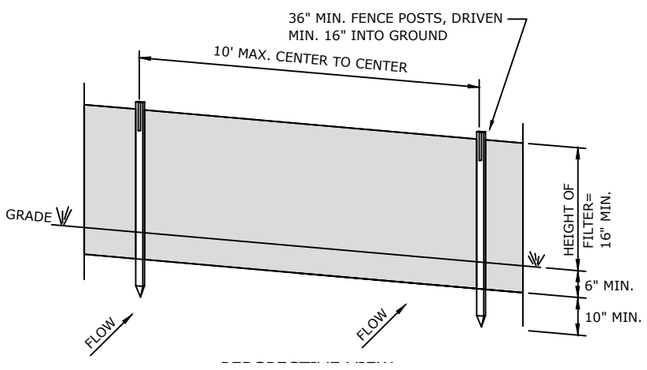


NOTES:

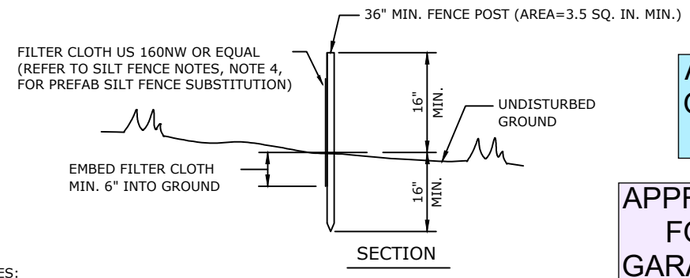
1. USE 1"–4" STONE, OR RECLAIMED OR RECYCLED CONCRETE OR APPROVED EQUAL.
2. THE LENGTH SHALL NOT BE LESS THAN 50 FEET.
3. CRUSHED STONE SHALL BE MAINTAINED AT A MINIMUM OF 6" IN DEPTH.
4. ENTRANCE SHALL HAVE A 12 FOOT MINIMUM WIDTH, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. ENTRANCE SHALL BE AT LEAST 24 FEET WIDE IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO THE PLACING OF STONE.
6. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS NOT PRACTICAL, A MOUNTABLE BERM WITH 1:5 SLOPES WILL BE PERMITTED.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS– OF–WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY SHALL BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

1 FIG2 STABILIZED CONSTRUCTION ENTRANCE DETAIL

SCALE: NONE
CROSS REFERENCE: NONE



PERSPECTIVE VIEW



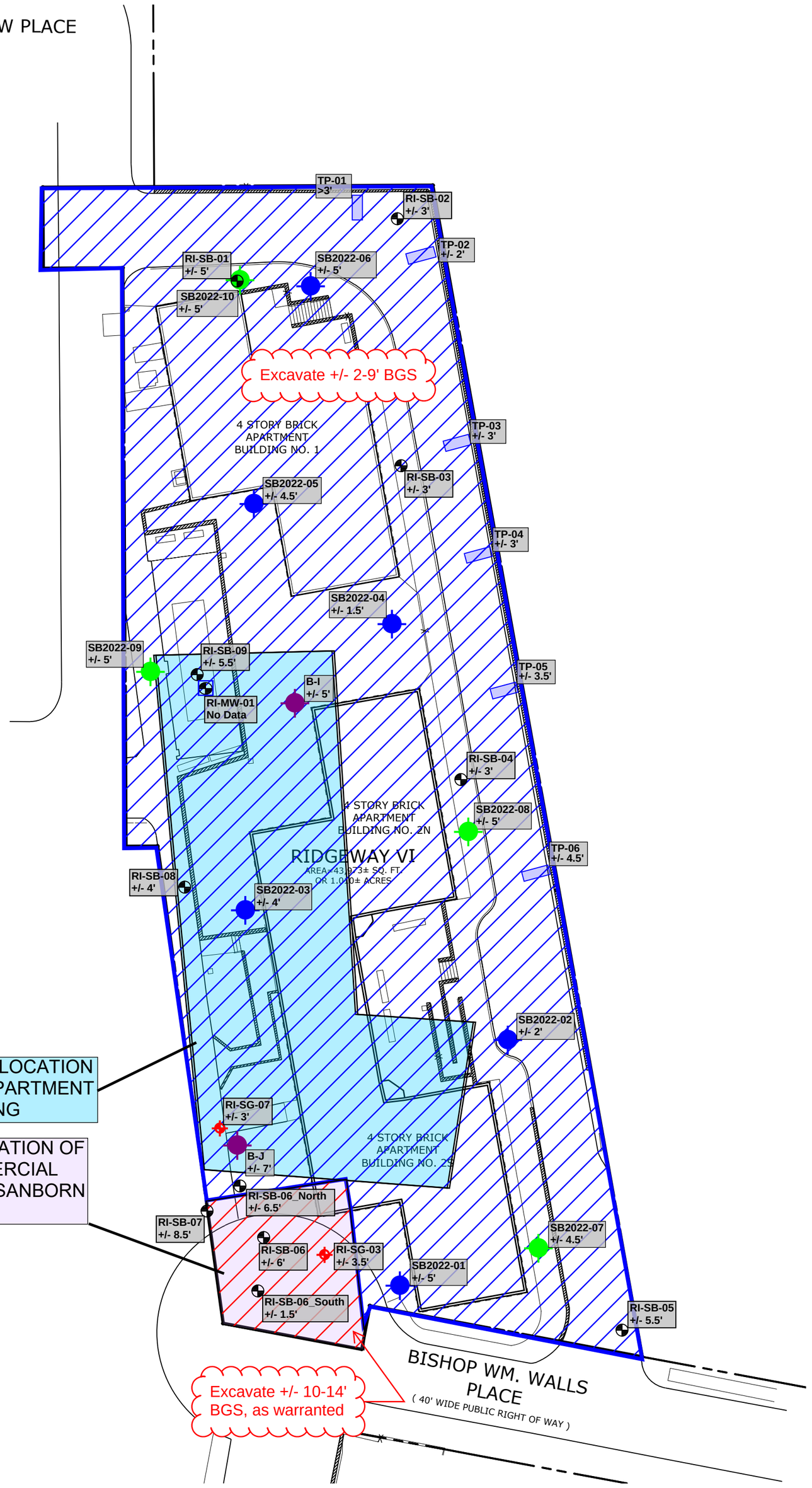
SECTION

NOTES:

1. FILTER CLOTH TO BE FASTENED SECURELY TO WOODEN STAKES
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIALS REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
4. PREFABRICATED SILT FENCE IS ACCEPTABLE AS LONG AS ALL MATERIAL SPECIFICATIONS ARE MET.

2 FIG2 STANDARD SILT FENCE DETAIL

SCALE: NONE
CROSS REFERENCE: NONE



2022 C.T. MALE PHASE II ESA SOIL BORING

2015 C.T. MALE PHASE II ESA SOIL BORING

2022 C.T. MALE BORING LOCATION FOR GEOTECHNICAL EVALUATION

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PROJ. NO : 22.2208
SCALE : 1"=30'
DATE :

FIGURE 7: REMEDIAL IMPLEMENTATION PLAN AND DETAILS
RIDGEWAY PHASE VI SITE

PREPARED FOR
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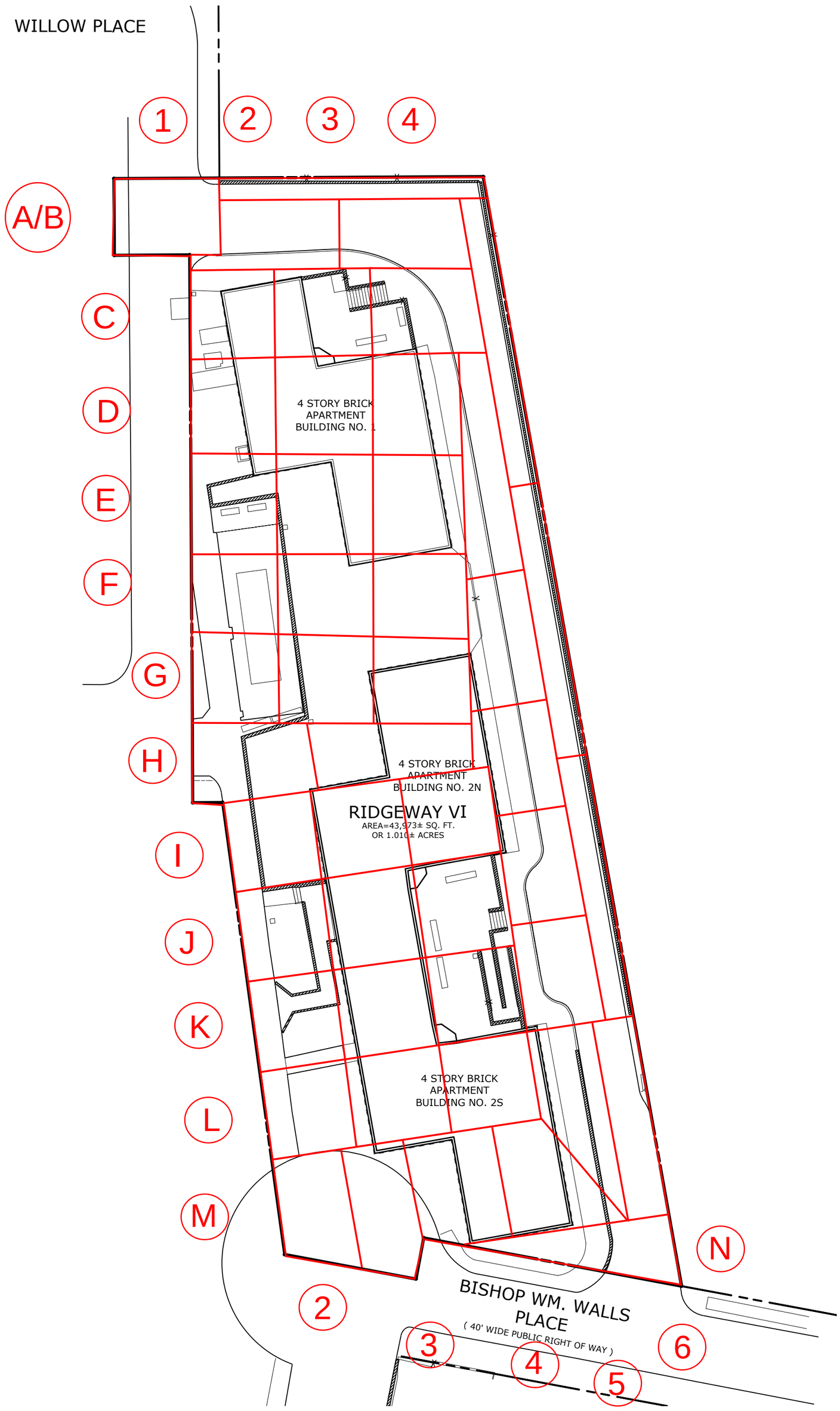
SHEET OF
DWG. NO:

XREFS: NONE

PROJECT NUMBER: 22.2208

CAD DWG. FILE NAME: BASE MAP PHASE VI SITE.dwg



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1 inch = 30 ft.

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DRAFTED : GLB/MDD

CHECKED :

PROJ. NO : 22.2208

SCALE : 1"=30'

DATE :

FIGURE 8: PROPOSED POST REMEDIATION CONFIRMATORY SAMPLING PLAN

RIDGEWAY PHASE VI SITE

PREPARED FOR CPG PHASE VI LIMITED PARTNERHIP

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APPENDIX B

TABLES

375-6.8 Soil cleanup objective tables.

(a) Unrestricted use soil cleanup objectives.

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
Metals		
Arsenic	7440-38-2	13 [c]
Barium	7440-39-3	350 [c]
Beryllium	7440-41-7	7.2
Cadmium	7440-43-9	2.5 [c]
Chromium, hexavalent [e]	18540-29-9	1[b]
Chromium, trivalent [e]	16065-83-1	30 [c]
Copper	7440-50-8	50
Total Cyanide [e, f]		27
Lead	7439-92-1	63 [c]
Manganese	7439-96-5	1600 [c]
Total Mercury		0.18 [c]
Nickel	7440-02-0	30
Selenium	7782-49-2	3.9[c]
Silver	7440-22-4	2
Zinc	7440-66-6	109 [c]
PCBs/Pesticides		
2,4,5-TP Acid (Silvex) [f]	93-72-1	3.8
4,4'-DDE	72-55-9	0.0033 [b]
4,4'-DDT	50-29-3	0.0033 [b]
4,4'-DDD	72-54-8	0.0033 [b]
Aldrin	309-00-2	0.005 [c]
alpha-BHC	319-84-6	0.02
beta-BHC	319-85-7	0.036
Chlordane (alpha)	5103-71-9	0.094

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
delta-BHC [g]	319-86-8	0.04
Dibenzofuran [f]	132-64-9	7
Dieldrin	60-57-1	0.005 [c]
Endosulfan I [d, f]	959-98-8	2.4
Endosulfan II [d, f]	33213-65-9	2.4
Endosulfan sulfate [d, f]	1031-07-8	2.4
Endrin	72-20-8	0.014
Heptachlor	76-44-8	0.042
Lindane	58-89-9	0.1
Polychlorinated biphenyls	1336-36-3	0.1
Semivolatile organic compounds		
Acenaphthene	83-32-9	20
Acenapthylene [f]	208-96-8	100 [a]
Anthracene [f]	120-12-7	100 [a]
Benz(a)anthracene [f]	56-55-3	1 [c]
Benzo(a)pyrene	50-32-8	1 [c]
Benzo(b)fluoranthene [f]	205-99-2	1 [c]
Benzo(g,h,i)perylene [f]	191-24-2	100
Benzo(k)fluoranthene [f]	207-08-9	0.8 [c]
Chrysene [f]	218-01-9	1 [c]
Dibenz(a,h)anthracene [f]	53-70-3	0.33 [b]
Fluoranthene [f]	206-44-0	100 [a]
Fluorene	86-73-7	30
Indeno(1,2,3-cd)pyrene [f]	193-39-5	0.5 [c]
m-Cresol [f]	108-39-4	0.33 [b]
Naphthalene [f]	91-20-3	12
o-Cresol [f]	95-48-7	0.33 [b]

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
p-Cresol [f]	106-44-5	0.33 [b]
Pentachlorophenol	87-86-5	0.8 [b]
Phenanthrene [f]	85-01-8	100
Phenol	108-95-2	0.33 [b]
Pyrene [f]	129-00-0	100
Volatile organic compounds		
1,1,1-Trichloroethane [f]	71-55-6	0.68
1,1-Dichloroethane [f]	75-34-3	0.27
1,1-Dichloroethene [f]	75-35-4	0.33
1,2-Dichlorobenzene [f]	95-50-1	1.1
1,2-Dichloroethane	107-06-2	0.02 [c]
cis -1,2-Dichloroethene [f]	156-59-2	0.25
trans-1,2-Dichloroethene [f]	156-60-5	0.19
1,3-Dichlorobenzene [f]	541-73-1	2.4
1,4-Dichlorobenzene	106-46-7	1.8
1,4-Dioxane	123-91-1	0.1 [b]
Acetone	67-64-1	0.05
Benzene	71-43-2	0.06
n-Butylbenzene [f]	104-51-8	12
Carbon tetrachloride [f]	56-23-5	0.76
Chlorobenzene	108-90-7	1.1
Chloroform	67-66-3	0.37
Ethylbenzene [f]	100-41-4	1
Hexachlorobenzene [f]	118-74-1	0.33[b]
Methyl ethyl ketone	78-93-3	0.12
Methyl tert-butyl ether [f]	1634-04-4	0.93
Methylene chloride	75-09-2	0.05

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
n - Propylbenzene [f]	103-65-1	3.9
sec-Butylbenzene [f]	135-98-8	11
tert-Butylbenzene [f]	98-06-6	5.9
Tetrachloroethene	127-18-4	1.3
Toluene	108-88-3	0.7
Trichloroethene	79-01-6	0.47
1,2,4-Trimethylbenzene [f]	95-63-6	3.6
1,3,5-Trimethylbenzene[f]	108-67-8	8.4
Vinyl chloride[f]	75-01-4	0.02
Xylene (mixed)	1330-20-7	0.26

All soil cleanup objectives (SCOs) are in parts per million (ppm).

Footnotes

[a] The SCOs for unrestricted use were capped at a maximum value of 100 ppm. See Technical Support Document (TSD), section 9.3.

[b] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.

[c] For constituents where the calculated SCO was lower than the rural soil background concentration, as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 1 SCO value for this use of the site.

[d] SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.

[e] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[f] Protection of ecological resources SCOs were not developed for contaminants identified in Table 375-6.8(b) with “NS”. Where such contaminants appear in Table 375-6.8(a), the applicant may be required by the Department to calculate a protection of ecological resources SCO according to the TSD.

Commercial laboratories have adopted methods which allow for the quantification of targeted PFAS in air and biota. The EPA's Office of Research and Development (ORD) is currently developing methods which allow for air emissions characterization of PFAS, including both targeted and non-targeted analysis of PFAS. Consult with the DER project manager and the DER chemist for assistance on analyzing biota/tissue and air samples.

Data Assessment and Application to Site Cleanup

Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.

Water Sample Results

NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These human health criteria should also be applied to surface water that is used as a water supply. This guidance also includes criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt). Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.

If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.

Soil Sample Results

NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:

Guidance Values for Anticipated Site Use	PFOA (ppb)	PFOS (ppb)
Unrestricted	0.66	0.88
Residential	6.6	8.8
Restricted Residential	33	44
Commercial	500	440
Industrial	600	440
Protection of Groundwater[2]	0.8	1.0

PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These

[2] The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).

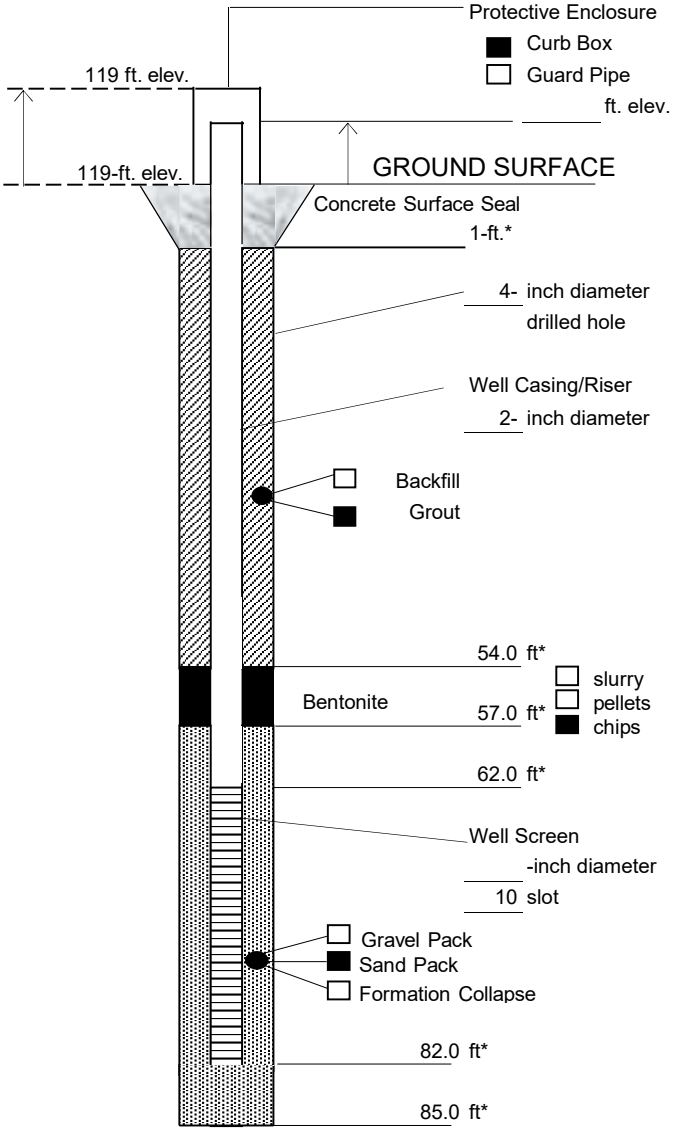
APPENDIX C

MONITORING WELL CONSTRUCTION LOGS

C.T. MALE ASSOCIATES

Well No. RI-MW-01

MONITORING WELL CONSTRUCTION LOG



* Depth below ground surface

Project Name: Ridgeway Phase VI Site

Project Number: 22.2208

Well No.: RI-MW-01 Boring No.: RI-SB-01

Town/City: City of Yonkers

County: Westchester State: NY

Installation Date(s): 7/18/23 to 7/21/23

Drilling Contractor: AARCO Environmental Services, Inc.

Drilling Method: Roto-Sonic

Water Depth From Top of Riser: 23.55 ft 7/26/23 (Date)

C.T. Male Observer: C. Ormsby

Materials Used

8	Bags of Sand	(50 lb. bags)
	Sand Size: #2	Brand: Filpro
2	Bags of Bentonite	(50 lb. bags)
	Brand: PDS Bentonite Plug	
20	ft. of PVC	well screen
62	ft. of PVC	well riser
1	Bags of Cement/Concrete	(80 lb. bags)
	Brand: Sakrete	

Grout Mixture:

14	Bags of Cement	(94 lb. bags)
25	Lbs. of Bentonite	
	Gallons of Water	
1	Grout Batches	

Notes:

APPENDIX D

GENERIC AND SPECIAL REQUIREMENTS CAMP

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. APeriodic@ monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required 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.

VOC Monitoring, Response Levels, and Actions

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

1. 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 must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. 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 must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can 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.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should 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 must 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.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

SPECIAL REQUIREMENTS COMMUNITY AIR MONITORING PROGRAM

Special Requirements for Work within 20 feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are likely to be lower, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m3 or less at the monitoring point.

- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary for each site.

Special Requirements for Indoor Work with Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under "Special Requirements for Work within 20 Feet of Potentially Exposed Individuals or Structures" except that in this instance "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential

vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evening) when building occupancy is at a minimum.

APPENDIX E

HEALTH AND SAFETY PLAN

December 2022
(Revised September 2023)

Site Specific Health & Safety Plan

Ridgeway Phase VI Site
Cottage Gardens
City of Yonkers
Westchester County, New York
BCP Site No. C360231

Prepared by:

C.T. MALE ASSOCIATES
50 Century Hill Drive
Latham, New York 12110
(518) 786-7400
FAX (518) 786-7299

C.T. Male Associates Project No: 22.2208

SITE SPECIFIC HEALTH & SAFETY PLAN
RIDGEWAY PHASE VI SITE
CITY OF YONKERS, WESTCHESTER COUNTY

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SITE SPECIFIC HEALTH & SAFETY PLAN
RIDGEWAY PHASE VI SITE
COTTAGE GARDENS
CITY OF YONKERS, WESTCHESTER COUNTY

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1.0 GENERAL

1.1 Overview

This Site-Specific Health and Safety Plan (HASP) was prepared for use during the implementation of the Remedial Investigation (RI) at the Ridgeway Phase VI Site (BCP Site No. C360231), which was completed in July 2023. The Site is located at Cottage Gardens in the City of Yonkers, Westchester County, New York (the "Site"). This HASP was subsequently modified in September 2023 to incorporate the implementation of the Remedial Work Plan (RWP).

This HASP is written to follow the regulatory requirements and guidelines in the following:

- 29 CFR 1910, OSHA, Safety and Health Regulations for General Industry.
- C.T. Male Associates Health and Safety Manual.
- Federal, State, County, and local guidance on Airborne Infectious Disease and COVID-19.

A designated Office Health and Safety Officer (OHSO) will be responsible for implementing C.T. Male health and safety policies and to ensure field work follows C.T. Male policies. A designated Site Health and Safety Officer (SHSO) will be responsible for implementing this HASP during the completion of the RI field work. All persons or parties who enter the work area (support zone, decontamination zone or exclusion zone) must review, sign, and comply with this HASP. A partial list of individuals authorized to enter the exclusion zone at the Site is presented in Section 13.0 of this HASP. Others may be added to the list as needed. A copy of this HASP will be maintained at the Site throughout the duration of the project. A complete description of the RI work is presented in the RI Work Plan and the remedial actions are outlined in the Remedial Work Plan, dated September 2023. A brief description of the proposed scope of work is outlined below:

<u>Remedial Investigation:</u>

- Oversee the drilling of soil and soil gas borings and installation of soil gas sampling points and groundwater monitoring wells by a subcontractor;
- Collection of subsurface soil samples from the soil borings for classification and submission for laboratory analyses;

- Collection of subsurface soil gas samples for submission for laboratory analyses;
- Installation and development of newly installed monitoring wells and existing monitoring wells;
- Groundwater purging and sampling for laboratory analyses from newly installed and existing monitoring wells;
- Collection of field quality control samples of soil and groundwater for laboratory analysis;
- Collection of water levels;
- Sampling of investigative derived waste for disposal;
- Surveying of sampling and monitoring well locations including elevation survey; and
- Other unforeseen environmental conditions which may be encountered during the RI work.

Remedial Work Plan Actions:

- Asbestos abatement and building demolition in accordance with NYSDOL Industrial Code Rule 56, will be conducted by the owner and their contractors;
- Advancement of test pits and/or test borings to aid in the collection of fill/soil samples for disposal facility waste characterization;
- Soil Vapor Intrusion evaluation will be completed at the Site;
- Decommissioning of existing monitoring wells within Site boundaries;
- Contingency plans in place for unknown tank(s) that may be encountered during the remedial action;
- Community Air Monitoring Plan will be established and followed for ground intrusive activities;
- Excavation and off-site disposal of impacted fill/soil mixtures mantling the Site;
- Collecting post-excavation samples for laboratory analysis; and
- Backfilling the Site with pre-approved imported fill meeting SCOs for Unrestricted Use sites.

1.2 Contact Names & Numbers

For this project, the following project contacts have been assigned.

SITE CONTACT:

CPG Phase VI Limited Partnership: Alice Anigacz 646-374-4755 (O)

CONSULTANT CONTACTS:

CONSULTING ENGINEER:	C.T. Male Associates 50 Century Hill Drive Latham, New York 12110	518.786.7400	(O – Latham)
	12 Raymond Avenue Poughkeepsie, New York 12603	845.454.4400	(O – Poughkeepsie)
	Daniel P. Reilly, P.E., Project Principal	518.786.7625 (O) 518.928.9792 (C)	
	Kirk Moline, P.G., Project Manager	518.786.7502 (O) 518.265.1708 (C)	
	Rosaura Andújar-McNeil, P.E. Site Manager	845.454.4400 (O) 347.232.1919 (C)	
	Nancy Garry, P.E., CSP Office Health & Safety Officer	518.786.7541 (O) 518.320.5783 (C)	
	Jonathon Dippert, P.G. Field Services Manager	518.786.7563 (O) 518.469.1183 (C)	
	To be determined, based on field staff onsite Site Health & Safety Officer (SHSO)		

EMERGENCY PHONE NUMBERS:

PERSONAL INJURY	Emergency	911
OR EMERGENCY:	St. John's Riverside Hospital 2 Park Avenue Yonkers, New York 10703-3402 (approx. 10 minutes)	914.965.6603
FIRE DEPARTMENT:	Emergency City of Yonkers Fire Department 5-7 New School Street Yonkers, New York 10701	911 914.377.7500
CITY POLICE:	Emergency City of Yonkers Police 104 South Broadway Yonkers, New York 10701	911 914.377.7900
NYS POLICE:	Emergency NYS Troop K Headquarters 2541 Route 44 Salt Point, New York 12578	911 845.677.7300
NEW YORK CITY REGIONAL POISON CONTROL CENTER:	New York City Department of Health & Mental Hygiene 455 First Street, Room 123 New York, New York 10016	800.222.1222
NATIONAL RESPONSE CENTER:	c/o United States Coast Guard (G-OPF) 2100 2nd Street, Southwest - Room 2611 Washington, DC 20593-0001	800.424.8802
NYSDEC SPILL HOTLINE:	24-hours	800.457.7362

2.0 HEATLH AND SAFETY PERSONNEL

The Office Health and Safety Officer (OHSO) will be responsible for implementing C.T. Male health and safety policies and to ensure field work follows C.T. Male policies.

The Site Health and Safety Officer (SHSO) or designee will be responsible for implementation of the HASP and the delegation of health and safety duties. The SHSO will coordinate the resolution of safety issues that arise during site work or ask the OSHO, and/or Field Services Manager, Project Manager for direction and compliance of the situation. When the SHSO is not present on-Site, a designee will be authorized to perform the duties of the SHSO, and the designee will be responsible for implementation of the HASP.

The SHSO or designee has authority to stop work upon their determination of an imminent safety hazard, emergency situation or other potentially dangerous situations (e.g., weather conditions). Authorization to resume work will be issued by the OHSO, Project Manager or the SHSO (see Section 11).

3.0 SITE LOCATION AND DESCRIPTION

The Ridgeway Phase VI Site is located in an urban area within the City of Yonkers, Westchester County, New York. The Site is approximately 1.01 acres in size and constitutes the entirety of tax parcel 2.-2094-1. The Site is addressed as Cottage Gardens and is located within eastern portions of the Cottage Place Gardens (CPG) apartment complex. See Figure 1: Site Location Map.

The site is developed with two (2) multi-story brick apartment buildings surrounded by landscaped areas, concrete walkways and an asphalt paved accessway. The apartment buildings are identified as Building No. 1 and No. 2 of the CPG complex and were constructed in the 1940's.

4.0 POTENTIAL SITE CONTAMINANTS

The potential Site contaminants, as identified through the RI and previous investigations, consist of one pesticide, one volatile organic compound (VOC), semi-volatile organic compounds (SVOCs) and metals in subsurface fill/soil.

Field evidence of contamination (petroleum-odors and elevated photoionization detector (PID) readings [less than 25 parts per million [ppm]]) were documented in fill material and native soils in the southwestern portion of the Site in the footprint of a former commercial garage. No VOCs or SVOCs exceeding Unrestricted Use SCOs were documented in the native soils at this location.

Analytical results of the groundwater sample collected from RI-MW-01 (deep well) identified one (1) VOC (benzene), two (2) metals (iron and sodium), and the Per- and Polyfluoroalkyl Substances (PFAS), Perfluorooctyl Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) at concentrations exceeding regulatory criteria.

Groundwater, either perched or otherwise, was not encountered within the depths explored at shallow boring locations completed during the RI or previous investigations (maximum refusal depth of shallow RI borings 14 below grade surface [bgs]). Groundwater was measured at a depth of approximately 23.55 feet bgs in RI monitoring well RI-MW-01 (deep well). Groundwater will likely not be encountered during excavation of impacted fill/soil as the anticipated depth of excavation for remediation purposes is anticipated to range from the ground surface to up to an estimated maximum depth of 14 feet bgs.

Analytical results of soil vapor samples collected identified trichloroethene and tetrachloroethene above the lowest sub-slab vapor concentration in the corresponding Soil Vapor/Indoor Air Matrix. It is important to note that as per the NYS Department of Health (DOH) Soil Vapor Intrusion (SVI) Guidance, "matrices are intended to be used when evaluating the results from buildings with full slab foundations." Soil vapor samples collected throughout the Site were not collected beneath existing buildings. Therefore, the data evaluation process in the RI Report is limited and the use of the Soil Vapor/Indoor Air Matrices is preliminary and provided only for comparison purposes. Furthermore, the exceedance of the lowest sub-slab vapor

concentration of compounds in Soil Vapor/Indoor Air Matrices, in the absence of indoor air data, is not prescriptive of a given response action.

4.1 Potential Exposure Pathways

Occupational exposure to potentially hazardous substances/chemicals associated with the work activities could potentially occur by dermal contact (skin contact), inhalation and indirect route (incidental ingestion).

4.1.1 Dermal Contact

The primary route of potential exposure for C.T. Male employees is dermal contact. Personnel sampling, conducting observations, soil vapor investigation, excavation activities, decommissioning wells and handling associated equipment may be exposed to potentially hazardous substances/chemicals by skin contact or adsorption. However, exposure is expected to be limited since workers are required to wear appropriate personal protective equipment (PPE) (i.e., appropriate work gloves, shoes, clothing, and safety glasses, etc.).

4.1.2 Inhalation

Constituents that potentially pose an occupational exposure to employees by the inhalation route may be during the soil vapor sampling or excavation activities. If a potential inhalation hazard is noted on-Site, C.T. Male staff will immediately stop work and take the appropriate steps to notify SHSO, PM or OHSO. Section 5.5 outlines air monitoring on Site, the RIWP also addresses soil vapor sampling activities, and the Remedial Action Work Plan (RWP) address soil excavation activities. The work being conducted will be reevaluated to determine the potential exposure and further PPE that may be required.

4.1.3 Ingestion

Personnel handling of associated equipment, and during project scope of work activities, could be exposed by incidental ingestion. Typically, this exposure occurs if proper PPE is not used, or personal hygiene is not practiced. Personal protection against exposure via ingestion is accomplished by performance of proper decontamination procedures when exiting contaminated work areas as well as using the correct PPE.

5.0 HAZARD ASSESSMENT

5.1 General

For this project, C.T. Male subcontracted portions of the RI activities. In addition, a General Contractor, under direct contract with the owner representative, will implement the major activities of the remedial action (soil excavation, off-site disposal and backfilling). The General Contractor and each subcontractor will be responsible for developing and implementing a Site-specific health and safety plan for their activities, for protection of their employees, and use of personal protective equipment. Health and safety plans from C.T. Male's subcontractors shall be submitted to C.T. Male prior to the work beginning for the subcontractor. In addition, if there are training or professional certificates required for the project as per OSHA or other applicable regulations, the subcontractor(s) shall provide copies of certificates to C.T. Male before work begins. The subcontractor will also be responsible for developing and following their own Respiratory Protection Program, as applicable.

The hazard assessment, use of specific protective equipment, and monitoring associated with each field work task of the RI and remedial actions to be conducted at the subject Site are presented in following subsections.

5.2 Media Sampling

5.2.1 Soil, Soil Gas and Groundwater Sampling and Water Levels

Soil, soil gas and groundwater sampling, and collection of groundwater levels were conducted for the investigation. The remedial actions will involve soil and potentially soil gas sampling. The potential hazards to personnel during this work are dermal contact and inhalation hazard. Level D protection should be sufficient to protect against dermal contact during handling of soils, soil gas and groundwater (if encountered). If organic vapors are present at the action levels presented in Section 5.5, on the basis of organic vapor monitoring of the work area, it may be necessary to upgrade to Level C respiratory protection.

5.3 Subsurface Work

Subsurface investigation work including the installation of soil borings, monitoring wells and soil gas points was conducted at the Site, and investigative activities could be conducted during/after the remedial action. Remedial action subsurface will include the advancement of test pits and/or test borings to aid in the collection of fill/soil samples for disposal facility waste characterization; the decommissioning of monitoring wells; the excavation and temporary staging and/or direct load-out of fill/soil for off-site disposal; backfilling with NYSDEC-approved material; and potentially soil gas vapor points.

The potential hazards to personnel during this work are dermal contact. Level D protection should be sufficient to protect against dermal contact during drilling of and/or handling of the subsurface soils, soil gas and groundwater (if encountered). If organic vapors are present at the action levels presented in Section 5.5, on the basis of organic vapor monitoring of the work area, it may be necessary to upgrade to Level C respiratory protection.

5.4 Asbestos Abatement and Building Demolition

Asbestos abatement and building demolition will be conducted in accordance with NYSDOL Industrial Code Rule 56, and will be conducted by the owner and their contractors. C.T. Male staff will not be involved in the removal of asbestos or abatement activities. C.T. Male may be conducting third party air monitoring on the Site. These activities will be managed under a separate applicable health and safety protocols as these activities are not part of the Remedial Action and are only referenced herein for information purposes.

5.5 Air Monitoring

During ground intrusive activities and activities outlined in section 5.3, the ambient air in the work area will be monitored with a photoionization detection (PID) meter (total volatile compounds – MiniRAE 3000) prior to the start of work and periodically as subsurface activities are conducted or as conditions warrant.

If a concentration of 10 ppm (sustained for 5 minutes) of total volatile compounds are detected within the work area on the instrument, relative to an isobutylene standard

(used to calibrate the instrument), work will cease immediately, and the workers shall shut down equipment and leave the area immediately. The level of personal protective equipment (PPE) protection will be evaluated prior to continuing work. If a PPE upgrade to Level C is required, it will include: a half face air purifying respirator equipped with combination organic vapor and particulate cartridges for 10-15 ppm exposure levels; and a full-face air purifying respirator for greater than 15 ppm to less than 50 ppm exposure levels, prior to continuing work. If a concentration greater than 15 ppm is encountered, work will cease immediately, and the situation will be evaluated prior to continuation of work. Table 1 summarizes the action levels relative to the required respiratory protection.

Table 1
C.T. Male Action Levels & Required Respiratory Protection

Action Level	Level of PPE	Type of Respiratory Protection
0-10 parts per million	Level D	No respiratory protection
10-15 parts per million	Level C	Negative pressure half-face respirator
15-50 parts per million	Level C	Negative pressure full-face respirator
Greater than 50	Cease Work	Evaluate work procedures

- Facial hair is not permitted while wearing most respirators.
- Workers required to wear a respirator must have a minimum of OSHA 40 Hour training with current medical monitoring and fit test documentation.

5.6 Community Air Monitoring Plan

A Site-specific Community Air Monitoring Plan (CAMP) will be followed for the project based on the New York State Department of Health Generic Community Air Monitoring Plan dated May 2010, included as Attachment D in the Remedial Action Work Plan. The CAMP will be followed during ground intrusive remedial activities (i.e., subsurface investigation activities, excavation, sample collection or waste characterization purposes, etc.). The intent of the CAMP is to provide a measure of protection for the downwind community (i.e., off-Site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of the RI or RA. The CAMP is not intended for use in establishing action levels for worker respiratory protection. The CAMP will monitor the air for dust (particulate air monitoring, see Section 5.6.1) and volatile organic compound vapors (VOC air monitoring, see Section 5.6.2) at the downwind perimeter of the work area. The action

levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown.

5.6.1 Particulate Air Monitoring

Two (2) real-time particulate monitors capable of continuously measuring concentrations of particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) will be utilized. The instruments will be placed inside environmental enclosures at temporary monitoring stations based on the prevailing wind direction each workday, one (1) upwind and one (1) downwind of the designated work areas.

Each particulate monitor will be equipped with a telemetry unit capable of transmitting real-time particulate data to the field representative. The particulate monitoring instruments will be capable of displaying and transmitting the short-term exposure limit (STEL) or 15-minute averaging period, which will be compared to the NYSDOH Generic CAMP action levels for particulates, as listed below. The instruments are programmed to alarm at preset action levels. At the end of each day, the readings for each instrument will be downloaded to a computer for electronic storage and retained for future reference and reporting.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that the downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, the downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped, and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

In the event of poor weather such as heavy rain, particulate monitoring will not be performed for protection of instrumentation. These weather conditions would limit

the effectiveness of the sensitive monitoring equipment and likely suppress particulate generation. Work activities will be halted if fugitive dust migration is visually observed for a sustained period of time during poor weather conditions.

5.6.2 Volatile Organic Compound Air Monitoring

C.T. Male will continuously monitor for volatile organic compounds (VOCs) at the downwind perimeter of the immediate work areas with a MiniRAE 3000 VOC monitor or equal, using a 10.6 eV lamp. The VOC monitor will be placed in the downwind environmental enclosure containing a particulate monitor. The downwind VOC monitor will be equipped with a telemetry unit capable of transmitting real-time VOC data to the field representative. The VOC monitoring instrument will be capable of displaying and transmitting the short-term exposure limit (STEL) or 15-minute averaging period, which will be compared to the NYSDOH Generic CAMP action levels for VOCs, as listed in the bulleted list below. The downwind VOC STEL readings will be downloaded to a computer for electronic storage and retained for future reference and reporting.

Upwind VOC STEL concentrations will be measured at the start of the workday, and periodically thereafter, employing a handheld MiniRae 3000 VOC monitor to evaluate the Site's background conditions. The upwind VOC STEL readings will be manually recorded for future reference and reporting.

- 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 must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can 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 must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can 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 must be shutdown. Work activities will then be evaluated to determine the source of the organic vapors and the engineering controls required to reduce/eliminate the organic vapors.

5.7 Hazard Identification and Control

As per C.T. Male health and safety programs, all personnel on Site will need to be in Level D (Hi-Vis reflective safety vest, safety glasses, hard hat, safety shoes, protective clothing, protective gloves, and hearing protection-if needed), at a minimum, while in work areas. The potential hazards to personnel during this work are dermal contact and inhalation hazards. Level D protection should be enough to protect against dermal contact and inhalation hazards during survey activities.

If a level of safety is required above Level D (e.g., Level C), the PM or FSM and SHSO will need to approve the work commencing. If a level of safety is determined to be at Level A or B, C.T. Male will stop work and re-assess the situation.

Roadway Work

Work on the shoulder of the roadways and high traffic areas (i.e., parking lots), may subject personnel to vehicular traffic. When feasible, work will be conducted behind barriers such as work vehicles, cones, or signs and field personnel will wear Class 2 reflective vests. The type of vest may change based upon day or night conditions and traffic speeds.

Biological Hazards

During the Site walk through for the project task, the area will be screened for biological hazards. The most common hazards anticipated are discussed below.

Insects

Bees, wasps, yellow jackets, spiders, snakes, and mosquitoes, etc. may be a potential hazard on this project, especially so for those individuals sensitized to those bites or stings. Protection methods against insects may be employed,

such as the use of protective clothing or insect repellents and training in recognition and identification of harmful insects.

Potential Hazards and Control

The following table presents generalized hazards potentially involved with the tasks to be completed on this project. Table 2 identifies general procedures to follow to prevent or reduce accident, injury or illness. Any worker on-site who identifies a potential hazard must report the condition to the SHSO or designee, and initiate control of the hazardous condition.

Table 2
Potential Hazards and Control

Potential Hazard	Control
Vehicular Traffic	1. Wear Hi-Vis safety vest when vehicular hazards exist. 2. Use cones, flags, barricades, and caution tape to define work area. 3. Use vehicle to block work area. 4. Use vehicle caution lights in high traffic areas within the Site. 5. Contact local police for high traffic situations on public roadways.
Slip, Trip, and Fall Protection	1. Assess work area to determine if there is a potential for falling. Additional PPE can be utilized to reduce slip, trip, fall hazards. 2. Make sure work area is neat and tools are staged in one general area. 3. Wear appropriate footwear based on site conditions and requirements. Watch where the individual is walking. Carry flashlight when walking in poorly lighted areas.
Inclement Weather	1. Stop outdoor work during electrical storms and other extreme weather conditions such as extreme heat or cold temperatures. 2. If there is lighting or thunder, staff need to stop work for 30 minutes since last occurrence and take cover in a safe location. Not in a field or under a tree. 3. Take cover indoors or in vehicle. 4. Listen to local forecasts for warnings about specific weather hazards such as tornadoes, hurricanes, and flash floods.
Utility Lines Contact	1. Have the subcontractor contact UDigNY or New York 811 to have utility lines marked prior to any underground excavation, trenching or drilling. The subcontractor must contacted UDig at least 72 hours prior to work.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	2. Conduct onsite utility mark out by a subcontractor, if needed. 3. Refer to Site drawings for utility locations. 4. Pre-clear the utility. Refer to the guidance on clearance from UDigNY or New York 811. 5. Complete the C.T. Male Subsurface Exploration checklist prior to initiating on Site activities.
Noise	1. Wear hearing protection when exposed to noise levels above 85 decibels, which includes equipment such as a drill rig, excavator, jackhammer, boat motor, woodchipper, chainsaw, or other heavy equipment is operating on-site. 2. Wear hearing protection whenever you need to raise your voice above normal conversational speech due to a loud noise source; as this much noise indicates the need for protection. 3. Hearing protection is required when measured sound exceeds 85 decibels (dB) where employees stand or conduct work.
Electrical Shock	1. Maintain appropriate distance between heavy equipment and overhead utilities; 20-foot minimum clearance from power lines; and 10-foot minimum clearance from shielded power lines. 2. Have the subcontractor contact local underground utility locating service prior to penetrating the ground surface.
Hand and Power Tools	1. Ensure cords to tools are not frayed and are properly grounded. 2. Ensure guards for power tools are in place (such as portable circular saw) as recommended by the manufacturer. 3. Tool cutting edges are kept in proper condition so the tool will operate properly. 4. Worn or bent tools are not to be used. Tool handles must be secure. 5. When not in use, tools are stored in a dry, secure location. 6. Ensure proper PPE use with hand and power tools. Cut or puncture resistant gloves, or work gloves to provide protection may be used. Check with OSHO or FSM or PM prior to use of the power tools. 7. If a generator is used with the power tools, ensure there is proper ventilation for the generator.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
Physical Injury	1. Wear safety glasses, reflective Hi-vis safety vest and/or shirt always when on-site. Personnel to have hearing protection on them and in use when it is required. 2. Maintain visual contact with any equipment operators and wear hard hats and Hi-vis safety vest when heavy equipment is operating on-site. Be aware of other vehicle traffic while heavy machinery is operating on-site. 3. Avoid loose clothing, long hair, and jewelry when working around rotary equipment. 4. Keep hands and feet away from drilling augers, excavation equipment tracks/tires, and other on-site heavy equipment. 5. Test emergency shut-off switches on equipment prior to daily use. 6. Wear life preserver in boats. 7. Do not enter manholes or confined spaces. 8. Be aware of openings into manholes and keep area clear of trip hazards. 9. Be aware of outside terrain – steep slopes and slip, trip hazards while working. 10. Be aware of biological hazards on-site such as insects (bees, mosquitoes, and flies), ticks, spiders, and snakes. 11. Be aware of botanical hazards such as poison ivy, poison sumac, and giant hogweed.
Back Injury	1. Use a mechanical lifting device or a lifting aid where appropriate. 2. Ensure the route is free of obstructions. 3. Bend at the knees and use leg muscles when lifting. 4. Use the buddy system if lifting heavy or awkward objects. 5. Do not twist or jerk your body when lifting.
Heat Stress	1. Increase consumption of water and electrolytes while working. 2. Avoid excessive alcohol intake the night before working in heat stress situations. 3. Avoid excessive caffeine intake when working in heat stress situations. 4. Increase number of rest breaks as necessary, and rest in a shaded area. 5. Watch for signs and symptoms of heat exhaustion and fatigue. 6. Rest in cool, dry areas.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	7. In the event of heat stress or heat stroke, bring the victim to a cool environment and call 911.
Cold Stress	1. Wear cotton, wool or synthetic (polypropylene) undergarments to absorb perspiration from the body. 2. Wear additional layers of light clothing as needed for warmth. The layering effect holds in air, trapping body heat, and some layers could be removed as the temperature rises during the day. 3. Pay close attention to body signals and feelings (hypothermia symptoms), especially to the extremities. Correct any problem indicators by breaking from the work activity and moving to a rest area to warm up and add additional clothing. 4. Increase water intake while working. 5. Avoid excessive alcohol intake the night before working in cold conditions. 6. Increase the number of rest breaks as necessary, and rest in a warm area. 7. In the event of hypothermia or frost bite, bring the victim to a warm environment and call 911.
Fire Control	1. Smoking is not allowed on-site. 2. Keep flammable liquids in closed containers. 3. Isolate flammable and combustible materials from ignition sources. 4. Keep fire extinguisher nearby and use only if deemed safe. 5. Inform FSM or SHSO prior to a chemical being brought on-site. 6. Facility Hot Work permit may be required for certain tasks. "Hot work" means riveting, welding, flame cutting or other fire or spark-producing operation.
Media Sampling (water, soil, sediment, soil gas, etc.)	1. Wear appropriate PPE to avoid skin, eye, and inhalation contact with contaminated media. 2. Stand upwind to minimize possible inhalation exposure, especially when opening monitoring wells or closed containers/vessels. 3. Conduct air monitoring, whenever necessary, to determine level of respiratory protection.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	4. If necessary, employ engineering controls to assist in controlling chemical vapors. 5. When collecting samples on or near water bodies, wear a life jacket and employ the buddy system. 6. When collecting samples from water bodies, assess water conditions and the water current and ensure that the sampling vessel is stabilized, or the water is safe to enter.
Cleaning Equipment	1. Wear appropriate PPE to avoid skin and eye contact with Alconox or other cleaning materials. 2. Stand upwind to minimize possible inhalation exposure. 3. Properly dispose of spent chemical cleaning solutions and rinse accordingly.
Deer Ticks	1. Wear long pants and long sleeve shirts. Pants could be tucked into the top of socks at boot level. Shirt tucked into pants. 2. Wear insect repellant clothing, if available. See SHSO for appropriate clothing. 3. Use tick repellent, this will need to be cleared with OSHO or SHSO to ensure that new chemicals are not introduced to the Site. 4. Perform personal body checks for the presence of ticks, after field work is complete and before the personnel have left the Site. 5. Notify the OHSO immediately if you have been bitten by a tick or discovered a tick on yourself.
Note: A first aid kit and fire extinguisher will be located in the C.T. Male company vehicle.	

Response actions to personal exposure from on-site contaminants include skin contact, eye contact, inhalation, ingestion, and puncture or laceration. The recommended response actions are presented in Section 11.2.

5.8 Airborne Infectious Disease Plan and COVID-19

C.T. Male COVID-19 & Airborne Infectious Disease

C.T. Male will follow applicable CDC, OSHA, New York State, and Local authorities for COVID-19 and other related infectious diseases. To address work Site safety regarding infectious disease exposure (including COVID-19), C.T. Male personnel will follow C.T. Male Associates 'Airborne Infectious Disease Exposure Prevention Plan' dated August 5, 2021. This plan would be followed when an airborne infectious disease is designated by the NYS Health Commissioner as a highly contagious communicable disease that presents a serious risk of harm to the public health.

For field activities, C.T. Male shall follow C.T. Male's SOP – 'Procedures for field staff in relation to COVID-19 or other virus', dated March 19, 2020, when applicable.

In addition to the above referenced Plan and SOP, C.T. Male employees will not report to work and notify their supervisor immediately if they are experiencing illness such as fever, cough, shortness of breath or difficulty breathing, chills, repeated shaking with chills, muscle aches, sore throat, loss of taste or smell, or runny/stuffy nose.

C.T. Male will also:

- Make effort to hold safety/tailgate meetings outdoors; maintain social distancing of six feet;
- Avoid sharing tools and equipment without cleaning and disinfecting;
- Avoid touching their eyes, nose and mouth with unwashed hands;
- Cover their cough or sneeze with a tissue, then throw the tissue in the trash;
- Clean and disinfect frequently touched objects and surfaces using a bleach solution or wipe;
- Wash their hands often with soap and water for 20 seconds, and use an alcohol-based hand sanitizer that is 60% alcohol when soap and water are unavailable;

6.0 TRAINING

The C.T. Male OSHA and SHSO will provide training to specifically address the activities, procedures, monitoring and equipment for the Site operations. It will include area and facility layout, hazards, emergency services (police, hospital, fire, etc.), and review of this HASP. Questions by workers, field personnel, etc. will be addressed at this time.

Workers and personnel conducting and/or supervising the project must have attended and successfully completed a 40 Hour Health and Safety Training Course for Hazardous Waste Operations and an annual 8-hour Refresher Course. Workers must take part in an employer medical surveillance program in accordance with OSHA 1910.120 requirements, including that the workers have had a medical physical within one (1) year prior to the date work begins and that they are physically able to wear a respirator.

Documentation of training and medical surveillance will be submitted to the OSHO or designee prior to the start of any on-site work. A copy of the training certificates shall be maintained by the OSHO and Human Resources Department at the C.T. Male Latham office.

7.0 SITE ACCESS

Remedial Action Site work (test pits; test borings; decommissioning of monitoring wells; soil excavation and backfill; sample collection, etc.) will be performed within the Site boundaries. Vehicular traffic will enter and exit the Site along designated entrance(s) (to be determined). The Site is located in a multi-family residential setting and the possibility exist for the public or curious bystanders may be present at the time of the work.

Temporary chain-link fencing with lockable gate(s) has been installed and is currently maintained around the perimeter of the Site. The fencing is anticipated to remain in-place throughout the remedial action. During the RA, the General Contractor supplies and equipment will likely be staged on different areas of the Site dependent on which areas of the Site are being remediated at any given time. Therefore, based on vehicular ingress/egress (to be determined), contractor staging areas and the work area locations, the work area will be considered anywhere within the boundaries of the Site.

Only OSHA trained employees of C.T. Male that are qualified to do the work of the Environmental Consulting Engineer and have read and signed this HASP will be allowed within the work/exclusion zone (see definition below). Pertinent contractors and subcontractors entering into the work area will follow their own HASPs and will have the necessary training for the work that they are performing. Temporary fencing/hazard tape will be installed around open excavations after hours when C.T. Male or the contractor is not on Site. The Contractor will be responsible for preventing and/or limiting unauthorized individuals from entering the Site during normal work hours.

The Contamination Reduction Zone (decontamination area), and Support Zone (clean area) shall be established outside the work area as necessary. The work/exclusion, contamination reduction and support zone during the RA work have been identified and designated as follows:

Work/Exclusion Zone - The location of the work/exclusion zone will be determined in the field prior to the start of work and will vary depending on the work activities conducted. For the most part, the work/exclusion zone is anticipated to be approximate 20 foot radius around the daily work area and defined with caution tape

and cones (see above, or equal method), when applicable. Only authorized persons with proper training and protective gear will be allowed to enter the work/exclusion zone.

Contamination Reduction Zone – If applicable, this zone will generally be a 10'± by 10'± area containing decontamination related supplies and equipment (decontamination station). The size of the work zone may be adjusted based on Site conditions or restraints. The location will be determined prior to the start of work and may vary depending on the area(s) the work is being conducted. This zone is where decontamination of personnel and equipment will take place, as necessary, on the basis of the work being performed, and temporary storage of Investigation Derived Wastes (IDW).

Support Zone - Area outside of the contamination reduction zone; not including the work/exclusion zone. Unauthorized or untrained individuals must remain in this zone.

8.0 PERSONAL PROTECTION

8.1 Level of Protection

Based on an evaluation of the potential hazards, the minimum level of protection to be worn by workers during implementation of the remedial activities is defined as Level D protection and will be controlled by the OHSO, SHSO or designee.

The minimum level D protective equipment will consist of field clothes, Hi-Vis shirts or vests, rubber and/or nitrile gloves, safety glasses, hard hats, face covering as applicable (Airborne Infectious disease/COVID-19), and safety boots (steel or composite toe). As appropriate, this level of protection may be modified to include ear plugs, protective suits, coveralls, leg chaps, or face shield for additional protection.

If required, level C protective equipment will consist of the items listed for Level D protection with the added protection of a half face air purifying respirator or a full-face air purifying respirator equipped with combination organic vapor and particulate cartridges, chemical resistant clothing, inner and outer chemically resistant gloves (i.e., nitrile and/or PVC), and chemical resistant safety over boots. Prior to field staff donning a respirator, C.T. Male Project Manager and OSHO will need to approve the use of the respirator, cartridges and staff donning them. Staff that have medical clearance and have been fit tested, should have their full-face or half-face air purifying respirators available. Appropriate combination organic vapor and particulate cartridge filters will be available at the Site to use, if necessary, with the air purifying respirators.

Level A or B is not anticipated, but if required, level B protective equipment will consist of the items listed for Level D protection except a self-contained breathing apparatus (SCBA) will be worn dependent on the level of contaminants present in the work zone, and protective suits will be required. When Site conditions warrant the need for level A or B protective equipment, work will cease, and the project will be re-evaluated to determine the necessity for eliminating the condition, employing engineering controls to reduce the potential contaminants of concern. C.T. Male staff are not approved for donning SCBA equipment.

8.2 Safety Equipment

Basic emergency and first aid equipment will be available at an area within the Support Zone clearly marked and available or within C.T. Male company vehicle. This shall include, at a minimum, a first aid kit, fire extinguisher, supply of potable water (if not available on-site or not in an appropriate distance), soap, towels, face covering, Clorox wipes or bleach solution. Extra PPE will also be kept in the work area, or within C.T. Male company vehicle. The SHSO or designee shall be equipped with a cellular phone in case of emergencies.

9.0 COMMUNICATIONS

The SHSO or designee shall notify the C.T. Male Project Manager and OSHO as soon as safely possible in the event of an accident, injury, or emergency action.

Hand signals for certain work tasks will be employed, as necessary, and the buddy system will be employed, when feasible for Site investigation activities.

10.0 DECONTAMINATION PROCEDURES

10.1 Personnel Decontamination Procedures

Decontamination procedures will be carried out by all personnel leaving the Work/Exclusion Zone (except under emergency evacuation). The amount of decontamination performed will be dependent on the level of personal protection currently being worn within the exclusion zone.

1. Do not remove respiratory protection (if applicable) until all steps have been completed.
2. Clean outer protective gloves and outer boots, if worn, with water (preferably with a pressurized washer) over designated wash tubs in the exclusion zone to remove the gross amount of contamination.
3. Deposit equipment used (tools, sampling devices, and containers) at designated drop stations - on plastic drop sheets or in plastic lined containers. If disposable equipment is used, it can be discarded in the designated container.
4. Rinse outer boots if worn and gloves with clean water in designated rinse tubs. Remove outer boots if worn and gloves and deposit in designated area to be determined in the field for use the next day or when necessary. If disposable outer boots are worn, remove and discard in designated container.
5. Remove protective suit, if worn, and discard in designated container. If ear plugs were used, they can be discarded in designated container. Remove respirator at this time, if used; wash and rinse with clean water. Organic vapor and particulate cartridges, when used, will be replaced daily. Used cartridges will be discarded in the designated waste container. Remove inner gloves and discard in designated container.
6. Remove hard hat & safety glasses, clean with Clorox wipes or Clorox bleach solution (or similar) prior to placing into C.T. Male vehicle.
7. Prior to entering the C.T. Vehicle, ensure that C.T. Male SOP for field staff in relation to COVID-19 is followed, if applicable.

10.2 Equipment and Sample Containers Decontamination

All decontamination will be completed by personnel in protective gear appropriate for the level of protection determined by the SHSO or designee. Manual sampling equipment including scoops, hand augers, and shovels which come into contact with the Site's soils or groundwater (if generated) will be cleaned with a tap water (or filtered water)/detergent wash and a tap water (or filtered water) rinse. The sampling equipment will be decontaminated after each sample is collected at the Contaminant Reduction Zone (Decontamination Station). The sampling equipment wash, and rinse water (if generated in significant amounts warranting containerization) will be captured in plastic pails or tubs and ultimately transferred to labeled appropriate storage containers(s) (e.g.: DOT 17H approved 55-gallon open top steel drums or frac tank) and staged on-site at a secure location.

Drill rig equipment (i.e., casing, drill rods, bits, core samplers) which comes into contact with the Site's soils or groundwater (if generated) will be decontaminated with hot water wash and/or other methods within the Contaminant Reduction Area. Larger equipment (i.e., drill rig) which comes into contact with the Site's soils will be decontaminated with hot water wash and/or other methods within a decontamination area. If performed during investigative activities, the cleaning will be performed at the completion of each boring location. During investigative activities, equipment decontamination wastes will be transferred to labeled appropriate storage containers and staged on-Site at a secure location.

Excavation equipment (i.e., rubber-tire backhoe or track excavator) which comes into contact with the Site's soils or groundwater will be decontaminated with a high pressure/hot water wash or utilizing dry decontamination methods (i.e., brushing of tires/tracks to removed adheres soils). Prior to the equipment being demobilized from the Site or prior to entering remediated areas of the Site, the equipment will be decontaminated in a manner that removes adhered fill/soils and residues. Fill/soils and residues generated from the decontamination procedures will be disposed of with the impacted fill/soil mixtures at the approved off-site disposal facilities. The decontamination procedure will focus on portions of the equipment that has come into contact with the Site's soils or groundwater (if generated) such as the bucket, tracks and tires. The cleaning will be performed at the completion of excavation

activities and the used cleaning liquids (if generated) will be stored in DOT approved containers for characterization and off-site disposal at a permitted disposal facility.

Trucks entering and exiting the Site will be subject to the requirements of the Site specific erosion and sediment control measures outlined in the RWP and site specific Stormwater Pollution Prevention Plan (SWPPP), which shall include the requirements of a stabilized construction entrance to mitigate fill/soil from being tracked off-site and onto roadways. The public roadway(s) where trucks exit the Site will be monitored by the Remediation Engineer's field representative. If fill/soil tracking is observed, improvements to the erosion and sediment controls and fill/soil loading procedures will be required and implemented. Trucks entering and exiting the Site will also conform to the Site's State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity.

Exterior surfaces of sample containers, when utilized, will be wiped clean with disposable paper towels in the decontamination zone and transferred to a clean cooler for transportation or shipment to the analytical laboratory. Sample identities will be noted and checked off against the chain-of-custody record. The disposable paper towels will be placed in the designated disposal container and disposed of as solid waste.

11.0 EMERGENCY RESPONSE PROCEDURES

THE PROJECT EMERGENCY COORDINATORs ARE:

Project Manager (PM)	Kirk Moline 518.786.7502 (O) 518.265.1708 (C)
Site Manager (SM)	Rosaura Andújar-McNeil 845.454.4400 (O) 347.232.1919 (C)
Field Services Manager (FSM)	Jonathan Dippert 518.786.7563 (O) 518.469.1183 (C)
Office Health and Safety Officer (OHSO)	Nancy Garry 518.786.7541 (O) 518.320.5783 (C)
Site Health and Safety Officer (SHSO)	To be determined based upon work task being completed.

The following standard emergency procedures will be used by on-Site personnel. The PM, FSM and OHSO shall be notified of any on-Site emergencies and be responsible for assuring that the appropriate procedures are followed.

IN THE EVENT OF AN EMERGENCY DIAL 911

11.1 Personal Injury

In the event of an Emergency situation, dial 911. Emergency first aid shall be administered on-Site as deemed necessary and only by a trained individual, if available at the Site. If a trained individual is not available on-Site, decontaminate if feasible, and transport individual to nearest medical facility (St. John's Riverside Hospital). If feasible, the injured individual shall not transport themselves to the nearest medical facility. The SHSO or Project Manager will be responsible for completing the incident report in conjunction with the employee.

11.2 Personal Exposure

The recommended response to worker exposure from contaminants on-Site includes the following:

SKIN CONTACT: Use generous amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention, as necessary.

EYE CONTACT: Wash eyes thoroughly with potable tepid water supply provided on-site. Eyes should be rinsed for at least 15 minutes subsequent to chemical contamination. Provide medical attention, as necessary.

INHALATION: Move worker to fresh air and outside of the work zone and/or, if necessary, decontaminate and transport to hospital (St. John's Riverside Hospital). If respirator use is implemented at the time of inhalation, worker must not remove respirator until completely away from the work zone.

INGESTION: Decontaminate, if feasible, and transport to hospital (St. John's Riverside Hospital).

PUNCTURE WOUND OR LACERATION: Provide first aid at the Site and if wound needs medical attention, decontaminate, if feasible, and transport to hospital (St. John's Riverside Hospital).

If the affected worker is exposed to contaminants on-Site and the injury or accident prevents decontamination of the individual, the emergency responders must be notified of this condition and the exposure must be kept to a minimum.

11.3 Potential or Actual Fire or Explosion

Immediately evacuate area in the event of potential or actual fire or explosion and dial 911. Notify the local Fire and Police Departments, and other appropriate emergency response groups as listed in Section 1.2. Perform off-site decontamination and contain wastes for proper disposal. If a fire or explosion occurs, all on-site

personnel must meet in the designated area of the Site (established by the SHSO or designee – prior to work starting and relayed to Site workers) for an accurate head count.

11.4 Equipment Failure

Should there be any equipment failure, breakdown, etc. the Project Manager, Field Services Manager or SHSO shall be contacted immediately. There will be a concerted effort to replace or repair the equipment in a timely manner.

11.5 Spill Response

The SHSO or designee shall initiate a corrective action program with the subcontractors in the event of an accidental release of a hazardous material, suspected hazardous material or petroleum. The SHSO or designee work with the General Contractors Emergency Coordinator and with the subcontractors for the purposes of spill prevention; identifying releases; implementing clean up measures; and notification of appropriate personnel.

The corrective action program will be implemented by the Project Manager or SHSO or designee and subcontractor to effectively control and minimize any impact accidental releases may have to the environment.

Effective control measures will include:

- Preliminary assessment of the release.
- Control of the release source.
- Containment of the released material.
- Effective clean-up of the released material.

Potential sources of accidental releases include hydraulic oil spills or petroleum leaks from heavy equipment; cooling oils (potentially PCB containing) for electrical equipment handling and cleaning; and spills from drums and tanks. The SHSO or designee in conjunction with the General Contractors and subcontractors shall respond to an accidental release in the following manner:

- Identify the character, source, amount, and area affected by the release.
- Have subcontractor take all reasonable steps to control the release.
- Notify Project Manager and Field Services Manager.

- Notify Site Contact for CPG Phase VI Limited Partnership.
- Notify the NYSDEC Spill Hotline at 1-800-457-7362 if required.
- Contain the release with sorbent material which should include speedy-dry, spill socks and sorbent pads.
- Prevent the release from entering sensitive receptors (i.e., catch basins and surface water) using the specified sorbent material or sandbags.
- Coordinate cleanup of the released material.
- Oversee proper handling and storage of contaminated material for disposal.

At no time should personal health or safety be compromised or jeopardized in an attempt to control a release. All health and safety measures as outlined in this HASP should be adhered to.

12.0 ADDITIONAL WORK PRACTICES

Workers will be expected to adhere to the established safety practices. Work on the project will be conducted according to established protocol and guidelines for the safety and health of all involved. The following will be adhered to:

- Employ the buddy system when possible, and for those work tasks which require it. Establish and maintain communications.
- Minimize contact with potentially contaminated soil, soil gas and groundwater.
- Employ disposable items, when possible, to minimize risks during decontamination and possible cross-contamination during sample handling.
- Smoking, eating, or drinking after entering the work zone and before decontamination will not be allowed.
- Avoid heat and other work stress related to wearing personal protective equipment. Take breaks as necessary and drink plenty of fluids to prevent dehydration.
- Withdrawal from a suspected or actual hazardous situation to reassess procedures is the preferred course of action.
- The removal of facial hair prior to working on-site will be required to allow for a proper respiratory face piece fit.
- The PM, SHSO, and field personnel shall maintain records recording daily activities, meetings, facts, incidents, data, etc. relating to the project. These records will be electronically available during the full duration of the project so that replacement personnel may add information while maintaining continuity.

13.0 AUTHORIZATIONS

Personnel authorized to enter the exclusion zone at the Ridgeway Phase VI Site at Cottage Gardens in the City of Yonkers, Westchester County, New York while operations are being conducted must be certified by the PM, OHSO or SHSO. Authorization will involve completion of appropriate training courses and review and sign off this HASP.

Personnel authorized to perform work on-site are as follows:

Company Representing	Written Name
C.T. Male	Kirk Moline, Jeffrey Marx, Steve Bieber, Rosaura Andújar-McNeil, Mary Loughlin, Dan Reilly, Jon Dippert, Dan Achtyl, Chris Ormsby, Cliff Bondi, Nathan Roberts, Ryan Hubbard, Brittany Taranto, Nancy Garry, Jorel Spain, Adam Rodgers

14.0 FIELD TEAM REVIEW

Each field team member shall sign this section after Site specific training is completed and before being permitted to work on-site.

I have read and understood this Site-Specific Health and Safety Plan, and I will comply with the provisions contained therein.

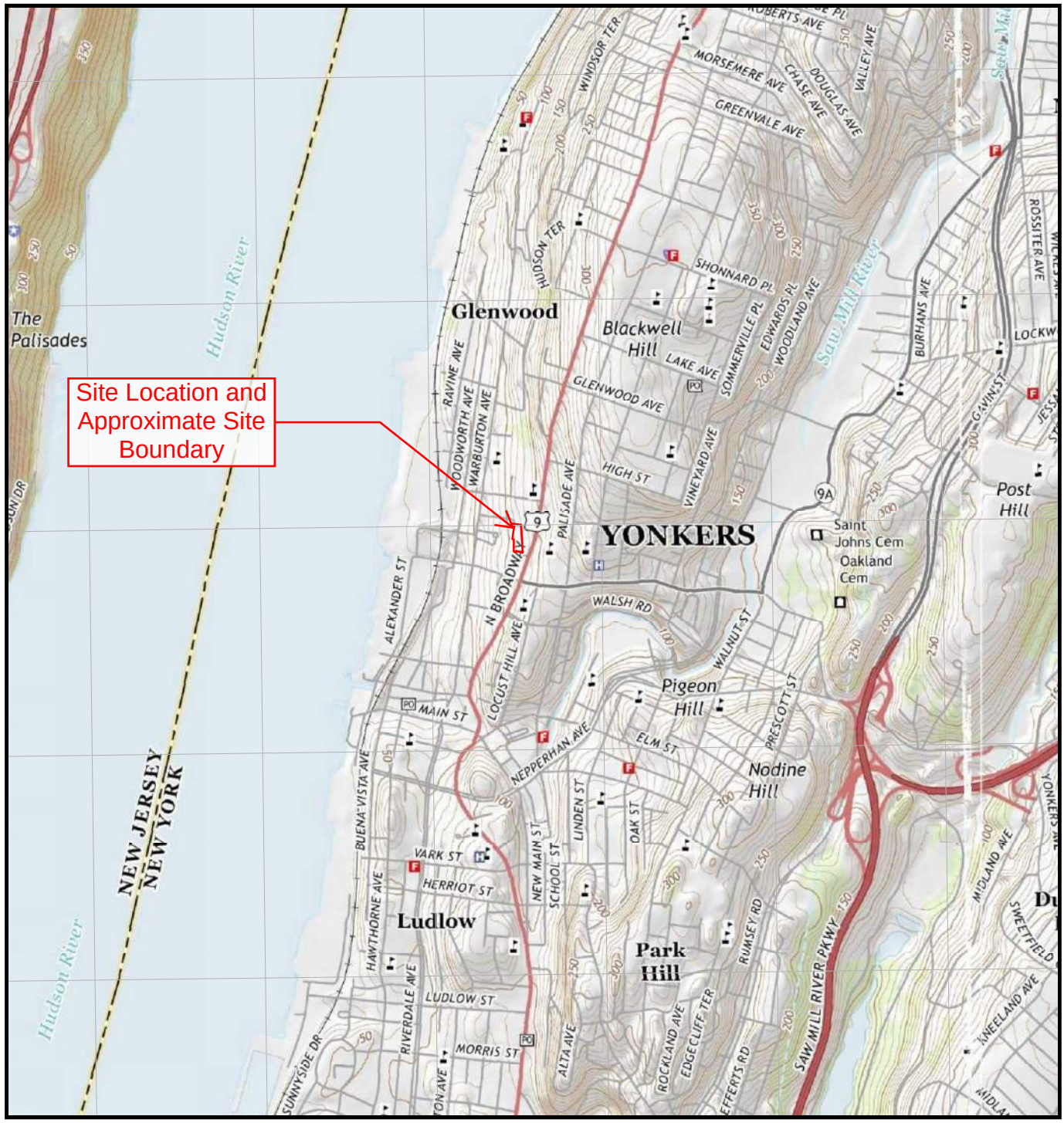
PROJECT: Remedial Investigation/Remedial Action
Ridgeway Phase VI Site
Cottage Gardens
City of Yonkers
Westchester County, New York

Name: Printed	Signature	Date

FIGURE 1

SITE LOCATION MAP

Attachment 1: Site Location Map



MAP REFERENCE
United States Geological Survey
7.5 Minute Series Topographic Map
Quadrangles: Mount Vernon, NY and Yonkers, NY
Date: 2016

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C.T.MALE ASSOCIATES
ENGINEERING, SURVEYING, ARCHITECTURE
LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C.

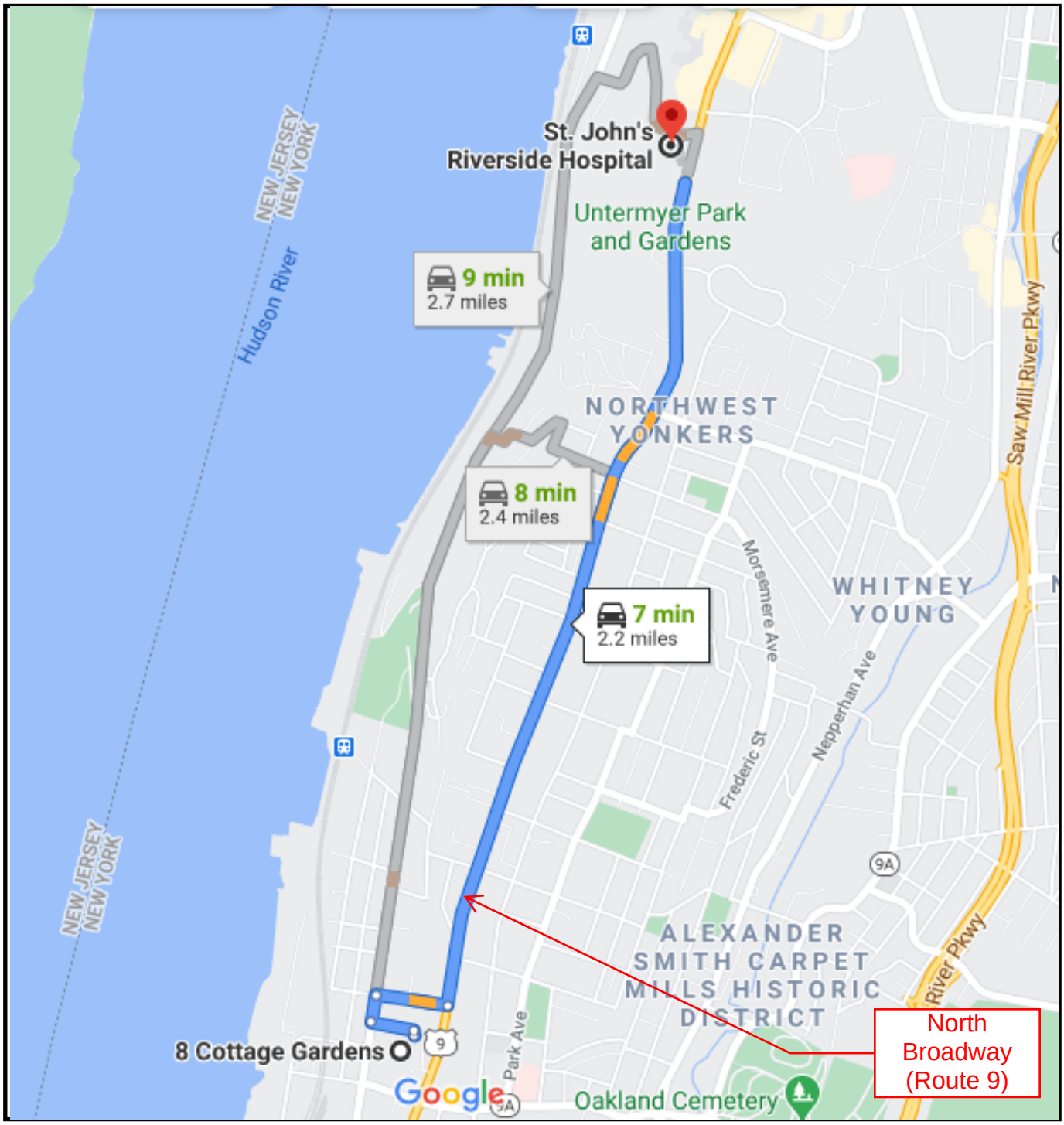
50 CENTURY HILL DRIVE
LATHAM, NY 12110

FIGURE 1 - SITE LOCATION MAP

CITY OF YONKERS	WESTCHESTER COUNTY, NY
SCALE: 1:24,000	The locations and features depicted on this map are approximate and do not represent an actual survey.
DRAFTER: RH/ML	
PROJECT No.: 22.2208	

FIGURE 2

MAP SHOWING ROUTE TO ST. JOHN'S RIVERSIDE HOSPITAL



MAP REFERENCE

Google Map Images (accessed January 5, 2021).

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C.T.MALE ASSOCIATES
ENGINEERING, SURVEYING, ARCHITECTURE
LANDSCAPE ARCHITECTURE & GEOLOGY, D.P.C.

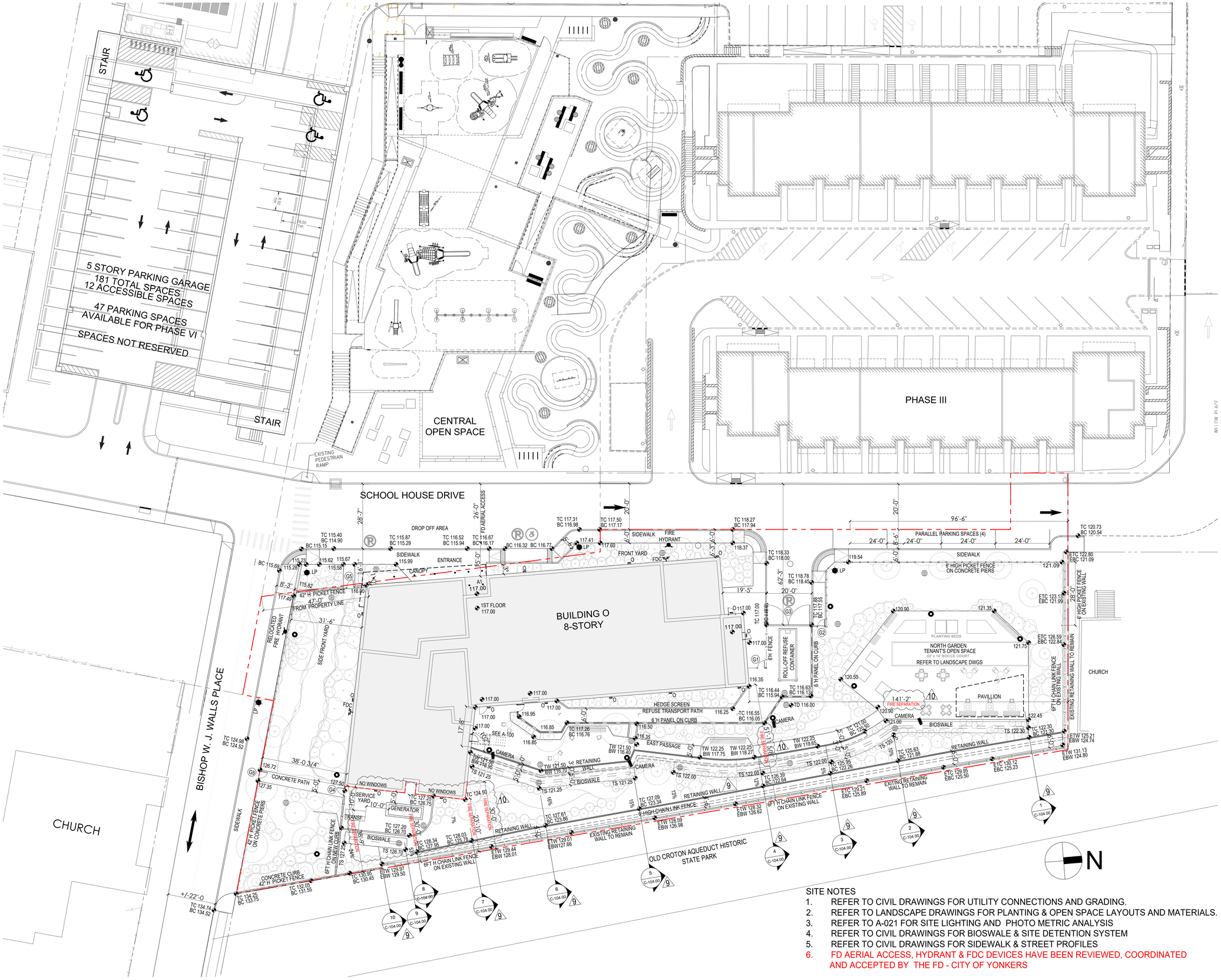
50 CENTURY HILL DRIVE
LATHAM, NY 12110

FIGURE 2 - ROUTE TO HOSPITAL

CITY OF YONKERS	WESTCHESTER COUNTY, NY
SCALE: NOT TO SCALE	The locations and features depicted on this map are approximate and do not represent an actual survey.
DRAFTER: ML	
PROJECT No.: 16.6669	

EXHIBIT 1

PROPOSED REDEVELOPMENT SITE PLAN AND LANDSCAPING PLAN



1 PHASE VI SITE PLAN
1/16" = 1'-0"

SITE NOTES

1. REFER TO CIVIL DRAWINGS FOR UTILITY CONNECTIONS AND GRADING.
2. REFER TO LANDSCAPE DRAWINGS FOR PLANTING & OPEN SPACE LAYOUTS AND MATERIALS.
3. REFER TO A-021 FOR SITE LIGHTING AND PHOTO METRIC ANALYSIS
4. REFER TO CIVIL DRAWINGS FOR BIOSWALE & SITE DETENTION SYSTEM
5. REFER TO CIVIL DRAWINGS FOR SIDEWALK & STREET PROFILES
6. FD AERIAL ACCESS, HYDRANT & FDC DEVICES HAVE BEEN REVIEWED, COORDINATED AND ACCEPTED BY THE FD - CITY OF YONKERS

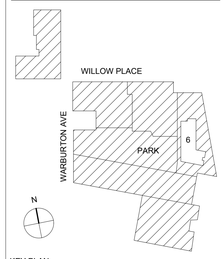
PROJECT:
WILLOW / RIDGEWAY VI

23 BISHOP WILLIAM J. WALLS PLACE
YONKERS, NY 10701

BLOCK 2094 : LOT 1

Developer:
THE COMMUNITY BUILDERS
8 WEST 38TH STREET, SUITE 1102
NEW YORK, NY 10018

MHACY
Municipal Housing Authority for the City of Yonkers
1511 CENTRAL PARK AVENUE
PO BOX 35
YONKERS, NY 10710



KEY PLAN

NO.	REVISION/SUBMISSION	DATE
10	ISSUED FOR PERMIT RE-SUBMISSION	04/05/2024
9	SITE PLAN AMENDMENT SUBMISSION	01/31/2024
8	ISSUED FOR PERMIT	08/31/2023
7	75% CD SUBMISSION	05/31/2023
6	CODE REVIEW SUBMISSION	11/30/2022
5	SITE PLAN APPROVAL SUBMISSION	11/21/2022
4	SITE PLAN APPROVAL SUBMISSION	10/12/2022
3	DESIGN DEVELOPMENT SUBMISSION	09/15/2022
2	SCHEMATICS DESIGN	03/24/2022
1	FEASIBILITY STUDY	12/10/2021

SUBMISSION:
ISSUED FOR PERMIT
RESUBMISSION

ARCHITECT:
MONICA LOPEZ ARCHITECT, LLC
85 Broad Street, 18th Floor, New York, NY 10004

CONSULTANTS:

REVIT CONSULTANT: IMC ARCHITECTURE DPC, 254 36TH ST, SUITE C663, BROOKLYN, NY 11232

MEP ENGINEER: EMTG CONSULTANTS INC, 236 MINEOLA BLVD, MINEOLA, NY 11501

STRUCTURAL ENGINEER: CITYSCAPE ENGINEERING, 8 HAVEN AVE, SUITE 209, PORT WASHINGTON, NY, 11050

CIVIL ENGINEER: PHILIP HABIB AND ASSOCIATES, 102 MADISON AVE #11, NEW YORK, NY 10016

LANDSCAPE ARCHITECT: LIZ FARRELL LANDSCAPE ARCHITECTURE, 523 SIXTH AVENUE, BROOKLYN, NY 11215

EXPEDITER: CORE CONSULTANTS NYC LLC, 254 36TH STREET, SUITE C663, BROOKLYN, NY 11232

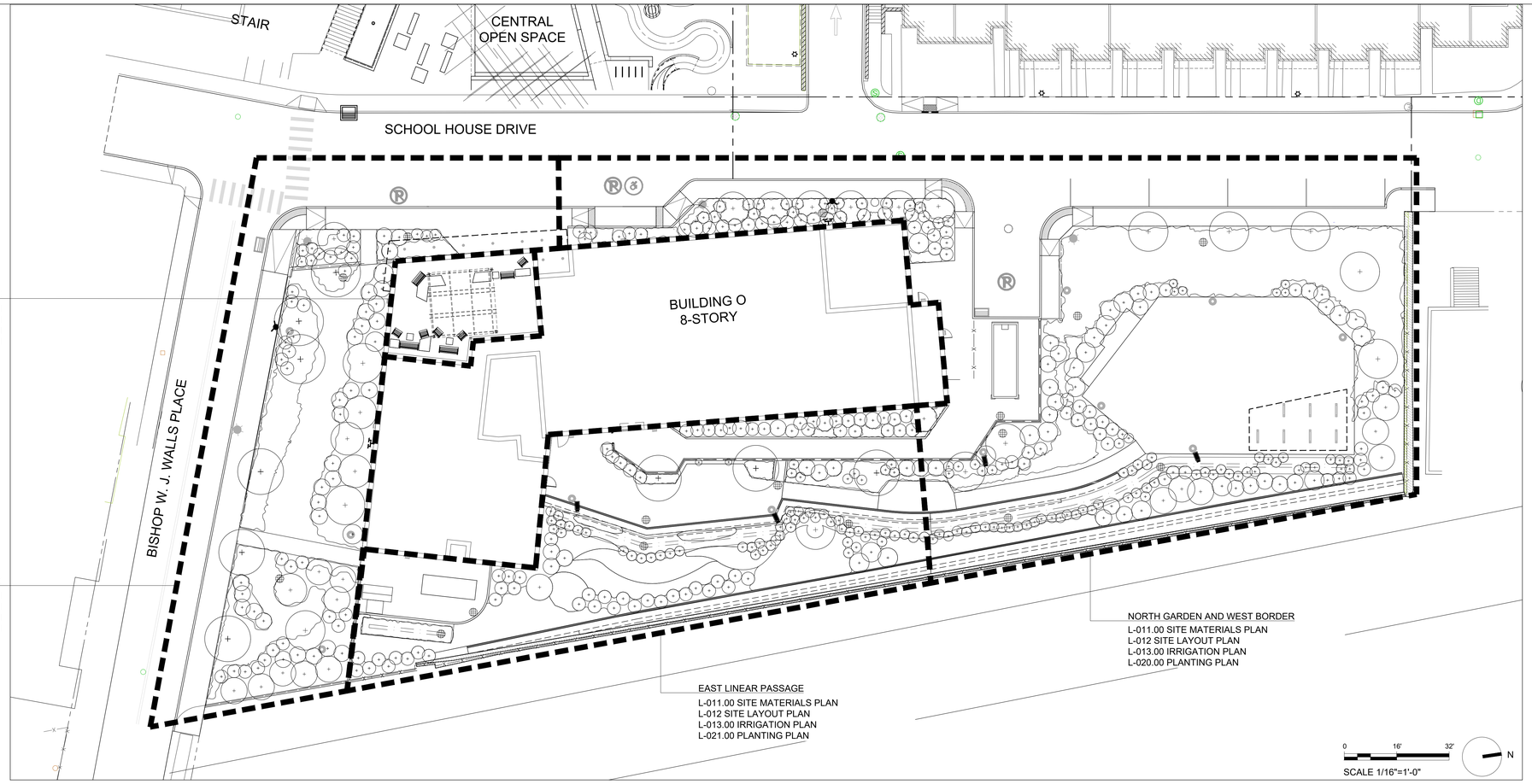
PHASE VI
SITE PLAN

SEAL & SIGNATURE:
REGISTERED ARCHITECT MONICA LOPEZ URIEN 035655 STATE OF NEW YORK

PROJECT No: 059
DRAWING BY: MLA/IMC
CHK BY: MLU

DRAWING NO: A-020.01

SCALE: 1/16" = 1'-0"



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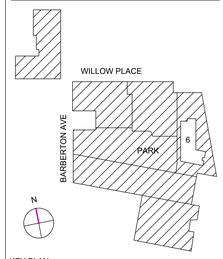

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SITE KEY PLAN

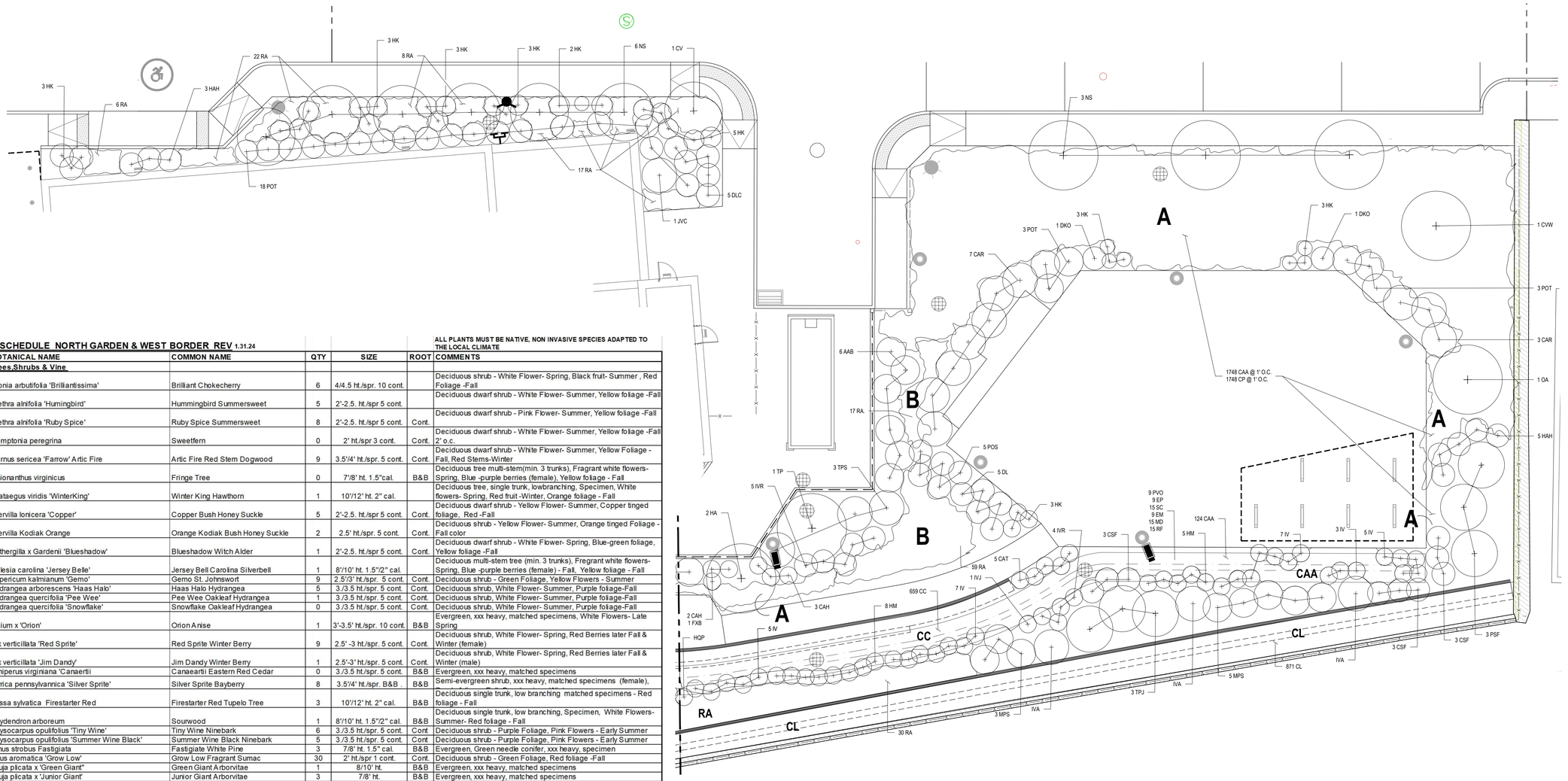
SEAL & SIGNATURE:

REGISTERED ARCHITECT
MONICA LOPEZ URIBE
035659
STATE OF NEW YORK

PROJECT No:
DRAWING BY:
CHK BY:

DRAWING NO:
L-010.00

SCALE:
1/16"=1'-0"



0 8' 16'

SCALE 1/8"=1'-0"

N

1 NORTH GARDEN AND WEST BORDER - PLANTING PLAN
1/8"=1'-0"

PLANT SCHEDULE NORTH GARDEN & WEST BORDER REV 1.31.24

ALL PLANTS MUST BE NATIVE, NON INVASIVE SPECIES ADAPTED TO THE LOCAL CLIMATE

KEY	BOTANICAL NAME	COMMON NAME	QTY	SIZE	ROOT	COMMENTS
	Trees,Shrubs & Vine					
AA	Aronia arbutifolia 'Brilliantissima'	Brilliant Chokecherry	6	4/4.5 ht./spr. 10 cont.		Deciduous shrub - White Flower- Spring, Black fruit- Summer , Red Foliage -Fall
CAH	Clethra alnifolia 'Humingbird'	Hummingbird Summersweet	5	2'-2.5. ht./spr 5 cont.		Deciduous dwarf shrub - White Flower- Summer, Yellow foliage -Fall
CAR	Clethra alnifolia 'Ruby Spice'	Ruby Spice Summersweet	8	2'-2.5. ht./spr 5 cont.	Cont.	Deciduous dwarf shrub - Pink Flower- Summer, Yellow foliage -Fall
COP	Comptonia peregrina	Sweetfern	0	2' ht./spr 3 cont.	Cont.	Deciduous dwarf shrub - White Flower- Summer, Yellow foliage -Fall 2' o.c.
CSF	Cornus sericea 'Farrow' Artic Fire	Artic Fire Red Stem Dogwood	9	3.5'/4' ht./spr. 5 cont.	Cont.	Deciduous dwarf shrub - White Flower- Summer, Yellow Foliage - Fall, Red Stems-Winter
CV	Chionanthus virginicus	Fringe Tree	0	7'/8' ht. 1.5"cal.	B&B	Deciduous tree multi-stem(min. 3 trunks), Fragrant white flowers-Spring, Blue -purple berries (female), Yellow foliage - Fall
CVW	Crataegus viridis 'WinterKing'	Winter King Hawthorn	1	10'/12' ht. 2" cal.		Deciduous tree, single trunk, lowbranching, Specimen, White flowers- Spring, Red fruit -Winter, Orange foliage - Fall
DL	Diervilla lonicera 'Copper'	Copper Bush Honey Suckle	5	2'-2.5. ht./spr 5 cont.	Cont.	Deciduous dwarf shrub - Yellow Flower- Summer, Copper tinged foliage, Red -Fall
DKO	Diervilla Kodiak Orange	Orange Kodiak Bush Honey Suckle	2	2.5' ht./spr. 5 cont.	Cont.	Deciduous shrub - Yellow Flower- Summer, Orange tinged Foliage - Fall color
FXB	Fothergilla x Gardenii 'Blueshadow'	Blueshadow Witch Alder	1	2'-2.5. ht./spr 5 cont.	Cont.	Deciduous dwarf shrub - White Flower- Spring, Blue-green foliage, Yellow foliage -Fall
HC	Halesia carolina 'Jersey Belle'	Jersey Bell Carolina Silverbell	1	8'/10' ht. 1.5"/2" cal.		Deciduous multi-stem tree (min. 3 trunks), Fregrant white flowers-Spring, Blue -purple berries (female) - Fall, Yellow foliage - Fall
HK	Hypericum kalmianum 'Gemo'	Gemo St. Johnswort	9	2.5'/3' ht./spr. 5 cont.	Cont.	Deciduous shrub - Green Foliage, Yellow Flowers - Summer
HAH	Hydrangea arborescens 'Haas Halo'	Haas Halo Hydrangea	5	3./3.5 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple foliage-Fall
HQP	Hydrangea quercifolia 'Pee Wee'	Pee Wee Oakleaf Hydrangea	1	3./3.5 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple foliage-Fall
HQS	Hydrangea quercifolia 'Snowflake'	Snowflake Oakleaf Hydrangea	0	3./3.5 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple foliage-Fall
IO	Illicium x 'Orion'	Orion Anise	1	3'-3.5' ht./spr. 10 cont.	B&B	Evergreen, xxx heavy, matched specimens, White Flowers- Late Spring
IVR	Ilex verticillata 'Red Sprite'	Red Sprite Winter Berry	9	2.5' -3 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Spring, Red Berries later Fall & Winter (female)
IVJ	Ilex verticillata 'Jim Dandy'	Jim Dandy Winter Berry	1	2.5'-3' ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Spring, Red Berries later Fall & Winter (male)
JVC	Juniperus virginiana 'Canaertii	Canaeartii Eastern Red Cedar	0	3./3.5 ht./spr. 5 cont.	B&B	Evergreen, xxx heavy, matched specimens
MPS	Myrica pennsylvannica 'Silver Sprite'	Silver Sprite Bayberry	8	3.5'/4' ht./spr. B&B .	B&B	Semi-evergreen shrub, xxx heavy, matched specimens (female),
NS	Nyssa sylvatica Firestarter Red	Firestarter Red Tupelo Tree	3	10'/12' ht. 2" cal.	B&B	Deciduous single trunk, low branching matched specimens - Red foliage - Fall
OA	Oxydendron arboreum	Sourwood	1	8'/10' ht. 1.5"/2" cal.	B&B	Deciduous single trunk, low branching, Specimen, White Flowers-Summer- Red foliage - Fall
POT	Physocarpus opulifolius 'Tiny Wine'	Tiny Wine Ninebark	6	3./3.5 ht./spr. 5 cont.	Cont	Deciduous shrub - Purple Foliage, Pink Flowers - Early Summer
POS	Physocarpus opulifolius 'Summer Wine Black'	Summer Wine Black Ninebark	5	3./3.5 ht./spr. 5 cont.	Cont	Deciduous shrub - Purple Foliage, Pink Flowers - Early Summer
PSF	Pinus strobus Fastigiata	Fastigiate White Pine	3	7/8' ht. 1.5" cal.	B&B	Evergreen, Green needle conifer, xxx heavy, specimen
RA	Rhus aromatica 'Grow Low'	Grow Low Fragrant Sumac	30	2' ht./spr 1 cont.	Cont.	Deciduous shrub - Green Foliage, Red foliage -Fall
TP	Thuja plicata x 'Green Giant"	Green Giant Arborvitae	1	8/10' ht.	B&B	Evergreen, xxx heavy, matched specimens
TPJ	Thuja plicata x 'Junior Giant'	Junior Giant Arborvitae	3	7/8' ht.	B&B	Evergreen, xxx heavy, matched specimens
TPS	Thuja standishii x plicata 'Steeplechase'	Steeplechase Arborvitae	3	7/8' ht.	B&B	Evergreen, xxx heavy, matched specimens
VA	Viburnum Acerfolium	Mapleleaf Viburnum	3	3.5'/4' ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple fruit & Red Purple Foliage -Fall
	Perennials , Grasses & Groundcovers					
CA	Carex appalachia	Appalachia Sedge Grass	1748	1 Cont.	Cont	Deciduous sedge grass - 6" o.c.
CP	Carex pennsylvanica	Pennsylvanica Sedge	1748	1 Cont.	Cont	Deciduous sedge grass -12" o.c.
CL	Chasmanthium latifolium	Northern Sea Oats	871	1 Cont.	Cont	Deciduous grass -12" o.c.
	Bioswale					
	Athyrium filix-femina	Common Lady fern	0	1 Cont.	Cont.	Deciduous fern - 12"o.c.
CAA	Carex amphiloba	Creek Sedge	124	1 Cont.	Cont	Deciduous sedge grass -12" o.c.
CC	Carex Cherokeensis	Cherokee Sedge	659	1 Cont.	Cont	Deciduous sedge grass -12" o.c.
	Chelone glabra	White Turtlehead	0	1 Cont.	Cont.	Perennials, White flower - Summer 12" o.c.
CAT	Clethra alnifolia 'Toms'	Toms Summersweet	5	1.5'-2. ht./spr. 3 cont.	Cont.	Deciduous dwarf shrub - White Flower- Summer, Yellow foliage -Fall
EP	Echinacea purpurea	Cone Flower	9	1 Cont.	Cont.	Perennials, Pink, Red flower - Summer 12" o.c.
EM	Eupatorium purpureum 'Ruby'	Ruby Dwarf Joe-pye weed	9	1 Cont.		Perennials, Dwarf cultivar Pink, Red flower - Summer 12" o.c.
HM	Hibiscus moscheutos Summer series 'Stary Night'	Stary Night Rosemallow	13	1 Cont.	Cont.	Perennials, Pink, Red flower - Summer 12" o.c.
IV	Itea virginicus 'Sprich'	Little Henry Sweetspire	27	2' ht./spr 3 cont.	Cont.	Deciduous dwarf shrub - White Flower- Early Summer, Red foliage - Fall 2.5' o.c.
	Iris versicolor	Blue Flag	0	1 Cont.	Cont.	Perennials, Blue flower - Spring 12" o.c.
	Lobelia siphilitica	Great Blue Lobelia	0	1 Cont.	Cont.	Perennials, Purple flower - Spring 12" o.c.
	Mertensia virginica	Virginia Bluebell	0	1 Cont.	Cont.	Perennials, Blue flower - Spring 12" o.c.
MD	Mondara didyma	Bee Balm	9	1 Cont.	Cont.	Perennials, Red flower - Summer 12" o.c.
	Osmunda cinnamomea	Cinnamon Fern	0	1 Cont.	Cont.	Deciduous fern - 12"o.c.
PVO	Panicum virgatum 'Short Orient'	Short Orient Switch Grass	9	1 Cont.	Cont.	Perennial grass - 12"o.c.
RF	Rudbeckia fulgida 'Goldsturm'	Goldsturm Black Eyed Susan	15	1 Cont.	Cont.	Perennials, Yellow flower - Summer 12"o.c.
SC	Symphiotrichum cordifolium	Common Wood Aster	15	1 Cont.	Cont.	Perennials, Purple flower - Late Summer, Fall 12" o.c.

PLANTING NOTES

1. CONTRACTOR MAY PLANT DURING ONE OF THE FOLLOWING PERIODS. DECIDUOUS TREES & SHRUBS: MARCH 1- MAY 15 AND OCTOBER 15- DEC. 1 EVERGREEN TREES & SHRUBS: APRIL 1- MAY 15 AND SEPT 1 - OCTOBER 15 PERENNIALS & GROUNDCOVER: APRIL 15- JUNE 15 AND SEPT 1 - OCTOBER 15
2. GUARANTEE/WARRANTY PERIOD FOR ALL PLANT MATERIALS IS ONE YEAR FROM THE DATE SUBSTANTIAL COMPLETION.
3. UPON COMPLETION OF THE PLANT INSTALLATION, THE LANDSCAPE CONTRACTOR SHALL ENTER INTO A ONE-YEAR LANDSCAPE MAINTENANCE SERVICE AGREEMENT WITH THE OWNER.
4. FINAL LOCATION OF ALL PLANTS TO BE DETERMINED IN THE FIELD AND APPROVED BY THE LANDSCAPE ARCHITECT.
5. THE CONTRACTOR SHALL USE CAUTION IN PROTECTING ALL PAVEMENTS, LIGHT FIXTURES, FENCES, WALLS, EQUIPMENT, UTILITIES, AND EXISTING PLANTS DURING PLANTING OPERATIONS. ANY ITEMS DAMAGED OR DESTROYED SHALL BE REPAIRED OR REPLACED AT THE DISCRETION AND TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE, AT THE CONTRACTORS EXPENSE.
6. COORDINATE ALL PLANT MATERIAL INSTALLATIONS WITH THE DRIP IRRIGATION SYSTEM INSTALLATION TO MINIMIZE DAMAGE TO PLANT MATERIAL AND ENSURE THE PLANT MATERIAL HAS 100% IRRIGATION COVERAGE WITHIN 24 HOURS OF PLANTING. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE TO HAND WATER ALL NEW PLANTINGS, UNTIL THE AUTOMATIC IRRIGATION SYSTEM IS FULLY OPERATIONAL.
7. PLANTING SOIL - ORGANIC TOPSOIL SANDY LOAM BLEND AS SUPPLIED BY ADVANCED SOIL TECHNOLOGIES, BRICK, NJ (732) 840-1700. REFER TO PLANTING DETAILS FOR SOIL DEPTHS AT TREE, SHRUB, PERENNIAL, AND GROUNDCOVERS PLANTINGS.
8. PLANTING SOIL SHALL CONSIST OF NATURAL SANDY LOAM ORGANIC TOPSOIL BLENDED WITH ORGANIC COMPOST AND COMPLY WITH THE FOLLOWING REQUIREMENTS:
   a. ORGANIC MATTER 3-5% (BY WEIGHT)
   b. PH RANGE: 6.2-7.2
   c. SIEVE ANALYSIS: PASSING 2" SIEVE (100%); PASSING 1" SIEVE (95%-100%); PASSING #4 SIEVE (90%-100%); PASSING #100 SIEVE (30%-60%).
   d. CLAY: TEST METHOD TO MEASURE THE CLAY CONTENT OF THE SOIL SHALL BE ASTM D422.
9. CONTRACTOR SHALL SUBMIT SOIL TEST REPORT FOR EACH TOPSOIL DELIVERY FOR APPROVAL BY THE LANDSCAPE ARCHITECT. REPORTS MUST ACCOMPANY EACH TOPSOIL DELIVERY. SOIL TEST REPORTS OVER ONE YEAR OLD WILL NOT BE ACCEPTED.
10. ALL PLANTING BEDS SHALL BE EXCAVATED TO 2' DEPTH AND CLEARED OF ALL CONSTRUCTION DEBRIS, TRASH, RUBBLE AND FOREIGN MATERIAL. EXCAVATED BEDS SHALL BE DE-COMPACTED TO A DEPTH OF 12" WITH A TINNING FORK OR AIR SPADE AND NEW PLANTING SOIL WITH COMPOST, BLENDED INTO THE TOP 12" OF THE EXISTING BASE MATERIAL, TO FACILITATE POSITIVE DRAINAGE, AND TESTED FOR PERCOLATION, PRIOR TO BACK FILLING WITH PLANTING SOIL. BEDS EXHIBITING STANDING WATER OR SLOW PERCOLATION SHALL BE CORRECTED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE, PRIOR TO THE START OF PLANTING OPERATIONS.
11. TREES, SHRUB, PERENNIAL, AND GROUNDCOVER PLANTINGS SHALL BE AMENDED WITH PHC (PLANT HEALTH CARE) MYCOR PLANT SAVER 4-7-4 PLANTING INOCULANTS, NATURAL BIO-FERTILIZER WITH BENEFICIAL BACTERIA AND HUMIC ACID AT MANUFACTURER'S RECOMMENDED APPLICATION RATES OR APPROVED EQUAL.
12. MULCH - TRIPLE SHREDDED WOOD BLEND OF NATURAL FOREST PRODUCT, BY ADVANCED SOIL TECHNOLOGIES - (732) 840-1700. UNIFORM GRADE WITH NO ADDITIVES OR OTHER TREATMENT ACCEPTABLE. MULCH SHALL BE 5/8" - 1¼" SIZE. THE PH RANGE 5.8-6.2. CONTRACTOR SHALL SUBMIT SAMPLE OF MULCH FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO DELIVERY. ALL TREES, SHRUB, ORNAMENTAL GRASS, PERENNIAL, AND GROUNDCOVER BEDS TO RECEIVE 1 ½"-2" LAYER OF MULCH.
13. THE LANDSCAPE ARCHITECT MAY REJECT ANY PLANTS, OR MATERIAL, WHICH DO NOT REPRESENT SPECIES, SIZE OR DESCRIPTION OUTLINED IN THE PLANT SCHEDULE. NO SUBSTITUTIONS WILL BE ACCEPTED WITHOUT PRIOR WRITTEN APPROVAL BY THE LANDSCAPE ARCHITECT.
14. ALL PLANTS SHALL BE VIGOROUS FREE FROM INJURY, DISEASE, PESTS, AND DEFECTS. ALL PLANT MATERIAL IS TO BE REPRESENTATIVE OF THEIR SPECIES AND CONFORM TO THE REQUIREMENTS AS ESTABLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMAN LATEST EDITION. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY UNSATISFACTORY MATERIAL OR PLANTS DELIVERED TO THE SITE.
15. IN LIEU OF TAGGING/INSPECTING PLANT MATERIAL AT THE NURSERY, THE LANDSCAPE ARCHITECT MAY REJECT ANY PLANTS, OR MATERIAL, WHICH DO NOT REPRESENT SPECIES, SIZE OR DESCRIPTION OUTLINED IN THE PLANT SCHEDULE. NO SUBSTITUTIONS WILL BE ACCEPTED WITHOUT PRIOR WRITTEN APPROVAL BY THE LANDSCAPE ARCHITECT.
16. ANY TREE (CANOPY OR ROOT) PRUNING REQUIRED BY THE PLANTING OPERATIONS SHALL BE DONE BY A NYS CERTIFIED ARBORIST. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL DEBRIS.
17. IF THERE IS A DISCREPANCY BETWEEN QUANTITIES OF PLANTS ON THE PLAN AND THE PLANT SCHEDULE, THE QUANTITY ON THE PLAN SHALL GOVERN

PLANTING LEGEND

- TREES / SHRUBS
- A — PERENNIALS, GRASSES, GROUNDCOVERS
- B — WOODY SHRUBS
- C — BIOSWALE PLANTING
- SEGMENTED BLOCK RETAINING WALL

NOTE:
SEE CIVIL DRAWINGS FOR SLOPE STABILIZATION MEASURES

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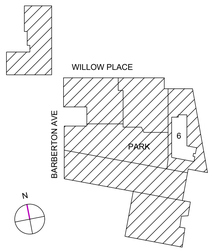

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LANDSCAPE ARCHITECT: LIZ FARRELL, LANDSCAPE ARCHITECTURE, 523 SIXTH AVENUE, BROOKLYN, NY 11215

EXPEDITER: CORE CONSULTANTS NYC LLC, 254 36TH STREET, SUITE C663, BROOKLYN, NY 11232

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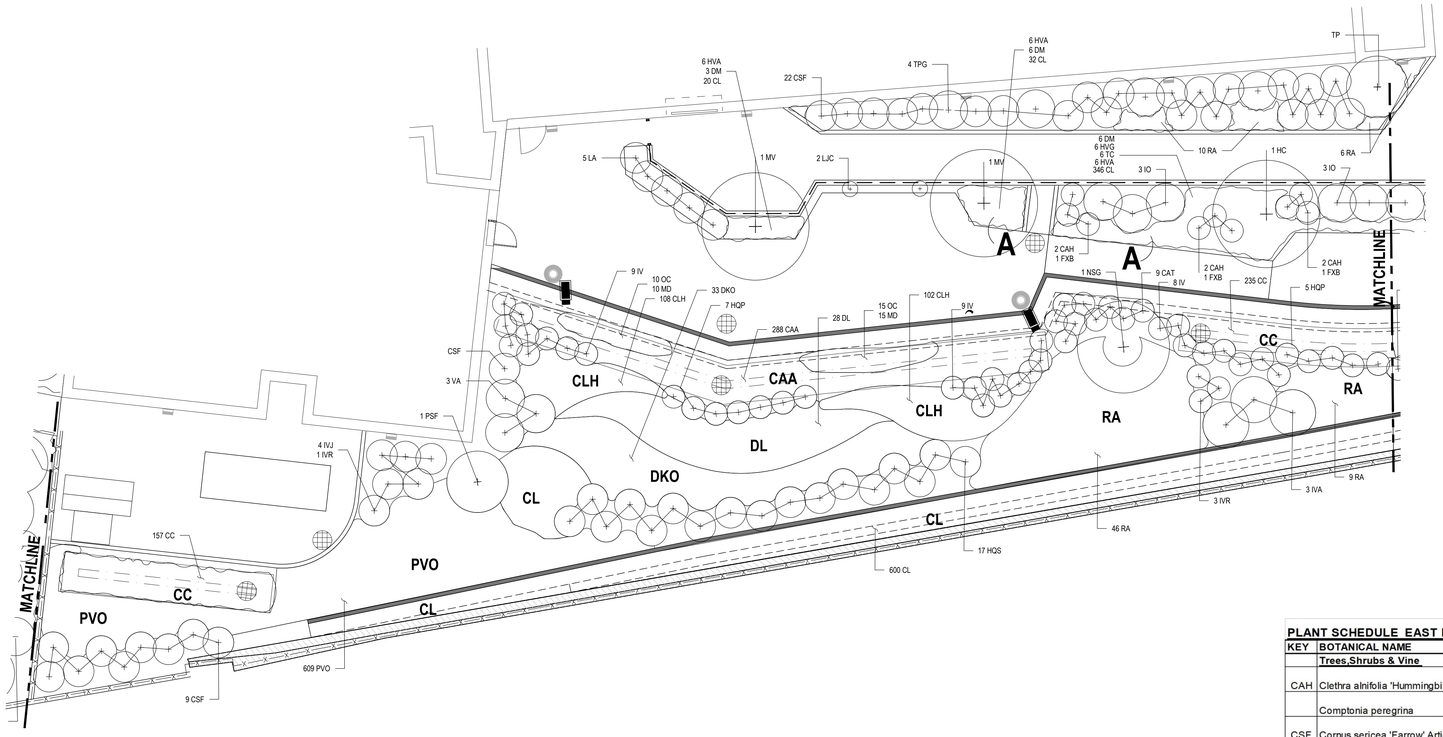
PLANTING PLAN - NORTH GARDEN & WEST BORDER

SEAL & SIGNATURE:
REGISTERED ARCHITECT MONICA LOPEZ UNAY 035659 STATE OF NEW YORK

PROJECT No:
DRAWING BY:
CHK BY:
DRAWING NO: L-020.00
SCALE: 1/8"=1'-0"



1 EAST LINEAR PASSAGE - PLANTING PLAN
1/8"=1'-0"

0 8' 16'
SCALE 1/8"=1'-0"

N

PLANTING LEGEND

- TREES / SHRUBS
- A — PERENNIALS, GRASSES, GROUNDCOVERS
- B — WOODY SHRUBS
- C — BIOSWALE PLANTING
- SEGMENTED BLOCK RETAINING WALL

NOTES:
1. SEE CIVIL DRAWINGS FOR SLOPE STABILIZATION MEASURES
2. SEE L.020.00 FOR PLANTING NOTES

PLANT SCHEDULE EAST LINEAR PASSAGE 1.31.24

ALL PLANTS MUST BE NATIVE, NON INVASIVE SPECIES ADAPTED TO THE LOCAL CLIMATE

KEY	BOTANICAL NAME	COMMON NAME	QTY	SIZE	ROOT	COMMENTS
	Trees,Shrubs & Vine					
CAH	Clethra alnifolia 'Hummingbird'	Hummingbird Summersweet	6	2'-2.5. ht./spr 5 cont.	Cont.	Deciduous dwarf shrub - White Flower- Summer, Yellow foliage -Fall
	Comptonia peregrina	Sweetfern	0	2' ht./spr 3 cont.	Cont.	Deciduous dwarf shrub - White Flower- Summer, Yellow foliage -Fall 2' o.c.
CSF	Cornus sericea 'Farrow' Artic Fire	Artic Fire Red Stem Dogwood	32	3.5'/4' ht./spr. 5 cont.	Cont.	Deciduous dwarf shrub - White Flower- Summer, Yellow Foliage - Fall, Red Stems-Winter
DL	Diervilla lonicera 'Copper'	Copper Bush Honey Suckle	28	2'-2.5. ht./spr 3 cont.	Cont.	Deciduous dwarf shrub - Yellow Flower- Summer, Copper tinged foliage, Red -Fall
DKO	Diervilla Kodiak Orange	Orange Kodiak Bush Honey Suckle	33	2.5' ht./spr. 3 cont.	Cont.	Deciduous shrub - Yellow Flower- Summer, Orange tinged Foliage - Fall color
	Diervilla rivularis Kodiak Black	Kodiak Black Bush Honey Suckle	0	2' ht./spr 3 cont.	Cont.	Deciduous dwarf shrub - Yellow Flower- Summer, Purple tinged Foliage -Fall color
FXB	Fothergilla x Gardenii 'Blueshadow'	Blueshadow Witch Alder	3	2'-2.5. ht./spr 5 cont.	Cont.	Deciduous dwarf shrub - White Flower- Spring, Blue-green foliage, Yellow foliage -Fall
HC	Halesia carolina 'Jersey Belle'	Jersey Bell Carolina Silverbell	1	8'/10' ht. 1.5"/2" cal.		Deciduous multi-stem tree (min. 3 trunks), Fregrant white flowers-Spring, Blue -purple berries (female) - Fall, Yellow foliage - Fall
	Hydrangea quercifolia 'Amethyst'	Amethyst Oakleaf Hydrangea	0	3./3.5 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple foliage-Fall
HQP	Hydrangea quercifolia 'Pee Wee'	Pee Wee Oakleaf Hydrangea	12	3./3.5 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple foliage-Fall
HQS	Hydrangea quercifolia 'Brido' Snowflake	Snowflake Oakleaf Hydrangea	17	3./3.5 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple foliage-Fall
IVR	Ilex verticillata 'Red Sprite'	Red Sprite Winter Berry	7	2.5' -3 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Spring, Red Berries later Fall & Winter (female)
IVJ	Ilex verticillata 'Jim Dandy'	Jim Dandy Winter Berry	1	2.5'-3' ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Spring, Red Berries later Fall & Winter (male)
IO	Illicium x 'Orion'	Orion Anise	6	3'-3.5' ht./spr. 10 cont.	B&B	Evergreen, xxx heavy, matched specimens, White Flowers- Late Spring
LA	Leucothoe axillaris	Doghobble	5	2'-2.5. ht./spr 5 cont.	Cont.	Evergreen groundcover, White flower - Spring
LJC	Lonicera sempervirens 'John Clayton'	John Clayton Honeysuckle	2	Staked 4' / 5 cont.	Cont.	Deciduous vine, Yellow Flower- Summer
MVA	Magnolia virginiana australis 'Sweet Thing'	Sweet Thing Sweetbay Magnolia	1	6/7' ht.	Cont.	Semi-evergreen, Multi-stem tree - specimen, White Flower-Summer
MV	Magnolia virginiana 'Jim Wilson' or Green Mile	Jim Wilson Sweetbay Magnolia	2	8/10' ht. 1.5/2" cal.	Cont.	Semi-evergreen, Multi-stem (3 trunks min) tree - specimen, White Flower- Summer
NSG	Nyssa sylvatica 'Green Gables'	Green Gables Tupelo Tree	2	8'/10' ht. 1.5"/2" cal.	B&B	Deciduous single trunk, low branching matched specimens - Red foliage - Fall
PSF	Pinus strobus Fastigiata	Fastigiate White Pine	1	7/8' ht. 1.5" cal.	B&B	Evergreen, Green needle conifer, xxx heavy, specimen
RA	Rhus aromatica 'Grow Low'	Grow Low Fragrant Sumac	55	2' ht./spr 3 cont.	Cont.	Deciduous shrub - Green Foliage, Red foliage -Fall
TP	Thuja plicata 'Green Giant'	Green Giant Arborvitae	1	7/8' ht.	B&B	Evergreen, xxx heavy, matched specimens
TPJ	Thuja plicata Junior Giant	Junior Giant Arborvitaie	4	6/7' ht.	B&B	Evergreen, xxx heavy, matched specimens
	Perennials , Grasses & Groundcovers					
CLH	Carex laxiculmis Hobb Bunny Blue	Bunny Blue Sedge Grass	210	1 cont.	Cont.	Evergreen groundcover, Blue green foliage, Plant 12" o.c.
CL	Chasmantium latifolium	Northern Sea Oats	600	1 Cont.	Cont	Deciduous grass -12" o.c.
HVA	Heuchera villosa 'Autumn Bride'	Autumn Bride Coral Bell	18	2 cont.	Cont.	Deciduous perennial, White flower Aug.-Sept., Plant 1.5' o.c.
HVG	Heuchera villosa 'Grape Expectations'	Grape Expectations Coral Bell	6	2 cont.	Cont.	Deciduous perennial, Variegated foliage, Pink flower May-June, Plant 1' o.c.
	Heuchera villosa 'Green Spice'	Green Spice Heuchera	0	1 cont.	Cont.	Deciduous perennial, White flower Aug.-Spet.,Plant 18" o.c.
	Heuchera americana 'Dale's Stain'	Dales Stain Heuchera	0	1 cont.	Cont.	Deciduous perennial, Variegated foliage, Pink flower May-June, Plant 12" o.c.
PVO	Panicum virgatum 'Short Orient'	Short Orient Switch Grass	609	1 Cont.	Cont.	Perennial grass - 12"o.c.
TC	Tiarella Cordifolia	Coralbell	6	1 cont.	Cont.	Deciduous perennial, Variegated foliage, Pink flower May-June, Plant 12" o.c.
DM	Dryopteris marginalis	Evergreen Wood Fern	6	2 cont.	Cont.	Evergreen fern, Green foliage, Plant 18" o.c.
	Bioswale					
	Athyrium filix-femina	Common Lady fern	0	1 Cont.	Cont.	Deciduous fern - 12"o.c.
CAA	Carex amphiloba	Creek Sedge	288	1 Cont.	Cont	Deciduous sedge grass -12" o.c.
CC	Carex Cherokeensis	Cherokee Sedge	392	1 Cont.	Cont	Deciduous sedge grass -12" o.c.
	Chelone glabra	White Turtlehead	0	1 Cont.	Cont.	Perennials, White flower - Summer 12" o.c.
CAT	Clethra alnifolia 'Toms'	Toms Summersweet	9	1.5'-2. ht./spr. 5 cont.	Cont.	Deciduous dwarf shrub - White Flower- Summer, Yellow foliage -Fall
IV	Itea virginicus 'Sprich'	Little Henry Sweetspire	17	2' ht./spr 3 cont.	Cont.	Deciduous dwarf shrub - White Flower- Early Summer, Red foliage - Fall 2.5' o.c.
MD	Mondara didyma	Bee Balm	20	1 Cont.	Cont.	Perennials, Red flower - Summer 12" o.c.
OC	Osmunda cinnamomea	Cinnamon Fern	25	1 Cont.	Cont.	Deciduous fern - 12"o.c.

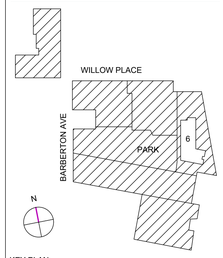
PROJECT:
WILLOW / RIDGEWAY VI

23 BISHOP WILLIAM J. WALLS PLACE
YONKERS, NY 10701

BLOCK: 2094
LOT: 1

Developer:
THE COMMUNITY BUILDERS
8 WEST 38TH STREET, SUITE 1102
NEW YORK, NY 10018

MHACY Municipal Housing Authority for the City of Yonkers
1511 CENTRAL PARK AVENUE
PO BOX 35
YONKERS, NY 10710



KEY PLAN

8	ISSUED FOR PERMIT RE-SUBMISSION	04/05/2024
7	SITE PLAN AMENDMENT SUBMISSION	01/31/2024
6	ISSUED FOR PERMIT	08/31/2023
5	75% CONSTRUCTION DRAWINGS	05/31/2022
4	CODE REVIEW SUBMISSION	11/30/2022
3	SITE PLAN APPROVAL SUBMISSION	11/21/2022
2	SITE PLAN APPROVAL SUBMISSION	10/12/2022
1	DESIGN DEVELOPMENT SUBMISSION	09/15/2022
NO.	REVISION/SUBMISSION	DATE

SUBMISSION:
ISSUED FOR PERMIT
RESUBMISSION

ARCHITECT:
MONICA LOPEZ ARCHITECT, LLC
85 Broad Street, 18th Floor, New York, NY 10004

CONSULTANTS:

REVIT CONSULTANT: IMC ARCHITECTURE DPC, 254 36TH ST, SUITE C663, BROOKLYN, NY 11232

MEP ENGINEER: EMTG CONSULTANTS INC, 236 MINEOLA BLVD, MINEOLA, NY 11501

STRUCTURAL ENGINEER: CITYSCAPE ENGINEERING, 8 HAVEN AVE, SUITE 209, PORT WASHINGTON, NY, 11050

CIVIL ENGINEER: PHILIP HABIB AND ASSOCIATES, 102 MADISON AVE #11, NEW YORK, NY 10016

LANDSCAPE ARCHITECT: LIZ FARRELL LANDSCAPE ARCHITECTURE, 523 SIXTH AVENUE, BROOKLYN, NY 11215

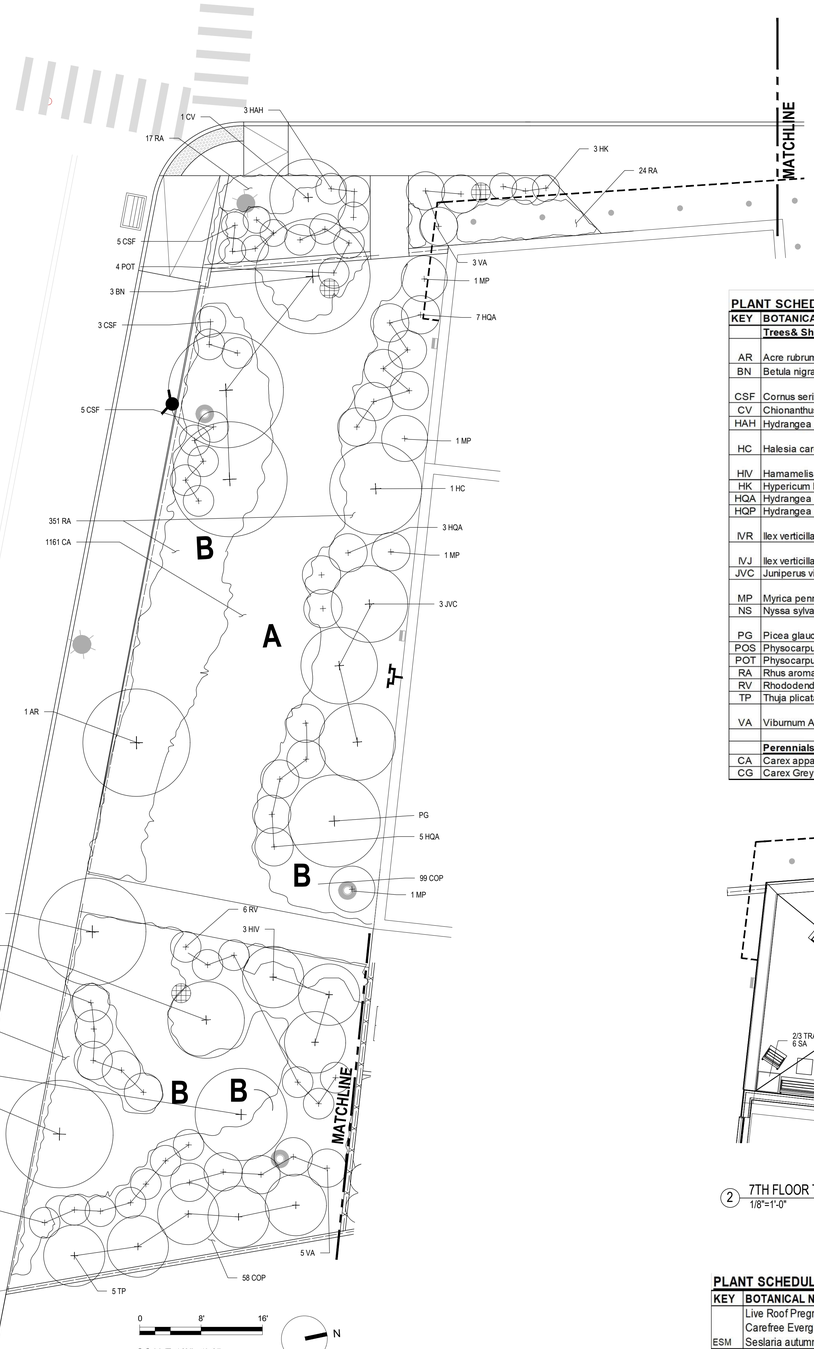
EXPEDITER: CORE CONSULTANTS NYC LLC, 254 36TH STREET, SUITE C663, BROOKLYN, NY 11232

DO NOT SCALE FROM THIS DRAWING.
THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL THE RELEVANT DETAILS FOR THIS PROJECT

LANDSCAPE PLAN - EAST LINEAR PASSAGE

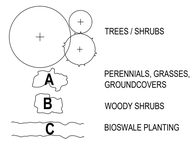
SEAL & SIGNATURE:
REGISTERED ARCHITECT MONICA LOPEZ URBA 035659 STATE OF NEW YORK

PROJECT No:
DRAWING BY:
CHK BY:
DRAWING NO: L-021.00
SCALE: 1/8"=1'-0"



1 SOUTH LINK - PLANTING PLAN
1/8"=1'-0"

PLANTING LEGEND

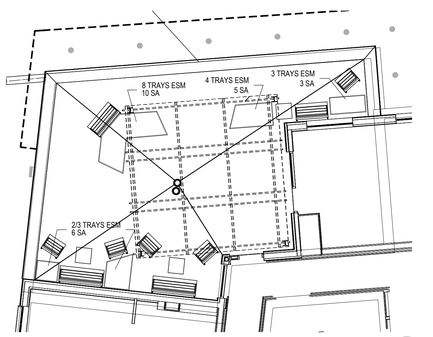


NOTES:
1. SEE CIVIL DRAWINGS FOR SLOPE STABILIZATION MEASURES
2. SEE L.020.00 FOR PLANTING NOTES

PLANT SCHEDULE SOUTH LINK

ALL PLANTS MUST BE NATIVE, NON INVASIVE SPECIES ADAPTED TO THE LOCAL CLIMATE

KEY	BOTANICAL NAME	COMMON NAME	QTY	SIZE	ROOT	COMMENTS
	Trees& Shrubs					
AR	Acre rubrum	Red Maple	3	10'/12' ht. 2"/2.5" cal.	B&B	Deciduous tree single trunk matched specimens - Red foliage - Fall
BN	Betula nigra 'Dura Heat'	Dura Heat River Birch	3	8'/10' ht. 1.5"/2" cal.	B&B	Deciduous multi-stem tree (min. 3 trunks), matched specimens -
CSF	Cornus sericea 'Farrow' Artic Fire	Artic Fire Red Stem Dogwood	13	3.5'/4' ht./spr. 5 cont.	Cont.	Deciduous dwarf shrub - White Flower- Summer, Yellow Foliage - Fall, Red Stems-Winter
CV	Chionanthus virginicus	Fringe Tree	1	7'/8' ht. 1.5"cal.	B&B	Deciduous tree multi-stem(min. 3 trunks), Fragrant white flowers-
HAH	Hydrangea arborescens 'Haas Halo'	Haas Halo Hydrangea	9	3./3.5 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple foliage-Fall
HC	Halesia carolina 'Jersey Belle'	Jersey Bell Carolina Silverbell	1	8'/10' ht. 1.5"/2" cal.	B&B	Deciduous multi-stem tree (min. 3 trunks), Fragrant White flowers- Late Spring, Yellow foliage - Fall
HIV	Hamamelis intermedia 'Amethyst'	Amethyst Witch Hazel	3	6'/7' ht.	B&B	Deciduous multi-stem shrub, Lavender- Purple flowers - Spring, Orange-Red foliage - Fall
HK	Hypericum kalmianum 'Gemo'	Gemo St. Johnswort	9	2'/2.5' ht./spr.	Cont.	Deciduous shrub - Green Foliage, Yellow Flowers - Summer
HQA	Hydrangea quercifolia 'Amethyst'	Amethyst Oakleaf Hydrangea	5	3./3.5 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple foliage-Fall
HQP	Hydrangea quercifolia 'Pee Wee'	Pee Wee Oakleaf Hydrangea	6	2.5/3.0 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple foliage-Fall
IVR	Ilex verticillata 'Red Sprite'	Red Sprite Winter Berry	3	2.5' -3 ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Spring, Red Berries later Fall & Winter (female)
IVJ	Ilex verticillata 'Jim Dandy'	Jim Dandy Winter Berry	1	2.5'-3' ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Spring, Red Berries later Fall & Winter (male)
JVC	Juniperus virginiana 'Canaertii	Canaeartii Eastern Red Cedar	3	6/7' ht.	B&B	Evergreen, xxx heavy, matched specimens
MP	Myrica pennsylvannica 'Silver Sprite'	Silver Sprite Bayberry	3	3'/3.5' ht./spr. 5 cont.	B&B	Semi-Evergreen shrub, xxx heavy, matched specimens (2 female & 1 male), Purple foliage -Fall, Grey berries - Winter
NS	Nyssa sylvatica Firestarter Red	Firestarter Red Tupelo Tree	1	8'/10' ht. 2"/2.5" cal.	B&B	Deciduous single trunk matched specimens - Red foliage - Fall
PG	Picea glauca	White Spruce	1	7'/8' ht.	B&B	Evergreen, Green needle conifer with white cast, xxx heavy, specimen
POS	Physocarpus opulifolius 'Summer Wine Black'	Summer Wine Black Ninebark	6	2.5'-3' ht./spr. 5 cont.	Cont	Deciduous shrub - Purple Foliage, Pink Flowers - Early Summer
POT	Physocarpus opulifolius 'Tiny Wine'	Tiny Wine Ninebark	6	2.5'-3' ht./spr. 5 cont.	Cont	Deciduous shrub - Purple Foliage, Pink Flowers - Early Summer
RA	Rhus aromatica 'Grow Low'	Grow Low Fragrant Sumac	#	2' ht./spr 3 cont.	Cont.	Deciduous shrub - Green Foliage, Red foliage -Fall - 2' o.c.
RV	Rhododendron viscosum 'Betty Cummins'	Betty Cummins Swamp Azalea	3	2.5'-3' ht./spr. 5 cont.	Cont.	Deciduous shrub, Fragrant Pink Flowers - Spring
TP	Thuja plicata 'Green Giant'	Green Giant Arborvitae	3	7'/8' ht.	B&B	Evergreen, xxx heavy, matched specimens
VA	Viburnum Acerfolium	Mapleleaf Viburnum	6	3.5'/4' ht./spr. 5 cont.	Cont.	Deciduous shrub, White Flower- Summer, Purple fruit & Red Purple Foliage -Fall
	Perennials, Grasses & Groundcovers					
CA	Carex appalachia	Appalachia Sedge Grass		1 Cont.	Cont	Deciduous sedge grass - 6" o.c.
CG	Carex Greyi	Greyi Sedge Grass	#	1 Cont.	Cont	Deciduous sedge grass -12" o.c.



2 7TH FLOOR TERRACE - PLANTING PLAN
1/8"=1'-0"
SCALE 1/8"=1'-0"

PLANT SCHEDULE 7th FLOOR ROOF TERRACE PLANTERS 5.22.23

KEY	BOTANICAL NAME	COMMON NAME	QTY	SIZE	ROOT	COMMENTS
ESM	Live Roof Pregrown -Prides Corner Carefree Evergreen Mix Sedum with Seslaria autumnalis grass			1' x 2' x 8"	Pregrown Tray	Mixed sedum species in trays, Remove trays before planting in planters. 10" growing media depth.
SA	Seslaria autumnalis	Autumn Grass	50	1 cont.	Cont.	Plant groups of-5 grasses in large planter 8" growing media depth. Cut

PROJECT:
WILLOW / RIDGEWAY VI

23 BISHOP WILLIAM J. WALLS PLACE
YONKERS, NY 10701

BLOCK: 2094
LOT: 1

Developer:
THE COMMUNITY BUILDERS
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NEW YORK, NY 10018

MHACY Municipal Housing Authority for the City of Yonkers
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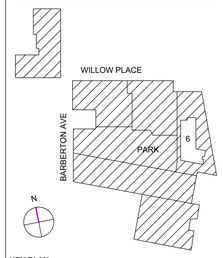

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NO.	REVISION/SUBMISSION	DATE

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ISSUED FOR PERMIT
RESUBMISSION

ARCHITECT:
MONICA LOPEZ ARCHITECT, LLC
85 Broad Street, 18th Floor, New York, NY 10004

CONSULTANTS:

REVIT CONSULTANT:
IMC ARCHITECTURE DPC
254 36TH ST, SUITE C663
BROOKLYN, NY 11232

MEP ENGINEER:
EMTG CONSULTANTS INC
236 MINEOLA BLVD
MINEOLA, NY 11501

STRUCTURAL ENGINEER:
CITYSCAPE ENGINEERING
8 HAVEN AVE, SUITE 209
PORT WASHINGTON, NY, 11050

CIVIL ENGINEER:
PHILIP HABIB AND ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 10016

LANDSCAPE ARCHITECT:
LIZ FARRELL
LANDSCAPE ARCHITECTURE
523 SIXTH AVENUE
BROOKLYN, NY 11215

EXPEDITER:
CORE CONSULTANTS NYC LLC
254 36TH STREET, SUITE C663
BROOKLYN, NY 11232

LANDSCAPE PLAN - SOUTH LINK OPEN SPACE

SEAL & SIGNATURE:
REGISTERED ARCHITECT MONICA LOPEZ URAN 026567 STATE OF NEW YORK

PROJECT No:
DRAWING BY:
CHK BY:
DRAWING NO: L-022.00
SCALE: 1/8"=1'-0"

EXHIBIT 2

GREEN AND SUSTAINABLE REMEDIATION DOCUMENTS

Green and Sustainable Remediation and Climate Resiliency Fact Sheet

Released June 2023

The New York State Department of Environmental Conservation (DEC), Division of Environmental Remediation (DER) requires green and sustainable remediation (GSR) and climate resiliency be considered in its remedial programs, regardless of the remedial phase, including State Superfund (SSF), Brownfield Cleanup Program (BCP), Environmental Restoration Program (ERP), and Petroleum Remediation Program.

DEC is providing additional guidance to further incorporate these concepts into its everyday business practices and to provide for better metrics to support decision making.

DEC Policies:

DER-31: Green Remediation

CP-49: Climate Change and DEC Action

Climate Leadership and Community Protection Act (Climate Act)

Background

In order to meet New York State's ambitious climate and sustainability requirements, DEC is integrating decarbonization and sustainability considerations into all of its actions. Compliance with and application of green and sustainable laws, policy, and guidance will better align consultants and remedial parties with the State's and DER's mission in protecting public health and the environment in a green and sustainable manner while aiding the State in reaching climate goals.

Getting Started

GSR practices should be implemented as early as the site characterization. As not all sites have incorporated GSR in earlier phases, it can be evaluated at any time and, moving forward, should build off the completion of each remedial phase. Specific guidance and green technique examples can be found in DER-31: Green Remediation (DER-31 - Green Remediation (ny.gov)).

Key Concepts for Implementation:

- **Idle reduction plan**
- **Minimize waste generation and material use**
- **Reuse or recycle material, when applicable**
- **Increase energy efficiency**
- **Enhance habitat value and land reuse**
- **Assess applicability of renewable energy sources**
- **Environmental impacts of treatment technologies and remedies**
- **Developing/utilizing zero emission technology on-site as practicable**
- **Other site-specific considerations**

What's New?

- **Standard Remedial Elements**
  - Remedial Design – To further our green and sustainable goals and provide a baseline for tracking metrics, this standard remedial element now requires (1) an environmental footprint analysis (e.g., SiteWise or SEFA), (2) definition of project-specific green and sustainable goals in the design specifications, (3) tracking of green metrics during project implementation (reported in the FER), and (4) completion of a climate change vulnerability assessment.
  - Green Remediation – Sites without a design phase should still implement green and sustainable practices through the implementation of an environmental footprint analysis (e.g., SiteWise or SEFA), tracking of green metrics and reporting in periodic or other site management reports, and a climate vulnerability assessment.

- **Site Management Plan Template -** Site Management Plan Template (ny.gov)
  - Periodic Assessments/Evaluations
    - Climate change vulnerability assessments are now mandatory and should consider wildfires.
    - Green remediation evaluations should consider material reuse and recycling, and carpooling.
  - Green Remediation Metrics Form for Site Management

- **Remedial Action Objectives**
  - Reduce direct and indirect greenhouse gas (GHG) and other emissions.
  - Increase energy efficiency and minimize use of non-renewable energy.
  - Conserve and efficiently manage resources and materials.
  - Reduce waste, increase recycling, and increase reuse of materials which would otherwise be considered a waste.
  - Enhance habitat value and create habitat when practicable.
  - Foster green and healthy communities and working landscapes which balance ecological, economic, and social goals.
  - Integrate the remedy with the Site's end use where possible and encourage green and sustainable re-development.

- **Guidance and Best Management Practices**
  - DEC – DEC Sustainability Policy Summary
    *Reach out to the DEC project manager for additional site-specific guidance
  - EPA – CLU-IN | Strategies & Initiatives | Green Remediation Focus > Best Management Practices

Climate Resiliency

It is recommended that all sites complete a climate vulnerability assessment to identify potential risks and recommend mitigation strategies. For example, remedial sites on flood plains should be analyzed for the potential for major storm flooding and how that would impact the remedy or remaining contamination on-site. Other climate change factors to consider include extreme temperatures, increased precipitation, wind, sea level rise, and wildfires.

The following links provide an example of a DEC hazardous waste site cleanup that evaluated climate resiliency and relevant guidance provided by our federal partner which can help inform vulnerability assessments and mitigation strategies on sites in DEC's programs.

Dzus Climate Resiliency Assessment Example

Superfund Climate Resilience | US EPA

For active remedial systems, perform an assessment with the following considerations:

- Engineered caps (including asphalt and concrete caps) with drainage and erosion control components helped alleviate flooding and protected floodwater from contacting contaminated material when inundation did occur.
- Fencing, while noted as damaged at several sites, likely prevented debris from causing more significant damage to site infrastructure and clogging of drainage structures.
- Automated shut-off controls and system notifications prevented tank overflows and provided information on operating systems when sites were not accessible.
- Use of berms, dikes, and other drainage and erosion control measures prevented some sites from flooding and likely allowed quicker reduction of floodwaters where inundation occurred.
- Implementation of hazard preparedness plans including moving drums to enclosed structures, strapping tanks, controlled drawdowns of surface impoundments, controlled shutdowns of operating remedial systems and close communication with regulatory officials prevented infrastructure damage and allowed quick assessment of the sites impacted by the storms.
- Time-critical removal actions at sites where permanent remedies are not yet in place reduced the amount of contamination potentially vulnerable to release during extreme wind and flooding.
- Other site-specific considerations.

Next Steps 

Keep an eye out for:

- updates to DER-10 and DER-31; and the
- release of a GSR public webpage!

DER-31 / Green Remediation

New York State Department of Environmental Conservation

DEC Program Policy

Issuing Authority: Val Washington	**Title:** Deputy Commissioner Office of Remediation and Materials Management
Date Issued: August 11, 2010	**Latest Date Revised:** January 20, 2011

I. Summary

This document identifies the New York State Department of Environmental Conservation (DEC) Division of Environmental Remediation (DER) approach to remediating sites in the context of the larger environment, a concept known as green remediation. "Green Remediation" (or greener cleanups) can be defined as *"the practice of considering **all** environmental effects of remedy implementation and incorporating options to **minimize the environmental footprint** of cleanup actions."* It is intended to be a holistic approach which improves the overall sustainability of the cleanups by promoting the use of more sustainable practices and technologies. Such practices and technologies are, for example, less disruptive to the environment, generate less waste, increase reuse and recycling, and emit fewer pollutants, including greenhouse gases (GHGs), to the atmosphere. The approach also recognizes the potential for positive economic and social benefits of site reuse and supports coordination of site reuse and remediation to effect the most beneficial and sustainable reuse of the site.

This document provides concepts and techniques of green remediation and guidance on how to apply them to DER's remedial programs, but does not specify methods or criteria to be used to quantify the effectiveness of the various green remediation concepts or remedial alternatives. The concepts will be considered and implemented to the extent feasible, and documented.

This policy applies to all phases of the site cleanup process, from investigation through completion of remediation for sites in the Spill Response Program, Inactive Hazardous Waste Disposal Site Remedial Program (State Superfund Program), Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and the Resource Conservation and Recovery Act (RCRA) Program.

II. Policy

DER is dedicated to developing and promoting innovative cleanup strategies that restore contaminated sites to productive use, promote environmental stewardship, and reduce associated costs while minimizing ancillary environmental impacts from these cleanups. Applying green remediation concepts, such as minimizing energy consumption, reducing GHG emissions, maximizing the reuse of land and the recycling of materials, and conserving natural resources such as soil, water and habitat helps to achieve that objective. Green remediation concepts will be applied to the existing (ongoing) cleanups and future cleanup of contaminated properties. This policy does not modify or replace existing remedial program goals. It is also not intended to encourage, and does not justify, implementation of a "no action" or lesser remedy when a more comprehensive remedy is called for, appropriate, and feasible. *The priority remains implementing remedies that are protective of public health and the environment*.

DER remains committed to implementing protective remedies in each program. Applying green and sustainable principles and technologies to each program, consistent with each program's enabling legislation and regulations, will increase the long term effectiveness, permanence and cost effectiveness of the cleanups and will minimize the overall environmental footprint of remediation.

Consistent with existing laws, including Environmental Conservation Law (ECL) Articles 1 and 3, regulations, DEC policy and with the growing national trend, this policy establishes an expectation (Section V) for proactive consideration and/or application of green remediation techniques to all phases of work in existing and future cleanups.

The procedures set forth in this policy document are intended for the use and guidance of both DEC staff and remedial parties. They are not intended to create any substantive or procedural rights enforceable by any party in administrative or judicial litigation with DEC. DEC reserves the right to act at variance with these procedures to address site-specific circumstances and to change them at any time.

III. Purpose and Background

Remediation clearly benefits the environment at and near the site by making the site protective of public health and the environment and by reducing or eliminating localized contamination. There is an environmental footprint (footprint), however, inherent in remediating sites. A remedy may, for example, require significant energy and material use, and contribute emissions of carbon dioxide (CO_2) and other GHGs to the atmosphere. It can also impact, for example, land use and aquifer recharge. This footprint can extend beyond the site property lines and even beyond adjacent properties to the larger environment. The larger environment may include, for example, the atmosphere at a significant distance from the site due to the emissions from power generation which provides electricity to operate remedial equipment. Decisions made during the course of planning and implementing the investigation and remediation impact the footprint of the cleanup.

Cleanup of our sites must be considered in a larger context, as demanded by issues such as GHG emissions and climate impacts, sprawl, and the effects of energy generation and use. Increasingly, cleanup programs across the nation are considering remedial activities that minimize ancillary environmental impacts by minimizing energy consumption, conserving natural resources, maximizing the reuse of land and recycling of materials. As cleanup technologies and incentives continue to evolve, green remediation strategies offer significant potential for increasing the net benefit of cleanup, cost savings, and the universe of long-term property reuse options without compromising cleanup goals.

Many of the green remediation techniques such as optimizing remedial system operation or implementing enhanced biological degradation have long been available and have been applied to cleanups in New York to yield greater efficiency, cost savings and reduced impact. The purpose of this policy on green remediation is to consider cleanups in the context of the larger environment and consistently and pro-actively apply more sustainable methods to remediate the site while still protecting public health and the environment and striving to achieve the established cleanup goals. This will result in cleanups that are more sustainable, meet long-term needs of all stakeholders, protect valuable state resources such as soil, water, habitat, and the atmosphere while respecting cost concerns.

IV. Responsibility

The responsibility for maintaining and updating this policy lies with the Bureau of Technical Support in DER. DER program staff are responsible for implementing this policy, with input from other involved DEC divisions.

V. Procedure

A. General Procedures

The protection of public health and the environment threshold and programmatic requirements must always be met when undertaking investigation and remediation. Green remediation concepts and techniques will be considered during all stages of the remedial program from site characterization through implementation of the remedy, to long-term site management obligations with the goal of improving the sustainability of the cleanup. Specific techniques are provided in Attachment 1. The major green remediation concepts below, and the attached green remediation techniques, will be considered and used to the extent feasible by remedial parties and DEC's staff and contractors.

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

Opportunities to increase the sustainability of site cleanups exist throughout the remedial process. The application of these concepts and techniques to the investigation, design, construction, operation, and monitoring phases is fairly straightforward. Relevant techniques should be pro-actively selected from the list in Attachment 1 or from other sources, combined to form the most sustainable approach for the site and/or remedial phase and applied.

Additionally, there are a number of green remediation techniques which by their nature are easy to implement, and either save money or are only negligibly more expensive. DEC expects that the techniques identified below will be implemented at sites unless a site-specific evaluation demonstrates impracticability or favors an alternative green approach.

- Use of renewable energy and/or the purchase of renewable energy credits (RECs) or a combination of the two techniques to offset 100% of the electricity demand at the site.[1]

[1] Purchase of "green Power" through an energy services company (ESCO) generally costs less than 0.5% of the overall operation and maintenance cost of a remedy. This cost may be off-set by more efficient designs.

- Reduce vehicle idling. All vehicles, both on and off road (including construction equipment) will be shut off when not in use for more than 5 minutes, consistent with 6 NYCRR Part 217 Motor Vehicle Emissions, Subpart 217-3 Idling Prohibition For Heavy Duty Vehicles.
- Design cover systems, to the extent possible, to be usable for alternate uses such as habitat or passive recreation, require minimal maintenance (e.g. less mowing), allow for infiltration of storm water and/or be integrated with the next use of the site.
- Beneficially reuse materials that would otherwise be considered a waste (e.g. crushed clean concrete as base or fill).
- Use of Ultra Low Sulfur Diesel (ULSD).

B. Role of Sustainability in Remedy Selection

Frequently the greatest benefit to the environment from the application of the green remediation concept can be realized at the remedy selection phase. Many factors are considered when selecting a remedy (e.g. the nine remedy selection criteria in 6NYCRR Part 375). Sustainability/green remediation is an aspect of one or more of the existing criteria. DEC is utilizing these concepts to support selection of the best remedy for a site. The consideration of sustainability in remedy selection is consistent with existing statutes, regulations, and guidance. Remedies will still be selected in accordance with applicable regulations, standards, policies, and guidance documents and all selected remedies shall still, at a minimum:

- protect public health and the environment;
- address source removal and control;
- address groundwater protection and restoration; and
- strive to meet the cleanup goal of the respective program (e.g., pre-disposal conditions for State Superfund sites; pre-release for petroleum spills).

All remedial parties, DER staff, and DER standby consultants and contractors should now consider sustainability/green remediation concepts when assembling and evaluating remedial alternatives.

Remedies selected under programs subject to 6NYCRR Part 375 (i.e., the State Superfund Program, Brownfield Cleanup Program, and Environmental Restoration Program), shall still be selected in accordance with the nine remedy selection criteria set forth at 375-1.8(f). Under Part 375, sustainability is primarily evaluated as part of the long-term effectiveness and permanence criterion and the short-term impacts and effectiveness criterion, but it may affect implementability, cost effectiveness, community acceptance, and land use.

Determining which remedial alternative will have the greatest net benefit to the environment or create the least direct, indirect, or life-cycle impact is not always obvious, and can be complex. Both quantitative and qualitative green metrics can help in this determination. However, these metrics can be difficult to normalize across technologies and alternatives. In order to compare the potential impacts of remedial alternatives, the following specific evaluations will be included as indicated in alternatives analysis documents (including feasibility and corrective measures studies).

- At a minimum, a qualitative assessment of total impacts related to the remedial alternatives being considered (e.g., direct and indirect sources of GHGs and relative scale of the GHGs, material reused on site or disposed, travel required to maintain the remedy) will be discussed

and relative impacts of the remedies compared. For example, "Alternative A uses significantly less electricity over the anticipated life of the remedy than the other alternatives and therefore results in less indirect emissions of GHGs. However, Alternative A requires the use of more heavy equipment for transportation, resulting in greater direct emissions and fuel use".

- If necessary to differentiate between remedies that offer equivalent public health and on/near site environmental protection, relevant and readily calculable metrics related to direct and indirect impacts for each alternative should be quantified. DER is not requiring a life-cycle analysis to determine upstream impacts as part of this quantitative analysis. Normalizing appropriate data to a common unit such as tons GHGs or CO_2 equivalents may be helpful and would be acceptable. Quantitative tools for calculating the relative impacts of various remedies are becoming widely available and may be used. All relevant metrics should be included in the analysis. The following are examples of the types of metrics that may be included.

    - Energy or emissions required to construct and operate the remedy. Direct emissions that are most relevant include stationary combustion of fuels (for generation of electricity, heat, etc.) and mobile combustion of fuels (for construction and transportation, including transportation of materials and waste and travel for operation and maintenance). Direct emissions could also include fugitive emissions and emissions from physical and/or chemical processes on site. Indirect energy use or emissions which are most relevant are related to generation of purchased electricity, heat, etc.;
    - Fuel use (e.g. gallons of diesel fuel or gasoline);
    - Volume or weight of material (e.g. construction and demolition debris) reused on site;
    - Tons of waste disposal avoided;
    - Linear feet of stream bank returned to natural conditions (e.g. from bulkhead to vegetated); and
    - Any other large direct or indirect imparts, emissions or potential emission sources may also be considered.

- Quantification of upstream emissions from the extraction, production and transportation of purchased materials and fuels is not anticipated to be required to differentiate remedial alternatives. DEC may consider any voluntary submission of upstream emissions data. This analysis, if provided, should be completed using widely available and generally accepted tools and techniques, and following generally accepted protocols such as the Climate Registry General Reporting Protocol. DEC could request upstream emissions quantification if needed to support remedial decisions.

DER will consider all sustainability and green remediation information presented, including qualitative and quantitative metrics. Energy use, emissions, effect on habitat and site reuse, and other sustainability issues will help to differentiate remedial alternatives that offer the same or similar level of on/near site environmental and public health protection. The concept of green remediation will not be used to justify "no action" or to implement a lesser remedy when a more comprehensive remedy is appropriate and feasible. *Sustainability will be considered as part of the evaluation of an appropriate remedy.* Alternatives with the following characteristics will likely be the greenest:

- Fewer short-term and long-term ancillary impacts to the environment;

- Fewer GHG emissions;
- Smaller environmental footprint;
- Achieves the remedial action objectives more sustainably;
- Allows for the greenest reuse;
- Achieves a complete and permanent cleanup; and
- Permanently and significantly reduces the toxicity, mobility or volume of contamination.

C. Documentation of Green Remediation Efforts

All green remediation efforts will be documented by the project lead (State, RP, etc.). DER is not requiring that the green remediation documentation conform to a particular format at this time. The information may be included in the document text, included as an appendix, or submitted and referenced as a separate supporting document such as a sustainability analysis report.

- In general, since green remediation/sustainability concepts are to be considered and/or implemented in all phases of site investigation and cleanup, any report of work during these phases which is submitted to DEC should describe the green remediation/sustainability efforts.

- All remedial alternatives analysis and decision documents will describe the green remediation principles considered in the evaluation and/or selection of the remedy, will present or reference any qualitative and/or quantitative sustainability information generated in support of remedy selection, and will discuss how the impacts can be minimized during implementation. Decision documents will also require that green remediation and sustainability efforts be implemented to the extent feasible in the design and implementation of the remedy.

- Corrective action modules for new Hazardous Waste Management Permits or Permit renewals issued under 6 NYCRR 373-2 (the RCRA Program) shall include conditions which require the Permittee to consider green remediation principles in all phases of the remedial process and to document their evaluation.

- In addition to statutory and regulatory requirements, final engineering reports must include a discussion of the green remediation practices/technologies employed throughout the remedial program.

- Green remediation principles must also be considered during each periodic review and remedial system optimization review conducted during the site management phase. The reports of the these reviews will discuss the green remediation principles employed during the past reporting cycle and any associated quantitative or qualitative reductions in impacts to the environment and will make recommendations that can be employed during the next reporting cycle.

VI. Related References

Web Sites:

NYSDEC Mission and Issue Priorities
NYSDEC Environmental Cleanup and Brownfields
EPA Green Remediation
ASTSWMO Greener Cleanups Information Resources

Documents:

EPA Green Remediation Primer: Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites. EPA 542-R-08-002. April 2008.

EPA Draft Green Revitalization Think Piece. December 26, 2007.

Smart Energy Resources Guide (SERG). EPA/600/R-08/049. March 2008.

Introduction to Energy Conservation and Production at Waste Cleanup Sites. EPA Engineering Forum Issue Paper. EPA 542-S-04-001. May 2004.

Better Site Design. NYSDEC, Division of Water. April 2008.

EPA Case Study: " A Construction and Demolition Waste Reduction Success Story ". EPA 560-F-09-001. January 2009.

Recover Your Resources: Reduce, Reuse, and Recycle Construction and Demolition Materials at Land Revitalization Projects. EPA 560-F-08-242. April 2008.

Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements. NYSDEC Commissioner Policy, Office of Air, Energy and Climate. July 15, 2009.

CP-49/Climate Change and DEC Action. NYSDEC Commissioner Policy. October 2010.

Air Force Center for Engineering and the Environment Sustainable Remediation Tool (SRT™)

Navy/Army Corps/Battelle SiteWise™ Tool

Protocols for life-cycle GHG emissions estimation:

- EPA's Climate Leaders Program Design Principles Guidance and Climate Leaders Basic Information
- Climate Registry General Reporting Protocol

Attachment 1
Examples of Green Remediation Techniques

Examples of Green Remediation Techniques Applicable to all Phases of the Remedial Programs
Increase energy efficiency/Minimize total energy use and direct and indirect CO_2/GHG emissions to the atmosphere
Reduce emissions of air pollutants
Minimize habitat disturbance and create or enhance habitat or usable land
Conserve natural resources such as soil and water; promote the sequestration of carbon through reforestation or afforestation
Minimize fresh water consumption and maximize water reuse during daily operations and treatment processes
Prevent long-term erosion, surface runoff, and off-site water quality impacts
Prevent unintended soil compaction
Minimize waste or implement beneficial use of materials that would otherwise be considered a waste
Minimize equipment and truck idling and use sustainably produced biofuels to reduce discharges of pollutants and GHGs to the atmosphere
Utilize clean diesel (new or retrofitted) equipment to reduce emissions to the atmosphere
Minimize truck travel for disposal to save energy, reduce emissions, reduce localized noise, vibration, and wear and tear on roads
Minimize use of heavy equipment to save energy and reduce emissions
Examples of Green Remediation Techniques Applicable to the Remedy Selection, Design and/or Construction Phases
Maintain, use, mimic or enhance natural processes where possible to effect remediation
Encourage development and evaluation of low energy alternatives such as enhanced bioremediation, phytoremediation, permeable reactive barriers (PRBs), source removal with monitored natural attenuation (MNA), enhanced attenuation of chlorinated organics (EACO), engineered wetlands, and remedies which can be driven to MNA or monitoring only (e.g., remedies which will not need external power indefinitely)
Use renewable energy if possible, or purchase Renewable Energy Credits
Evaluate if a remediation system could be protective with an intermittent energy supply (e.g., pumping or venting only during daytime or adequate winds)
Encourage the use of remediation technologies that permanently destroy contamination to reduce impacts associated with long-term site management
Address sources more aggressively to reduce long-term operation and maintenance of treatment or containment systems

Design for efficiency (e.g., size motors optimally) to reduce indirect emissions of electricity production
Design adaptable systems (e.g., systems that use less energy as the site cleans up)
Incorporate green building design
Reuse existing buildings and infrastructure to reduce waste
Reuse and Recycle construction and demolition (C&D) debris and other materials
Maximize beneficial use of materials that would otherwise be considered a waste
Integrate remedial design with contemplated reuse of site
Design cover systems to be usable (e.g., habitat, recreation, renewable energy generation, bio-fuel crop production)
Design storm water management or cover systems to recharge aquifers/minimize the creation or replacement of impervious surfaces
Use native vegetation requiring little or no irrigation
Reclaim treated water for beneficial use such as process water or irrigation
Examples of Green Remediation Techniques Applicable to Site Management
Focus on optimization to reduce energy use or time to closure
Increase energy efficiency/minimize total energy use and CO_2/GHG emissions to the air by replacing equipment, altering operation or shutting down unnecessary equipment
Improve reliability to reduce O&M visit frequency
Evaluate the possibility of switching to renewable energy either directly (generated on site, off-grid or grid-tied), or indirectly through a utility (green power purchase program)
Complete the Remedial Site Optimization Process to identify opportunities to reduce energy and other impacts
Incorporate sustainability into periodic reviews to identify opportunities to reduce energy and other impacts
Assess if an energy intensive remedy is still the best remedy for the site
Evaluate the possibility of MNA for sites where this was not originally considered

United States Environmental Protection Agency

Office of Land and Emergency Management (5203)
EPA 542-F-19-002 August 2019 Update

Green Remediation Best Management Practices: Excavation and Surface Restoration

A fact sheet about the concepts and tools for using best management practices to reduce the environmental footprint of activities associated with assessing and remediating contaminated sites

www.clu-in.org/greenremediation

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The U.S. Environmental Protection Agency (EPA) *Principles for Greener Cleanups* outline the Agency's policy for evaluating and minimizing the environmental footprint of activities involved in cleaning up contaminated sites.[1] Best management practices (BMPs) of green remediation involve specific activities to address the core elements of greener cleanups:

- Reduce total energy use and increase the percentage of energy from renewable resources.
- Reduce air pollutants and greenhouse gas emissions.
- Reduce water use and preserve water quality.
- Conserve material resources and reduce waste.
- Protect land and ecosystem services.

Overview

Excavation of soil, sediment or waste material is often undertaken at contaminated sites to:

- Address immediate risk to human health or the environment as part of immediate or long-term removal actions.
- Prepare for implementation of in situ or ex situ remediation technologies and construction of associated infrastructure.
- Address contaminant hot spots in soil or sediment for which other remedies may be infeasible due to extremely high cost, long duration or technical constraints.

Many opportunities exist to reduce the environmental footprint of excavation activities and final restoration of disturbed land, surface water and ecosystems. Excavation as well as subsequent backfilling activities rely on use of heavy earth-moving machinery and often involve managing large volumes of material.

Project Planning

Early and integrated project planning allows excavation approaches to set the stage for sharing natural resources, processes and infrastructures throughout site investigation, remediation and reuse. Planning-related BMPs for excavation projects include:

- Maximize use of available satellite imagery to define the boundaries of excavation areas and operate machinery in the field with high "surgical" precision.
- Incorporate a high-resolution site characterization strategy, which uses high-density data sets rather than repeated field mobilizations to address information gaps as cleanup progresses.
- Establish a dynamic work strategy, which provides flexibility to adjust cleanup activities according to real-time field measurements. For example, screening soil samples at pre-determined decision points through use of laser-induced fluorescence technology might indicate that contaminated subsurface material in some areas could be left in place and covered with clean material instead of excavated.
- Develop advanced schedules for anticipated onsite activities, to minimize traffic between onsite contaminated and clean zones and the days in which work is actively performed in the field.
- Identify onsite or nearby sources of topsoil, to avoid long-distance transport of clean soil. Options may include onsite manufacturing of topsoil through use of locally sourced industrial byproducts such as compost or silica-based spent foundry sands.[2]

Waste coordination assistance is offered by many state and municipal agencies to plan beneficial reuse of excavated materials. For example, the New York City Clean Soil Bank (CSB) matches projects generating surplus clean native soil with projects needing soil for construction. In the first three years of operation, the CSB enabled a 1.2 million-mile reduction in truck transportation, which reduced diesel fuel consumption by approximately 250,000 gallons.[3]

- Identify onsite or nearby sources of backfill material such as shredded tires or crushed concrete.
- Incorporate green requirements into cleanup and supporting service procurements.
- Choose service providers with local offices, to minimize the distance of worker commutes and machinery transport.
- Choose equipment and product vendors with nearby production or distribution centers, to minimize delivery-related fuel use.
- Retrieve native, noninvasive plants for later replanting.
- Rescue and relocate wildlife that rely on habitat in areas to be excavated. Many environmental, academic or community groups offer help in conducting wildlife rescues and compiling wildlife or plant inventories.
- Identify existing or anticipated ecosystem services to be considered in project designs.[4]

Onsite air emissions can be reduced by finding opportunities to use less fuel. Selection of BMPs may be influenced by site conditions, the regional air quality status, local ordinance or the weather anticipated during field work. Related BMPs that may be incorporated into project plans include:

Consumption of fuel and associated emission of air contaminants typically account for a major portion of the environmental footprint of excavation and backfilling activities.

- Use fuel-efficient on-road vehicles such as hybrid electric sport utility vehicles and pickup trucks.
- Use off-road machinery fueled by biodiesel blends that minimize emission of particulate matter.
- Use on-road or off-road utility vehicles fully powered by electricity.
- Use retrofitted diesel-fired machinery or portable equipment with emission control technologies such as diesel oxidation catalysts, diesel particulate filters or approved fuel additives. Information on verified technologies is available from the U.S. EPA[5] or California Air Resources Board.[6]

BMPs to reduce diesel fuel consumption and associated air emissions from trucks or tractor trailers that will transfer excavated soil or other materials to offsite locations for disposal, recycling or reuse include:

- Select the closest qualified waste facility.
- Combine excavated material with comparable waste generated at nearby sites, for consolidated transfer in a single trip or fewer trips to the intended facility or site.
- Choose trucking fleets that use vehicles equipped with fuel efficiency options such as tractor-trailer skirts and air tabs as well as clean diesel technology, which is generally available in newer trucks or through engine and emission system retrofits in older trucks. Details about engine retrofits are available from the Diesel Technology Forum.[7]
- Use alternate shipping methods that may be available, such as rail lines.

Field Activities

The amount of diesel fuel needed to operate heavy machinery such as backhoes or graders may be reduced by BMPs such as:

- Deploy machinery that is suitably sized; use of undersized or oversized equipment can decrease efficiencies considerably.
- Use machine models capable of performing assorted tasks, whenever feasible, to avoid field deployment of multiple types of machines. For instance, a single excavator can be equipped with a bucket for digging, a breaker for demolition or a grapple for land clearing.
- Use an automated coupling system rather than a manual pin-on system for changing excavator attachments, to reduce machine operating time.
- Incorporate electronic intelligence systems to improve productivity within and among field machines. "Smart" systems enable work managers to remotely monitor field operations via machine-to-machine communications and identify changes to be made by machinery operators accordingly.
- Use machines with variable-speed control technology, which automatically reduces engine speed during low workload requirements, or with pump torque control, which allows a machine operator to change a machine's hydraulic pump torque.
- Use machines with repowered or newer engines that are more fuel efficient.
- Implement an engine idle reduction plan to avoid fuel consumption when machinery is not actively engaged. Options include manual shutdown after a specified time such as five minutes, engagement of automatic shutdown devices, or use of auxiliary power units to heat or cool machinery cabs.
- Perform routine, on-time maintenance such as oil changes to assure fuel efficiency.

Characterization and excavation of lead-contaminated soil at the Ross Metals Inc. NPL site in Rossville, Tennessee, were completed simultaneously through high-resolution site characterization and dynamic work strategies deployed in a single field mobilization. Real-time measurements were made with a portable x-ray fluorescence (XRF) spectrometer, which reduced the need for sample analyses by an offsite laboratory and avoided potential overexcavation. Following excavation and offsite disposal of approximately 70,600 cubic yards of material, additional XRF data combined with offsite laboratory analytical results confirmed that the site's targeted standard for lead in residential soils had been met.[8]

- Deploy direct-push technology (DPT) instead of rotary drilling rigs whenever feasible for additional subsurface sampling or for monitoring well installation. DPT can reduce drilling duration by as much as 50-60% while eliminating generation of drill cuttings or the need to dispose of drilling fluids.

The amount of additional diesel fuel as well as gasoline, propane or non-rechargeable electric batteries needed to operate small or mid-sized auxiliary field equipment can be minimized by using onsite sources of renewable energy. Relevant BMPs include:

By reducing the need to transport liquid fuel or extend the local electricity grid, onsite renewable energy offers the potential to significantly reduce the environmental footprint of excavation at sites in remote areas, such as former mining sites.

- Use solar power packs to recharge batteries in small electronic devices such as cell phones, laptop computers and sensors.
- Deploy mobile power systems to operate construction equipment or tools such as electricity generators, chainsaws, wood chippers, refrigeration units, or temporary lighting fixtures. Mobile power systems typically use maneuverable photovoltaic (PV) panels or small wind turbines that can be easily transported via carts, pick-up trucks or trailers.
- Install a ground-mounted PV array, wind turbine or mechanical windmill to power equipment needed for long-term site monitoring or maintenance. If properly scaled and configured, these renewable energy systems also could power equipment for other remediation activities such as groundwater pumping.

Generation of dust and potential mobilization of airborne contaminants during excavation and backfilling can be reduced through BMPs such as:

- Limit the speed of trucks and other vehicles traversing the site to 10 miles per hour.
- Spray water onto surfaces of vulnerable work areas, in conjunction with water conservation and runoff management techniques.
- Emplace a fabric cover over excavated material that is loaded into open trucks for onsite or offsite hauling.

Designs for backfilling, grading and stabilizing a 3-acre basin affected by mining waste at the Elizabeth Mine NPL site in South Strafford, Vermont, included intent to mirror the site's natural contours and drainage patterns. The fully graded surfaces were seeded with native plant species that target Vermont state conservation and wildlife goals.

Other BMPs used at this 250-acre site included using biodiesel to operate heavy machinery; choosing machinery equipped with clean diesel technologies for excavation, waste consolidation and construction of a 45-acre capping system; using onsite resources to manufacture needed topsoil rather than importing raw materials; and choosing construction products verified as environmentally friendly or preferable. Use of biodiesel (B-20), alone, over six months of remedy construction was estimated to reduce emission of hydrocarbons and sulfur dioxide by 20%, carbon dioxide by 16% and particulate matter and carbon monoxide each by 12%.[9]

Green remediation strategies also help reduce consumption of fresh water, reclaim or reuse uncontaminated water, and avoid introduction of toxic processing materials into groundwater or surface water. Related BMPs include:

- Cover soil in work areas with tarps or heavy mats for dust suppression, instead of periodically spraying water onto exposed surfaces. Use of biodegradable cover fabric will help control erosion and provide a substrate for future plant growth. Alternatively, a synthetic fabric can often be reused for other purposes.
- Contain and properly dispose of all decontamination fluids to prevent their entrance into storm drains or ground surfaces.
- Use graywater that may be available from onsite or nearby sources for purposes such as washing or steam-cleaning excavation machinery or irrigation of affected vegetation.

Other BMPs focus on preserving water quality and conserving natural resources during the process of dewatering contaminated sediment after its excavation or dredging:

- Lay synthetic barriers and fluid collection systems on ground surfaces of staging and work areas, to avoid introducing toxic materials to underlying groundwater.
- Avoid use of dewatering coagulants or flocculants containing chemicals that are potentially toxic to aquatic life.
- Use a passive rather than active mechanical process to dewater sediment when possible. A passive process relies on natural gravity flow and evaporation of the water rather than equipment such as filter presses powered by slurry pumps.
- Implement a dewatering process that maximizes recycling of slurry and other process water.
- Use geotextile bags or nets when possible to assure containment of excavated sediment during dewatering and to increase efficiency when handling and transporting the dewatered sediment.
- Transfer treated slurry water to other onsite areas or nearby sites for beneficial use in remedial or non-remedial applications such as wetlands enhancement or plant irrigation.

Countless and diverse manufactured products are purchased for use during excavation and surface restoration, such as personal protective equipment, synthetic sheeting and routine business materials. Green purchasing considers product lifecycles and gives preference to products with recycled and bio-based instead of petroleum-based contents; products, packing material and disposable

equipment with reuse or recycling potential; and contents and manufacturing processes involving nontoxic materials. BMPs relating to environmentally sound purchasing include:

- Choose geotextile fabrics/tarps made of recycled material.
- Use hydraulic fluids that are biodegradable for operating equipment such as drill rigs.[10]
- Use phosphate-free detergents instead of organic solvents or acids to decontaminate equipment not used directly for sample collection.
- Substitute temporary silt fences with biodegradable erosion controls such as tubular devices filled with organic materials. Such devices capture sediment transported by stormwater runoff from or to adjoining slopes while building substrates for future vegetation.[11]

Selection of BMPs concerning excavation and surface restoration activities at a specific site can be facilitated through use of the ASTM Standard Guide for Greener Cleanups.[12] Use of the U.S. EPA *Methodology for Understanding and Reducing a Project's Environmental Footprint* and associated spreadsheets can additionally help project managers make informed decisions by quantifying the anticipated environmental footprint and adjusting project activities accordingly.[13]

BMPs focused on maximizing reuse or recycling of excavated material and minimizing generation of waste during the process of excavating contaminated material include:

- Segregate and stockpile drill cuttings generated by drilling, to facilitate onsite reuse of the material.
- Reclaim and stockpile uncontaminated soil for use as infill or other purposes such as habitat creation.
- Salvage organic debris that is uncontaminated and free of pests or disease, for use as supplemental infill, mulch or compost.
- Salvage uncontaminated objects with potential recycle, resale, donation or onsite infrastructure value, such as steel, concrete and granite.
- Designate collection points for recycling single-use items such as metal, plastic and glass containers; paper and cardboard; and other consumable items.

Cleanup at the 113-acre Curtis Bay Coast Guard Yard NPL site in Baltimore, Maryland, involved soil excavation, sediment dredging and extensive building demolition. Use of BMPs aimed at sustainable materials and waste management resulted in recycling of approximately 2,620 tons of concrete, 20 tons of steel, 110 tons of timber and 2,050 tons of petroleum-contaminated soil. The project's greener cleanup strategy also created approximately 60,000 square feet of greenspace and introduced drainage controls such as permeable pavement that allow infiltration of precipitation.[14]

Safeguarding Land & Ecosystems

Additional BMPs can be integrated in work plans to specifically address the potentially significant environmental footprint an excavation project may pose on land and ecosystems. Relevant BMPs include:

- Restrict machinery, vehicle and worker traffic to well-defined corridors that are minimally obtrusive.
- Place metal grates over thick mulch in onsite traffic corridors, which minimizes soil compaction while fostering subsurface infiltration of precipitation.
- Emplace geotextile surface material and quick-growth grass seeds in staging areas, to stabilize the underlying sod.
- Employ rumble grates with a closed-loop graywater washing system or an advanced, self-contained wheel washing system to minimize vehicle tracking of soil and sediment across non-work areas or offsite.
- Inspect equipment left onsite before renewing field activities, to avoid harming animals potentially nesting in the equipment. Operation of equipment with nest debris also could cause equipment inefficiency or breakdown.
- Limit use of artificial lighting that may disturb sensitive animal species.
- Avoid removing trees in staging areas or uncontaminated zones.
- Retain and use downed trees as habitat snags in onsite streams or forests.
- Replicate the site's original contours during soil grading.

Other BMPs focus on minimizing potential soil erosion due to stormwater runoff. For optimal efficiency, stormwater controls at excavation sites can be designed to meet needs of the site's future use. Examples include:

- Convert a portion of the excavation pit to a basin that can capture and store stormwater, instead of fully backfilling the pit.
- Construct permanent earthen berms or dikes to prevent erosion in low-lying onsite or adjacent areas that might remain vulnerable to stormwater flows.
- Incorporate bioswales, tree canopies or other green infrastructure elements that can filter stormwater as well as capture rainwater or snowmelt.[15]

Green infrastructure can significantly decrease the amount of stormwater runoff and pollutants reaching local waters. For example:

- The urban forest in Charlotte, North Carolina, was found to annually intercept about 209 million gallons of rainfall (as of 2006), which saves the city approximately $2,077,400 in annual stormwater management costs.[16]
- In Cincinnati, Ohio, the U.S. EPA and federal partners constructed and studied a rain garden network bordered by berms and populated by drought- and flood-tolerant perennials and grasses. Over four years, the network retained about 90% of all rainfall and achieved an overall stormwater volume retention capacity exceeding 50%.[17]

Use of the National Stormwater Calculator can help estimate frequency of runoff from a specific site based on its soil conditions, land cover and historical rainfall.[18]

- Minimize use of impermeable materials such as concrete to re-surface areas, and maximize retention or creation of permeable surfaces in areas that are contiguous.
- Allocate greenspace as a buffer in sensitive natural areas such as steep hillsides, riparian zones or wetlands that are prone to generating or receiving runoff.
- Establish plans for long-term maintenance and inspections of onsite wet ponds created for stormwater management. Routine maintenance typically includes removing debris after major storms, repairing damaged embankments, and harvesting vegetation when a 50% reduction in water surface occurs.[19]

BMPs applying to the process of revegetating excavated/backfilled areas, particularly those with anticipated ecological reuse, include:

- Revegetate backfilled areas as quickly as possible through use of a diverse mix of grasses, shrubs, forbs and trees supporting many habitat types.
- Include plant species that promote colonization of bees and other pollinators.
- Seed or install native rather than non-native species, which typically increases the rate of plant survival and minimizes the need for irrigation and soil or plant inputs.
- Choose grass species requiring little or no mowing.
- Substitute chemical fertilizers, herbicides or pesticides with non-synthetic inputs, integrated pest management methods, and soil solarizing techniques during vegetation planting, transplanting or ongoing maintenance.

Excavation and backfilling activities also may affect land and ecosystems gradually over time. Potential effects include subsidence, soil chemistry imbalance, reduced subsurface microbial populations or failing wildlife habitat restoration. Selection and prioritization of BMPs to avoid such impacts can be facilitated by compiling a pre-excavation inventory of site characteristics such as land contours, drainage patterns, plant species and densities, and resident and migratory animal species. The availability of a baseline inventory also will facilitate final restoration that best recreates a site's pre-development conditions.

Over 33,000 tons of contaminated soil, debris and sediment were removed at the 10-acre Raleigh Street Dump NPL site in Tampa, Florida. In addition, 40 tons of illegally dumped tires were removed and recycled. After placing clean soil, planting grass and restoring wetlands, the potentially responsible parties worked with the Wildlife Habitat Council to further restore the site's ecological systems. Full restoration included doubling the wetlands acreage, creating a 4-acre upland meadow, installing bird and bat boxes, and planting milkweed gardens for Monarch butterfly habitat. The National Oceanic and Atmospheric Administration provided technical expertise to protect aquatic life and coastal habitats throughout site investigation and cleanup.[20]

This fact sheet provides an update on information compiled in the December 2008 "Best Management Practices for Excavation and Surface Restoration" fact sheet (EPA 542-F-08-012), in collaboration with the Greener Cleanups Subcommittee of the U.S. EPA Technical Support Project's Engineering Forum.

To view BMP fact sheets on other topics, visit CLU-IN Green Remediation Focus: www.clu-in.org/greenremediation.

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For more information, contact: Carlos Pachon, OLEM/OSRTI (pachon.carlos@epa.gov), U.S. Environmental Protection Agency