FORMER EXCELSIOR BAG

YONKERS, NEW YORK

Remedial Alternatives Analysis

NYSDEC BCP Site Number: C360190
AKRF Project Number: 200131

Prepared For:

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LIST OF ACRONYMS

Acronym	Definition
111-TCA	1,1,1-Trichloroethane
AKRF	AKRF, Inc.
ASTM	American Society for Testing and Materials
AST	Aboveground Storage Tank
AWQSGVs	Ambient Water Quality Standards and Guidance Values
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BER	Business Environmental Risks
bgs	below ground surface
BOA	Brownfield Opportunity Area
BTEX	A group of VOCs comprising benzene, toluene, ethylbenzene, and xylenes
CAMP	Construction Air Monitoring Plan
COC	Contaminants of Concern
CPP	Citizen Participation Plan
CVOC	Chlorinated Volatile Organic Compound
DD	Decision Document
DER	Discrete Emission Reduction; Division of Environmental Remediation
DNAPL	Dense Non-Aqueous Phase Liquid
EC	Engineering Control
EE	Environmental Easement
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
FER	Final Engineering Report
HASP	Health and Safety Plan
HREC	Historical Recognized Environmental Condition
IC	Institutional Control
ISCO	In-Situ Chemical Oxidation
IRM	Interim Remedial Measures
IRMWP	Interim Remedial Measure Work Plan
LIF	Laser Induced Florescence
mg/kg	Milligrams per Kilogram
MGP	Manufactured Gas Plants

Acronym	Definition
MNA	Monitored Natural Attenuation
MTA	Metropolitan Transportation Authority
MW	Monitoring Well
NAPL	Non-Aqueous Phase Liquid
ng/l	Nanograms Per Liter
NYCRR	New York Codes, Rules, and Regulations
NYEC	New York Engineering Company
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation/ Department
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
O&M	Operation and Maintenance
OSHA	United States Occupational Safety and Health Administration
PAOC	Potential Area of Concern
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PGW	Protection of Groundwater
PID	Photoionization Detector
ppm	Parts Per Million
PSA	Potential Source Area
QAPP	Quality Assurance Project Plan
QHHEA	Qualitative Human Health Exposure Assessment
RAA	Remedial Alternatives Analysis
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RI	Remedial Investigation
RIR	Remedial Investigation Report

Acronym	Definition
RIWP	Remedial Investigation Work Plan
RR	Restricted Residential
SB	Soil Boring
SCG	Standards, Criteria, and Guidance
SCO	Soil Cleanup Objective
SI	Supplementary Investigation
SIM	Selective Ion Monitoring
SIR	Supplementary Investigation Report
SMP	Site Management Plan
SRI	Supplemental Remedial Investigation
SSDS	Sub-Slab Depressurization System
SV	Soil Vapor
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethylene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS	Technical Operational and Guidance Series
UST	Underground Storage Tank
UU	Unrestricted Use
VOC	Volatile Organic Compounds
µg/L	Micrograms per Liter
µg/m3	Micrograms per Cubic Meter

1.0 INTRODUCTION

This Remedial Alternatives Analysis (RAA) Report has been prepared by AKRF, Inc. (AKRF) on behalf of Extell Hudson Waterfront LLC and Extell Hudson Waterfront I LLC (the Volunteers) for the Former Excelsior Bag site located at 25, 35 and 45 Riverside Drive (f/k/a 159-161 Alexander Street and 15 Babcock Place), in Yonkers, New York (the Site). The purpose of this RAA Report is to identify, evaluate and select an effective remedy that is technically implementable and capable of achieving the Site Remedial Action Objectives (RAOs) to address contamination identified by the 2020-2021 Remedial Investigation (RI), August 2021 Supplemental Remedial Investigation (SRI), Supplementary Investigation #1 (SI #1), and SI #2 [which has not been previously addressed under the NYSDEC-Approved March 2022 Interim Remedial Measure Work Plan (IRMWP)]. This RAA Report was used to establish the proposed remedy for the Site detailed in the Remedial Action Work Plan (RAWP).

The Site is located at 25, 35 and 45 Riverside Drive (f/k/a 159-161 Alexander Street and 15 Babcock Place) in Yonkers, New York. The Site is part of a larger Extell Hudson Waterfront redevelopment plan approved by the City of Yonkers Planning Board on April 11, 2018, for which the final subdivision map was filed with the Westchester County Clerk's office on January 24, 2020. The Site is now identified by the City of Yonkers Tax Map as Section 2, Block 2620, Lot 2, a portion of Lot 9, Lots 10, 11 and 12, Fisherman Way, Colman Way, and portion of Riverside Drive. The Site consists of an approximately 243,952-square foot vacant property with concrete/asphalt paved surfaces, an active construction area to the north (Phase I Construction), and a stone revetment (along the western boundary adjacent to the Hudson River). A site location map is provided as Figure 1 and a site plan is provided as Figure 2.

1.1 Summary of Brownfield Cleanup Program (BCP) Milestones

The Volunteers were accepted into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) as Volunteers (BCP Site No. C360190), pursuant to NYSDEC Brownfield Cleanup Agreement (BCA) (BCA Index No. C360190-04-20), executed on April 30, 2020 and subsequently amended. A Remedial Investigation Work Plan (RIWP) was prepared by AKRF in July 2020 and approved by NYSDEC on August 4, 2020, and subsequent RI activities were conducted in September 2020 and April 2021. A draft Remedial Investigation Report (RIR) was submitted to NYSDEC on July 9, 2021, and preliminary comments on the draft July 2021 RIR were provided by NYSDEC to AKRF (on behalf of the Volunteer) via email on July 29, 2021. A formal RIR comment letter was issued by NYSDEC on September 7, 2021.

Based upon NYSDEC comments, a SRI was conducted in August 2021 in accordance with the NYSDEC-approved August 2021 SRI Work Plan. The revised RIR, which incorporated the results of the September 2020/April 2021 RI and the August 2021 SRI field activities, was submitted to NYSDEC on October 8, 2021, and approved by NYSDEC (with modifications) on October 29, 2021. The final November 2021 RIR was submitted to NYSDEC on November 3, 2021. The November 2021 RIR is summarized in the previous reports section (Section 3.0).

Prior to preparation of this RAA Report and the RAWP (which proposes a Track 4 remedy for the Site), two Supplementary Investigations (SI #1 and SI #2) were conducted to further refine the environmental findings presented in the RIR. Specifically, the Supplementary Investigations were intended to further investigate potential areas of concern (PAOCs) for anticipated cleanup under a Track 4 remedy.

SI #1 further evaluated PAOCs for metals identified during the RI. Specifically, areas with total metal concentrations exceeding established site-specific thresholds [detailed within the NYSDEC-approved December 2021 SI #1 Work Plan (SIWP #1)] were further evaluated as potential source areas (PSAs) for hazardous waste via Toxicity Characteristic Leaching Procedure (TCLP) sampling. The SI #1 was conducted in December 2021 in accordance with the SIWP #1. The SI

Report #1 (SIR #1) detailing the results of the investigation was submitted to NYSDEC in January 2022 and approved by NYSDEC on March 4, 2022. The January 2022 SIR #1 is summarized in the previous reports section (Section 3.0).

SI #2 was conducted to refine the horizontal and vertical extents of coal tar impacts documented above the Hudson River sediment confining layer during the 2020/2021 RI. The SI #2 was conducted from February 2022 to April 2022 in accordance with the NYSDEC-approved February 2022 SIWP #2 and the SIR #2 detailing the results of the investigation was submitted to NYSDEC in August 2022. NYSDEC provided comments to the SIR #2 in September 2022. The revised SIR #2 (addressing NYSDEC comments) was submitted to NYSDEC in December 2022 and approved by NYSDEC on January 5, 2023. The December 2022 SIR #2 is summarized in the previous reports section (Section 3.0).

To facilitate the Phase I Construction activities in the southeast corner of the Site (construction of Riverside Drive), the Volunteer, in consultation with NYSDEC, conducted limited remediation in accordance with the NYSDEC-approved March 2022 Interim Remedial Measure Work Plan (IRMWP) and October 2022 IRMWP Deviation Letter. The limited IRM activities, which were conducted in September 2022 through February 2023 to the satisfaction of NYSDEC, included closure in-place of the underground storage tanks (USTs) and excavation of shallow fill materials with elevated concentrations of semivolatile organic compounds (SVOCs) identified during the RI in the southeastern corner of the Site. The IRM activities will be detailed in a forthcoming IRM Construction Completion Report (CCR).

This RAA Report was submitted to NYSDEC for review in December 2022 (as a separate standalone report prior to the preparation of the RAWP). In an email correspondence dated January 12, 2023, NYSDEC provided comments and agreed with the preferred remedy outlined in this RAA Report. The NYSDEC comments were incorporated into this updated RAA Report and during the development of the RAWP being submitted to NYSDEC for public comment. NYSDEC comments provided in January 2023 are provided as Appendix A.

1.2 Proposed Redevelopment Plan

Proposed development of the Site includes two low-rise residential buildings (referred to as Building E and Building F), a portion of a third low-rise residential building (Building D), surrounding access roadways, and a waterfront esplanade. The first phase of construction (Phase I Construction), which includes components on both the Site and the north adjacent BICC Cables site (NYSDEC BCP Site No. C360051), began on September 13, 2021 as detailed below.

1.2.1 Phase I Construction

On May 20, 2021, a Change of Use Notification was submitted to NYSDEC detailing limited proposed redevelopment activities planned at the Site (Phase I Construction). The Phase I Construction portion of the Extell Hudson Waterfront redevelopment plan straddles the northern portion of the Former Excelsior Bag Site and the north-adjacent BICC site (NYSDEC BCP Site No. C360051). On June 23, 2021, AKRF submitted to NYSDEC Supplemental Environmental Management Documentation, including a Soil/Materials Management Plan (SMMP) and a Health and Safety Plan and Community Air Monitoring Plan (HASP and CAMP) to ensure that appropriate environmental management practices would be implemented during all intrusive and Site restoration work required for the proposed Phase I Construction activities. NYSDEC concluded in a letter dated August 16, 2021 that the proposed May 2021 Change of Use will not create a conflict with the ongoing remedial program for the Site or increase exposures of contamination to public health and the environment; therefore, NYSDEC authorized the Volunteer to proceed with Phase I

Construction, to be implemented in accordance with the June 23, 2021 Supplemental Environmental Management Documentation (i.e., the SMMP, HASP, and CAMP).

Phase I Construction, which began on September 13, 2021, initially included construction of the following portions of the Site: the southern portion of Lot 9 (southern portion of Building D), Colman Way (access road south of Building D), and a portion of Lot 12 (waterfront esplanade west of Building D and Colman Way). The proposed Phase I Construction area was revised to include a portion of Riverside Drive (eastern access road), and Lot 2 (southeastern landscaped area) as detailed in a letter submitted to NYSDEC on July 15, 2022. NYSDEC approved the inclusion of the portion of Riverside Drive and Lot 2 [exclusive of the IRM areas detailed in the previous reports section (Section 3.0)] in a letter dated July 22, 2022.

2.0 SITE DESCRIPTION AND HISTORY

2.1 Site Description and Surrounding Land Use

The Site is located at 25, 35 and 45 Riverside Drive (f/k/a 159-161 Alexander Street and 15 Babcock Place) in Yonkers, New York. The Site is part of a larger Extell Hudson Waterfront redevelopment plan approved by the City of Yonkers Planning Board on April 11, 2018, for which the final subdivision map was filed with the Westchester County Clerk's office on January 24, 2020. The Site is now identified by the City of Yonkers Tax Map as Section 2, Block 2620, Lot 2, portion of Lot 9, Lots 10, 11 and 12, Fisherman Way, Colman Way, and portion of Riverside Drive. The Site consists of an approximately 243,952-square foot vacant property with concrete/asphalt paved surfaces, an active construction area to the north and east (Phase I Construction), and a stone revetment (along the western boundary adjacent to the Hudson River).

The Site is bounded to the north by vacant land that was remediated pursuant to the BCP and at which construction of the northern portion of Building D and Building C of the Extell Hudson Waterfront development is underway (the BICC Cables BCP Site No. C360051); to the east by Riverside Drive (f/k/a Alexander Street), followed by a Metropolitan Transit Authority bus depot; to the southeast by the Greyston Bakery at 104 Alexander Street [former Woodworth Avenue Works Manufactured Gas Plant (MGP) Site, NYSDEC Administrative Order on Consent Index No. CO0-20180516- 519, Site No. 360164]; to the south by the Avalon Yonkers multi-family residential development [a/k/a Polychrome Research and Development (R&D) BCP Site No. C360099]; and to the west by the Hudson River. The larger surrounding area is occupied by mixed residential, commercial, and industrial uses. A Site Location Map is provided as Figure 1, and a Site Plan is provided as Figure 2.

2.2 Site Geology, Hydrogeology and Subsurface Characteristics

The following geologic and hydrogeological conditions were noted during the RI, SRI, and Supplementary Investigations:

1. Site stratigraphy consists of an uppermost layer of historic fill materials, encountered at depths up to 20 feet below ground surface (bgs), that is generally underlain by a native former Hudson River sediment intermediate confining layer (Intermediate Confining Layer), starting at depths between 13.5 and 35 feet bgs and extending to depths up to 116 feet bgs. A layer of native Hudson River sands was encountered in some borings between historic fill materials and the Intermediate Confining Layer at depths ranging from 7 to 44 feet bgs. Beneath the Intermediate Confining Layer is a sand and clayey silt layer of varying thickness (observed between 25 to 50 feet thick across the Site) followed by a deeper confining layer comprised of glacial till (Deep Confining Layer), encountered at depths ranging from 103 feet to 145 feet bgs, which is suspected to be a thin geologic layer overlaying bedrock.

2. As detailed in the "Surficial Geological Map of New York: Lower Hudson Sheet," dated 1989 and consistent with observations in some of the RI/SRI soil borings, the Site's historical fill materials are underlain by lacustrine sand, which consists of sand deposits associated with large bodies of water, generally a near-shore deposit or near a sand source, and well sorted, stratified, generally quartz sand, with variable thickness. According to the "Geologic Map of New York: Lower Hudson Sheet," dated March 1970, bedrock at the Site is expected to consist of garnet-bearing gneiss and interlayered quartzite containing varying amounts of biotite, garnet, and sillimanite; with minor marble, amphibolite, and rusty paragneiss. While previous environmental investigations and the RI/SRI conducted at the Site did not include drilling activities that extended to bedrock, several soil borings

were advanced during the SRI to equipment refusal (on suspected boulders) within the Deep Confining Layer. The top of the Deep Confining Layer slopes downward to the west (toward the Hudson River) across the Site at depths ranging from 103 feet bgs (SRI-SB-05) to 145 feet bgs (SRI-SB-06), which is anticipated to be generally consistent with the depths and slope of the underlying bedrock at the Site.

3. Based on Site-specific groundwater measurements, the depth to groundwater beneath the Site ranges from approximately 4 to 6 feet bgs and flows beneath the Site in a westerly direction. Low tide and high tide groundwater elevation contour maps are included as Figure 3A and 3B, respectively.

2.3 Nearby Areas of Public Concern

The areas immediately surrounding the Site to the south and east are predominantly residential and commercial in nature. The area to the north was remediated pursuant to the BCP with remaining contamination managed via site management. This area is currently undergoing redevelopment. The nearest sensitive receptors (i.e., schools, daycares, or hospitals) include Charter School of Educational Excellence located at 260 Warburton Ave, Yonkers, NY 10701, approximately 1,050 feet northeast of the Site; and Beczak Environmental Education Center, located at 35 Alexander Street. Yonkers NY 10701, approximately 1,110 feet south of the Site.

On-Site Receptors: Since the Site is partially vacant and partially under construction, existing on-site potential receptors include Site visitors, trespassers, construction workers, and inspectors. Once the Site is redeveloped, the on-site potential receptors will include adult and child residents, employees, and visitors (e.g., pedestrians, cyclists, customers, vendors, and inspectors).

Off-Site Receptors: Potential off-site receptors within a 0.25-mile radius of the Site include adult and child residents, commercial and construction workers, students, pedestrians, cyclists, and commercial and recreational users of the Hudson River, based on the following existing and future surrounding uses:

1. Commercial Businesses;
2. Residential Buildings;
3. Building Construction/Renovation;
4. Roadways, bike paths; and
5. Schools/Day Care Facilities

2.4 Site History

The Site history described below is based on historical sources (i.e., fire insurance maps, aerial photography, and city directories), provided in the February 2017 Phase I Environmental Site Assessment (ESA) prepared by Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C. (Langan).

As of 1898, a majority of the Site footprint was identified as land under water within the Hudson River with the exception of a vacant upland area present in the southeast corner.

By 1917, the southeast corner of the Site was developed with several structures identified as Yerks & Co. Lumber and Coal. Yonkers Hay and Grain Co. also occupied one on-site structure. Fill was apparently placed to raise the eastern and central portions of the Site above the Hudson River elevation with the western portion remaining as land under water. The reclaimed land was occupied by York Central Freight Yard railroad tracks.

By 1942, the Site was improved with several centrally located buildings identified as the New York Engineering Company (NYEC). One additional building east of the NYEC was identified as Otto Brehm Wholesale Flour. Two docks were built along the southwestern boundary of the Site over the Hudson River. The southeast lumber yard of the Site was now identified as J.A. Mahlstedt Lumber Company.

By 1951, the NYEC building footprint was extended to the north. A blacksmith also occupied this area. It appeared that additional land to the west was raised above the Hudson River elevation, and the docks in the southwest corner were no longer present. The southern portion of the Site was occupied by Arthur G. Blair Inc. Boat Building with a building in the southeast corner identified as a machine shop. Three additional structures were built in this area, one of which was identified to contain castor oil products. Between 1951 and 1957, a few smaller on-site structures were razed.

By 1971, several additional smaller structures were razed, and a machine shop was identified in the northern portion of the Site. The existing building in the southeast corner was no longer identified as a machine shop. It appeared that the remaining underwater western portion of the Site had been raised above the Hudson River elevation. By 1978, the NYEC and Wholesale Flour buildings were razed and a building, utilized for manufacturing, was present in the southern portion of the Site.

By 1990, an additional building utilized for manufacturing was present in the northeastern portion of the Site. Between 1991 and 2004, the freight yard and railroad tracks on the northern portion of the Site were no longer present. Additional warehouse space, utilized for manufacturing, was constructed in the central portion of the Site sometime after 2004 (creating one contiguous approximately 97,000 square-foot, one- to two-story industrial structure). Between 1992 and approximately 2014, the on-site structures were used for industrial manufacturing by Excelsior Transparent Bag Manufacturing Corporation. From 2014 to 2020, the structures were used intermittently as a film studio.

All above grade structures at the Site were demolished in February through March 2021 in order to conduct the RI. The Site is currently owned by the Volunteers.

3.0 PREVIOUS REPORTS

Previous environmental reports for the Site are summarized below:

Phase I Environmental Site Assessment – 159-161 Alexander Street & 15 Babcock Place, City of Yonkers, New York, Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., September 2017

Langan prepared a Phase I ESA for the Site (referred to in the report as the "Subject Property") in September 2017. The September 2017 Phase I ESA was prepared as an update to information presented in a February 2017 Phase I ESA also prepared by Langan. The Phase I ESA was performed in conformance with ASTM Standard E1527-13 and assessed the potential for the presence of hazardous materials, based on reconnaissance of the Site and surrounding area, review of data on geology and hydrology of the surrounding area, examination of historical Sanborn fire insurance maps and aerial photographs, and review of pertinent federal and state regulatory databases. The Phase I ESA identified the following recognized environmental conditions (RECs):

- REC 1 – Historical Use of Subject Property – Former uses of potential concern for the Site included a boat manufacturing yard, a machine shop, steel fabrication plant, and flexographic manufacturing and printing. Prior to 2012, the Site was operated by the Excelsior Transparent Bag Manufacturing Corporation for manufacturing and printing of bags since at least 1992. Evidence of former manufacturing equipment (ink mixing machine, ink storage vats, polyethylene bead aboveground storage tanks (ASTs), former parts cleaning area, etc.) was observed on the Site during the Phase I ESA Site inspection. Additionally, numerous floor drains were noted throughout the interior of the Subject Property. The report noted that without building plans (which were not provided) to identify where these drains discharged, it could not be determined how these areas may have adversely affected the environment and the discharge fate of the floor drains was identified as a site-specific limitation.

  In March 2017, EBI Consulting (EBI) performed a limited Phase II ESA at the Subject Property to evaluate potential subsurface impacts from the RECs identified in Langan's February 2017 Phase I ESA. As described in detail below (see REC 2 & 3), limited petroleum-related groundwater impacts and Site-wide soil vapor impacts were identified that were attributed to the historical use of the Site. With the exception these impacts, analytes detected in soil and groundwater were attributed to the presence of historical fill characteristic of an urban environment (i.e., EBI's findings did not suggest evidence indicative of a widespread release of petroleum or hazardous materials in soil or groundwater at the Site). However, EBI's investigation was limited in scope; therefore, the potential for unidentified subsurface impacts associated with historical use remained.

- REC 2 – Petroleum-Impacted Groundwater on the Southeast Portion of the Site – Based on information obtained during EBI's March 2017 Phase II ESA, concentrations of petroleum-related volatile organic compounds (VOCs) (benzene, ethylbenzene, isopropylbenzene, and xylenes) were detected above NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) Ambient Water Quality Standards and Guidance Values (AWQSGV) Class GA groundwater standards in one monitoring well located in the southeast portion of the Site. Given the monitoring well's up-gradient location on the Site, the identified contamination may have been attributable to an off-site source.

- REC 3 – Soil Vapor Impacts beneath the Site – As part of EBI's March 2017 Phase II ESA, four soil vapor samples were collected from the area beneath the existing buildings. Elevated concentrations of VOCs, in particular tetrachloroethylene (PCE) and trichloroethylene (TCE), were detected in soil vapor samples collected below the building footprint. According to EBI, the source of the PCE was not identified. The identified impacts in soil vapor beneath the Site were determined by Langan to represent a REC.

- REC 4 – Historical On-Site Petroleum Bulk Storage – According to information provided in the Environmental Data Resources, Inc. (EDR) Report reviewed as part of this ESA, a former 2,000-gallon fuel oil UST was installed at the Site in December 1981 and removed in August 1997. According to a Phase I ESA prepared in April 2000 (HRP Associates, Inc.), the UST was historically used to heat the building on the north end of the Site. No documentation of the condition of the UST system or soil conditions in the area of the UST subsequent to removal was obtained as part of the Phase I ESA. Although the findings of EBI's March 2017 Phase II ESA did not suggest evidence of a widespread release of petroleum in soil or groundwater, EBI's investigation did not include a geophysical survey to locate the historical UST and the sampling was not focused on the suspected former UST location (on the north end of the Site). Based on the presence of a historical UST and lack of any documentation of UST closure or associated sampling in the UST area, the historical UST was considered a REC.

The following Historical Recognized Environmental Condition (HREC) were identified:

- HREC 1 – Historical On-Site Bulk Storage Tanks (Closed Spill No. 9406513) – Evidence of two 2,900-gallon USTs formerly containing alcohol-based solvents were noted during the Phase I ESA. The USTs were located along the southeastern exterior wall of the on-site building. According to information provided in the EDR Report reviewed as part of this ESA, a tank test failure was reported to the NYSDEC in August 1994 and spill case no. 9406513 was assigned. According to the spill case narrative, the UST (only one UST was discussed in the spill case narrative) was pumped out and soil excavation was performed to remove impacted material from around the UST. The spill case was closed by NYSDEC in April 2010. Details with respect to the date of soil excavation, soil quantities removed, and samples collected (if any) were not provided. However, based on the information provided, the spill case was addressed to the satisfaction of NYSDEC and, therefore, Langan concluded that it represented an HREC.
- HREC 2 – Closed Spill No. 0408137 – A closed spill listing for spill no. 0408137 was identified for an unknown quantity of n-propanol and n-propylacetate spilled to soil in October 2004. According to the spill case narrative, the spill was cleaned up in December 2004, and the spill case was closed by the Westchester County Department of Health. No further details regarding the spill were obtained during this ESA. As the spill was closed by the appropriate regulatory agency (Westchester County Department of Health), Langan concluded that spill case 0408137 represented an HREC.

The following Business Environmental Risks (BERs):

- BER 1 – Historic Fill Material – Much of the land around and adjacent to the Site was created by filling in the Hudson River using imported fill material of unknown origin. This landfilling was conducted in stages, began in the late 1880s, and was completed in the mid-1970s. The presence of impacted fill material beneath the Site was confirmed following completion of EBI's March 2017 Phase II ESA, wherein soil analytical results identified widespread SVOC and metals in soil to depths of 8 feet bgs. Langan did not consider the presence of fill material at the Site to be a REC, as defined by ASTM 1527-13, as the presence of this material along long stretches of the Hudson River waterfront was a well-known condition not generally the subject of regulatory enforcement actions. Langan also stated that the fill material posed minimal risk to human health and the environment because the Site was covered with buildings and hardscape and, therefore, could be considered a de minimis condition. In light of the User's plans to redevelop the Subject Property, the fill was considered a BER, and implementation of soil handling and management procedures during site construction activities to address proper excavation, re-use, handling, and possible off-site disposal of this material was recommended.
- BER 2 – Regional Groundwater Quality – Langan identified impacts from historical operations conducted at adjacent or nearby properties as a BER due to the potential for migration of contaminants to impact soil vapor and/or groundwater at the Site. Since potable water is provided to the Site by the City of Yonkers and is derived from surface impoundments in the Croton, Catskill, and Delaware

watersheds, Langan concluded that the potential contaminated groundwater posed minimal risk to human health considering groundwater was not used for any purpose at the Site. However, Langan noted that the presence and migration of contaminants may impact future Site redevelopment activities such as dewatering, as laboratory analytical results documenting discharge water quality were required for municipal discharge permits.

Phase II ESA – 159-161 Alexander Street, Yonkers, NY, EBI Consulting, April 2017

According to the EBI Phase II ESA, a limited subsurface investigation was performed at the Subject Property on March 17, 2017, to evaluate the potential impact to the Site from the RECs identified in the February 2017 Phase I ESA prepared by Langan.

EBI's investigation consisted of the following:

- Advancing 13 borings by direct push Geoprobe to depths ranging from 2.5 to 12 feet bgs.
- Collection of continuous soil samples every 4 feet, field screening the vapor headspace of the soil samples for total ionizable VOCs using a photoionization detector (PID), and a description of the physical characteristics of the soil samples on boring logs.
- Collection, laboratory analysis, and reporting of one to three soil samples per boring (depending on recovery and/or groundwater presence for analysis of VOCs, SVOCs, metals, and polychlorinated biphenyls (PCBs). A total of 16 soil samples were collected and analyzed.
- Collection, laboratory analysis, and reporting of six groundwater samples from temporary monitoring wells via a peristaltic pump and disposable polyethylene tubing for analysis of VOCs, SVOCs, and metals.
- Collection, laboratory analysis, and reporting of four soil vapor samples from the area beneath the existing buildings for analysis of VOCs via Environmental Protection Agency (EPA) Method TO-15.

The laboratory analytical results for samples revealed the following:

Soil

- No VOC exceedances of the NYSDEC Restricted Residential Soil Cleanup Objectives (RRSCOs) were reported.
- Concentrations of several SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3cd)pyrene and 2-methylnaphthalene] were reported above the NYSDEC RRSCOs.
- Concentrations of metals (arsenic, copper, lead, and mercury) were reported above the NYSDEC RRSCOs.
- No PCB exceedances of the NYSDEC RRSCOs were reported.

Groundwater

- Several VOCs, including benzene, ethylbenzene, isopropylbenzene, total xylenes, and naphthalene, were detected in the groundwater sample collected from SB-3 (in the southeast portion of the Site at concentrations exceeding the NYSDEC TOGS AWQSGVs Class GA groundwater standards.
- One SVOC [benzo(a)pyrene] was detected in all (six total) of the groundwater samples exceeding the NYSDEC AWQSGVs TOGS Class GA groundwater standards.
- Concentrations of metals were not detected above the laboratory method detection limit in the samples collected.

Soil Vapor

- PCE was detected in all four sub-slab soil vapors samples with concentrations ranging from 144 micrograms per cubic meter (µg/m^3) to 6,850 µg/m^3. TCE was detected in two of the four soil vapor samples with concentrations ranging from 6.4 µg/m^3 to 51 µg/m^3.
- Ethylbenzene was detected in the two sub-slab soil vapor samples collected beneath the southeast corner of the building with concentrations ranging from 381 µg/m^3 to 565 µg/m^3.

Remedial Investigation Report – Former Excelsior Bag, Yonkers, NY, AKRF, Inc., November 2021

The RI was conducted in September 2020 and April 2021 in accordance with the NYSDEC-approved July 2020 RIWP prepared by AKRF. A draft RIR was submitted to NYSDEC on July 9, 2021. Based upon NYSDEC comments to the July 2021 RIR, a SRI was conducted in August 2021 in accordance with the NYSDEC-approved August 2021 SRI Work Plan. The RI and SRI included the following scope of work:

1. Demolition of the existing structures, leaving the concrete slabs in place and crushing and stockpiling masonry wall materials (i.e., concrete masonry unit and brick) approved by NYSDEC for reuse as on-site backfill;
2. A geophysical survey across the Site to investigate the potential presence of USTs and/or buried ASTs from past on-site uses, and to clear boring locations of underground utilities;
3. The collection of two surface soil samples (RI-SS-01 and RI-SS-02);
4. The advancement of 14 shallow soil borings (RI-SB-01 through RI-SB-13 and RI-SB-25) to 15 feet bgs, or 5 feet below the groundwater interface (whichever was encountered first), with the collection and the laboratory analysis of one to two soil samples from each soil boring;
5. The advancement of 18 intermediate soil borings (RI-SB-14 through RI-SB-24 and RI-SB-26 through RI-SB-32) to the top of the native Hudson River sediment confining layer, with the collection and the laboratory analysis of one to three soil samples from each intermediate soil boring;
6. The advancement of seven deep soil borings (SRI-SB-01 through SRI-SB-07) to equipment refusal within the glacial till confining layer, with the collection and laboratory analysis of one sample from the interval exhibiting the most field-observable evidence of contamination from each SRI boring;
7. The installation of eight permanent groundwater monitoring wells (RI-MW-01 through RI-MW-08), with the collection and laboratory analysis of eight groundwater samples;
8. The installation of eight temporary soil vapor points (RI-SV-01 through RI-SV-08), with the collection and laboratory analysis of eight soil vapor samples; and the collection and analysis of one ambient (outdoor) air sample.
9. An elevation survey for the installed monitoring wells.

The revised RIR, which incorporated the results of the September 2020/April 2021 RI and the August 2021 SRI field activities, was submitted to NYSDEC on October 8, 2021, and approved by NYSDEC (with modifications) on October 29, 2021. The final November 2021 RIR was submitted to NYSDEC on November 3, 2021. The November 2021 RIR concluded the following:

Surface Soil

Surface soils were identified on the northern portion of the Site during the RI. The laboratory analytical results from surface soil samples are summarized below.

- VOCs were not detected at concentrations above their NYSDEC RRSCOs and/or Protection of Groundwater SCOs (PGWSCOs) in any of the surface soil samples.

- Six SVOCs, consisting of the polycyclic aromatic hydrocarbons (PAHs) benzo(a)anthracene at a concentration of 2.1 milligrams per kilogram (mg/kg), benzo(a)pyrene at a concentration of 1.9 mg/kg, benzo(b)fluoranthene at a concentration of 2.6 mg/kg, chrysene at a concentration of 1.9 mg/kg, dibenzo(a,h)anthracene at a concentration of 0.35 mg/kg, and indeno(1,2,3-cd)pyrene at a concentration of 1.3 mg/kg, were detected at concentrations above their respective RRSCOs and/or PGWSCOs in one of the two surface soil samples analyzed (RI-SS-01_0-0.5_20200901).
- Pesticides and herbicides were not detected in any of the surface soil samples above RRSCOs and/or PGWSCOs.
- PCBs were not detected in any of the surface soil samples above RRSCOs and/or PGWSCOs.
- Lead was detected above its RRSCO and PGWSCO in one of the two surface soil samples analyzed (RI-SS-01_0-0.5_20200901) at a concentration of 857 mg/kg.
- Per- and polyfluoroalkyl substances (PFAS) were not detected in any of the surface soil samples above Restricted Residential (RR) and/or Protection of Groundwater (PGW) PFAS Guidance Values.

RI surface soil sample concentrations exceeding RRSCOs and/or PGWSCOs are shown on Figure 4A.

Fill Materials

Historic fill materials were encountered Site-wide from surface grade down to 20 feet bgs. Elevated concentrations of PAHs and metals exceeding RRSCOs and/or PGWSCOs were observed Site-wide within fill materials (with higher concentrations of PAHs, lead, and mercury in the southeast portion of the Site).

Evidence of petroleum-related contamination [i.e., slight petroleum-like odors, elevated PID readings [maximum of 37.6 parts per million (ppm)], and detections of VOCs in soil] was encountered in the southeastern portion of the Site in the area of the former abandoned in-place UST. The VOC detections in soil above RRSCOs and/or PGWSCOs were limited to a few samples generally located in the southeastern portion of the Site and do not appear to be impacting groundwater at the Site; however, further action was warranted to address the residual petroleum-related contamination (i.e., closure in-place of the USTs and excavation/removal of associated contaminated soil). This was addressed as part of IRM activities detailed further below.

The laboratory analytical results from fill material soil samples are summarized below.

- Six VOCs were detected at concentrations above their respective PGWSCOs, but below respective RRSCOs (with the exception of benzene which was detected at a concentration equal to its RRSCO) in 12 fill material samples (inclusive of two blind duplicate samples): 1,2-dichloroethane in two samples at concentrations up to 0.66 mg/kg, acetone in nine samples at concentrations up to 0.13 mg/kg, benzene in one sample at a concentration of 4.8 mg/kg, methyl ethyl ketone (2-butanone) in one sample at a concentration of 0.31 mg/kg, toluene in one sample at a concentration of 2.6 mg/kg, and xylenes in one sample at a concentration of 13 mg/kg.
- SVOCs consisting of PAHs were detected at concentrations above their respective RRSCOs and/or PGWSCOs in 20 fill material samples (inclusive of two blind duplicate samples): benzo(a)anthracene at concentrations up to 70 mg/kg, benzo(a)pyrene at concentrations up to 23 mg/kg, benzo(b)fluoranthene at concentrations up to 72 mg/kg, benzo(k)fluoranthene at concentrations up to 23 mg/kg, chrysene at concentrations up to 86 mg/kg, dibenzo(a,h)anthracene at concentrations up to 10 mg/kg, fluoranthene in one sample at a concentration of 130 mg/kg, indeno(1,2,3-cd)pyrene at concentrations up to 37 mg/kg, naphthalene in one sample at a concentration of 21 mg/kg, phenanthrene in one sample at a concentration of 160 mg/kg, and pyrene in one sample at a concentration of 200 mg/kg.

- Pesticides/herbicides were not detected in any of the fill material samples above RRSCOs and/or PGWSCOs
- PCBs were not detected in any of the fill material samples above RRSCOs and/or PGWSCOs.
- Seven metals were detected at concentrations above their respective RRSCOs and/or PGWSCOs in 24 fill material samples (inclusive of three blind duplicate samples): arsenic at concentrations up to 23.7 mg/kg, cadmium in one sample at a concentration of 9.87 mg/kg, copper at concentrations up to 3,990 mg/kg, lead at concentrations up to 3,250 mg/kg, mercury at concentrations up to 17 mg/kg, nickel at concentrations up to 156 mg/kg, and selenium in one sample at a concentration of 4.6 mg/kg.
- PFAS were not detected in any of the fill material samples above RR and/or PGW PFAS Guidance Values.

RI fill material soil sample concentrations exceeding RRSCOs and/or PGWSCOs are shown on Figure 4B and Figure 4C.

Coal Tar in Intermediate Native Soil (Above the Intermediate Confining Layer)

Coal tar impacted soil, coal tar odors, and elevated PID readings were documented in the south-central portion of the Site directly above the Intermediate Confining Layer at depths ranging from approximately 20 to 35 feet bgs. The coal tar impacts were observed at thicknesses of up to 10 feet (ranging from a light coating to fully saturated DNAPL intervals) in soil borings RI-SB-15, RI-SB-17, RI-SB-18, and RI-SB-27 (with a maximum PID reading of 140.3 ppm in RI-SB-27 at 34 feet bgs). Sheen and/or coal tar odors were also documented in RI soil borings RI-SB-16, RI-SB-29, and RI-SB-30, and in SRI soil borings SRI-SB-03, SRI-SB-05, and SRI-SB-06. Coal tar odors and staining were also noted on drill cuttings/fluids and drilling equipment at RI-SB-28, RI-SB-31, and RI-SB-32 following advancement through the interval above the Hudson River sediment confining layer. The intermediate coal tar impacts appeared to be limited mostly to the south-central portion of the Site within a low point in the surface of the underlying Intermediate Confining Layer. The coal tar impacts appeared to have migrated from the south-adjacent Polychrome R&D Lab BCP site toward this low point, with the original coal tar source being the former Woodworth Avenue Works MGP site, located east and upgradient of the Polychrome R&D Lab BCP site.

The laboratory analytical results from intermediate native soil samples are summarized below.

- VOCs were detected at concentrations above their respective PGWSCOs and/or RRSCOs in 11 intermediate soil samples: 1,2,4-trimethylbenzene at concentrations up to 170 mg/kg, 1,3,5-trimethylbenzene (mesitylene) at concentrations up to 49 mg/kg, acetone at concentrations up to 0.085 mg/kg, benzene at concentrations up to 2.1 mg/kg, ethylbenzene at concentrations up to 200 mg/kg, methyl ethyl ketone (2-butanone) in one sample at a concentration of 0.28 mg/kg, n-propylbenzene at concentrations up to 11 mg/kg, toluene in one sample at a concentration of 2.1 mg/kg, and xylenes at concentrations up to 94 mg/kg.
- SVOCs were detected at concentrations above their respective RRSCOs and/or PGWSCOs in eight intermediate soil samples: acenaphthene at concentrations up to 690 mg/kg, acenaphthylene in one sample at a concentration of 140 mg/kg, anthracene at concentrations up to 300 mg/kg, benzo(a)anthracene at concentrations up to 200 mg/kg, benzo(a)pyrene at concentrations up to 220 mg/kg, benzo(b)fluoranthene at concentrations up to 180 mg/kg, benzo(k)fluoranthene at concentrations up to 53 mg/kg, chrysene at concentrations up to 220 mg/kg, dibenzo(a,h)anthracene in five samples at concentrations up to 10 mg/kg, dibenzofuran in one sample at a concentration of 64 mg/kg, fluoranthene at concentrations up to 370 mg/kg, fluorene at concentrations up to 310 mg/kg, indeno(1,2,3-cd)pyrene at concentrations up to 89 mg/kg, naphthalene at concentrations up to 2,400 mg/kg, phenanthrene at concentrations up to 1,000 mg/kg, and pyrene at concentrations up to 490 mg/kg.

- Three metals were detected at concentrations above their respective RRSCOs and/or PGWSCOs in three intermediate soil samples (inclusive of one blind duplicate sample): arsenic at concentrations up to 19.1 mg/kg, lead at concentrations up to 3,460 mg/kg, and mercury at concentrations up to 3.56 mg/kg.

RI and SRI intermediate soil sample concentrations exceeding RRSCOs and/or PGWSCOs are shown on Figure 4D.

Coal Tar in Deep Native Soil (Above the Glacial Till)

Deeper coal tar impacts were encountered above the Deep Confining Layer, however, impacts appeared to be limited to the southern portion of the Site. Trace evidence of coal tar related DNAPL comprised of sheen/staining, coal tar odors, and elevated PID readings were observed directly above the Deep Confining Layer in one boring, SRI-SB-05, from approximately 98 to 103 feet bgs. DNAPL and/or other evidence of significant coal tar impacts was not encountered in any other SRI boring above the Deep Confining Layer; however, coal tar odors and/or elevated PID readings were encountered in SRI-SB-04 and SRI-SB-06 above the Deep Confining Layer at depths ranging from approximately 83 to 118 feet bgs and 117 to 150 feet bgs, respectively. The coal tar impacts appeared to have migrated from the southeast-adjacent (and upgradient) former Woodworth Avenue Works MGP Site. Based on the limited nature of coal tar impacts observed, it did not appear that DNAPL or other evidence of significant coal tar impacts was migrating along the Deep Confining Layer beneath the Site to downgradient receptors (i.e., towards the Hudson River).

The laboratory analytical results from deep native soil samples are summarized below.

- VOCs were detected at concentrations above their respective PGWSCOs and/or RRSCOs in two deep soil samples and in the respective blind duplicate sample: 1,2,4-trimethylbenzene at concentrations up to 41 mg/kg, 1,3,5-trimethylbenzene in one sample at a concentration of 11 mg/kg, benzene at concentrations up to 12 mg/kg, ethylbenzene at concentrations up to 21 mg/kg, toluene at concentrations up to 70 mg/kg, and xylenes at concentrations up to 86 mg/kg.
- SVOCs were detected at concentrations above their respective RRSCOs and/or PGWSCOs in one deep soil sample and in the respective blind duplicate sample: benzo(a)anthracene at concentrations up to 34 mg/kg, benzo(a)pyrene at concentrations up to 26 mg/kg, benzo(b)fluoranthene at concentrations up to 19 mg/kg, benzo(k)fluoranthene at concentrations up to 7.9 mg/kg, chrysene at concentrations up to 32 mg/kg, dibenzo(a,h)anthracene at concentrations up to 2.8 mg/kg, dibenzofuran at a concentration of 7.1 mg/kg, fluorene at concentrations up to 80 mg/kg, indeno(1,2,3-cd)pyrene at concentrations up to 9.2 mg/kg, naphthalene at concentrations up to 830 mg/kg, and phenanthrene at concentrations up to 190 mg/kg.

SRI deep soil sample concentrations exceeding RRSCOs and/or PGWSCOs are shown on Figure 4E.

Groundwater

Low level concentrations of PAHs were detected in shallow groundwater at concentrations exceeding NYSDEC AWQSGVs (Class GA) Site-wide, which are likely attributable to PAHs in the shallow fill layer at the Site and/or indicative of regional groundwater conditions. Low-level concentrations of naphthalene were detected in one well (MW-05), which is likely attributable to coal tar impacts noted in southern portion of the Site. Metals were also detected at concentrations exceeding AWQSGVs Site-wide, which are likely some combination of naturally occurring and/or attributable to background conditions (including tidal influence from brackish Hudson River water), rather than a Site release. PFAS were also detected in groundwater samples across the Site slightly above NYSDEC PFAS Screening Levels; however, these are also likely related to background conditions and not attributable to an on-site release or source area, since there were no detections of PFAS in shallow site soils and no detections in excess of the RR and/or PGW PFAS Guidance Values in Site saturated soils and fill material.

The laboratory analytical results from groundwater samples are summarized below.

- VOCs were not detected in any of the groundwater samples above NYSDEC AWQSGVs (Class GA).
- SVOCs were detected at concentrations above AWQSGVs in eight groundwater samples (inclusive of one blind duplicate sample): benzo(a)anthracene at concentrations up to 0.41 microgram per liter (µg/L), benzo(a)pyrene at concentrations up to 0.3 µg/L, benzo(b)fluoranthene at concentrations up to 0.32 µg/L, benzo(k)fluoranthene at concentrations up to 0.33 µg/L, chrysene at concentrations up to 0.36 µg/L, indeno(1,2,3-cd)pyrene at concentrations up to 0.14 µg/L, and naphthalene in one sample at a concentration of 13 µg/L.
- Pesticides were not detected above laboratory reporting limits in any of the groundwater samples.
- PCBs were not detected above laboratory reporting limits in any of the groundwater samples.
- Metals were detected at concentrations above their AWQSGVs in the nine total (unfiltered) groundwater samples (inclusive of the one blind duplicate sample): iron in all nine samples at concentrations up to 23,700 micrograms per liter (µg/L), magnesium at concentrations up to 208,000 µg/L, manganese at concentrations up to 948.6 µg/L, and sodium in all nine samples at concentrations up to 1,900,000 µg/L.
- Metals were detected at concentrations above their AWQSGVs in the nine dissolved (filtered) groundwater samples (inclusive of the one blind duplicate sample): iron in all nine samples at concentrations up to 22,800 µg/L, magnesium at concentrations up to 212,000 µg/L, manganese at concentrations up to 917.1 µg/L, selenium in one sample at a concentration of 37.2 µg/L, and sodium in all nine samples at concentrations up to 1,950,000 µg/L.
- PFAS were detected above NYSDEC PFAS Screening Levels in all of the groundwater samples except for RI-MW-07_20210413 and blind duplicate sample RI-MW-X01_20210413 (collected from RI-MW-03). Perfluorooctanoic acid (PFOA) was detected above its NYSDEC PFAS Screening Level of 10 nanograms per liter (ng/l) in the seven samples and the one duplicate sample at concentrations up to 42.6 ng/l; perfluorooctanesulfonic acid (PFOS) was detected above its NYSDEC PFAS Screening Level of 10 ng/l in two samples at concentrations up to 17.5 ng/l; and 6:2 fluorotelomer sulfonate was detected above its NYSDEC PFAS Screening Level of 100 ng/l in one sample at a concentration of 144 ng/l.
- 1,4-Dioxane was not detected in any of the groundwater samples.

RI groundwater sample concentrations above their respective AWQSGVs are shown on Figure 5A. Groundwater sample PFAS and/or 1,4-dioxane concentrations above their NYSDEC PFAS Screening Levels are shown on Figure 5B.

Soil Vapor

Petroleum-related and other VOCs acetone, benzene, toluene, ethylbenzene, m,p- and o-xylene (collectively referred to as "BTEX"), 1,3-butadiene, 2,2,4-trimethylpentane, 2-hexanone, 4-ethyltoluene, carbon disulfide, chloroform, cyclohexane, dichlorodifluoromethane, ethanol, isopropanol, methyl ethyl ketone (2-butanone), n-heptane, n-hexane, and tert-butyl were detected in one or more soil vapor samples at concentrations up to 4,570 µg/m^3 [methyl ethyl ketone (2-butanone) in RI-SV-03_20210413]. Petroleum-related compounds detected in soil vapor were likely related to the petroleum impacts noted in the southern portion of the Site and/or possibly to an off-site source.

Solvent-related compounds PCE and 1,1,1-trichloroethane (111-TCA) were detected one or more soil vapor samples (111-TCA detected in RI-SV-05_20210413 at a concentration of 96 µg/m^3 and PCE detected in RI-SV-01_20210405 and RI-SV-04_20210413790, with a maximum concentration of 95.6 µg/m^3 in RI-SV-04_20210413). However, previous investigations have documented elevated concentrations of PCE (up

to a concentration of 6,850 µg/m^3) and TCE (up to a concentration of 51 µg/m^3) in soil vapor, particularly in the southern portion of the Site. These chlorinated VOCs were not detected in soil above RRSCOs and/or PGWSCOs, or in groundwater above AWQSGVs, indicating a potential off-site source.

RI soil vapor sample detections are shown on Figure 6.

Supplementary Investigation Report #1 (SIR #1) – Former Excelsior Bag, Yonkers, NY, AKRF, Inc., January 2022

The SI #1 further evaluated PAOCs for metals identified during the RI. On October 12, 2021, AKRF submitted a letter to NYSDEC detailing proposed Track 4 site-specific SCOs for metals, which were accepted by NYSDEC in a letter issued on November 9, 2021. As detailed in AKRF's October 12, 2021 letter (and as further detailed in Section 5.3.5 of the October 2021 RIR), several shallow fill material samples across the Site contained elevated total metal concentrations above RRSCOs and/or PGWSCOs, including arsenic, cadmium, copper, lead, mercury, nickel, and selenium; however, the RI did not identify the presence of an associated exposure pathway (since the Site is capped and no metals impacts were documented in groundwater). Selenium was detected in one groundwater sample slightly above its NYSDEC AWQSGV; however, none of the other metals detected in soil above RRSCOs and/or PGWSCOs were detected above AWQSGVs in site-wide groundwater.

Although an exposure pathway for metals found in shallow fill materials was not identified during the RI, the elevated total metal concentrations documented in shallow fill materials (specifically lead and mercury) were considered PAOCs based on their potential to represent source areas for hazardous substances [defined in DER-10 §1.3(70); 6 NYCRR Part 375 §1.2(au)].

Based on this evaluation, total metal concentrations exceeding established site-specific thresholds (detailed within the NYSDEC-approved December 2021 SIWP #1) were further evaluated as PSAs for hazardous waste via TCLP sampling; based on discussions with NYSDEC, only soils exceeding hazardous waste criteria would be considered source areas, which if present, would necessitate removal as part of the Site's anticipated Track 4 remedy. Eight shallow fill soil samples, collected and analyzed from seven soil boring locations advanced during the RI, identified total metal concentrations (specifically lead and mercury) that warranted additional sampling and analysis for their respective hazardous waste criteria.

SI #1 field activities were conducted on December 6, 2021 in accordance with the NYSDEC-approved SIWP #1 and included the following:

- The advancement of seven shallow soil borings (SI-PSA-RISB04, SI-PSA-RISB12, SI-PSA-RISB14, SI-PSA-RISB19, SI-PSA-RISB20, SI-PSA-RISB22, and SI-PSA-RISB23) to depths between 5 and 10 feet bgs (to evaluate the seven hazardous metals PSAs); and
- The collection and laboratory analysis of eight shallow fill soil samples and associated quality assurance and quality control (QA/QC) samples. One sample was collected at each soil boring, with the exception of SI-PSA-RISB04, which included the collection two samples.

The SIR #1 was submitted to NYSDEC in January 2022 and approved by NYSDEC on March 4, 2022. The SIR #1 concluded the following:

- None of the TCLP lead or mercury sample results exceeded their respective EPA Maximum TCLP Concentrations. Therefore, the seven Hazardous Metals PSAs evaluated as part of SI #1 were not considered source areas that would necessitate removal as part of the Site's anticipated Track 4 remedy.

SI #1 soil sample TCLP concentrations are shown on Figure 7.

Supplementary Investigation Report #2 (SIR #2) – Former Excelsior Bag, Yonkers, NY, AKRF, Inc., December 2022

The Volunteer conducted SI #2 to refine the horizontal and vertical extents of coal tar impacted soil documented above the Hudson River sediment confining layer during the 2020/2021 RI. SI #2 field program utilized a Geoprobe® direct-push probe (DPP) drill rig equipped with laser induced fluorescence (LIF) (i.e., TarGOST) drilling probe technology.

The SI #2 was conducted from February 2022 to April 2022, in accordance with the NYSDEC-approved February 2022 SIWP #2, and included the following scope of work:

- Marking of LIF boring locations by a New York State-licensed surveyor and completion of a geophysical survey of the marked LIF boring locations and surrounding area to clear the proposed drilling locations.
- Pre-clearing of concrete and shallow fill material obstructions (utilizing a combination of Geoprobe® DPP concrete grinding bit and sonic drilling techniques) and the advancement of LIF probe equipment (utilizing a Geoprobe® DPP) at 90 locations (SI-LIF-01 through SI-LIF-90) gridded across the horizontal extent of DNAPL impacts identified in the 2020-2021 RI.
- Based on real time review of LIF data and in consultation with NYSDEC, an additional 45 LIF borings (SI-LIF-91 through SI-LIF-135) were advanced beyond the perimeter of the previously identified DNAPL area from the 2020-2021 RI. Particularly, the boundary of the DNAPL area extended further north and west (from the area identified in the RI).
- The advancement of 21 confirmatory soil borings [18 co-located with LIF boring locations and three step-out locations beyond the perimeter of the LIF borings) for LIF data calibration and soil sampling purposes (utilizing sonic drilling techniques).
- The collection and submission of 24 soil samples (one to three samples from each confirmatory soil boring), and associated QA/QC samples, for LIF data calibration and/or analysis of VOCs and SVOCs. Two soil samples were also collected and submitted for DNAPL fingerprint analysis.
- Grouting, backfilling, and surface patching of confirmatory boring locations.
- Survey of LIF and confirmatory soil boring locations by a New York State-licensed surveyor following completion of all field activities.

The SIR #2 was submitted to NYSDEC in December 2022 and approved by NYSDEC on January 5, 2023. The SIR #2 concluded the following:

- Based on the preliminary delineation conducted during the RI, the coal tar appeared to have migrated from the south-adjacent Polychrome R&D Lab (Polychrome West) BCP site toward a low point in the top of the Intermediate Confining Layer under the south-central portion of the Site (with the original coal tar source being the Woodworth Avenue Works Former MGP site, located east and upgradient of the Polychrome R&D Lab BCP site). Based on supplemental information obtained from the SI #2, the apparent migration pathway and original coal tar source identified in the RI have been confirmed.
- Significant coal tar impacts above the Intermediate Confining Layer were observed during the RI to be limited to the south-central portion of the Site and did not extend off-site to the east or north (bound by RI-SB-19, and RI-SB-15) or west into the Hudson River (bound by RI-SB-16, RI-SB-29, RI-SB-30, and SRI-SB-06). Based on supplemental information obtained from the SI #2, the presence of coal tar impacts generally in the south-central portion of the Site had been confirmed and did not appear to extend off-site; however, the northern, southern, western, and eastern horizontal bounds and vertical bounds (depth) of the coal tar impacts had been further refined (in comparison to the RI). Depths of coal tar impacts ranged from 20 to 44 feet bgs (with intervals of fully saturated DNAPL up to 15 feet thick). Horizontally, the boundary of the coal tar impacts extends further north (bounded by SI-LIF 132); and the east and west boundaries appear to be narrower in comparison to the delineated extent

detailed in the RI, with the exception of coal tar impacts observed immediately adjacent to the southern property boundary and a finger extending further west in the southwestern portion of the Site adjacent to the Hudson River.

- In addition, it was previously assumed that the coal tar impacts appeared to have accumulated at a low point on the top of the Intermediate Confining Layer thus preventing migration of coal tar further north, east, or west. While this assumption appears to hold true for preventing migration further north or east, the SI #2 concluded that, with the exception of an isolated area along the south-central portion of the Site, the Intermediate Confining Layer generally continues to decline in depth progressing further west of the area observed with coal tar impacts. Based upon interpretation of the LIF data, low points on the top of the Intermediate Confining Layer (in comparison to the elevation further west) appeared to be limited to the area surrounding LIF borings SI-LIF-06, SI-LIF-07, SI-LIF-08, SI-LIF-31, and SI-LIF-42. It did not appear that the Intermediate Confining Layer was encountered in LIF borings SI-LIF-06 and SI-LIF-08 prior to termination at 40 feet bgs, and confirmatory soil boring SI-CB-07 (located between SI-LIF-06 and SI-LIF-08) encountered the Intermediate Confining Layer at 44 feet bgs. This is noticeably deeper than the nearest boring conducted further west, SI-LIF-05, which encountered the Intermediate Confining Layer at approximately 32.5 feet bgs. SI-LIF-31 and SI-LIF-42 encountered the Intermediate Confining Layer at depths of 35 and 34 feet bgs, respectively. This is also noticeably deeper than LIF borings further west (SI-LIF-29 and SI-LIF-40 encountered the confining layer at approximately 31 feet bgs). Additional borings conducted during the 2020-2021 RI in this area (i.e., RI-SB-17 and RI-SB-27) also documented the top of the Intermediate Confining Layer at depths of 35 to 37 feet bgs.
- Based on further investigation of historical Sanborn Maps, it appears that a former timber bulkhead was constructed along the former Site shoreline between 1898 and 1917 (with a small section added in the southwest corner sometime prior to 1951) and then was likely buried in place as the Site uses continued to fill the shore area and extend land further west. The timber bulkhead likely also acted as a subsurface feature (in addition to the limited low points of Hudson River sediment confining layer noted above) that limited migration of coal tar impacts further west toward the Hudson River, since the location of this former bulkhead is in the general vicinity of the refined western boundary of significant coal tar impacts documented in this SI #2.
- The data obtained from the SI #2 was used, in consultation with NYSDEC, to establish the proposed remedial boundaries to address coal tar impacts at the Site as part of this RAA and the RAWP. Target group "COAL TAR" LIF responses greater than 20% Reference Emitter (RE) were considered representative of significant coal tar impacts (i.e., soil impacted by coal tar indicative of DNAPL). Target group "COAL TAR" responses greater than 5% but less than 20% RE and secondary group "RESIDUAL" responses greater than 20% RE were still considered representative of coal tar impacts that may warrant remediation.

SI #2 soil sample VOC and SVOC concentrations exceeding RRSCOs and/or PGWSCOs are shown on Figure 8A and Figure 8B, respectively. The refined extent of coal tar impacts is depicted on Figure 9A (plan view) and Figure 9B (cross sectional views).

Interim Remedial Measure Work Plan (IRMWP) – Former Excelsior Bag, Yonkers, NY, AKRF, Inc., March 2022

To facilitate the construction schedule, limited remediation was completed at the Site in accordance with the NYSDEC-approved March 2022 IRMWP, and as modified by the October 2022 IRMWP Deviation Letter. The IRM activities, which were conducted September 2022 through February 2023, addressed closure in-place of the USTs and removal of shallow fill materials with elevated concentrations of SVOCs identified during the RI in the southeastern corner of the Site. The IRM excavation areas and endpoint

sample locations are shown on Figure 10. IRM activities will be further detailed in a forthcoming IRM CCR.

4.0 REVIEW OF SITE CONTAMINATION

The data compiled during the RI, SRI, SI #1, and SI #2 were compared to the following standards, criteria, and guidance to determine the nature and extent of the contamination area associated with the Site:

- **Soil** – NYSDEC Protection of Public Health RRSCOs and PGWSCOs;
- **Groundwater** – NYSDEC Class GA (Drinking Water) AWQSGVs;
- **Grossly Contaminated Media** – as defined in NYSDEC DER-10 and 6 NYCRR 375-1.2(u), soil, sediment, surface water, or groundwater which contains sources or substantial quantities of mobile contamination in the form of NAPL that is identifiable either visually, through strong odor, by elevated contaminant vapor levels or is otherwise readily detectable without laboratory analysis; and
- **Soil Vapor** – NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

4.1 Contaminants of Concern in Respective Media

Based on the data compiled during the RI, SRI, SI #1, and SI #2, and the proposed future use of the Site, the contaminants of concern (COCs) in respective media types are listed below.

4.1.1 Soil

Surface Soils

- The SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno[1,2,3-cd]pyrene detected at concentrations exceeding RRSCOs and/or PGWSCOs; and
- Lead detected at a concentration exceeding its RRSCO and PGWSCO in surface soil sample RI-SS-01_0-0.5_20200901.

Fill Materials

- The petroleum-related VOCs benzene, toluene, and xylenes, and chlorinated solvent VOC 1,2-dichloroethane detected in RI-SB-24_1-3_20210408 and/or RI-SB-18_1-3_20210407, both located in the vicinity of the former abandoned in-place UST(s) identified in the southeast corner of the Site;
- The SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and/or pyrene detected at concentrations exceeding RRSCOs and/or PGWSCOs in multiple samples across the Site (with higher concentrations of PAHs detected in several samples in the southeastern portion of the Site);
- The metals arsenic, cadmium, copper, lead, mercury, nickel, and selenium, detected at concentrations exceeding RRSCOs and/or PGWSCOs across the Site (with more elevated concentrations of lead and mercury detected in several samples in the southeastern portion of the Site); and
- Eight shallow fill soil samples, collected and analyzed from seven soil boring locations advanced during the RI, identified total metal concentrations (specifically lead and mercury) that warranted additional sampling and analysis for their respective hazardous waste criteria (conducted as SI #1). None of the TCLP lead or mercury sample results exceeded their respective EPA limits as characteristic hazardous waste.

Intermediate Native Soil (Above the Hudson River Sediments)

- The VOCs 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene (mesitylene), acetone, benzene, ethylbenzene, methyl ethyl ketone (2-butanone), n-butylbenzene, n-propylbenzene, toluene, and xylenes detected at concentrations above RRSCOs and/or PGWSCOs in the southern portion of the Site;
- The SVOCs acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene detected at concentrations above RRSCOs and/or PGWSCOs, with higher concentrations in soil samples collected in the south-central portion of the site; and
- The metals arsenic, lead, and mercury detected at concentrations above both RRSCOs and PGWSCOs in intermediate samples collected in the southeastern portion of the Site.

The VOC and SVOC exceedances are attributable to coal tar impacts [i.e., grossly contaminated media as defined in NYSDEC DER-10 and 6 NYCRR 375-1.2(u)] encountered in the south-central portion of the Site directly above the Intermediate Confining Layer at depths ranging from approximately 20 to 44 feet bgs (specifically within intermediate RI soil borings RI-SB-15, RI-SB-16, RI-SB-17, RI-SB-18, RI-SB-27, and RI-SB-30, SRI soil boring SRI-SB-03, and SI #2 confirmatory soil borings SI-CB-07, SI-CB-14, SI-CB-20, SI-CB-41, SI-CB-48, SI-CB-65, SI-CB-75, SI-CB-89, SI-CB-98, SI-CB-102, SI-CB-109, SI-CB-120, SI-CB-120W, SI-CB-128, SI-CB-129, and SI-CB-129W).

The presence of grossly contaminated media in the form of DNAPL was confirmed based upon visual observations from corresponding RI, SRI, and SI #2 boring logs and evaluation of SI #2 LIF (i.e., TarGOST) logs.

Deep Native Soil (Above the Glacial Till)

- The VOCs 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene (mesitylene), benzene, ethylbenzene, toluene, and xylenes detected at concentrations exceeding RRSCOs and/or PGWSCOs in one to two deep samples in the southern portion of the Site (SRI-SB-05 and SRI-SB-06); and
- The SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno[1,2,3-cd]pyrene, naphthalene, and phenanthrene detected at concentrations exceeding RRSCOs and/or PGWSCOs in one deep sample in the southeastern corner of the Site (SRI-SB-05).

The VOC and SVOC exceedances are attributable to limited coal tar impacts encountered above the Deep Confining Layer in the southern portion of the Site ranging from 83 to 150 feet bgs (specifically within SRI-SB-04, SRI-SB-05, and SRI-SB-06).

4.1.2 Groundwater

- The SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-c,d)pyrene, and naphthalene at concentrations exceeding AWQSGVs;
- The metals iron, magnesium, manganese, selenium, and sodium at concentrations exceeding AWQSGVs; and

- PFAS PFOA, PFOS, and 6:2 fluorotelomer sulfonate detected above their NYSDEC PFAS Screening Levels in one or more samples.

4.1.3 Soil Vapor

- Petroleum-related VOCs, detected at moderate or elevated concentrations in multiple samples across the Site; and
- Chlorinated-VOCs (CVOCs) (111-TCA and PCE) detected in the southern portion of the Site.

4.2 Conceptual Site Model

This section presents a conceptual site model that identifies each known or likely release area, discusses how such releases likely occurred, the migration pathway of the released material, and what impacts the contaminants have on human health and the environment.

4.2.1 Soil Contamination

Petroleum-Related VOCs, PAHs, and Metals in Shallow Fill Materials

Fill materials were historically placed Site-wide and across the general surrounding area to fill land under water to support initial development, as was a common practice in this area along the eastern side of the Hudson River. The concentrations of PAHs and metals in the soil/fill vary across the Site, which is expected, based on the heterogeneity of the fill materials. Higher concentrations of PAHs, lead, and mercury detected in fill materials in the southeast portion of the Site could also be attributed to historical on-site uses (e.g., coal yard, railroad tracks).

The evidence of petroleum-related contamination in the southeastern portion of the Site [i.e., slight petroleum-like odors, elevated PID readings (maximum of 37.6 ppm), and detections of petroleum-related VOCs in soil] is likely attributable to residual impacts from the former abandoned in-place USTs. VOC detections in soil above RRSCOs and/or PGWSCOs were limited to a few samples generally located in the southeastern portion of the Site.

Source materials associated with shallow fill contamination at the Site (i.e., total SVOCs exceeding 500 mg/kg and the abandoned in place USTs located in the southeast corner of the Site) were identified and addressed as part of IRM activities conducted September 2022 through February 2023.

Coal Tar in Intermediate Native Soil (Above the Intermediate Confining Layer)

Coal tar impacts documented above the Intermediate Confining Layer in the south-central portion of the Site during the RI and SI #2 appear to have migrated from the south-adjacent Polychrome R&D Lab (Polychrome West) BCP site toward a low point in the top of the Intermediate Confining Layer (with the original coal tar source being the former Woodworth Avenue Works MGP site, located east and upgradient of the Polychrome R&D Lab BCP site). The coal tar impacts documented at the Site above the Intermediate Confining Layer do not appear to extend off-site from the Site toward the Hudson River.

Depths of coal tar impacts ranged from 20 to 44 feet bgs (with intervals fully saturated with DNAPL up to 15 feet thick). The lateral extent of coal tar impacts encompasses an area approximately 75 to 125 foot wide (east to west) by approximately 350 foot long area (extending from the southern Site boundary to the north) in the south-central portion of the Site, with additional areas of coal tar impacts observed immediately adjacent to the

southern property boundary, and a finger extending further west in the southwestern portion of the Site adjacent to the Hudson River.

Based on the 2020-2021 RI, the coal tar appeared to be accumulating at a low point on the top of the Intermediate Confining Layer thus preventing migration of coal tar documented at the Site further north, east, or west. While this assumption appears to hold true for preventing migration further north or east, the 2022 SI #2 concluded that, with the exception of an isolated area along the south-central portion of the Site, the Intermediate Confining Layer generally continues to decline in depth progressing further west of the area observed with coal tar impacts. Low points on the top of the Intermediate Confining Layer (in comparison to the elevation further west) appear to be limited to the area surrounding SI #2 LIF borings SI-LIF-06, SI-LIF-07, SI-LIF-08, SI-LIF-31, and SI-LIF-42.

Based on further investigation detailed in the SIR #2, it appears that a former timber bulkhead was constructed along the former Site shoreline between 1898 and 1917 (with a small section added in the southwest corner sometime prior to 1951) and then was likely buried in place as the Site uses continued to fill the shore area and extend land further west. The timber bulkhead likely also acted as a subsurface feature (in addition to the limited low points on the top of the Intermediate Confining Layer noted above) that limited migration of coal tar impacts further west toward the Hudson River, since the location of this bulkhead is in the general vicinity of the refined western boundary of significant coal tar impacts documented in the SI #2.

Coal Tar in Deep Native Soil (Above the Glacial Till)

Deeper coal tar impacts were encountered in the southern portion of the Site at depths ranging from approximately 83 to 150 feet bgs above the Deep Confining Layer. Trace evidence of DNAPL comprised of sheen/staining, coal tar odors, and elevated PID readings were observed in one boring, SRI-SB-05, directly above the Deep Confining Layer from approximately 98 to 103 feet bgs. DNAPL or other evidence of significant coal tar impacts was not encountered in any other deep boring above the Deep Confining Layer; however, coal tar odors, and/or elevated PID readings were encountered in SRI-SB-04 and SRI-SB-06 above the Deep Confining Layer at depths ranging from approximately 83 to 118 feet bgs and 117 to 150 feet bgs, respectively.

Based on previous environmental investigations and/or activities performed at the adjacent Polychrome R&D BCP site and former Woodworth Avenue Works MGP site, coal tar impacts were observed above the Deep Confining Layer on the western portion of the former Woodworth Avenue Works MGP site adjacent to Alexander Street (located southeast and upgradient of the Site); on the southern portion of the Metropolitan Transportation Authority (MTA) property north of Babcock Place (located east and upgradient of the Site); and on the northeast portion of the Polychrome R&D BCP site (south and cross-gradient of the Site).

The limited coal tar impacts encountered above the Deep Confining Layer in the southeastern corner of the Site appears to have migrated from the southeast-adjacent (and upgradient) former Woodworth Avenue Works MGP site (i.e., the source). It does not appear that significant coal tar impacts are currently migrating along the Deep Confining Layer beneath the Site to downgradient receptors (i.e., beneath the Hudson River).

4.2.2 Groundwater Contamination

Low level concentrations of PAHs detected in groundwater at concentrations exceeding AWQSGVs (Class GA) Site-wide are likely attributable to PAHs in the shallow fill layer at the Site and/or indicative of regional groundwater conditions. Low-level concentrations of naphthalene detected in one well (MW-05) are likely attributable to coal tar impacts noted in the southern portion of the Site. Metals detected in groundwater at concentrations exceeding AWQSGVs likely reflect some combination of naturally occurring, and/or attributable to background conditions (including tidal influence from brackish Hudson River water), rather than a Site release. Petroleum-related VOCs detected in Site soil in the southeast corner of the Site do not appear to be to be impacting groundwater at the Site.

4.2.3 Soil Vapor Contamination

Petroleum-related compounds detected in soil vapor are likely related to the petroleum impacts noted in the southern portion of the Site and/or possibly to an off-site source. 111-TCA and PCE were detected in soil vapor at relatively low concentrations during the RI; however, previous investigations have documented elevated concentrations of PCE (up to a concentration of 6,850 µg/m^3) and TCE (up to a concentration of 51 µg/m^3) in soil vapor, particularly in the southern portion of the Site. These chlorinated VOCs were not detected in soil above RRSCOs and/or PGWSCOs, or in groundwater above AWQSGVs, indicating a potential off-site source. In addition, the presence of widespread coal tar impacts also represents a vapor intrusion concern for the Site.

4.2.4 Emerging Contaminants

PFAS were detected in shallow groundwater samples across the Site slightly above NYSDEC Screening Levels, and low levels of PFAS were detected in shallow fill material at concentrations below RR and PGW Guidance Values. Concentrations of PFAS in Site shallow fill materials and groundwater are likely related to background conditions and are not attributed to an on-site release or source area.

4.3 Significant Threat Determination

NYSDEC, in consultation with NYSDOH, has determined that the Site poses a significant threat to the environment. This decision was based on the RI findings and Site's proximity to the Hudson River, which is located downgradient and to the west of the Site.

5.0 QUALITATIVE HUMAN HEALTH AND EXPOSURE ASSESSMENT

This section includes an evaluation of who might be exposed to the Site contamination, and how the exposure would take place. Environmental and public health exposure can occur only if there is a complete pathway from a specific chemical of concern contained in one of the media to a receptor. The mere presence of known contamination is not in itself evidence that a complete exposure pathway will exist. Based on results from the previous investigations, the contaminated media associated with the Site included soil, groundwater, and soil vapor. The Section includes a review of the potential routes of exposure.

5.1 Route of Exposure and Potential Receptors

The five elements of an exposure pathway include:

1. The source of contamination;
2. The environmental media and transport mechanisms;
3. The point of exposure;
4. The route of exposure; and
5. The receptor population.

An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway cannot be ruled out. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future.

An exposure route is the mechanism by which a receptor comes into contact with a chemical. Three potential primary routes exist by which chemicals can enter the body:

- Ingestion of water, fill, and/or soil;
- Inhalation of vapors and/or particulates; and
- Dermal contact with water, fill, and/or soil.

The Site currently consists of an approximately 243,952-square foot vacant property with concrete/asphalt paved surfaces, an active construction area to the north (Phase I Construction), and revetment stone (along the western boundary adjacent to the Hudson River). The areas immediately surrounding the Site to the south and east are predominantly residential and commercial in nature. The area to the north was remediated pursuant to the BCP with remaining contamination managed via site management. This area is currently undergoing redevelopment. The nearest sensitive receptors (i.e., schools, daycares, or hospitals) include Charter School of Educational Excellence located at 260 Warburton Ave, Yonkers, NY 10701, approximately 1,050 feet northeast of the Site; and Beczak Environmental Education Center, located at 35 Alexander Street. Yonkers NY 10701, approximately 1,110 feet south of the Site.

On-Site Receptors: Since the Site is partially vacant and partially under construction, existing on-site potential receptors include Site visitors, trespassers, construction workers, and inspectors. Once the Site is redeveloped, the on-site potential receptors will include adult and child residents, employees, and visitors (e.g., pedestrians, cyclists, customers, vendors, and inspectors).

Off-Site Receptors: Potential off-site receptors within a 0.25-mile radius of the Site include adult and child residents, commercial and construction workers, students, pedestrians, cyclists, and commercial and recreational users of the Hudson River based on the following existing and future surrounding uses:

1. Commercial Businesses;
2. Residential Buildings;
3. Building Construction/Renovation;
4. Roadways, bike paths; and
5. Schools/Day Care Facilities

5.2 Exposure Assessment

This section presents an evaluation of whether there are existing or future exposure pathways at the Site.

5.2.1 Existing Exposure Pathways

On-Site Existing Conditions: The findings of the data described in the RIR, SIR #1, and SIR #2 suggest Site-wide contamination associated with the presence of historic fill material, residual petroleum-related contamination in the southeastern portion of the Site near the former abandoned in-place UST was remediated as part of IRMWP activities conducted September 2022 through February 2023, and coal tar impacts encountered in the south-central portion of the Site directly above the Intermediate Confining Layer at depths ranging from approximately 20 to 44 feet bgs.

The first phase of construction (Phase I Construction), which includes components on both the Site and the north adjacent BICC Cables NYSDEC BCP site, began on September 13, 2021. Phase I Construction includes construction of the southern portion of Building D, surrounding access roadways, and the esplanade. To limit exposure pathways to both workers and nearby off-site receptors, construction activities are being conducted in compliance with NYSDEC-approved June 2021 Supplemental Environmental Management Documentation, which includes a Soil Materials Management Plan (SMMP), Health and Safety Plan (HASP), and Community Air Monitoring Plan (CAMP). A perimeter fence is also installed around the active Phase I Construction area at the Site and access through locked entrances is limited to permitted visitors/construction workers.

The remaining inactive/vacant portion of the Site is generally capped with either the former building slab, asphalt pavement, or gravel; and the slab and pavement were observed to be in good condition, with minimal fractures, breaks, and/or open areas. While it is possible to touch surface soils and/or inhale dust in the few unpaved areas in the inactive portion of the Site, a perimeter fence is also installed surrounding this portion, and access through locked entrances is limited to permitted visitors. Therefore, exposure through dermal contact or ingestion routes of exposure is unlikely. Also, since the Site is a vacant open-air lot, and the former building slab and asphalt paved areas were observed to be in good condition, inhalation of contaminants via soil vapor intrusion is not a concern. In addition, groundwater in the City of Yonkers is not used for potable water supply. Therefore, no exposure pathways from on-site contaminants currently exist for the inactive/vacant portion of the Site; however, when redevelopment activities commence, potential exposure pathways to on-site contamination will be present unless controlled by implementation of a CAMP, site-specific HASP, and other measures as part of a site-wide RAWP.

Off-Site Existing Conditions: The presence of historic fill materials, coal tar impacts, and other environmental impacts have been previously documented in surrounding off-site subsurface conditions. Most of the properties in the immediate vicinity, including the BICC Cables BCP site (BCP No. C360051) to the north and the Polychrome R&D BCP site (BCP No. C360099) to the south have been previously remediated, and engineering and

institutional controls (ECs/ICs) have been put in place to mitigate exposure to and off-site migration of remaining contamination beneath those sites. The Greyston Bakery (former Woodworth Avenue Works MGP site) to the southeast was previously remediated under the NYSDEC Voluntary Cleanup Program (VCP) (VCP No. V00361); however, further site investigations conducted under the NYSDEC Administrative Order on Consent (Index No. CO0-20180516- 519, Site No. 360164) concluded that subsurface contamination, including MGP related impacts, remain at the Woodworth Avenue Works MGP site, and further investigation is necessary to evaluate potential off-site preferential migration pathways.

Notwithstanding the above off-site conditions, potential exposure pathways to off-site contamination migrating from the Site is further limited by the NYSDEC-approved June 2021 Supplemental Environmental Management Documentation (i.e., SMMP, HASP and CAMP) for the active Phase I Construction area. For the inactive/vacant portion of the Site, no exposure pathways to off-site migration of contaminants from the Site currently exist; however, when redevelopment activities commence, potential exposure pathways will exist unless controlled by implementation of a CAMP, site-specific HASP, and other measures as part of a site-wide RAWP.

5.2.2 Future (Short Term) Exposure Pathways

During future Site-wide redevelopment ground-intrusive activities, specifically remedial and construction excavation activities, construction workers could come into direct dermal contact with contaminated surface/subsurface historic fill materials, subsurface coal tar impacts, and groundwater. In addition, during excavation activities, construction workers could encounter contaminated dust and soil vapor, resulting in potential ingestion and inhalation exposure pathways. Similarly, off-site receptors could be exposed to particulates and vapors from on-site activities, unless controls to prevent off-site particulate/vapor migration are put in place. These pathways will be controlled during future construction/remediation activities by implementing a CAMP, site-specific HASP, and other measures as part of a site-wide RAWP.

5.2.3 Future (Long Term) Exposure Pathways

Following redevelopment, potential exposure pathways to future residents, employees, and visitors would include direct dermal contact with contaminated surface soil and potential intrusion of contaminated vapors into future buildings. Potential exposure pathways to future construction workers during post-redevelopment intrusive activities would also include direct dermal contact with contaminated subsurface historic fill materials, coal tar impacts, and groundwater. These potential exposure pathways will be prevented by ECs/ICs implemented at the Site, including a Site-wide cover system constructed in a manner to eliminate exposure to residual subsurface contamination and vapor mitigation [e.g., vapor barrier and an active sub-slab depressurization system (SSDS)] installed as a component of future buildings. In addition, a Site Management Plan (SMP) will be implemented that specifies procedures for preventing exposure to residual contamination during future soil disturbance.

5.3 Overall Human Health Exposure Assessment

As discussed above, existing exposure pathways from contaminated media (i.e., soil/fill, groundwater, and/or soil vapor) for the active Phase I Construction area are managed by the NYSDEC-approved June 2021 Supplemental Environmental Management Documentation (i.e., SMMP, HASP and CAMP). No exposure pathways from contaminants currently exist for the

inactive/vacant portion of the Site; however, when redevelopment activities commence, potential exposure pathways would exist unless managed by remedial measures (e.g., implementation of the HASP, CAMP, and other measures included in a site-wide RAWP).

Based on the results of the Qualitative Human Health and Exposure Assessment (QHHEA), a NYSDEC-approved RAWP, which includes a HASP to protect on-site workers, should be implemented during remedial/redevelopment activities to ensure that the potential exposure pathways identified do not become complete. The HASP will include a CAMP compliant with Appendices 1A and 1B of DER-10. The RAWP will address the contaminated soil/fill at the Site and the installation/implementation of ECs and ICs, respectively. In addition, a SMP will be implemented post redevelopment to prevent potential exposure pathways to residual contamination in the long term.

5.4 Fish and Wildlife Impact Analysis

Based on the conceptual site model, no actual impacts to fish and wildlife resources (i.e., the Hudson River) are anticipated from contaminants of concern found at the Site. PAHs, metals, and PFAS in groundwater across the Site are generally indicative of background conditions. Petroleum-related contamination in soil/fill appeared to be limited to the southeastern portion of the Site, in the vicinity of the former abandoned in-place UST (which was remediated as part of the IRM activities conducted September 2022 through February 2023 in accordance with the NYSDEC-approved March 2022 IRMWP and October 2022 IRMWP Deviation Letter). Coal tar impacts encountered above the Intermediate Confining Layer appear to be limited to the south-central portion of the Site generally within a low point in the Intermediate Confining Layer; and it also appears a former buried in-place timber bulkhead may have acted as a subsurface feature that limited migration of coal tar impacts further west toward the Hudson River. Lastly, coal tar impacts encountered above the Deep Confining Layer appear to be limited to the southeastern portion of the Site and do not appear to be migrating toward the Hudson River.

6.0 REMEDIAL ACTION OBJECTIVES

The RAOs for the Site are summarized in this section and include a review of goals to be achieved during the implementation of the RAWP.

6.1 Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure to particulates and vapors volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants from soil that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

6.2 Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles emanating from contaminated groundwater.

RAOs for Environmental Protection

- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water and sediment.
- Remove the source of ground or surface water contamination.

6.3 Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the Site.

7.0 APPLICABLE STANDARDS, CRITERIA, AND GUIDELINES

The following remedial Standards, Criteria, and Guidance (SCGs) apply to the project, and are the performance criteria used to determine if the RAOs for remediation have been met.

- NYSDEC Ambient Water Quality Standards and Guidance Values – TOGS 1.1.1 (June 1998, as amended)
- NYSDEC CP-51 Soil Cleanup Guidance (October 2010)
- NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (May 2010, as amended)
- NYSDEC DER-13 – NYSDEC Strategy for Evaluating Soil Vapor Intrusion at Remedial Sites in New York (October 2006)
- NYSDEC DER-23 Citizen Participation Handbook for Remedial Programs (January 2021)
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York – Soil Vapor Intrusion Mitigation (October 2006, as amended)
- 6 NYCRR Part 360 – Solid Waste Management
- 6 NYCRR Part 364 – NYS Waste Transporter Permits
- 6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- 6 NYCRR Subpart 374-1 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Subpart 374-3 – Standards for Universal Waste
- 6 NYCRR Part 375 – Environmental Remediation Programs
- 6 NYCRR Part 376 – Land Disposal Restrictions
- 6 NYCRR Part 612 – Registration of Petroleum Storage Facilities
- 6 NYCRR Part 613 – Handling and Storage of Petroleum
- 6 NYCRR Part 614 – Standards for New and Substantially Modified Petroleum Storage Tanks
- 6 NYCRR Part 703 – New York State Groundwater Quality Standards
- 40 CFR Part 280 – Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks
- 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response

Additional regulations and guidance may be applicable, relevant, and appropriate for the remedial alternatives and will be complied with during implementation of the remedial program. However, the list above is intended to represent the principal SCGs that were considered in evaluating the remedial alternatives for the Site.

8.0 DEVELOPMENT OF REMEDIAL ALTERNATIVES

This section details the preliminary technology screening and development of remedial alternatives further evaluated in Section 8.0.

8.1 General Response Actions

Prior to selection and screening of technology-specific remedial alternatives, medium-specific "general response actions," as defined in DER-10, capable of achieving RAOs were selected for use as the basis of the preliminary technology screening process. General response actions that were considered are summarized below. The general response actions also include "No Action" as required by DER-10.

- No action
- Extraction and off-site disposal/treatment
- In-situ treatment
- Containment
- Implementation of ICs

8.2 Estimated Volumes of Contaminated Media

To provide a basis for the selection of remedial technologies applicable to Site conditions, volumes of contaminated media were estimated based upon the nature and extent of contamination documented in previous investigations. The estimated volumes and assumptions are summarized below. For purposes of this RAA, volumes of contaminated media were estimated based upon a Track 1 Unrestricted Use Soil Cleanup Objective (UUSCO) and Track 4 Site-Specific SCO remedy, respectively.

In-Text Table 8.2A
Estimated Volumes for Track 1 Remedy

Media	Area (sq. ft.)	Interval (ft-ft)	Avg. Thickness (ft)	Volume (CY)	Assumptions
Surface Soil & Shallow Fill Materials	243,952	0 - 20	20	180,700	Surface soil and shallow fill materials exceeding UUSCOs exist across the Site up to approximately 20 feet bgs.
Intermediate Coal Tar Impacted Soil	42,900	20 - 44	15	23,800	An approximately 42,900 square-foot area of coal tar impacted soil exceeding UUSCOs were observed from depths ranging from 20 to 44 feet bgs (above the Hudson River sediment confining layer). An average thickness of 15 feet (i.e., 20 to 35 feet) was assumed across the impacted area.
Deep Coal Tar Impacted Soil	50,000	98 - 145	5	9,300	An approximately 50,000 square-foot area of deep coal tar impacted soil exceeding UUSCOs (extending across the southern-most portion of the Site) would be addressed. Exceedances ranged from 98 to 145 feet deep. An average thickness of 5 feet was assumed across the 50,000 square foot area.

Notes:
1. For purposes of this RAA, the Track 1 remedy assumes that groundwater and soil vapor concentrations exceeding applicable standards would be fully addressed via general response actions conducted for soil and are therefore not provided as separate volume estimates.

In-Text Table 8.2B
Estimated Volumes for Track 4 Remedy

Media	Area (sq. ft.)	Interval (ft-ft)	Avg. Thickness (ft)	Volume (CY)	Assumptions
Surface Soil & Shallow Fill Materials	36,700	0 - 20	20	27,200	Surface soil/shallow fill materials targeted under a Track 4 remedy would include materials necessary for access to underlying intermediate coal tar source material. Residual Site-wide contamination in surface soil/shallow fill materials would be addressed via implementation of Site-wide ECs/ICs (i.e., raising the Site grade as part of the cover system).
Intermediate Coal Tar Impacted Soil	36,700	20 - 44	15	20,400	An approximately 36,700 square-foot area to depths ranging from 20 to 44 feet bgs would be targeted under a Track 4 remedy to address coal tar source materials. An average thickness of 15 feet (i.e., 20 to 35 feet) was assumed for purposes of this RAA. Residual contamination would be addressed via implementation of Site-wide ECs/ICs (i.e., cover system).
Deep Coal Tar Impacted Soil	NA	NA	NA	NA	It is assumed that deep coal tar impacts did not constitute source material requiring remediation under a Track 4 remedy. Residual contamination would be addressed via implementation of Site-wide ECs/ICs (i.e., cover system).

Notes:
1. For purposes of this RAA, the Track 4 remedy assumes that groundwater and soil vapor concentrations exceeding applicable standards would be partially addressed via general response actions conducted for soil and residual contamination would be addressed via Site-wide ECs/ICs; therefore, are not provided as separate volume estimates.

8.3 Identification and Screening of Technologies

Prior to assembly of remedial alternatives, technology types and process options applicable to Site conditions were identified and screened on a medium-specific basis for technical implementability, effectiveness in achieving Site RAOs, and cost effectiveness. At the conclusion of this step, alternatives that were determined not to be technically implementable, effective in achieving RAOs, or cost effective relative to the other alternatives developed were eliminated from further consideration. A summary of the identification and screening process is provided in Table 1.

8.4 Summary of Retained Technologies by Media Type

Technology types and process options that were retained for each media type are summarized in In-Text Table 8.4 below. The technologies presented below were assembled into remedial alternatives retained for evaluation as detailed in the following section.

In-Text Table 8.4
Summary of Retained Technologies

Media Type	General Response Action	Retained Technology Type / Process Option
Surface Soil and Shallow Fill Materials	No Action	No Action
	Extraction and Off-Site Disposal	Excavation/Off-Site Disposal (Track 1 & Track 4)
	Containment	Site-Wide Cover System (Track 4)

In-Text Table 8.4
Summary of Retained Technologies

	Institutional Controls (ICs)	SMP, Environmental Easement, Groundwater Use Restrictions (Track 4)
Intermediate Coal Tar Impacted Soil	No Action	No Action
	Extraction and Off-Site Disposal/Treatment	Excavation/Off-Site Disposal (Track 1)
		Recovery Wells (Track 4)
	Containment	Site-Wide Cover System (Track 4)
		Slurry Walls, Sheet Piling (Track 4)
		In-Situ Soil Solidification (ISS) (Track 4)
	Institutional Controls (ICs)	SMP, Environmental Easement (Track 4)
Deep Coal Tar Impacted Soil	No Action	No Action
	Containment	Site-Wide Cover System (Track 4)
	In-Situ Treatment	Monitored Natural Attenuation (MNA) (Track 4)
		In-Situ Chemical Oxidation (ISCO) (Track 1)
	Institutional Controls (ICs)	SMP, Environmental Easement (Track 4)
Groundwater	No Action	No Action
	Extraction and Off-Site Disposal/Treatment	Excavation Dewatering/Treatment (Track 1)
	Containment	Site-Wide Cover System (Track 4)
	In-Situ Treatment	Monitored Natural Attenuation (MNA) (Track 4)
	Institutional Controls (ICs)	SMP, Environmental Easement, Groundwater Use Restrictions
Soil Vapor	No Action	No Action
	Extraction and Off-Site Disposal/Treatment	Excavation/Off-Site Disposal (Track 1)
		Sub-Slab Depressurization System (SSDS) (Track 4)
	Containment	Site-Wide Cover System (Track 4)
	Institutional Controls (ICs)	SMP, Environmental Easement

8.5 Summary of Remedial Alternatives

Track 4 remedies address source material as a component of the remedy and allow for the implementation of long-term ECs/ICs to achieve RAOs for soil, groundwater, and soil vapor. Based upon the findings of the RI, SRI, Supplementary Investigations, and correspondence with NYSDEC, a Track 4 remedy will require remediation of coal tar source material documented above the Intermediate Confining Layer. Coal tar source material is defined as soil impacted by coal tar indicative of DNAPL, including areas defined in the SIR #2 as target group "COAL TAR" LIF responses greater than 20% RE.[1] Limited areas with residual coal tar impacts, particularly along the southern Site boundary, are also targeted for remediation to address potential migration pathways onto the Site and/or off-site to the Hudson River. In addition, the remedy will include the installation of ECs including groundwater/DNAPL monitoring wells, vapor barrier, SSDS, and a Site cap; and implementation of ICs including an Environmental Easement (EE), Site and groundwater use restrictions, and a SMP detailing all of the foregoing and long term operation and monitoring and maintenance of the ECs.

Source materials associated with shallow fill contamination at the Site (i.e., total SVOCs exceeding 500 mg/kg and the abandoned in place USTs located in the southeast corner of the Site) were identified and addressed as part of IRM activities conducted September 2022 through February 2023 in accordance with the NYSDEC-approved March 2022 IRMWP and as modified by the October 2022 IRMWP Deviation Letter. IRM activities will be further detailed in a forthcoming IRM CCR.

Prior to assembly and evaluation of the Track 4 remedial alternatives presented below, an initial screening of remedial technologies to address the coal tar source material identified above the Intermediate Confining Layer was performed as presented in Table 1.

Below is a summary of the remedial alternatives that were retained for evaluation. The remedial alternatives also included a "No Action" alternative and an alternative that achieves UUSCOs as required by DER-10 Section 4.4(3)(d)(2).

1. Remedial Alternative 1 – No Action
2. Remedial Alternative 2 – Track 1 UUSCOs
3. Remedial Alternative 3 – Track 4 Site-Specific SCOs - Intermediate Coal Tar Source Material Excavation and Off-site Disposal, and ECs/ICs
4. Remedial Alternative 4 – Track 4 Site-Specific SCOs - Intermediate Coal Tar Source Material Containment/Extraction and DNAPL Off-site Disposal, and ECs/ICs
5. Remedial Alternative 5 – Track 4 Site-Specific SCOs - Intermediate, Coal Tar Source Material In-Situ Solidification (ISS), and ECs/ICs

8.5.1 Remedial Alternative 1 – No Action

This alternative consists of allowing the Site to remain in its current condition. No remedial activities would occur under this remedy (notwithstanding limited natural attenuation and biological processes that would occur over time), and no ECs/ICs would be established as part of redevelopment activities.

[1] As further detailed in the SIR #2, LIF equipment, specifically TarGOST, captures fluorescent responses emitted by surrounding subsurface materials and returns the signals (as waveforms) to be analyzed and logged. The waveform's intensity is recorded as a percentage of the equipment's standardized RE value (a single point calibrated fluorescent intensity, based upon the NAPL of interest, and normalized to 100% RE).

Contamination documented at the Site during the RI, SRI, and Supplementary Investigations would remain in its current condition, including elevated VOCs, SVOCs, and metals in shallow fill materials, coal tar impacts observed above the Intermediate Confining Layer and the Deep Confining Layer, elevated SVOCs and metals in groundwater, and elevated VOCs in soil vapor. Any existing or potential human exposures and environmental impacts related to contaminated soil, groundwater, and soil vapor would remain unaddressed as no ECs/ICs would be established as part of redevelopment activities.

8.5.2 Remedial Alternative 2 – Track 1 Unrestricted Use Soil Cleanup Objectives (UUSCOs)

This alternative would include excavation and off-site disposal of all contaminated soil to comply with UUSCOs.

Surface Soils/Fill Materials

Surface soils and fill materials at the Site generally exceed UUSCOs. To achieve UUSCOs, it is assumed excavation and off-site disposal of historical fill materials encountered across the Site from surface grade to approximately 20 feet bgs would be required.

Intermediate Coal Tar Impacted Soil

Coal tar impacts (with associated soil samples exceeding UUSCOs) were encountered above the Intermediate Confining Layer in the southern portion of the Site from approximately 20 to 44 feet bgs. To achieve UUSCOs, excavation and off-site disposal of coal tar impacted soil encountered in the southern portion of the Site above the Intermediate Confining Layer would be required.

Deep Coal Tar Impacted Soil

Coal tar impacts were also encountered above the Deep Confining Layer from approximately 83 to 150 feet bgs in the southern portion of the Site, with one soil sample collected from 98 to 100 feet bgs exceeding UUSCOs. Excavation and removal to these depths was considered technically infeasible; therefore, to achieve UUSCOs, a network of in-situ chemical oxidation (ISCO) injection wells would be installed across the southern portion of the Site targeting the deep coal tar impacted soil and groundwater. It is assumed that the ISCO injection process would require multiple rounds of injection and several years to achieve UUSCOs.

Groundwater

Groundwater is anticipated to be encountered at approximately 5 feet bgs, therefore, excavation activities beneath the groundwater table for shallow fill and intermediate coal tar contamination removal would also include significant dewatering and groundwater treatment activities. Due to the significant dewatering and treatment and removal of contaminated soil above and below the groundwater table as part of intermediate coal tar remediation, this remedy would significantly reduce, if not eliminate groundwater contamination at the Site. However, this remedy would not eliminate potential future migration of groundwater contamination onto the Site from off-site sources.

Soil Vapor

Due to the significant soil removal and groundwater treatment activities that would occur to achieve UUSCOs, this remedy would significantly reduce, if not eliminate, soil vapor

contamination at the Site. However, this remedy would not eliminate potential future migration of soil vapor contamination onto the Site from off-site sources.

8.5.3 Remedial Alternative 3 – Track 4 SCOs – Intermediate Coal Tar Source Material Excavation and Off-site Disposal, and ECs/ICs

This alternative would include excavation and off-site disposal of the coal tar source material encountered at depths up to 44 feet bgs; dewatering and treatment of groundwater encountered within soil excavations; installation of ECs including groundwater/DNAPL monitoring wells, vapor barrier, SSDS, and a Site cap; and implementation of ICs including an EE, Site and groundwater use restrictions, and a SMP.

Surface Soils/Fill Materials

Source materials associated with shallow fill contamination at the Site were addressed as part of IRM activities conducted September 2022 through February 2023 in accordance with the NYSDEC-approved March 2022 IRMWP, as modified by the October 2022 IRMWP Deviation Letter. Under this remedial alternative, removal of shallow fill materials would be limited to the extent necessary to support removal of intermediate coal tar source material. Potential human exposures and environmental impacts related to post-remediation residual contamination in surface soils/fill materials at the Site would be addressed via installation of ECs (i.e., a Site cap) and implementation of ICs (i.e., Environmental Easement and SMP).

Intermediate Coal Tar Impacted Soil

Under this remedial alternative, coal tar source material identified above the Intermediate Confining Layer would be removed from the Site via excavation and off-site disposal. Excavation for coal tar source material would be required to depths up to approximately 44 feet bgs; therefore, significant support of excavation and dewatering activities would be required. Following excavation, potential human exposures and environmental impacts related to residual coal tar impacts in intermediate soils at the Site would be addressed via installation of ECs (i.e., a Site cap) and implementation of ICs (i.e., EE and SMP).

Deep Coal Tar Impacted Soil

The limited coal tar impacted soils observed above the Deep Confining Layer does not appear to constitute source material that is impacting other Site media or migrating to downgradient receptors (i.e., beneath the Hudson River). Therefore, under this alternative, deep coal tar residual impacts would be addressed through natural attenuation (i.e., allowing the limited deep coal tar impacts to gradually decline as a result of natural process, such as natural degradation). Natural attenuation is an effective remedy where source material is not present and there are limited impacts to sensitive receptors.

The already low risk of potential human exposures and environmental impacts related to remaining residual contamination would be addressed via installation of ECs (i.e., a Site cap) and implementation of ICs (i.e., EE and SMP).

Groundwater

Under this alternative, the on-site sources of groundwater contamination (i.e., the intermediate coal tar source material) would be removed. In addition, significant dewatering and groundwater treatment activities would be conducted as part of the coal tar source area excavation activities, further reducing groundwater contamination at the Site. Groundwater contamination remaining after removal of source material (i.e., intermediate DNAPL) would be addressed through monitored natural attenuation (MNA). Installation

of ECs (i.e., a Site cap), and implementation of ICs (i.e., EE, SMP, groundwater use restrictions) would further reduce potential human exposure and environmental impacts.

Soil Vapor

Under this alternative, intrusion of soil vapor into future buildings at the Site would be mitigated via installation of ECs including a vapor barrier and SSDS installed beneath first floor occupied spaces; and implementation of ICs including an SMP and EE. The SSDS would be active with the ability to be converted to passive, if warranted.

8.5.4 Remedial Alternative 4 – Track 4 SCOs – Intermediate Coal Tar Source Material Containment/Extraction, and ECs/ICs

This alternative would include containment of the intermediate coal tar source material via the installation of a slurry wall surrounding the plume area to eliminate further migration; extraction of DNAPL via a network of recovery wells installed within the plume area; installation of ECs including groundwater/DNAPL monitoring wells, vapor barrier, SSDS, and a Site cap; and implementation of ICs including an EE, groundwater use restrictions, and a SMP.

Surface Soils/Fill Materials

Source materials associated with shallow fill contamination at the Site were addressed as part of IRM activities conducted September 2022 through February 2023 in accordance with the NYSDEC-approved March 2022 IRMWP, and as modified by the October 2022 IRMWP Deviation Letter. Under this remedial alternative, potential human exposures and environmental impacts related to remaining contamination in surface soils/fill materials at the Site would be addressed via installation of ECs (i.e., a Site cap), and implementation of ICs (i.e., Environmental Easement and SMP).

Intermediate Coal Tar Impacted Soil

Under this remedial alternative, coal tar source material identified above the Intermediate Confining Layer would be contained via the installation of a slurry wall along the downgradient and cross-gradient portions of the plume area (i.e., to the north, south and west) to eliminate further migration; and then extracted via a network of DNAPL recovery wells installed within the plume area. It is assumed for this alternative that approximately 35,200 vertical square feet (i.e., 880 linear feet installed to an average depth of 40 feet bgs) of slurry walls would be installed surrounding the intermediate coal tar source material (to the north, south and west) to depths ranging from approximately 35 to 45 feet bgs. The use of steel sheeting as a perimeter containment wall is considered infeasible due to significant subsurface obstructions expected to be encountered. Following installation of the containment system, a network of DNAPL recovery wells would be installed to extract the coal tar source material over time. Potential human exposures and environmental impacts related to coal tar impacts in intermediate soils at the Site would be addressed via installation of ECs (i.e., a Site cap), and implementation of ICs (i.e., EE and SMP).

Deep Coal Tar Impacted Soil

The approach for addressing the deep coal tar impacts under Remedial Alternative 4 would be the same as the approach outlined for Remedial Alternative 3 (i.e., natural attenuation).

Groundwater

Under this alternative, on-site sources of groundwater contamination (i.e., the intermediate coal tar source material) would be extracted over time via recovery wells. In addition,

limited quantities of contaminated groundwater would also be removed during recovery, further reducing groundwater contamination at the Site.

Similar to Remedial Alternative 3, groundwater contamination remaining after removal of source material would be addressed through MNA. Installation of ECs (i.e., a Site cap), and implementation of ICs (i.e., EE, SMP, groundwater use restrictions) would further reduce potential human exposure and environmental impacts.

Soil Vapor

The approach for addressing soil vapor contamination under Remedial Alternative 4 would be the same at the approach taken for Remedial Alternative 3 (i.e., installation of ECs including a vapor barrier and SSDS installed beneath first floor occupied spaces; and implementation of ICs including an EE and a SMP).

8.5.5 Remedial Alternative 5 – Track 4 SCOs – Intermediate Coal Tar Source Material In-Situ Solidification (ISS), and ECs/ICs

This alternative would include in-situ treatment of the intermediate coal tar source material via in-situ soil solidification (ISS); installation of ECs including groundwater/DNAPL monitoring wells, vapor barrier, SSDS, and a Site cap; and implementation of ICs including an EE, groundwater use restrictions, and a SMP.

Under this alternative, an approximately 36,700 square-foot area would be targeted for ISS up to a maximum depth of approximately 44 feet bgs. Prior to ISS, shallow fill materials overlying the 36,700 square-foot area would be excavated to the groundwater table (estimated as approximately 5 feet bgs) to create a bench/containment and to allow for "swelling" during ISS treatment. It is assumed that a majority of the intermediate coal tar source material would be addressed via excavator bucket mixing techniques, with deeper portions completed via auger mixing. Pre-clearing of subsurface obstructions and debris would be required as part of ISS treatment activities.

This alternative would also include installation of ECs including groundwater/DNAPL monitoring wells, vapor barrier, SSDS, and a Site cap; and implementation of ICs, including an EE, groundwater use restrictions, and a SMP.

Surface Soils/Fill Materials

Source materials associated with shallow fill contamination at the Site were addressed as part of IRM activities conducted September 2022 through February 2023 in accordance with the NYSDEC-approved March 2022 IRMWP, and as modified by the October 2022 IRMWP Deviation Letter. Under this remedial alternative, removal of shallow fill materials would be limited to those necessary to support ISS of intermediate coal tar source material (e.g., removal of shallow fill materials above the groundwater table within the 36,700 square-foot area targeted for ISS). Potential human exposures and environmental impacts related to remaining residual contamination in surface soils/fill materials at the Site would be addressed via installation of ECs (i.e., a Site cap), and implementation of ICs (i.e., EE and SMP).

Intermediate Coal Tar Impacted Soil

Under this remedial alternative, coal tar source material identified above the Intermediate Confining Layer would be treated at the Site via ISS. An approximately 36,700 square-foot area would be targeted for ISS up to a maximum depth of approximately 44 feet bgs. Prior to ISS, shallow fill materials overlying the 36,700 square-foot area would be excavated to the groundwater table (estimated as approximately 5 feet bgs) to create a

bench/containment and to allow for "swelling" during ISS treatment. Following removal of shallow fill materials, it is assumed a majority of the intermediate coal tar source material would be addressed via excavator bucket mixing techniques, with deeper portions and portions completed via auger mixing. Pre-clearing of subsurface obstructions and debris would be required as part of ISS treatment activities.

Following ISS treatment, potential human exposures and environmental impacts related to contact with residual contamination soils at the Site would be addressed via installation of ECs (i.e., a Site cap), and implementation of ICs (i.e., EE and SMP).

Deep Coal Tar Impacted Soil

The approach for addressing the deep coal tar impacts under Remedial Alternative 5 would be the same at the approach outlined for Remedial Alternatives 3 and 4 (i.e., natural attenuation).

Groundwater

On-site sources of groundwater contamination [i.e., the SVOC source material removed as part of IRM activities conducted September 2022 through February 2023 and the intermediate coal tar source material treated as part of ISS] would be addressed as discussed above.

Groundwater contamination remaining after treatment/removal of source material will be addressed through MNA. Installation of ECs (i.e., a Site cap), and implementation of ICs (i.e., EE, SMP, groundwater use restrictions) would further reduce potential human exposure and environmental impacts.

Soil Vapor

The approach for addressing soil vapor contamination under Remedial Alternative 5 would be the same as the approach taken for Remedial Alternatives 3 and 4 (i.e., installation of ECs including a vapor barrier and SSDS installed beneath first floor occupied spaces; and implementation of ICs including an EE and a SMP).

9.0 EVALUATION OF REMEDIAL ALTERNATIVES

This section includes a review of remediation alternatives that were considered for the remedy phase of the BCP to address the contamination identified by the RI, SRI, and Supplementary Investigations. The following performance measures were used to complete the evaluation of remedial alternatives:

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

The first two evaluation criteria (protection of human health and the environment, and compliance with SCGs) are threshold criteria and must be satisfied in order for an alternative to be considered for selection. The following six evaluation criteria (short-term effectiveness and impacts, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume of contaminated material, implementability, cost effectiveness, and land use) are primary balancing criteria which are used to compare the positive and negative aspects of each of the remedial alternatives, provided the alternative satisfies the threshold criteria. The final evaluation criteria (community acceptance) is reevaluated after public comments on the remedy have been received, if any, prior to NYSDEC selection/approval of the remedy.

9.1 Remedial Alternative 1 – No Action

1. Protection of Human Health and the Environment – Not satisfied, as this alternative would not eliminate, reduce, or control through removal, treatment, containment, or ECs/ICs, any existing or potential human exposures or environmental impacts related to contaminated media at the Site. This alternative would also not achieve Site RAOs.
2. Compliance with SCGs – Not satisfied, as this alternative would not conform to or take into consideration any applicable SCGs.
3. Long-term Effectiveness and Permanence – Not effective, as existing and potential human exposures and environmental impacts from remaining contamination would remain in the long-term (e.g., following redevelopment activities).
4. Reduction of Toxicity, Mobility, or Volume of Contaminated Material – Not satisfied, as this alternative would not reduce the toxicity, mobility, and volume of contaminated materials at the Site.
5. Short-term Effectiveness and Impacts – Not effective, as there would be no measures in place to prevent human exposure or environmental impacts during redevelopment activities.
6. Implementability – Very feasible, as no personnel, regulatory approvals, or monitoring of remedial measures would be needed during redevelopment.

7. Cost Effectiveness – Very cost effective to proceed with no action; however, this criterion is not satisfied, as it requires a comparison of cost to long/short term effectiveness and toxicity reduction, which would not be achieved.
8. Land Use – Not satisfied. Currently, the Site is a vacant lot, however, the Site is proposed for redevelopment (under the NYSDEC BCP) with low-rise residential buildings, surrounding access roadways, and a waterfront esplanade. This is consistent with redevelopment patterns in the area and intended future use of the property proposed by in the City of Yonkers Alexander Street Master Plan and City of Yonkers Brownfield Opportunity Area (BOA) Plan. No action would be inconsistent with intended and proposed future land use of the Site.
9. Community Acceptance – Not satisfied, as this alternative would not be protective of public health and the environment.

9.2 Remedial Alternative 2 – Track 1 Unrestricted Use Soil Cleanup Objectives (UUSCOs)

1. Protection of Human Health and the Environment – Satisfied, as this alternative would eliminate, through removal, any existing or potential human exposures or environmental impacts related to contaminated media at the Site. This alternative would also achieve Site RAOs for soil, groundwater, and soil vapor.
2. Compliance with SCGs – Satisfied, as this alternative would conform to or take into consideration applicable SCGs for soil, groundwater, and soil vapor.
3. Long-term Effectiveness and Permanence – Effective, as existing and potential human exposures and environmental impacts from remaining contamination at the Site would be eliminated in the long-term (e.g., following remedial and redevelopment activities).
4. Reduction of Toxicity, Mobility, or Volume of Contaminated Material – Satisfied, as all contaminated material currently at the Site would be removed or treated.
5. Short-term Effectiveness and Impacts – Not effective. Although excavation of shallow and intermediate contamination and ISCO treatment of deep contamination would eliminate all contaminated material at the Site, the length of time and effort required to satisfy UUSCOs eliminates this alternative as an effective short-term remedy. In addition, the risk of potential short-term adverse environmental impacts and human exposures during implementation of the remedy would be high as a result of increased exposure time and construction measures needed to conduct excavation well below the groundwater table. This alternative would also pose a high risk of damage to adjacent structures and utilities, and have a high likelihood of nuisance conditions related to odors, excessive trucking, etc.
6. Implementability – Infeasible. This alternative would require excavations ranging from 20 to 44 feet across the Site which would require significant dewatering and groundwater treatment activities. In addition, significant support of excavation (SOE) construction measures would be needed, as there are buildings and roadways immediately adjacent to the Site to the east and south, the Hudson River immediately west, and active construction activities immediately to the north. In addition, significant underpinning would be required for adjacent buildings and utilities, which requires permission from the adjacent property owners. Lastly, treatment of deep residual coal tar impacts on the southern portion of the Site using ISCO is anticipated to require multiple rounds of injection and take several years to complete, which would significantly delay the completion of the Track 1 remedy and associated occupancy of the proposed buildings (without restrictions).
7. Cost Effectiveness – Not cost-effective, as excavation to depths significantly below the water table across the Site would incur significant costs associated with SOE, dewatering, and soil

disposal/import efforts. Based on the dimensions of the Site, to achieve Track 1 UUSCOs, it is assumed that approximately 180,700 cubic yards of historic fill materials and approximately 23,800 cubic yards of DNAPL contaminated soil would need to be excavated. Using a conversion factor of 1.5, this equals approximately 271,100 tons and 35,700 tons, respectively. In addition, the Site's existing grade is anticipated to be raised to comply with new flood map requirements; therefore, imported backfill materials would be required for a vast majority of remedial excavations, as a majority of building foundation elements and infrastructure will be above existing grade. This equates to a total of approximately 204,500 cubic yards of import materials. Significant support of excavation would be needed across the perimeter of the excavation and significant dewatering and treatment operations would be needed for a vast majority of the excavation. In addition, excavation activities would have to be conducted under a temporary enclosure (e.g., tent) with odor control, which would significantly extend the duration of remediation and associated costs. For treatment of the deep coal tar impacts, a network of ISCO injection wells would be needed in the southern portion of the Site.

In summary, the direct costs associated with Remedial Alternative 2 are estimated to be approximately $81,930,000. No short/long-term operation and maintenance (O&M) costs would be necessary under this alternative; however, the direct costs alone make this alternative not a cost-effective option. The estimated costs for Remedial Alternative 2 are further detailed in Table 2A.

8. Land Use – Satisfied, as this alternative would result in the cleanup of the Site for unrestricted use, which would allow for proposed future redevelopment.
9. Community Acceptance – Partially satisfied and less acceptable. Although this alternative would achieve Site RAOs and allow for unrestricted use, the risk of potential short-term adverse environmental impacts and human exposures during implementation of the remedy would be high as a result of increased exposure time and construction measures needed to conduct excavation well below the groundwater table. In addition, this alternative would pose a high risk of damage to adjacent structures and utilities, and have a high likelihood of nuisance conditions related to odors, excessive trucking, etc.

9.3 Remedial Alternative 3 – Track 4 SCOs – Intermediate Coal Tar Source Material Excavation and Off-site Disposal, and ECs/ICs

1. Protection of Human Health and the Environment – Satisfied, as this alternative would eliminate, through removal of source material and implementation of ECs/ICs, existing or potential human exposures or environmental impacts related to contaminated media at the Site. This alternative would also achieve Site RAOs.
2. Compliance with SCGs – Satisfied, as this alternative would conform to or take into consideration applicable SCGs.
3. Long-term Effectiveness and Permanence – Effective, as existing and potential human exposures and environmental impacts from remaining contamination at the Site would be eliminated in the long-term (e.g., following remedial and redevelopment activities).
4. Reduction of Toxicity, Mobility, or Volume of Contaminated Material – Satisfied, as coal tar source material documented at the Site would be removed. Residual contamination associated with shallow fill materials and deep coal tar impacts would be addressed in the short term via installation of ECs (i.e., a Site cap) and implementation of ICs (i.e., Environmental Easement and SMP) and via natural attenuation over the long term.
5. Short-term Effectiveness and Impacts – Not effective. Although excavation would remove all intermediate coal tar source material at the Site, the length of time and effort that would be

required to conduct an excavation to depths well below the groundwater table eliminates this alternative as an effective short-term remedy. In addition, the risk of potential short-term adverse environmental impacts and human exposures during implementation of the remedy would be high as a result of increased exposure time and construction measures needed to conduct excavation well below the groundwater table. This alternative would also pose a high risk of damage to adjacent structures and utilities, and have a high likelihood of nuisance conditions related to odors, trucking, etc.

6. Implementability – Infeasible. This alternative would require excavations up to a maximum depth of approximately 44 feet bgs across the coal tar source material area, which is several feet below the groundwater table. In addition, significant SOE construction measures would be needed, as there are buildings and roadways immediately adjacent to the Site to the east and south, the Hudson River immediately west, and active construction activities immediately to the north. In addition, significant underpinning would be required for adjacent buildings, which requires permission from the adjacent property owners.
7. Cost Effectiveness – Not cost-effective, as excavation to depths up to approximately 44 feet bgs across the Site would incur significant costs associated with SOE, dewatering, and soil disposal/import efforts. It is assumed that approximately 27,200 cubic yards of historic fill materials and approximately 20,400 cubic yards of coal tar source materials would need to be excavated. Using a conversion factor of 1.5, this equals approximately 40,800 tons and 30,600 tons, respectively. In addition, the Site's existing grade is anticipated to be raised to comply with new flood map requirements; therefore, it is assumed that imported backfill materials would be required for the remedial excavation, as a majority of building foundation elements and infrastructure will be above existing grade. This equates to approximately 47,600 cubic yards of backfill materials. In addition, excavation activities would have to be conducted under a temporary enclosure (e.g., tent) with odor control, which would significantly extend the duration of remediation and associated costs.

   In summary, the direct costs associated with Remedial Alternative 3 are estimated to be approximately $30,130,000, with O&M costs projected over 30 years to be approximately $604,000. The total costs in comparison to other Track 4 alternatives makes this alternative not a cost-effective option. The estimated costs for Remedial Alternative 3 are further detailed in Table 2B.
8. Land Use – Satisfied, as this alternative would result in the cleanup of the Site for restricted residential use, which would allow for proposed future redevelopment.
9. Community Acceptance – Partially satisfied and less acceptable. Although this alternative would achieve Site RAOs, the risk of potential short-term adverse environmental impacts and human exposures during implementation of the remedy would be high as a result of increased exposure time and construction measures needed to conduct excavation well below the groundwater table. In addition, this alternative would pose a high risk of damage to adjacent structures and utilities, and have a high likelihood of nuisance conditions related to odors, trucking, etc.

9.4 Remedial Alternative 4 – Track 4 SCOs – Intermediate Coal Tar Source Material Containment/Extraction, and ECs/ICs

1. Protection of Human Health and the Environment – Satisfied, as this alternative would eliminate, through containment and extraction and implementation of ECs/ICs, existing or potential human exposures or environmental impacts related to contaminated media at the Site. This alternative would also achieve Site RAOs.

2. Compliance with SCGs – Somewhat satisfied; although this alternative would conform to or take into consideration most applicable SCGs, this alternative would not take into consideration prioritizing removal and/or treatment, if feasible, prior to containment. With treatment considered a feasible option (as described in Section 9.5 for Remedial Alternative 5), this alternative would not be in compliance with all applicable SCGs.
3. Long-term Effectiveness and Permanence – Somewhat effective. At a minimum, assuming a containment and extraction system works as intended, the operation of an extraction system is expected to occur over a long duration, and therefore, is only considered somewhat effective in comparison to other alternatives. Also, there is the moderate to high potential that a DNAPL extraction system would require significant modifications and/or maintenance following remedial and redevelopment activities, which could impact the long-term effectiveness and permanence of this alternative. In addition, this alternative would pose long-term O&M challenges (i.e., access limitations) as a majority of the DNAPL extraction system would need to be installed within the footprint of future buildings.
4. Reduction of Toxicity, Mobility, or Volume of Contaminated Material – Somewhat satisfied, as coal tar source material documented at the Site would remain in the short and medium term but contained and removed over time. Residual contamination associated with shallow fill materials and deep coal tar impacts would be addressed in the short term via installation/implementation of ECs (i.e., a Site cap and DNAPL recovery) and implementation of ICs (i.e., Environmental Easement and SMP) and via continued DNAPL recovery and natural attenuation over the long term.
5. Short-term Effectiveness and Impacts – Not effective. Although containment and extraction would remove a majority of contaminated material over time, this alternative would not immediately remove or treat the coal tar source material. Containment and extraction would limit exposure to coal tar source material to workers during construction; however, short term impacts on future building design to incorporate an extraction system, and management of coal tar waste post remediation make this an ineffective alternative in the short term.
6. Implementability – Challenging and may not be feasible. For purposes of this RAA, this system is estimated to include approximately 35,200 vertical square feet of slurry walls installed to the Hudson River sediment confining layer surrounding the southern, western, and northern boundaries of the coal tar source area, with a network of approximately 15 DNAPL extraction wells (one well every approximately 2,500 square feet of coal tar source area) installed within the coal tar source area. Although feasible, this alternative would pose challenges to incorporate such an extraction system into future redevelopment plans as a majority of the DNAPL extraction system would need to be installed within the footprint of future buildings. Also, there is the moderate to high potential that a DNAPL extraction system would require significant modifications and/or maintenance following remedial and redevelopment activities, which would be challenging given the access limitations that would exist once the buildings are constructed/occupied. For example, installation of additional DNAPL extraction wells in areas where significant recoverable DNAPL is present may not be feasible following construction of the future buildings.
7. Cost Effectiveness – Cost effective for direct costs, but ineffective for future O&M costs. Although this alternative would limit the intrusive work required during remediation, O&M of a DNAPL extraction system is expected to incur high short-term and long-term O&M costs. Based on an estimated 35,200 vertical square feet of slurry wall and 15 DNAPL extraction wells installed as part of the DNAPL extraction system, direct costs are estimated to be

approximately $7,910,000, with O&M costs projected over 30 years to be approximately $7,040,000. The estimated costs for Remedial Alternative 4 are further detailed in Table 2C.

8. Land Use – Somewhat satisfied, as this alternative would result in the cleanup of the Site for restricted residential use, which would allow for proposed future redevelopment; however, incorporation of a DNAPL extraction system into a proposed residential development poses significant challenges for future O&M and management of DNAPL waste.
9. Community Acceptance – Partially satisfied and less acceptable. Although this alternative would achieve Site RAOs, it would be invasive in nature to future owners/tenants of the occupied buildings.

9.5 Remedial Alternative 5 – Track 4 SCOs – Intermediate Coal Tar Source Material In-Situ Solidification (ISS), and ECs/ICs

1. Protection of Human Health and the Environment – Satisfied, as this alternative would eliminate, through ISS and implementation of ECs/ICs, existing or potential human exposures or environmental impacts related to contaminated media at the Site. This alternative would also achieve Site RAOs.
2. Compliance with SCGs – Satisfied, as this alternative would conform to or take into consideration applicable SCGs.
3. Long-term Effectiveness and Permanence – Effective, as existing and potential human exposures and environmental impacts from remaining contamination at the Site would be eliminated in the long-term (e.g., following remedial and redevelopment activities), with comparatively minimal post remediation O&M requirements.
4. Reduction of Toxicity, Mobility, or Volume of Contaminated Material – Satisfied, as coal tar source material documented at the Site would be permanently treated via ISS. Residual contamination associated with shallow fill materials and residual deep coal tar impacts would be addressed in the short term via installation of ECs (i.e., a Site cap) and implementation of ICs (i.e., Environmental Easement and SMP) and via natural attenuation over the long term.
5. Short-term Effectiveness and Impacts – Effective. ISS would limit exposure to coal tar source material to workers during remediation/redevelopment, while also treating source material in a relatively short duration and with relatively less impacts to the surrounding community (in comparison to Remedial Alternatives 2 and 3).
6. Implementability – Feasible. ISS has been proven on other similar remediation projects to be a technically/administratively implementable remedial technology that is especially effective for remediation of coal tar source material well below the groundwater table.
7. Cost Effectiveness – Cost-effective. The direct costs associated with this alternative are significantly lower than Remedial Alternatives 2 and 3 (excavation and disposal). Although the direct costs are higher than Remedial Alternative 4 (containment and extraction), post remedy O&M costs projected over 30 years are expected to be significantly lower, making this alternative the most cost-effective option. It is estimated that this alternative would require excavation and off-site disposal of fill materials to the groundwater table across an approximately 36,700 square-foot area, followed by ISS treatment from the groundwater table to an average depth of 35 feet. This equates to approximately 6,800 cubic yards of fill materials (10,200 tons) generated for off-site disposal, followed by approximately 40,800 cubic yards of ISS treatment.

In summary, the direct costs associated with Remedial Alternative 5 are estimated to be approximately $13,890,000, with O&M costs protected over 30 years to be approximately $604,000. The estimated costs for Remedial Alternative 5 are further detailed in Table 2D.

8. Land Use – Satisfied, as this alternative would result in the cleanup of the Site for restricted residential use, which would allow for proposed future redevelopment.
9. Community Acceptance – Satisfied, as this alternative would achieve Site RAOs and also be shorter in duration (in comparison to Remedial Alternatives 2, 3, and 4), therefore, reducing potential human exposures to workers and the surrounding community; and minimize post remedy O&M requirements following construction and occupancy of the future buildings.

9.6 Comparison of Remedial Alternatives

The remedial alternatives evaluated above were ranked from most effective (1) to least effective (5) for each given performance measure as summarized in the table below. Ties are indicated with the same rank.

In-Text Table 9.6
Comparison of Remedial Alternatives

Remedial Alternative	Protection of Human Health and the Environment	Compliance with SCGs	Long-Term Effectiveness and Permanence	Reduction of Toxicity, Mobility, and Volume through Treatment	Short-Term Effectiveness and Impacts	Implementability	Cost Effectiveness	Community Acceptance
Alternative 1 - No Action	5	5	5	5	1	1	1	5
Alternative 2 - Track 1 UUSCOs	1	1	1	1	5	5	5	4
Alternative 3 - Track 4 SCOs – Intermediate Coal Tar Source Material Excavation/ Off-site Disposal	2	1	2	2	4	4	4	2
Alternative 4 - Track 4 SCOs – Intermediate Coal Tar Source Material Containment/ Extraction	4	4	4	4	3	3	3	2
Alternative 5 - Track 4 SCOs – Intermediate Coal Tar Source Material ISS	2	1	2	2	2	2	2	1

10.0 SELECTION OF PREFERRED REMEDY

Remedial Alternative 1 (No Action) was reviewed and found to be unacceptable. This alternative allows the Site to remain in its current condition which would not achieve either threshold criteria (i.e., protection of human health and the environment, and compliance with SCGs). This alternative would also not achieve Site RAOs.

Remedial Alternative 2 (Track 1) and Remedial Alternative 3 (Track 4 coal tar source material excavation and removal) were reviewed and found to be infeasible. Although these alternatives would achieve Site RAOs, these alternatives would be technically/administratively infeasible to implement, extremely expensive, and lack community acceptance.

Remedial Alternative 4 (Track 4 coal tar source material containment and extraction) was reviewed and found to be impracticable. Although this alternative would conform to or take into consideration most applicable SCGs, this alternative would not take into consideration prioritizing removal and/or treatment over containment and recovery, if feasible, as required by DER-10, and treatment via ISS (Remedial Alternative 5) was determined to be a feasible alternative. In addition, although the direct costs associated with this alternative are relatively low, this alternative would pose installation and long-term O&M challenges as a majority of the DNAPL extraction system would need to be installed within the footprint of occupied portions of future buildings on the ground floor. This alternative would also lack community acceptance as it would be invasive in nature to future owners/tenants of the occupied buildings.

Remedial Alternative 5 was reviewed and determined to be capable of achieving the RAOs while also being the most technically/administratively implementable and cost-effective option. After careful consideration with respect to the evaluation criteria listed, Remedial Alternative 5 is determined to be the preferred remedy.

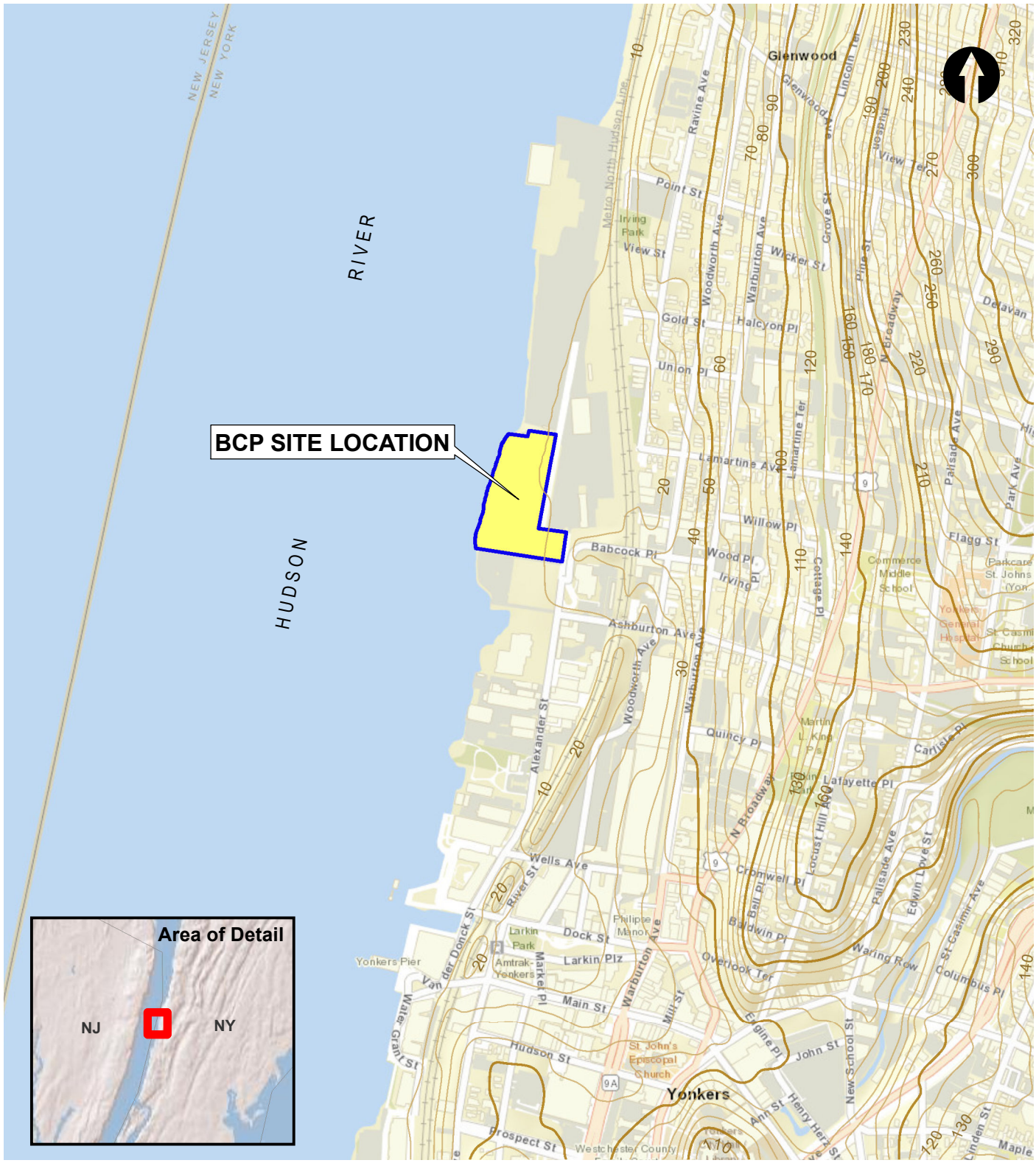
10.1 Preferred Alternative – Remedial Alternative 5

Remedial Alternative 5 includes ISS of the intermediate coal tar source material; installation of ECs including groundwater/DNAPL monitoring wells, vapor barrier, SSDS, and a Site cap; and implementation of ICs including an EE, groundwater use restrictions, and a SMP.

Under this remedial alternative, coal tar source material identified above the Intermediate Confining Layer would be treated at the Site via ISS. An approximately 36,700 square-foot area would be targeted for ISS to a maximum depth of approximately 44 feet bgs. Prior to ISS, shallow fill materials overlying the 36,700 square-foot area would be excavated to the groundwater table (estimated as approximately 5 feet bgs) to create a bench/containment and to allow for "swelling" during ISS treatment. Following removal of shallow fill materials, it is assumed a majority of the intermediate coal tar source material plume area would be addressed via excavator bucket mixing techniques, with deeper portions completed via auger mixing. Pre-clearing of subsurface obstructions and debris would also be conducted as part of ISS treatment activities.

This alternative is the basis for design under the RAWP.

FIGURES



Service Layer Credits: ESRI Worlwide Street Map data; 2019.

Map Source - BCP Site Boundary from Ward Carpenter Engineers, Inc. "Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

0 800 1,600

SCALE IN FEET

AKRF

440 Park Avenue South, New York, NY 10016

FORMER EXCELSIOR BAG

Yonkers, New York

BCP SITE LOCATION

DATE **8/4/2023**

PROJECT NO. **200131**

FIGURE **1**

LEGEND

- BCP SITE BOUNDARY
- LOT NAME — LOT BOUNDARY AND NAME
- PROPOSED LOCATION OF FUTURE BUILDING
- PHASE I CONSTRUCTION AREA
- SHALLOW SOIL BORING LOCATION
- INTERMEDIATE SOIL BORING LOCATION
- DEEP SOIL BORING LOCATION
- SOIL VAPOR POOINT LOCATION
- GROUNDWATER SAMPLE LOCATION
- SURFACE SOIL SAMPLE LOCATION
- AMBIENT AIR SAMPLE LOCATION
- DNAPL DELINEATION SOIL BORING LOCATION
- CLOSED IN-PLACE USTS (ADDRESSED AS PART OF IRM ACTIVITIES)

NOTE: DUE TO SCALING CONSTRAINTS, SOME SAMPLE LOCATIONS SHOWN ON FIGURE 2 WERE SLIGHTLY REPOSITIONED TO AVOID OVERLAPPING SYMBOLS. IN ADDITION, EACH MONITORING WELL WAS INSTALLED WITHIN THE CO-LOCATED SOIL BORING. REFER TO APPENDIX F OF THE RIR FOR SOIL BORING, GROUNDWATER MONITORING WELL, AND SOIL VAPOR POINT SURVEY DATA.

DNAPL - Dense Non-Aqueous Phase Liquid
UST - Underground Storage Tank
IRM - Interim Remedial Measure

Aerial Source:
2018 New York State ITS GIS Orthoimagery

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc.
"Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

0 50 100 200
SCALE IN FEET

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FORMER EXCELSIOR BAG
Yonkers, New York

BCP SITE AND RI/SRI SAMPLE LOCATION PLAN

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
2

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- 1.28 MONITORING WELL LOCATION AND GROUNDWATER ELEVATION
- LOW TIDE GROUNDWATER ELEVATION CONTOUR
- INFERRED GROUNDWATER FLOW DIRECTION

Aerial Source:
2018 New York State ITS GIS Orthoimagery

Map Source - BCP Site Boundary from Ward Carpenter Engineers, Inc. "Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Groundwater measurements recorded by AKRF on April 19, 2021.

Groundwater elevations calculated using elevation survey data detailed on PS&S Sample Location Map, dated June 2, 2021.

Elevations are in feet above NAVD88.

0 50 100 200

SCALE IN FEET

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FORMER EXCELSIOR BAG
Yonkers, New York

GROUNDWATER ELEVATION CONTOUR MAP (LOW TIDE)

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
3A

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- 0.86 MONITORING WELL LOCATION AND GROUNDWATER ELEVATION
- HIGH TIDE GROUNDWATER ELEVATION CONTOUR
- INFERRED GROUNDWATER FLOW DIRECTION

Aerial Source:
2018 New York State ITS GIS Orthoimagery

Map Source - BCP Site Boundary from Ward Carpenter Engineers, Inc. "Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Groundwater measurements recorded by AKRF on April 19, 2021.

Groundwater elevations calculated using elevation survey data detailed on PS&S Sample Location Map, dated June 2, 2021.

Elevations are in feet above NAVD88.

0 50 100 200

SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

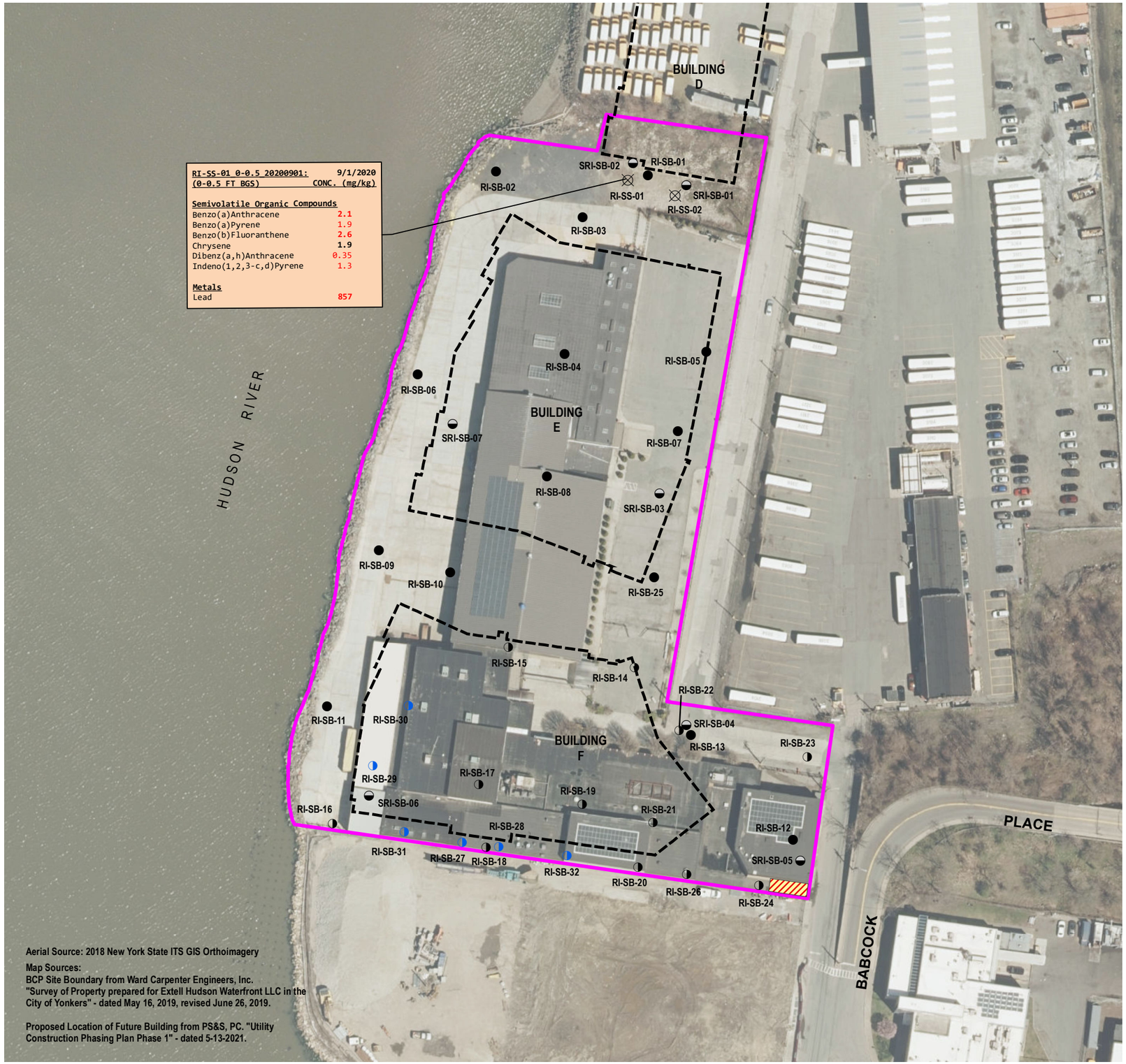
FORMER EXCELSIOR BAG
Yonkers, New York

GROUNDWATER ELEVATION CONTOUR MAP (HIGH TIDE)

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
3B



Aerial Source: 2018 New York State ITS GIS Orthoimagery

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc. "Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- SHALLOW SOIL BORING LOCATION
- INTERMEDIATE SOIL BORING LOCATION
- DEEP SOIL BORING LOCATION
- DNAPL DELINEATION SOIL BORING LOCATION
- SURFACE SOIL SAMPLE LOCATION
- CLOSED IN-PLACE USTS (ADDRESSED AS PART OF IRM ACTIVITIES)

	Part 375 Protection of Groundwater mg/kg	PART 375 RESTRICTED RESIDENTIAL mg/kg
Semivolatile Organic Compounds		
Benzo(a)Anthracene	1	1
Benzo(a)Pyrene	22	1
Benzo(b)Fluoranthene	1.7	1
Chrysene	1	3.9
Dibenz(a,h)Anthracene	1000	0.33
Indeno(1,2,3-c,d)Pyrene	8.2	0.5
Metals		
Lead	450	400

Part 375 Soil Cleanup Objectives (SCOs): SCOs listed in the New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations (6 NYCRR Part 375).

Exceedances of NYSDEC Protection of Groundwater Soil Cleanup Objectives (PGWSCOs) are presented in bold font.
Exceedances of NYSDEC Restricted Residential Soil Cleanup Objectives (RRSCOs) are presented in red.
Exceedances of NYSDEC PGWSCOs and NYSDEC RRSCOs are presented in bold red.

Note:
1. Surface soil samples (RI-SS-01 and RI-SS-02) were collected in the northern open vegetated area from the 0 to 6-inch below ground surface interval to assess surface soil conditions.

DNAPL: Dense nonaqueous phase liquid
IRM - Interim Remedial Measure
VOC: Volatile organic compound
SVOC: Semi volaile organic compound
UST - Underground Storage Tank
mg/kg:milligrams per kilogram = parts per million (ppm)

0 50 100 200
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

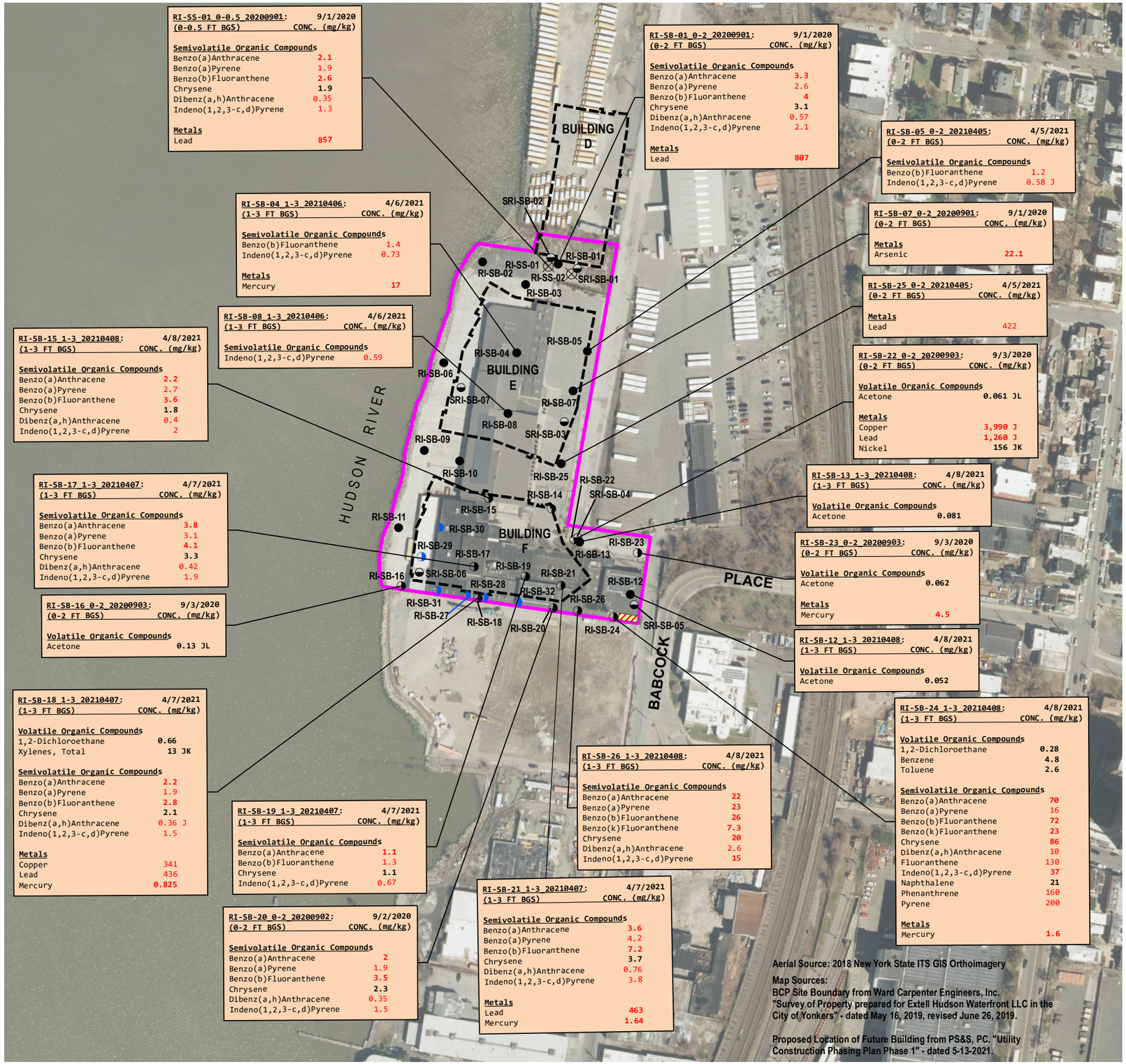
FORMER EXCELSIOR BAG
Yonkers, New York

RI SURFACE SOIL SAMPLE CONCENTRATIONS ABOVE NYSDEC RRSCOs AND PGWSCOs

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
4A



Aerial Source: 2018 New York State ITS GIS Orthoimagery

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc. "Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- SHALLOW SOIL BORING LOCATION
- INTERMEDIATE SOIL BORING LOCATION
- DEEP SOIL BORING LOCATION
- DNAPL DELINEATION SOIL BORING LOCATION
- SURFACE SOIL SAMPLE LOCATION
- CLOSED IN-PLACE USTS (ADDRESSED AS PART OF IRM ACTIVITIES)

	Part 375 Protection of Groundwater mg/kg	PART 375 RESTRICTED RESIDENTIAL mg/kg
Volatile Organic Compounds		
1,2-Dichloroethane	0.02	3.1
Acetone	0.05	100
Benzene	0.06	4.8
Naphthalene	12	100
Toluene	0.7	100
Xylenes, Total	1.6	100
Semivolatile Organic Compounds		
Benzo(a)Anthracene	1	1
Benzo(a)Pyrene	22	1
Benzo(b)Fluoranthene	1.7	1
Benzo(k)Fluoranthene	1.7	3.9
Chrysene	1	3.9
Dibenz(a,h)Anthracene	1000	0.33
Fluoranthene	1000	100
Indeno(1,2,3-c,d)Pyrene	8.2	0.5
Phenanthrene	1000	100
Pyrene	1000	100
Metals		
Arsenic	16	16
Copper	1720	270
Lead	450	400
Mercury	0.73	0.81
Nickel	130	310

Part 375 Soil Cleanup Objectives (SCOs): SCOs listed in the New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations (6 NYCRR Part 375).

Exceedances of NYSDEC Protection of Groundwater Soil Cleanup Objectives (PGWSCOs) are presented in bold font.
Exceedances of NYSDEC Restricted Residential Soil Cleanup Objectives (RRSCOs) are presented in red.
Exceedances of NYSDEC PGWSCOs and NYSDEC RRSCOs are presented in bold red.

Notes:
1. The 1st fill material sample was collected from each shallow and intermediate soil boring (RI-SB-01 through RI-SB-26) to assess shallow fill materials from the 2-foot interval directly below the observed paved surface. Only one shallow fill material sample was collected from RI-SB-03 due to the presence of a 5-foot thick interval of concrete encountered from 0 to 5 feet below ground surface. RI-SB-03 shallow fill material sample was collected from the 2-foot interval directly above the groundwater interface (see Figure 4C).

2. No shallow fill material soil samples were collected from DNAPL delineation soil borings (RI-SB-27 through RI-SB-32) which were advanced to delineate the presence of observed DNAPL contamination (i.e., coal tar) above the Hudson River sediment intermediate confining layer .

3. No shallow fill material soil samples were collected from deep soil borings (SRI-SB-01 through SRI-SB-07) with the exception of SRI-SB-07 (further detailed in the RIR).

DNAPL: Dense nonaqueous phase liquid
IRM - Interim Remedial Measure
VOC: Volatile organic compound
SVOC: Semi volaile organic compound
UST - Underground Storage Ta
mg/kg:milligrams per kilogram = parts per million (ppm)
J: The concentration given is an estimated value.
K: Reported concentration value is proportional to dilution factor and may be exaggerated.
L: Sample result is estimated and biased low.

0 100 200 400
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

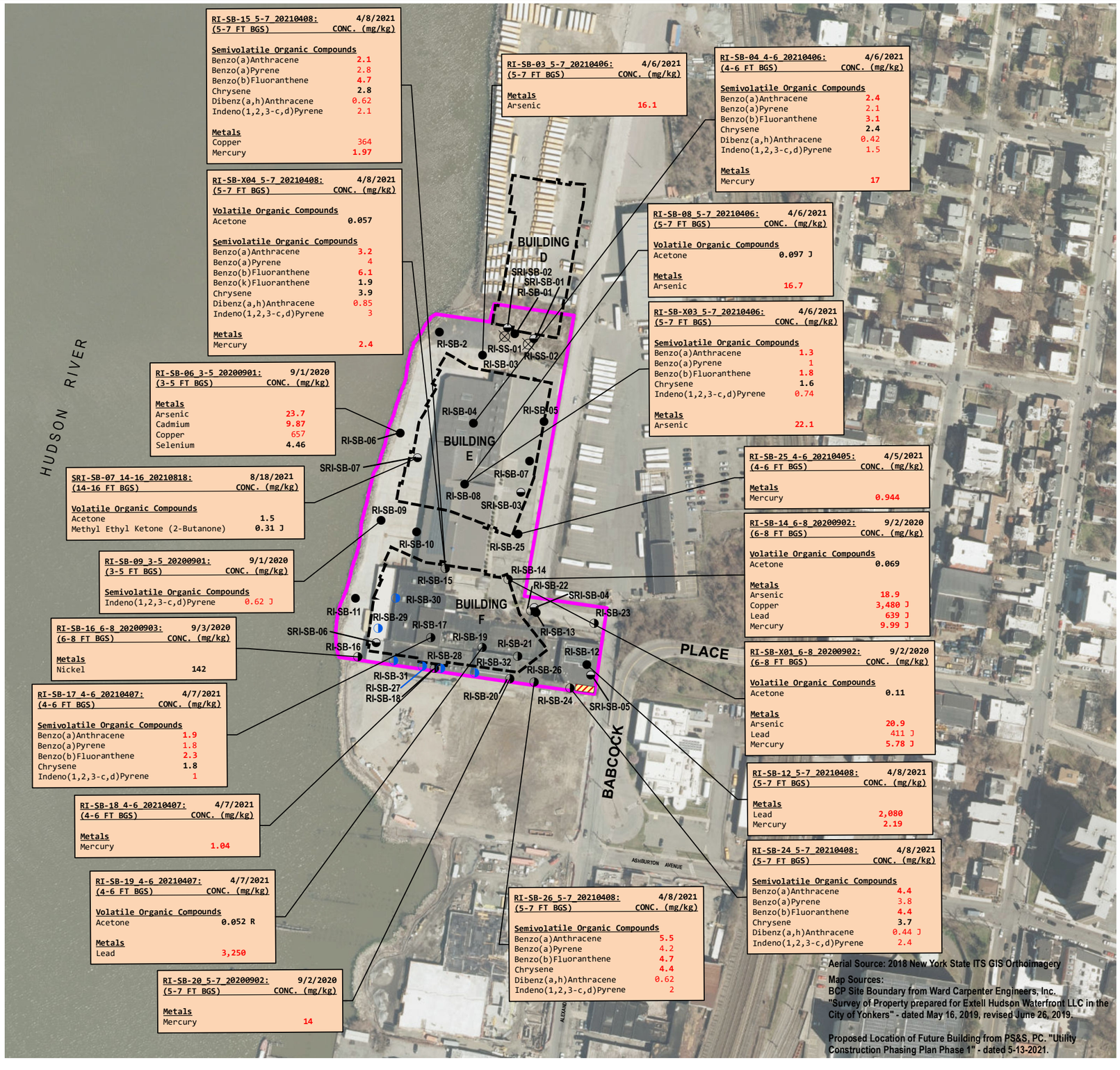
FORMER EXCELSIOR BAG
Yonkers, New York

RI 1ST FILL MATERIAL SAMPLE CONCENTRATIONS ABOVE NYSDEC RRSCOs AND PGWSCOs

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
4B



RI-SB-15 5-7 20210408: (5-7 FT BGS) — 4/8/2021 CONC. (mg/kg)

Semivolatile Organic Compounds	
Benzo(a)Anthracene	2.1
Benzo(a)Pyrene	2.8
Benzo(b)Fluoranthene	4.7
Chrysene	2.8
Dibenz(a,h)Anthracene	0.62
Indeno(1,2,3-c,d)Pyrene	2.1
Metals	
Copper	364
Mercury	1.97

RI-SB-X04 5-7 20210408: (5-7 FT BGS) — 4/8/2021 CONC. (mg/kg)

Volatile Organic Compounds	
Acetone	0.057
Semivolatile Organic Compounds	
Benzo(a)Anthracene	3.2
Benzo(a)Pyrene	4
Benzo(b)Fluoranthene	6.1
Benzo(k)Fluoranthene	1.9
Chrysene	3.9
Dibenz(a,h)Anthracene	0.85
Indeno(1,2,3-c,d)Pyrene	3
Metals	
Mercury	2.4

RI-SB-06 3-5 20200901: (3-5 FT BGS) — 9/1/2020 CONC. (mg/kg)

Metals	
Arsenic	23.7
Cadmium	9.87
Copper	657
Selenium	4.46

SRI-SB-07 14-16 20210818: (14-16 FT BGS) — 8/18/2021 CONC. (mg/kg)

Volatile Organic Compounds	
Acetone	1.5
Methyl Ethyl Ketone (2-Butanone)	0.31 J

RI-SB-09 3-5 20200901: (3-5 FT BGS) — 9/1/2020 CONC. (mg/kg)

Semivolatile Organic Compounds	
Indeno(1,2,3-c,d)Pyrene	0.62 J

RI-SB-16 6-8 20200903: (6-8 FT BGS) — 9/3/2020 CONC. (mg/kg)

Metals	
Nickel	142

RI-SB-17 4-6 20210407: (4-6 FT BGS) — 4/7/2021 CONC. (mg/kg)

Semivolatile Organic Compounds	
Benzo(a)Anthracene	1.9
Benzo(a)Pyrene	1.8
Benzo(b)Fluoranthene	2.3
Chrysene	1.8
Indeno(1,2,3-c,d)Pyrene	1

RI-SB-18 4-6 20210407: (4-6 FT BGS) — 4/7/2021 CONC. (mg/kg)

Metals	
Mercury	1.04

RI-SB-19 4-6 20210407: (4-6 FT BGS) — 4/7/2021 CONC. (mg/kg)

Volatile Organic Compounds	
Acetone	0.052 R
Metals	
Lead	3,250

RI-SB-20 5-7 20200902: (5-7 FT BGS) — 9/2/2020 CONC. (mg/kg)

Metals	
Mercury	14

RI-SB-03 5-7 20210406: (5-7 FT BGS) — 4/6/2021 CONC. (mg/kg)

Metals	
Arsenic	16.1

RI-SB-04 4-6 20210406: (4-6 FT BGS) — 4/6/2021 CONC. (mg/kg)

Semivolatile Organic Compounds	
Benzo(a)Anthracene	2.4
Benzo(a)Pyrene	2.1
Benzo(b)Fluoranthene	3.1
Chrysene	2.4
Dibenz(a,h)Anthracene	0.42
Indeno(1,2,3-c,d)Pyrene	1.5
Metals	
Mercury	17

RI-SB-08 5-7 20210406: (5-7 FT BGS) — 4/6/2021 CONC. (mg/kg)

Volatile Organic Compounds	
Acetone	0.097 J
Metals	
Arsenic	16.7

RI-SB-X03 5-7 20210406: (5-7 FT BGS) — 4/6/2021 CONC. (mg/kg)

Semivolatile Organic Compounds	
Benzo(a)Anthracene	1.3
Benzo(a)Pyrene	1
Benzo(b)Fluoranthene	1.8
Chrysene	1.6
Indeno(1,2,3-c,d)Pyrene	0.74
Metals	
Arsenic	22.1

RI-SB-25 4-6 20210405: (4-6 FT BGS) — 4/5/2021 CONC. (mg/kg)

Metals	
Mercury	0.944

RI-SB-14 6-8 20200902: (6-8 FT BGS) — 9/2/2020 CONC. (mg/kg)

Volatile Organic Compounds	
Acetone	0.069
Metals	
Arsenic	18.9
Copper	3,480 J
Lead	639 J
Mercury	9.99 J

RI-SB-X01 6-8 20200902: (6-8 FT BGS) — 9/2/2020 CONC. (mg/kg)

Volatile Organic Compounds	
Acetone	0.11
Metals	
Arsenic	20.9
Lead	411 J
Mercury	5.78 J

RI-SB-12 5-7 20210408: (5-7 FT BGS) — 4/8/2021 CONC. (mg/kg)

Metals	
Lead	2,080
Mercury	2.19

RI-SB-24 5-7 20210408: (5-7 FT BGS) — 4/8/2021 CONC. (mg/kg)

Semivolatile Organic Compounds	
Benzo(a)Anthracene	4.4
Benzo(a)Pyrene	3.8
Benzo(b)Fluoranthene	4.4
Chrysene	3.7
Dibenz(a,h)Anthracene	0.44 J
Indeno(1,2,3-c,d)Pyrene	2.4

RI-SB-26 5-7 20210408: (5-7 FT BGS) — 4/8/2021 CONC. (mg/kg)

Semivolatile Organic Compounds	
Benzo(a)Anthracene	5.5
Benzo(a)Pyrene	4.2
Benzo(b)Fluoranthene	4.7
Chrysene	4.4
Dibenz(a,h)Anthracene	0.62
Indeno(1,2,3-c,d)Pyrene	2

Aerial Source: 2018 New York State ITS GIS Orthoimagery

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc. "Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- SHALLOW SOIL BORING LOCATION
- INTERMEDIATE SOIL BORING LOCATION
- DEEP SOIL BORING LOCATION
- DNAPL DELINEATION SOIL BORING LOCATION
- SURFACE SOIL SAMPLE LOCATION
- CLOSED IN-PLACE USTS (ADDRESSED AS PART OF IRM ACTIVITIES)

	Part 375 Protection of Groundwater mg/kg	PART 375 RESTRICTED RESIDENTIAL mg/kg
Volatile Organic Compounds		
Methyl Ethyl Ketone (2-Butanone)	0.12	100
Acetone	0.05	100
Semivolatile Organic Compounds		
Benzo(a)Anthracene	1	1
Benzo(a)Pyrene	22	1
Benzo(b)Fluoranthene	1.7	1
Benzo(k)Fluoranthene	1.7	3.9
Chrysene	1	3.9
Dibenz(a,h)Anthracene	1000	0.33
Indeno(1,2,3-c,d)Pyrene	8.2	0.5
Metals		
Arsenic	16	16
Cadmium	7.5	4.3
Copper	1720	270
Lead	450	400
Mercury	0.73	0.81
Nickel	130	310
Selenium	4	180

Part 375 Soil Cleanup Objectives (SCOs): SCOs listed in the New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations (6 NYCRR Part 375).

Exceedances of NYSDEC Protection of Groundwater Soil Cleanup Objectives (PGWSCOs) are presented in bold font.
Exceedances of NYSDEC Restricted Residential Soil Cleanup Objectives (RRSCOs) are presented in red.
Exceedances of NYSDEC PGWSCOs and NYSDEC RRSCOs are presented in bold red.

Notes:
1. The 2nd fill material sample was collected from each shallow and intermediate soil boring (RI-SB-01 through RI-SB-26) to assess shallow fill materials from the interval displaying the highest PID reading / visual evidence of contamination, or in absence of visual evidence of contamination, from the 2-foot interval directly above the groundwater interface.

2. No shallow fill material soil samples were collected from DNAPL delineation soil borings (RI-SB-27 through RI-SB-32) which were advanced to delineate the presence of observed DNAPL contamination (i.e., coal tar) above the Hudson River sediment intermediate confining layer.

3. No shallow fill material soil samples were collected from deep soil borings (SRI-SB-01 through SRI-SB-07) with the exception of SRI-SB-07 (further detailed in the RIR).

DNAPL: Dense nonaqueous phase liquid
IRM - Interim Remedial Measure
VOC: Volatile organic compound
SVOC: Semi volaile organic compound
UST - Underground Storage Tank
mg/kg:milligrams per kilogram = parts per million (ppm)
J: The concentration given is an estimated value.

0 100 200 400
SCALE IN FEET

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440 Park Avenue South, New York, NY 10016

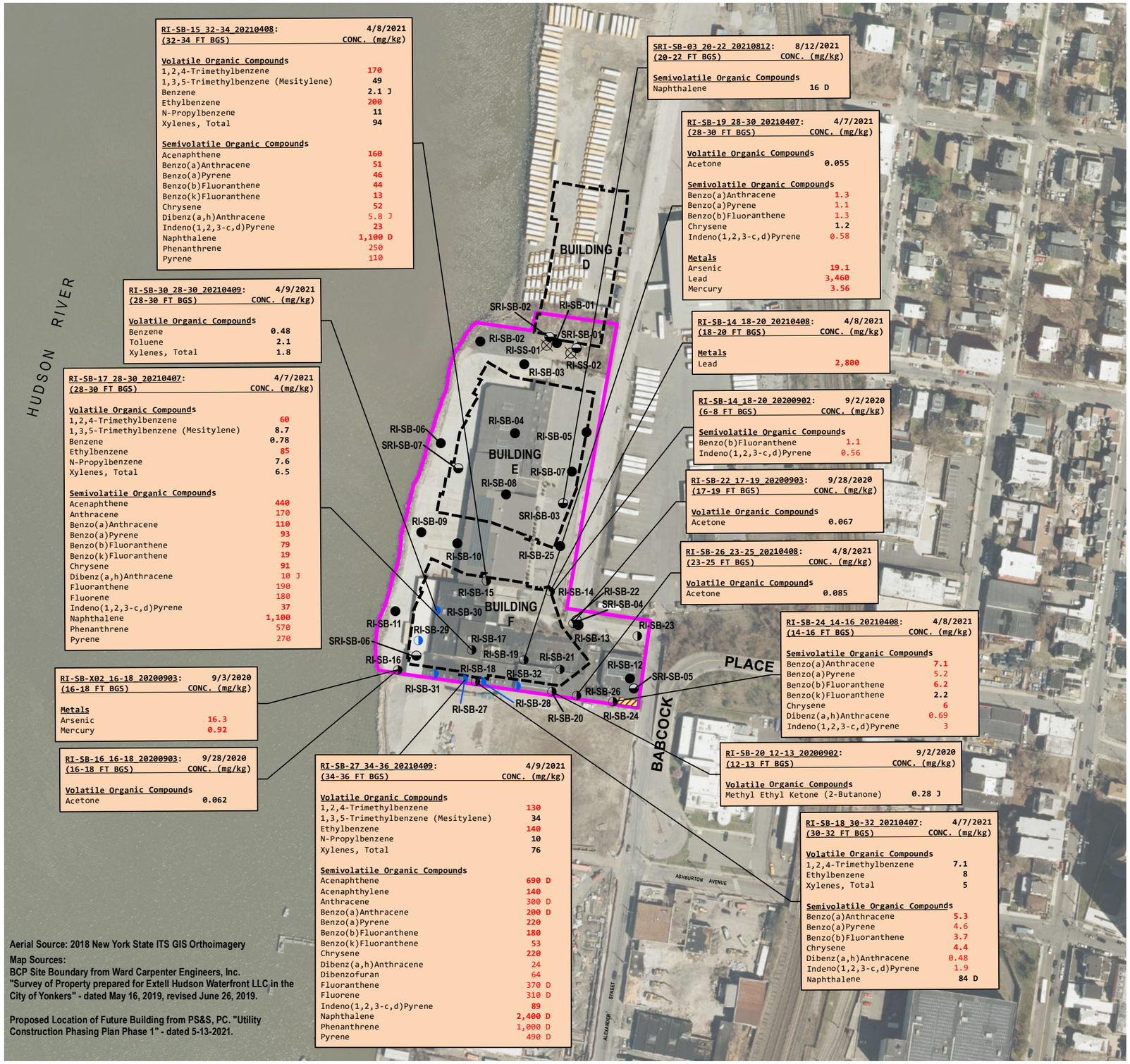
FORMER EXCELSIOR BAG
Yonkers, New York

RI 2ND FILL MATERIAL SAMPLE CONCENTRATIONS ABOVE NYSDEC RRSCOs AND PGWSCOs

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
4C



RI-SB-15_32-34_20210408: (32-34 FT BGS) — 4/8/2021 CONC. (mg/kg)

Volatile Organic Compounds	
1,2,4-Trimethylbenzene	170
1,3,5-Trimethylbenzene (Mesitylene)	49
Benzene	2.1 J
Ethylbenzene	200
N-Propylbenzene	11
Xylenes, Total	94
Semivolatile Organic Compounds	
Acenaphthene	160
Benzo(a)Anthracene	51
Benzo(a)Pyrene	46
Benzo(b)Fluoranthene	44
Benzo(k)Fluoranthene	13
Chrysene	52
Dibenz(a,h)Anthracene	5.8 J
Indeno(1,2,3-c,d)Pyrene	23
Naphthalene	1,100 D
Phenanthrene	250
Pyrene	110

RI-SB-30_28-30_20210409: (28-30 FT BGS) — 4/9/2021 CONC. (mg/kg)

Volatile Organic Compounds	
Benzene	0.48
Toluene	2.1
Xylenes, Total	1.8

RI-SB-17_28-30_20210407: (28-30 FT BGS) — 4/7/2021 CONC. (mg/kg)

Volatile Organic Compounds	
1,2,4-Trimethylbenzene	60
1,3,5-Trimethylbenzene (Mesitylene)	8.7
Benzene	0.78
Ethylbenzene	85
N-Propylbenzene	7.6
Xylenes, Total	6.5
Semivolatile Organic Compounds	
Acenaphthene	440
Anthracene	170
Benzo(a)Anthracene	110
Benzo(a)Pyrene	93
Benzo(b)Fluoranthene	79
Benzo(k)Fluoranthene	19
Chrysene	91
Dibenz(a,h)Anthracene	10 J
Fluoranthene	190
Fluorene	180
Indeno(1,2,3-c,d)Pyrene	37
Naphthalene	1,100
Phenanthrene	570
Pyrene	270

RI-SB-X02_16-18_20200903: (16-18 FT BGS) — 9/3/2020 CONC. (mg/kg)

Metals	
Arsenic	16.3
Mercury	0.92

RI-SB-16_16-18_20200903: (16-18 FT BGS) — 9/28/2020 CONC. (mg/kg)

Volatile Organic Compounds	
Acetone	0.062

RI-SB-27_34-36_20210409: (34-36 FT BGS) — 4/9/2021 CONC. (mg/kg)

Volatile Organic Compounds	
1,2,4-Trimethylbenzene	130
1,3,5-Trimethylbenzene (Mesitylene)	34
Ethylbenzene	140
N-Propylbenzene	10
Xylenes, Total	76
Semivolatile Organic Compounds	
Acenaphthene	690 D
Acenaphthylene	140
Anthracene	300 D
Benzo(a)Anthracene	200 D
Benzo(a)Pyrene	220
Benzo(b)Fluoranthene	180
Benzo(k)Fluoranthene	53
Chrysene	220
Dibenz(a,h)Anthracene	24
Dibenzofuran	64
Fluoranthene	370 D
Fluorene	310 D
Indeno(1,2,3-c,d)Pyrene	89
Naphthalene	2,400 D
Phenanthrene	1,000 D
Pyrene	490 D

SRI-SB-03_20-22_20210812: (20-22 FT BGS) — 8/12/2021 CONC. (mg/kg)

Semivolatile Organic Compounds	
Naphthalene	16 D

RI-SB-19_28-30_20210407: (28-30 FT BGS) — 4/7/2021 CONC. (mg/kg)

Volatile Organic Compounds	
Acetone	0.055
Semivolatile Organic Compounds	
Benzo(a)Anthracene	1.3
Benzo(a)Pyrene	1.1
Benzo(b)Fluoranthene	1.3
Chrysene	1.2
Indeno(1,2,3-c,d)Pyrene	0.58
Metals	
Arsenic	19.1
Lead	3,460
Mercury	3.56

RI-SB-14_18-20_20210408: (18-20 FT BGS) — 4/8/2021 CONC. (mg/kg)

Metals	
Lead	2,800

RI-SB-14_18-20_20200902: (6-8 FT BGS) — 9/2/2020 CONC. (mg/kg)

Semivolatile Organic Compounds	
Benzo(b)Fluoranthene	1.1
Indeno(1,2,3-c,d)Pyrene	0.56

RI-SB-22_17-19_20200903: (17-19 FT BGS) — 9/28/2020 CONC. (mg/kg)

Volatile Organic Compounds	
Acetone	0.067

RI-SB-26_23-25_20210408: (23-25 FT BGS) — 4/8/2021 CONC. (mg/kg)

Volatile Organic Compounds	
Acetone	0.085

RI-SB-24_14-16_20210408: (14-16 FT BGS) — 4/8/2021 CONC. (mg/kg)

Semivolatile Organic Compounds	
Benzo(a)Anthracene	7.1
Benzo(a)Pyrene	5.2
Benzo(b)Fluoranthene	6.2
Benzo(k)Fluoranthene	2.2
Chrysene	6
Dibenz(a,h)Anthracene	0.69
Indeno(1,2,3-c,d)Pyrene	3

RI-SB-20_12-13_20200902: (12-13 FT BGS) — 9/2/2020 CONC. (mg/kg)

Volatile Organic Compounds	
Methyl Ethyl Ketone (2-Butanone)	0.28 J

RI-SB-18_30-32_20210407: (30-32 FT BGS) — 4/7/2021 CONC. (mg/kg)

Volatile Organic Compounds	
1,2,4-Trimethylbenzene	7.1
Ethylbenzene	8
Xylenes, Total	5
Semivolatile Organic Compounds	
Benzo(a)Anthracene	5.3
Benzo(a)Pyrene	4.6
Benzo(b)Fluoranthene	3.7
Chrysene	4.4
Dibenz(a,h)Anthracene	0.48
Indeno(1,2,3-c,d)Pyrene	1.9
Naphthalene	84 D

Aerial Source: 2018 New York State ITS GIS Orthoimagery

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc.
"Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- SHALLOW SOIL BORING LOCATION
- INTERMEDIATE SOIL BORING LOCATION
- DEEP BORING LOCATION
- DNAPL DELINEATION SOIL BORING LOCATION
- SURFACE SOIL SAMPLE LOCATION
- CLOSED IN-PLACE USTS (ADDRESSED AS PART OF IRM ACTIVITIES)

	Part 375 Protection of Groundwater mg/kg	PART 375 RESTRICTED RESIDENTIAL mg/kg
Volatile Organic Compounds		
1,2,4-Trimethylbenzene	3.6	52
1,3,5-Trimethylbenzene (Mesitylene)	8.4	52
Acetone	0.05	100
Benzene	0.06	4.8
Ethylbenzene	1	41
Methyl Ethyl Ketone (2-Butanone)	0.12	100
Naphthalene	12	100
N-Propylbenzene	3.9	100
Xylenes, Total	1.6	100
Semivolatile Organic Compounds		
Acenaphthene	98	100
Anthracene	1000	100
Benzo(a)Anthracene	1	1
Benzo(a)Pyrene	22	1
Benzo(b)Fluoranthene	1.7	1
Benzo(k)Fluoranthene	1.7	3.9
Chrysene	1	3.9
Dibenz(a,h)Anthracene	1000	0.33
Fluoranthene	1000	100
Fluorene	386	100
Indeno(1,2,3-c,d)Pyrene	8.2	0.5
Phenanthrene	1000	100
Pyrene	1000	100
Metals		
Arsenic	16	16
Lead	450	400
Mercury	0.73	0.81

Part 375 Soil Cleanup Objectives (SCOs): SCOs listed in the New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations (6 NYCRR Part 375).

Exceedances of NYSDEC Protection of Groundwater Soil Cleanup Objectives (PGWSCOs) are presented in bold font.
Exceedances of NYSDEC Restricted Residential Soil Cleanup Objectives (RRSCOs) are presented in red.
Exceedances of NYSDEC PGWSCOs and NYSDEC RRSCOs are presented in bold red.

Notes:
1. Intermediate soil samples were collected from each intermediate soil boring (RI-SB-14 through RI-SB-24, and RI-SB-26) and DNAPL delineation soil borings RI-SB-27, RI-SB-29, and RI-SB-30 at the interval directly above the Hudson River sediment confining layer to assess the presence of DNAPL contamination (i.e., coal tar). Samples collected from DNAPL delineation soil borings were analyzed for VOCs and SVOCs only.

2. Intermediate soil samples were not collected from DNAPL delineation borings RI-SB-28, RI-SB-31, and RI-SB-32 due to no recovery at the interval directly above the Hudson River sediment confining layer.

3. Intermediate soil samples were not collected from shallow soil borings (RI-SB-01 through RI-SB-13 and RI-SB-25) which were terminated 15 feet below ground surface, or 5 feet below the groundwater interface (whichever was encountered first).

4. Intermediate soil samples were not collected from deep soil borings (SRI-SB-01 through SRI-SB-07) with the exception of SRI-SB-03 (further detailed in the RIR).

DNAPL: Dense nonaqueous phase liquid
IRM - Interim Remedial Measur
VOC: Volatile organic compound
SVOC: Semi volaile organic compound
UST - Underground Storage Tank
mg/kg:milligrams per kilogram = parts per million (ppm)
J: The concentration given is an estimated value.

0 100 200 400
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

FORMER EXCELSIOR BAG
Yonkers, New York

RI/SRI INTERMEDIATE SOIL SAMPLE CONCENTRATIONS ABOVE NYSDEC RRSCOs AND PGWSCOs

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
4D

SRI-SB-06_143-145_20210817: 8/17/2021
(143-145 FT BGS) CONC. (mg/kg)

Volatile Organic Compounds	
Benzene	0.83
Toluene	1

SRI-SB-05_98-100_20210816: 8/16/2021
(98-100 FT BGS) CONC. (mg/kg)

Volatile Organic Compounds	
1,2,4-Trimethylbenzene	18 JL
Benzene	4.8 JL
Ethylbenzene	8.9 JL
Toluene	29 JL
Xylenes, Total	37 JL
Semivolatile Organic Compounds	
Benzo(a)Anthracene	34
Benzo(a)Pyrene	26
Benzo(b)Fluoranthene	19
Benzo(k)Fluoranthene	7.9
Chrysene	32
Dibenz(a,h)Anthracene	2.8
Indeno(1,2,3-c,d)Pyrene	9.2
Naphthalene	830 D
Phenanthrene	190 D

SRI-SB-X01_98-100_20210816: 8/16/2021
(98-100 FT BGS) CONC. (mg/kg)

Volatile Organic Compounds	
1,2,4-Trimethylbenzene	41 J
1,3,5-Trimethylbenzene (Mesitylene)	11 J
Benzene	12 J
Ethylbenzene	21 J
Toluene	70 J
Xylenes, Total	86 J
Semivolatile Organic Compounds	
Benzo(a)Anthracene	24
Benzo(a)Pyrene	19
Benzo(b)Fluoranthene	14
Benzo(k)Fluoranthene	5.3
Chrysene	22
Dibenz(a,h)Anthracene	1.9 J
Indeno(1,2,3-c,d)Pyrene	6.8
Naphthalene	480 D
Phenanthrene	140

Aerial Source: 2018 New York State ITS GIS Orthoimagery

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc. "Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- SHALLOW SOIL BORING LOCATION
- INTERMEDIATE SOIL BORING LOCATION
- DEEP SOIL BORING LOCATION
- DNAPL DELINEATION SOIL BORING LOCATION
- SURFACE SOIL SAMPLE LOCATION
- CLOSED IN-PLACE USTS (ADDRESSED AS PART OF IRM ACTIVITIES)

	Part 375 Protection of Groundwater mg/kg	PART 375 RESTRICTED RESIDENTIAL mg/kg
Volatile Organic Compounds		
1,2,4-Trimethylbenzene	3.6	52
1,3,5-Trimethylbenzene (Mesitylene)	8.4	52
Acetone	0.05	100
Benzene	0.06	4.8
Ethylbenzene	1	41
Methyl Ethyl Ketone (2-Butanone)	0.12	100
Toluene	0.7	100
Xylenes, Total	1.6	100
Semivolatile Organic Compounds		
Benzo(a)Anthracene	1	1
Benzo(a)Pyrene	22	1
Benzo(b)Fluoranthene	1.7	1
Benzo(k)Fluoranthene	1.7	3.9
Chrysene	1	3.9
Dibenz(a,h)Anthracene	1000	0.33
Indeno(1,2,3-c,d)Pyrene	8.2	0.5
Naphthalene	12	100
Phenanthrene	1000	100

Part 375 Soil Cleanup Objectives (SCOs): SCOs listed in the New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations (6 NYCRR Part 375).

Exceedances of NYSDEC Protection of Groundwater Soil Cleanup Objectives (PGWSCOs) are presented in bold font.
Exceedances of NYSDEC Restricted Residential Soil Cleanup Objectives (RRSCOs) are presented in red.
Exceedances of NYSDEC PGWSCOs and NYSDEC RRSCOs are presented in bold red.

Notes:
1. Deep soil samples were collected from SRI-SB-04, SRI-SB-05, and SRI-SB-06, only, due to deep coal tar impacts observed above the deep glacial till confining layer, and analyzed for TCL VOCs and TCL SVOCs.

DNAPL: Dense nonaqueous phase liquid
IRM - Interim Remedial Measure
VOC: Volatile organic compound
SVOC: Semi volaile organic compound
UST - Underground Storage Tank
mg/kg:milligrams per kilogram = parts per million (ppm)
J: The concentration given is an estimated value.

0 50 100 200
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

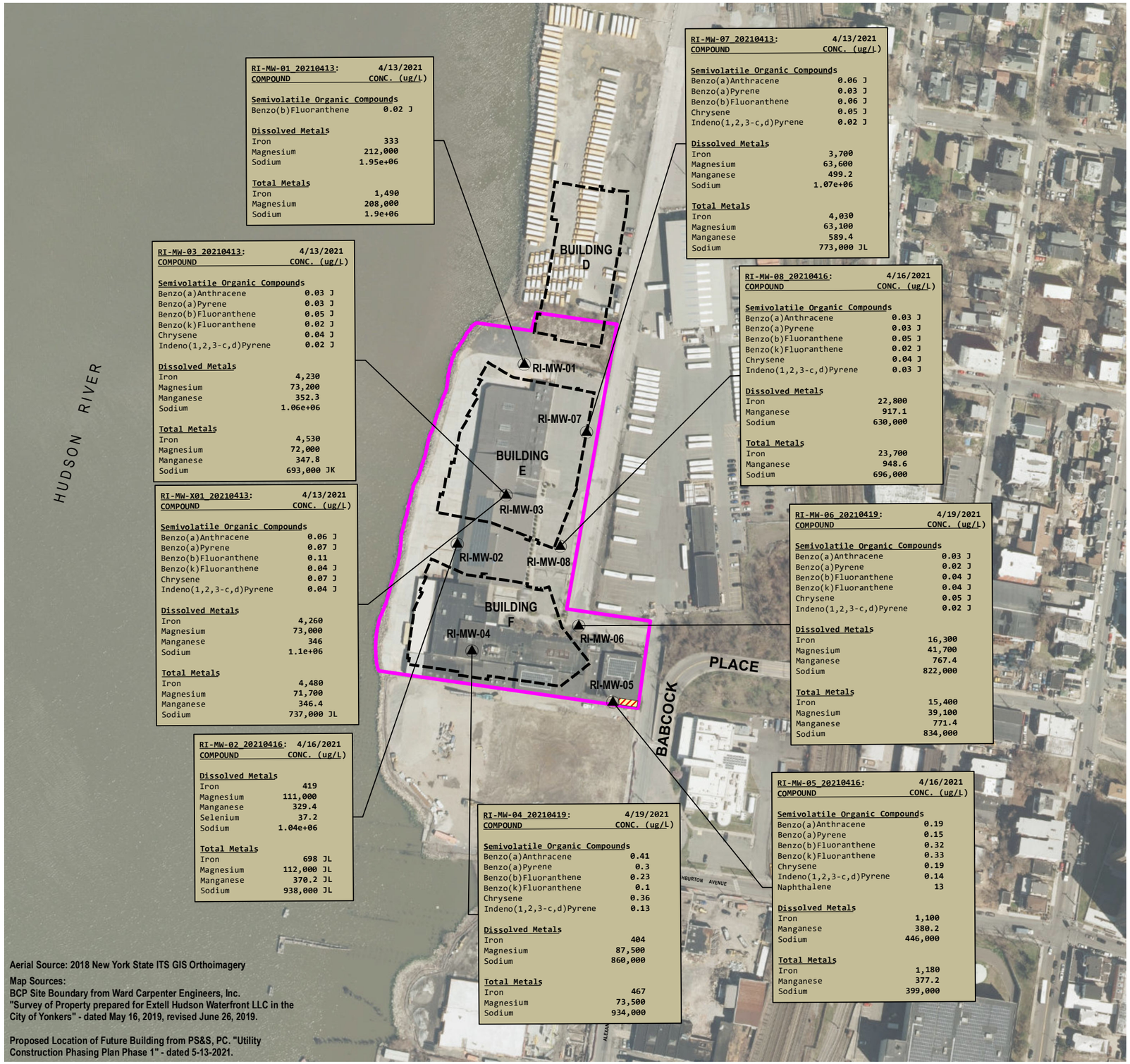
FORMER EXCELSIOR BAG
Yonkers, New York

SRI DEEP SOIL SAMPLE CONCENTRATIONS ABOVE NYSDEC RRSCOs AND PGWSCOs

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
4E



RI-MW-01 20210413: 4/13/2021

COMPOUND	CONC. (ug/L)
Semivolatile Organic Compounds	
Benzo(b)Fluoranthene	0.02 J
Dissolved Metals	
Iron	333
Magnesium	212,000
Sodium	1.95e+06
Total Metals	
Iron	1,490
Magnesium	208,000
Sodium	1.9e+06

RI-MW-03 20210413: 4/13/2021

COMPOUND	CONC. (ug/L)
Semivolatile Organic Compounds	
Benzo(a)Anthracene	0.03 J
Benzo(a)Pyrene	0.03 J
Benzo(b)Fluoranthene	0.05 J
Benzo(k)Fluoranthene	0.02 J
Chrysene	0.04 J
Indeno(1,2,3-c,d)Pyrene	0.02 J
Dissolved Metals	
Iron	4,230
Magnesium	73,200
Manganese	352.3
Sodium	1.06e+06
Total Metals	
Iron	4,530
Magnesium	72,000
Manganese	347.8
Sodium	693,000 JK

RI-MW-X01 20210413: 4/13/2021

COMPOUND	CONC. (ug/L)
Semivolatile Organic Compounds	
Benzo(a)Anthracene	0.06 J
Benzo(a)Pyrene	0.07 J
Benzo(b)Fluoranthene	0.11
Benzo(k)Fluoranthene	0.04 J
Chrysene	0.07 J
Indeno(1,2,3-c,d)Pyrene	0.04 J
Dissolved Metals	
Iron	4,260
Magnesium	73,000
Manganese	346
Sodium	1.1e+06
Total Metals	
Iron	4,480
Magnesium	71,700
Manganese	346.4
Sodium	737,000 JL

RI-MW-02 20210416: 4/16/2021

COMPOUND	CONC. (ug/L)
Dissolved Metals	
Iron	419
Magnesium	111,000
Manganese	329.4
Selenium	37.2
Sodium	1.04e+06
Total Metals	
Iron	698 JL
Magnesium	112,000 JL
Manganese	370.2 JL
Sodium	938,000 JL

RI-MW-04 20210419: 4/19/2021

COMPOUND	CONC. (ug/L)
Semivolatile Organic Compounds	
Benzo(a)Anthracene	0.41
Benzo(a)Pyrene	0.3
Benzo(b)Fluoranthene	0.23
Benzo(k)Fluoranthene	0.1
Chrysene	0.36
Indeno(1,2,3-c,d)Pyrene	0.13
Dissolved Metals	
Iron	404
Magnesium	87,500
Sodium	860,000
Total Metals	
Iron	467
Magnesium	73,500
Sodium	934,000

RI-MW-07 20210413: 4/13/2021

COMPOUND	CONC. (ug/L)
Semivolatile Organic Compounds	
Benzo(a)Anthracene	0.06 J
Benzo(a)Pyrene	0.03 J
Benzo(b)Fluoranthene	0.06 J
Chrysene	0.05 J
Indeno(1,2,3-c,d)Pyrene	0.02 J
Dissolved Metals	
Iron	3,700
Magnesium	63,600
Manganese	499.2
Sodium	1.07e+06
Total Metals	
Iron	4,030
Magnesium	63,100
Manganese	589.4
Sodium	773,000 JL

RI-MW-08 20210416: 4/16/2021

COMPOUND	CONC. (ug/L)
Semivolatile Organic Compounds	
Benzo(a)Anthracene	0.03 J
Benzo(a)Pyrene	0.03 J
Benzo(b)Fluoranthene	0.05 J
Benzo(k)Fluoranthene	0.02 J
Chrysene	0.04 J
Indeno(1,2,3-c,d)Pyrene	0.03 J
Dissolved Metals	
Iron	22,800
Manganese	917.1
Sodium	630,000
Total Metals	
Iron	23,700
Manganese	948.6
Sodium	696,000

RI-MW-06 20210419: 4/19/2021

COMPOUND	CONC. (ug/L)
Semivolatile Organic Compounds	
Benzo(a)Anthracene	0.03 J
Benzo(a)Pyrene	0.02 J
Benzo(b)Fluoranthene	0.04 J
Benzo(k)Fluoranthene	0.04 J
Chrysene	0.05 J
Indeno(1,2,3-c,d)Pyrene	0.02 J
Dissolved Metals	
Iron	16,300
Magnesium	41,700
Manganese	767.4
Sodium	822,000
Total Metals	
Iron	15,400
Magnesium	39,100
Manganese	771.4
Sodium	834,000

RI-MW-05 20210416: 4/16/2021

COMPOUND	CONC. (ug/L)
Semivolatile Organic Compounds	
Benzo(a)Anthracene	0.19
Benzo(a)Pyrene	0.15
Benzo(b)Fluoranthene	0.32
Benzo(k)Fluoranthene	0.33
Chrysene	0.19
Indeno(1,2,3-c,d)Pyrene	0.14
Naphthalene	13
Dissolved Metals	
Iron	1,100
Manganese	380.2
Sodium	446,000
Total Metals	
Iron	1,180
Manganese	377.2
Sodium	399,000

Aerial Source: 2018 New York State ITS GIS Orthoimagery

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc.
"Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- GROUNDWATER SAMPLE LOCATION
- CLOSED IN-PLACE USTS (ADDRESSED AS PART OF IRM ACTIVITIES)

	NYSDEC AWQSGVs ug/l
Semivolatile Organic Compounds	
Benzo(a)Anthracene	0.002
Benzo(a)Pyrene	0
Benzo(b)Fluoranthene	0.002
Benzo(k)Fluoranthene	0.002
Chrysene	0.002
Indeno(1,2,3-c,d)Pyrene	0.002
Naphthalene	10
Metals	
Iron	300
Magnesium	35,000
Manganese	300
Selenium	10
Sodium	20,000

NYSDEC TOGS Class GA Ambient Water Quality Standard and Guidance Values (AWQSGVs):
New York State Department of Environmental Conservation (NYSDEC)
Technical and Operational Guidance Series (TOGS) (1.1.1):

µg/L: micrograms per Liter = parts per billion (ppb)

Only Exceedances of NYSDEC AWQSGVs are shown in bold font.

IRM - Interim Remedial Measure
UST - Underground Storage Tank
J: The concentration given is an estimated value.

0 100 200 400
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

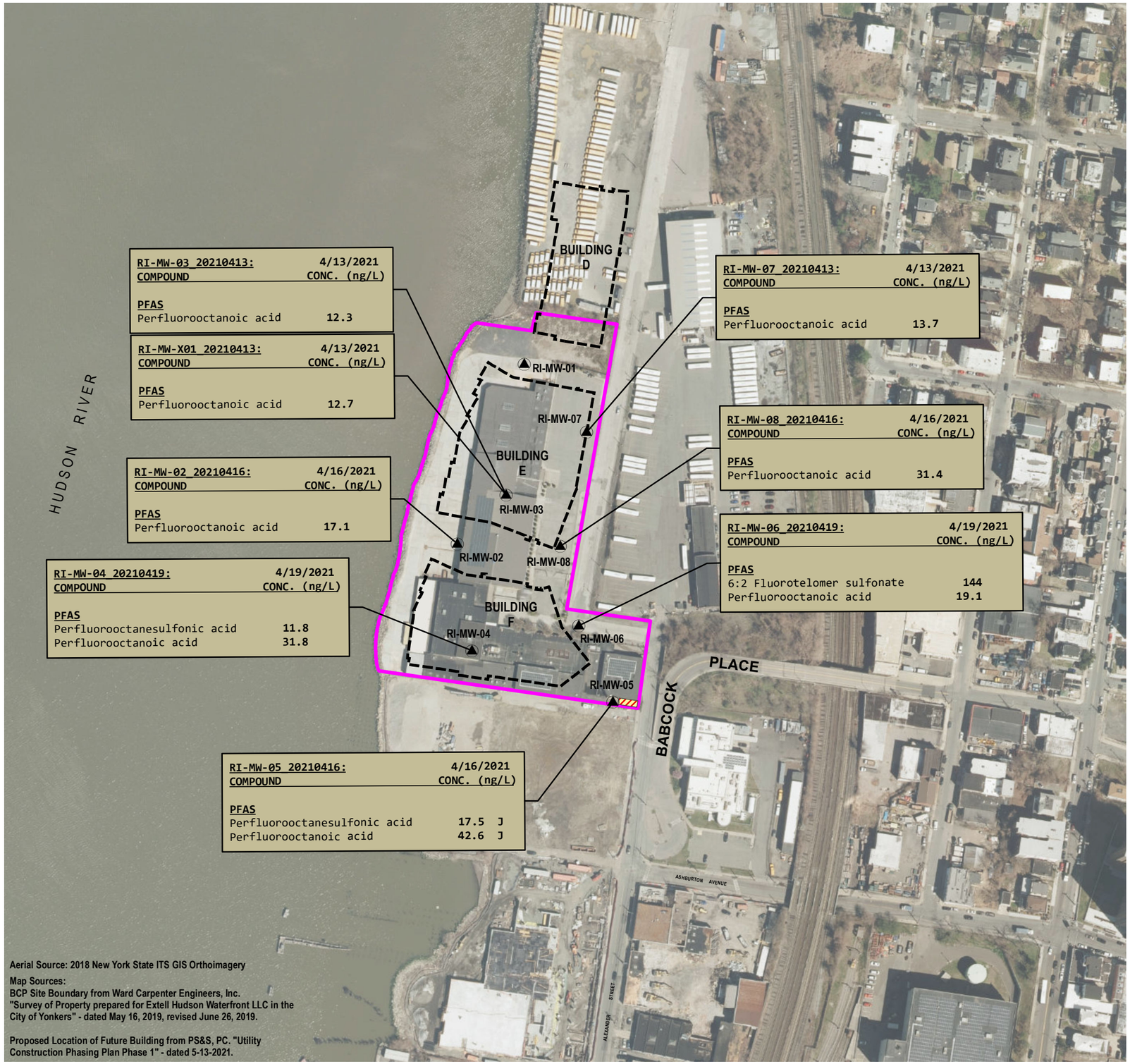
FORMER EXCELSIOR BAG
Yonkers, New York

RI GROUNDWATER CONCENTRATIONS ABOVE AWQSGVs

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
5A



Aerial Source: 2018 New York State ITS GIS Orthoimagery

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc. "Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- GROUNDWATER SAMPLE LOCATION
- CLOSED IN-PLACE USTS (ADDRESSED AS PART OF IRM ACTIVITIES)

NYSDEC PFAS Screening Levels Groundwater ng/l	
PFAS	
6:2 Fluorotelomer sulfonate	100
Perfluorooctanesulfonic acid	10
Perfluorooctanoic acid	10

ng/L: nanograms per Liter = parts per trillion (ppt)

PFAS: Per- and polyfluoroalkyl substances
PFOA: Perfluorooctanoic acid
PFOS: Perfluorooctanesulfonic acid

IRM - Interim Remedial Measure
UST - Underground Storage Tank

J: The concentration given is an estimated value.

0 100 200 400
SCALE IN FEET

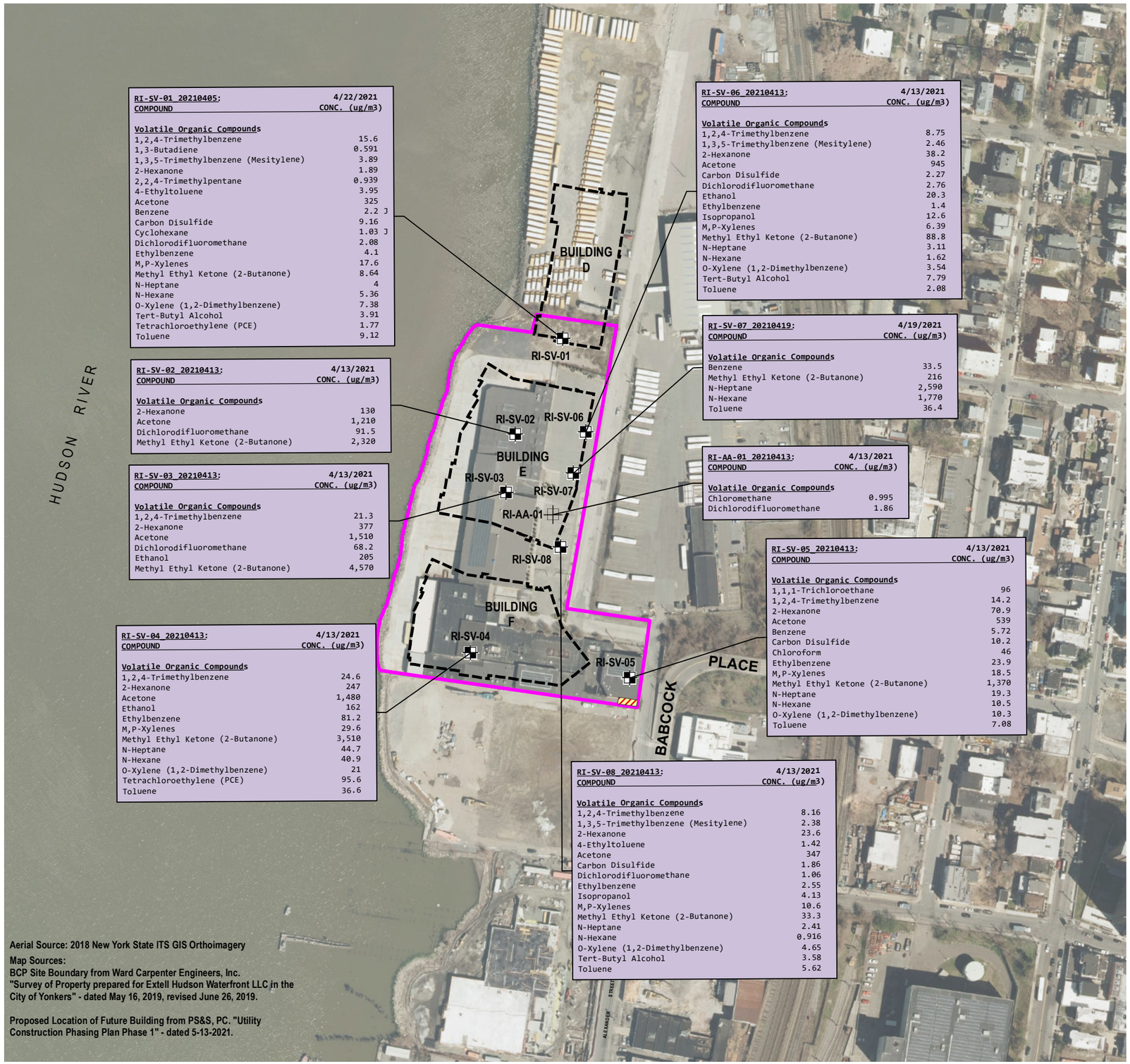
AKRF
440 Park Avenue South, New York, NY 10016

FORMER EXCELSIOR BAG
Yonkers, New York

RI GROUNDWATER SAMPLE EMERGING CONTAMINENT CONCENTRATIONS ABOVE GUIDANCE VALUES

DATE
8/4/2023
PROJECT NO.
200131
FIGURE
5B

G:\Projects\200131 - EXTELL FORMER EXCELSIOR BAG\Technical\GIS and Graphics\Hazmat\RAWP\200131 Fig 5B RI Groundwater Emerging Conaminant Concentrations.mxd1/12/2023 11:53:54 AM mveilleux



RI-SV-01 20210405: 4/22/2021

COMPOUND	CONC. (ug/m3)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	15.6
1,3-Butadiene	0.591
1,3,5-Trimethylbenzene (Mesitylene)	3.89
2-Hexanone	1.89
2,2,4-Trimethylpentane	0.939
4-Ethyltoluene	3.95
Acetone	325
Benzene	2.2 J
Carbon Disulfide	9.16
Cyclohexane	1.03 J
Dichlorodifluoromethane	2.08
Ethylbenzene	4.1
M,P-Xylenes	17.6
Methyl Ethyl Ketone (2-Butanone)	8.64
N-Heptane	4
N-Hexane	5.36
O-Xylene (1,2-Dimethylbenzene)	7.38
Tert-Butyl Alcohol	3.91
Tetrachloroethylene (PCE)	1.77
Toluene	9.12

RI-SV-02 20210413: 4/13/2021

COMPOUND	CONC. (ug/m3)
Volatile Organic Compounds	
2-Hexanone	130
Acetone	1,210
Dichlorodifluoromethane	91.5
Methyl Ethyl Ketone (2-Butanone)	2,320

RI-SV-03 20210413: 4/13/2021

COMPOUND	CONC. (ug/m3)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	21.3
2-Hexanone	377
Acetone	1,510
Dichlorodifluoromethane	68.2
Ethanol	205
Methyl Ethyl Ketone (2-Butanone)	4,570

RI-SV-04 20210413: 4/13/2021

COMPOUND	CONC. (ug/m3)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	24.6
2-Hexanone	247
Acetone	1,480
Ethanol	162
Ethylbenzene	81.2
M,P-Xylenes	29.6
Methyl Ethyl Ketone (2-Butanone)	3,510
N-Heptane	44.7
N-Hexane	40.9
O-Xylene (1,2-Dimethylbenzene)	21
Tetrachloroethylene (PCE)	95.6
Toluene	36.6

RI-SV-06 20210413: 4/13/2021

COMPOUND	CONC. (ug/m3)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	8.75
1,3,5-Trimethylbenzene (Mesitylene)	2.46
2-Hexanone	38.2
Acetone	945
Carbon Disulfide	2.27
Dichlorodifluoromethane	2.76
Ethanol	20.3
Ethylbenzene	1.4
Isopropanol	12.6
M,P-Xylenes	6.39
Methyl Ethyl Ketone (2-Butanone)	88.8
N-Heptane	3.11
N-Hexane	1.62
O-Xylene (1,2-Dimethylbenzene)	3.54
Tert-Butyl Alcohol	7.79
Toluene	2.08

RI-SV-07 20210419: 4/19/2021

COMPOUND	CONC. (ug/m3)
Volatile Organic Compounds	
Benzene	33.5
Methyl Ethyl Ketone (2-Butanone)	216
N-Heptane	2,590
N-Hexane	1,770
Toluene	36.4

RI-AA-01 20210413: 4/13/2021

COMPOUND	CONC. (ug/m3)
Volatile Organic Compounds	
Chloromethane	0.995
Dichlorodifluoromethane	1.86

RI-SV-05 20210413: 4/13/2021

COMPOUND	CONC. (ug/m3)
Volatile Organic Compounds	
1,1,1-Trichloroethane	96
1,2,4-Trimethylbenzene	14.2
2-Hexanone	70.9
Acetone	539
Benzene	5.72
Carbon Disulfide	10.2
Chloroform	46
Ethylbenzene	23.9
M,P-Xylenes	18.5
Methyl Ethyl Ketone (2-Butanone)	1,370
N-Heptane	19.3
N-Hexane	10.5
O-Xylene (1,2-Dimethylbenzene)	10.3
Toluene	7.08

RI-SV-08 20210413: 4/13/2021

COMPOUND	CONC. (ug/m3)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	8.16
1,3,5-Trimethylbenzene (Mesitylene)	2.38
2-Hexanone	23.6
4-Ethyltoluene	1.42
Acetone	347
Carbon Disulfide	1.86
Dichlorodifluoromethane	1.06
Ethylbenzene	2.55
Isopropanol	4.13
M,P-Xylenes	10.6
Methyl Ethyl Ketone (2-Butanone)	33.3
N-Heptane	2.41
N-Hexane	0.916
O-Xylene (1,2-Dimethylbenzene)	4.65
Tert-Butyl Alcohol	3.58
Toluene	5.62

Aerial Source: 2018 New York State ITS GIS Orthoimagery

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc.
"Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- AMBIENT AIR SAMPLE LOCATION
- SOIL VAPOR POINT LOCATION
- CLOSED IN-PLACE USTS (ADDRESSED AS PART OF IRM ACTIVITIES)

SOIL VAPOR

µg/m³ - micrograms per cubic meter

Concentrations detected above the laboratory reporting limit are shown.

IRM - Interim Remedial Measure
UST - Underground Storage Tank

0 100 200 400
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

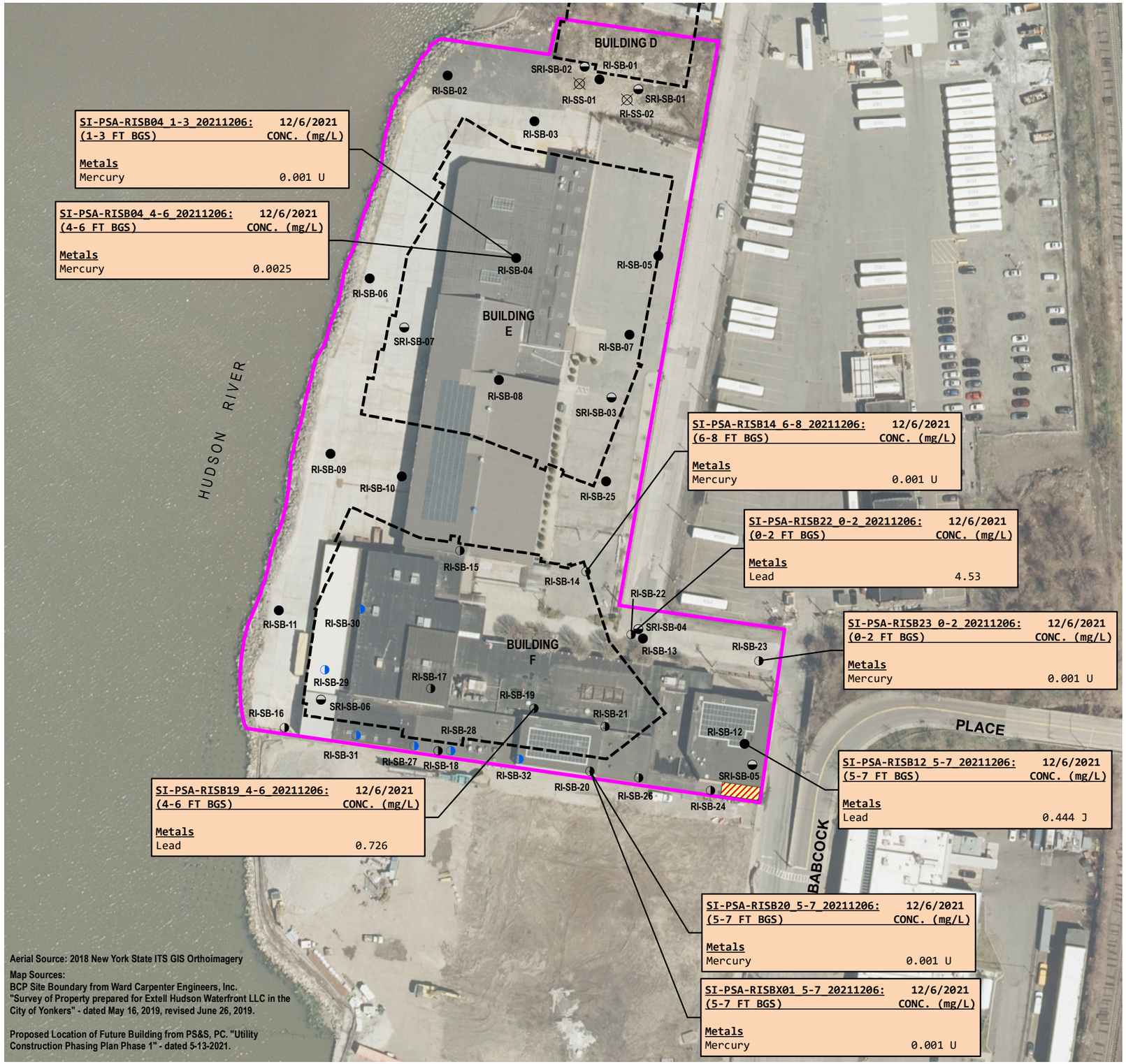
FORMER EXCELSIOR BAG
Yonkers, New York

SOIL VAPOR DETECTIONS

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
6



Aerial Source: 2018 New York State ITS GIS Orthoimagery

Map Sources:
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Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

LEGEND

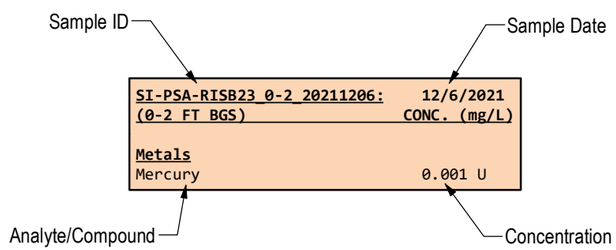
- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- SHALLOW SOIL BORING LOCATION
- INTERMEDIATE SOIL BORING LOCATION
- DEEP SOIL BORING LOCATION
- DNAPL DELINEATION SOIL BORING LOCATION
- SURFACE SOIL SAMPLE LOCATION
- CLOSED IN-PLACE USTS (ADDRESSED AS PART OF IRM ACTIVITIES)

	EPA Maximum TCLP Concentration mg/l
Metals	
Lead	5
Mercury	0.2

1. EPA Maximum TCLP Concentration: Environmental Protection Agency (EPA) Maximum Toxicity Characteristic Leaching Procedure (TCLP) concentrations established for the Resource Conservation and Recovery Act (RCRA) eight heavy metals ("RCRA 8") corresponding to hazardous waste.
2. No exceedances of the EPA Hazardous Waste Criteria were reported.

mg/l:milligrams per liter = parts per million (ppm)
J: The concentration given is an estimated value.
U:The analyte was not detected at the indicated concentration.

IRM - Interim Remedial Measure
UST - Underground Storage Tank



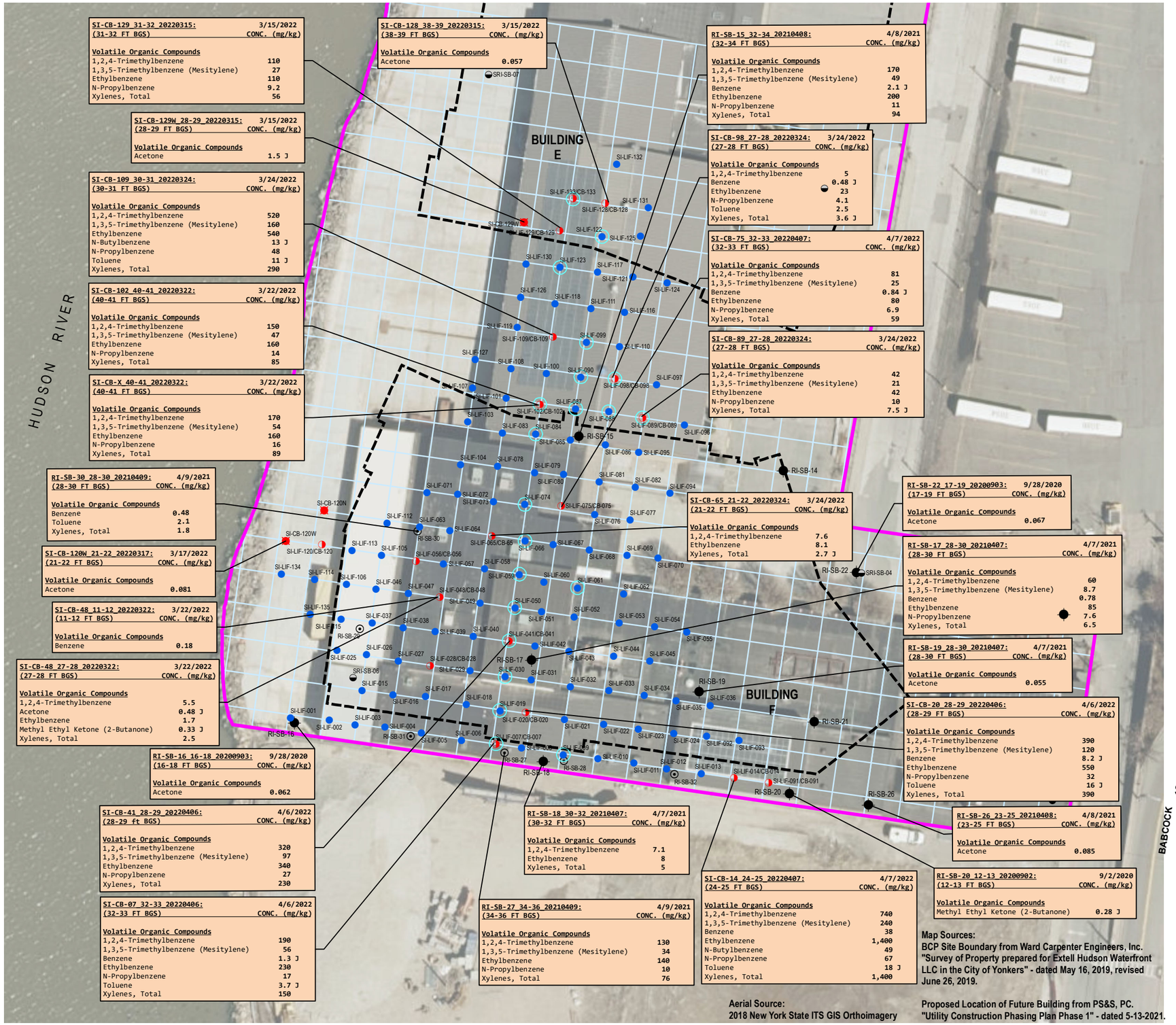
0 50 100 200
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

FORMER EXCELSIOR BAG
Yonkers, New York

SIR #1 SOIL SAMPLE TCLP CONCENTRATIONS

DATE 8/4/2023
PROJECT NO. 200131
FIGURE 7



LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- 2020-2021 RI INTERMEDIATE SOIL BORING LOCATION
- 2021 SRI DEEP SOIL BORING LOCATION
- 2020-2021 RI DNAPL DELINEATION SOIL BORING LOCATION
- STEP-OUT CONFIRMATORY SOIL BORING LOCATION
- LIF SOIL BORING LOCATION
- LIF BORING WITH CO-LOCATED CONFIRMATORY SOIL BORING LOCATION
- LIF/CONFIRMATORY BORING WITH SHALLOW REFUSAL

NOTES:

CT: Coal Tar
DNAPL: Dense Non-Aqueous Phase Liquid
LIF: Laser Induced Fluorescence
RE: Reference Emitter
PSA: Potential Source Area

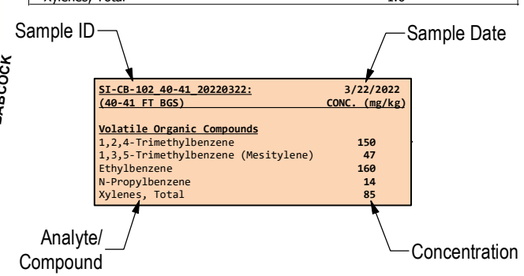
Part 375 Soil Cleanup Objectives (SCOs): SCOs listed in the New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations (6 NYCRR Part 375).

Exceedances of NYSDEC Lesser of Restricted Residential (RR) and Protection of Groundwater (PGW) Soil Cleanup Objectives (SCOs) are presented in bold font.

RI/SRI Intermediate Soil Sample Exceedances are also shown for reference.

mg/kg:milligrams per kilogram = parts per million (ppm)
J: The concentration given is an estimated value.

Lesser of Restricted Residential and Protection of Groundwater SCOs	mg/kg
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	3.6
1,3,5-Trimethylbenzene (Mesitylene)	8.4
Acetone	0.05
Benzene	0.06
Ethylbenzene	1
Methyl Ethyl Ketone (2-Butanone)	0.12
Naphthalene	12
N-Butylbenzene	12
N-Propylbenzene	3.9
Toluene	0.7
Xylenes, Total	1.6



0 60 120
SCALE IN FEET

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc. "Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Aerial Source:
2018 New York State ITS GIS Orthoimagery

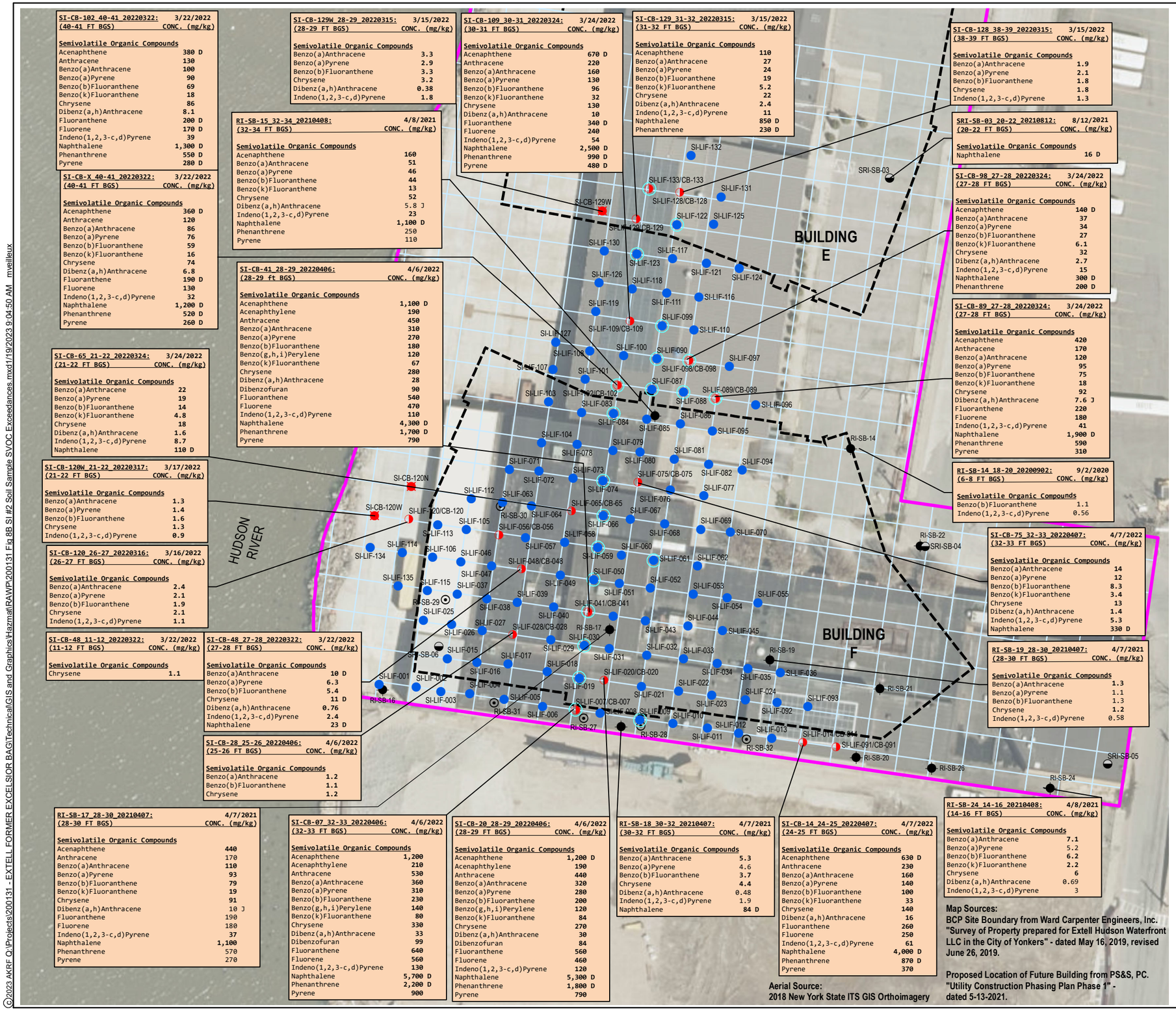
Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

AKRF
440 Park Avenue South, New York, NY 10016

FORMER EXCELSIOR BAG
Yonkers, New York

SI #2 SOIL SAMPLE VOC CONCENTRATIONS ABOVE NYSDEC RRSCOs AND PGWSCOs

DATE
8/4/2023
PROJECT NO.
200131
FIGURE
8A



SI-CB-102_40-41_20220322: (40-41 FT BGS) 3/22/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	380 D
Anthracene	130
Benzo(a)Anthracene	100
Benzo(a)Pyrene	90
Benzo(b)Fluoranthene	69
Benzo(k)Fluoranthene	18
Chrysene	86
Dibenz(a,h)Anthracene	8.1
Fluoranthene	200 D
Fluorene	170 D
Indeno(1,2,3-c,d)Pyrene	39
Naphthalene	1,300 D
Phenanthrene	550 D
Pyrene	280 D

SI-CB-X_40-41_20220322: (40-41 FT BGS) 3/22/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	360 D
Anthracene	120
Benzo(a)Anthracene	86
Benzo(a)Pyrene	76
Benzo(b)Fluoranthene	59
Benzo(k)Fluoranthene	16
Chrysene	74
Dibenz(a,h)Anthracene	6.8
Fluoranthene	190 D
Fluorene	130
Indeno(1,2,3-c,d)Pyrene	32
Naphthalene	1,200 D
Phenanthrene	520 D
Pyrene	260 D

SI-CB-65_21-22_20220324: (21-22 FT BGS) 3/24/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	22
Benzo(a)Pyrene	19
Benzo(b)Fluoranthene	14
Benzo(k)Fluoranthene	4.8
Chrysene	18
Dibenz(a,h)Anthracene	1.6
Indeno(1,2,3-c,d)Pyrene	8.7
Naphthalene	110 D

SI-CB-120W_21-22_20220317: (21-22 FT BGS) 3/17/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	1.3
Benzo(a)Pyrene	1.4
Benzo(b)Fluoranthene	1.6
Chrysene	1.3
Indeno(1,2,3-c,d)Pyrene	0.9

SI-CB-120_26-27_20220316: (26-27 FT BGS) 3/16/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	2.4
Benzo(a)Pyrene	2.1
Benzo(b)Fluoranthene	1.9
Chrysene	2.1
Indeno(1,2,3-c,d)Pyrene	1.1

SI-CB-48_11-12_20220322: (11-12 FT BGS) 3/22/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Chrysene	1.1

SI-CB-129W_28-29_20220315: (28-29 FT BGS) 3/15/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	3.3
Benzo(a)Pyrene	2.9
Benzo(b)Fluoranthene	3.3
Chrysene	3.2
Dibenz(a,h)Anthracene	0.38
Indeno(1,2,3-c,d)Pyrene	1.8

RI-SB-15_32-34_20210408: (32-34 FT BGS) 4/8/2021 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	160
Benzo(a)Anthracene	51
Benzo(a)Pyrene	46
Benzo(b)Fluoranthene	44
Benzo(k)Fluoranthene	13
Chrysene	52
Dibenz(a,h)Anthracene	5.8 J
Indeno(1,2,3-c,d)Pyrene	23
Naphthalene	1,100 D
Phenanthrene	250
Pyrene	110

SI-CB-41_28-29_20220406: (28-29 ft BGS) 4/6/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	1,100 D
Acenaphthylene	190
Anthracene	450
Benzo(a)Anthracene	310
Benzo(a)Pyrene	270
Benzo(b)Fluoranthene	180
Benzo(g,h,i)Perylene	120
Benzo(k)Fluoranthene	67
Chrysene	280
Dibenz(a,h)Anthracene	28
Dibenzofuran	90
Fluoranthene	540
Fluorene	470
Indeno(1,2,3-c,d)Pyrene	110
Naphthalene	4,300 D
Phenanthrene	1,700 D
Pyrene	790

SI-CB-48_27-28_20220322: (27-28 FT BGS) 3/22/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	10 D
Benzo(a)Pyrene	6.3
Benzo(b)Fluoranthene	5.4
Chrysene	11 D
Dibenz(a,h)Anthracene	0.76
Indeno(1,2,3-c,d)Pyrene	2.4
Naphthalene	23 D

SI-CB-28_25-26_20220406: (25-26 FT BGS) 4/6/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	1.2
Benzo(b)Fluoranthene	1.1
Chrysene	1.2

SI-CB-109_30-31_20220324: (30-31 FT BGS) 3/24/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	670 D
Anthracene	220
Benzo(a)Anthracene	160
Benzo(a)Pyrene	130
Benzo(b)Fluoranthene	96
Benzo(k)Fluoranthene	32
Chrysene	130
Dibenz(a,h)Anthracene	10
Fluoranthene	340 D
Fluorene	240
Indeno(1,2,3-c,d)Pyrene	54
Naphthalene	2,500 D
Phenanthrene	990 D
Pyrene	480 D

SI-CB-129_31-32_20220315: (31-32 FT BGS) 3/15/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	110
Benzo(a)Anthracene	27
Benzo(a)Pyrene	24
Benzo(b)Fluoranthene	19
Benzo(k)Fluoranthene	5.2
Chrysene	22
Dibenz(a,h)Anthracene	2.4
Indeno(1,2,3-c,d)Pyrene	11
Naphthalene	850 D
Phenanthrene	230 D

SI-CB-128_38-39_20220315: (38-39 FT BGS) 3/15/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	1.9
Benzo(a)Pyrene	2.1
Benzo(b)Fluoranthene	1.8
Chrysene	1.8
Indeno(1,2,3-c,d)Pyrene	1.3

SRI-SB-03_20-22_20210812: (20-22 FT BGS) 8/12/2021 CONC. (mg/kg)

Semivolatile Organic Compounds

Naphthalene	16 D

SI-CB-98_27-28_20220324: (27-28 FT BGS) 3/24/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	140 D
Benzo(a)Anthracene	37
Benzo(a)Pyrene	34
Benzo(b)Fluoranthene	27
Benzo(k)Fluoranthene	6.1
Chrysene	32
Dibenz(a,h)Anthracene	2.7
Indeno(1,2,3-c,d)Pyrene	15
Naphthalene	300 D
Phenanthrene	200 D

SI-CB-89_27-28_20220324: (27-28 FT BGS) 3/24/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	420
Anthracene	170
Benzo(a)Anthracene	120
Benzo(a)Pyrene	95
Benzo(b)Fluoranthene	75
Benzo(k)Fluoranthene	18
Chrysene	92
Dibenz(a,h)Anthracene	7.6 J
Fluoranthene	220
Fluorene	180
Indeno(1,2,3-c,d)Pyrene	41
Naphthalene	1,900 D
Phenanthrene	590
Pyrene	310

RI-SB-14_18-20_20200902: (6-8 FT BGS) 9/2/2020 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(b)Fluoranthene	1.1
Indeno(1,2,3-c,d)Pyrene	0.56

SI-CB-75_32-33_20220407: (32-33 FT BGS) 4/7/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	14
Benzo(a)Pyrene	12
Benzo(b)Fluoranthene	8.3
Benzo(k)Fluoranthene	3.4
Chrysene	13
Dibenz(a,h)Anthracene	1.4
Indeno(1,2,3-c,d)Pyrene	5.3
Naphthalene	330 D

RI-SB-19_28-30_20210407: (28-30 FT BGS) 4/7/2021 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	1.3
Benzo(a)Pyrene	1.1
Benzo(b)Fluoranthene	1.3
Chrysene	1.2
Indeno(1,2,3-c,d)Pyrene	0.58

RI-SB-24_14-16_20210408: (14-16 FT BGS) 4/8/2021 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	7.1
Benzo(a)Pyrene	5.2
Benzo(b)Fluoranthene	6.2
Benzo(k)Fluoranthene	2.2
Chrysene	6
Dibenz(a,h)Anthracene	0.69
Indeno(1,2,3-c,d)Pyrene	3

RI-SB-17_28-30_20210407: (28-30 FT BGS) 4/7/2021 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	440
Anthracene	170
Benzo(a)Anthracene	110
Benzo(a)Pyrene	93
Benzo(b)Fluoranthene	79
Benzo(k)Fluoranthene	19
Chrysene	91
Dibenz(a,h)Anthracene	10 J
Fluoranthene	190
Fluorene	180
Indeno(1,2,3-c,d)Pyrene	37
Naphthalene	1,100
Phenanthrene	570
Pyrene	270

SI-CB-07_32-33_20220406: (32-33 FT BGS) 4/6/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	1,200
Acenaphthylene	210
Anthracene	530
Benzo(a)Anthracene	360
Benzo(a)Pyrene	310
Benzo(b)Fluoranthene	230
Benzo(g,h,i)Perylene	140
Benzo(k)Fluoranthene	80
Chrysene	330
Dibenz(a,h)Anthracene	33
Dibenzofuran	99
Fluoranthene	640
Fluorene	560
Indeno(1,2,3-c,d)Pyrene	130
Naphthalene	5,700 D
Phenanthrene	2,200 D
Pyrene	900

SI-CB-20_28-29_20220406: (28-29 FT BGS) 4/6/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	1,200 D
Acenaphthylene	190
Anthracene	440
Benzo(a)Anthracene	320
Benzo(a)Pyrene	280
Benzo(b)Fluoranthene	200
Benzo(g,h,i)Perylene	120
Benzo(k)Fluoranthene	84
Chrysene	270
Dibenz(a,h)Anthracene	30
Dibenzofuran	84
Fluoranthene	560
Fluorene	460
Indeno(1,2,3-c,d)Pyrene	120
Naphthalene	5,300 D
Phenanthrene	1,800 D
Pyrene	790

RI-SB-18_30-32_20210407: (30-32 FT BGS) 4/7/2021 CONC. (mg/kg)

Semivolatile Organic Compounds

Benzo(a)Anthracene	5.3
Benzo(a)Pyrene	4.6
Benzo(b)Fluoranthene	3.7
Chrysene	4.4
Dibenz(a,h)Anthracene	0.48
Indeno(1,2,3-c,d)Pyrene	1.9
Naphthalene	84 D

SI-CB-14_24-25_20220407: (24-25 FT BGS) 4/7/2022 CONC. (mg/kg)

Semivolatile Organic Compounds

Acenaphthene	630 D
Anthracene	230
Benzo(a)Anthracene	160
Benzo(a)Pyrene	140
Benzo(b)Fluoranthene	100
Benzo(k)Fluoranthene	33
Chrysene	140
Dibenz(a,h)Anthracene	16
Fluoranthene	260
Fluorene	250
Indeno(1,2,3-c,d)Pyrene	61
Naphthalene	4,000 D
Phenanthrene	870 D
Pyrene	370

Map Sources:
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Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

Aerial Source:
2018 New York State ITS GIS Orthoimagery

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- 2020-2021 RI INTERMEDIATE SOIL BORING LOCATION
- 2021 SRI DEEP SOIL BORING LOCATION
- 2020-2021 RI DNAPL DELINEATION SOIL BORING LOCATION
- STEP-OUT CONFIRMATORY SOIL BORING LOCATION
- LIF SOIL BORING LOCATION
- LIF BORING WITH CO-LOCATED CONFIRMATORY SOIL BORING LOCATION
- LIF/CONFIRMATORY BORING WITH SHALLOW REFUSAL

NOTES:

CT: Coal Tar
DNAPL: Dense Non-Aqueous Phase Liquid
LIF: Laser Induced Fluorescence
RE: Reference Emitter
PSA: Potential Source Area

Part 375 Soil Cleanup Objectives (SCOs): SCOs listed in the New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations (6 NYCRR Part 375).

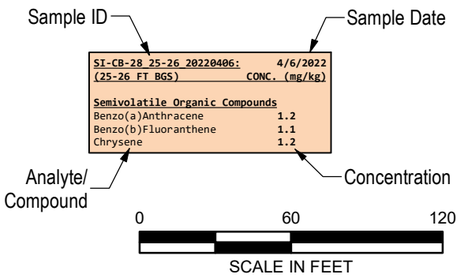
Exceedances of NYSDEC Lesser of Restricted Residential (RR) and Protection of Groundwater (PGW) Soil Cleanup Objectives (SCOs) are presented in bold font.

RI/SRI Intermediate Soil Sample Exceedances are also shown for reference.

SI-CB-X_40-41_20220322 IS A BLIND DUPLICATE OF SI-CB-102_40-41_20220322

mg/kg:milligrams per kilogram = parts per million (ppm)
D: Analyte concentration obtained from dilution.
J: The concentration given is an estimated value.

Lesser of Restricted Residential and Protection of Groundwater SCOs mg/kg	
Semivolatile Organic Compounds	
Acenaphthene	98
Acenaphthylene	100
Anthracene	100
Benzo(a)Anthracene	1
Benzo(a)Pyrene	1
Benzo(b)Fluoranthene	1
Benzo(g,h,i)Perylene	100
Benzo(k)Fluoranthene	1.7
Chrysene	1
Dibenz(a,h)Anthracene	0.33
Dibenzofuran	59
Fluoranthene	100
Fluorene	100
Indeno(1,2,3-c,d)Pyrene	0.5
Phenanthrene	100
Pyrene	100



AKRF
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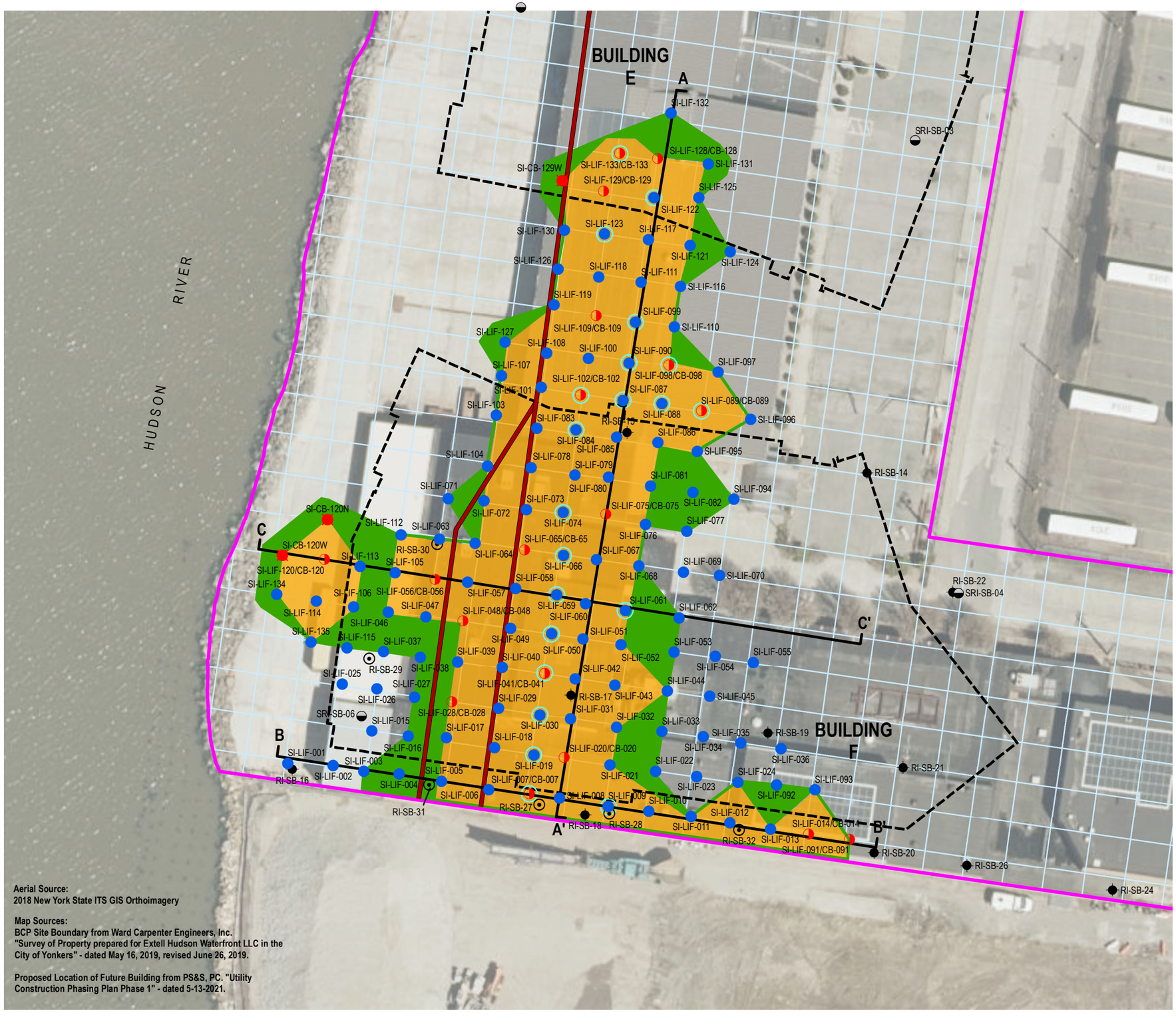
FORMER EXCELSIOR BAG
Yonkers, New York

SI #2 SOIL SAMPLE SVOC CONCENTRATIONS ABOVE NYSDEC RRSCOs AND PGWSCOs

DATE
8/4/2023

PROJECT NO.
200131

FIGURE
8B



Aerial Source:
2018 New York State ITS GIS Orthoimagery

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc.
"Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

LEGEND

- BCP SITE BOUNDARY
- PROPOSED LOCATION OF FUTURE BUILDING
- REFINED EXTENT OF COAL TAR RESIDUAL IMPACTS ABOVE THE INTERMEDIATE CONFINING LAYER
- REFINED EXTENT OF COAL TAR SOURCE MATERIAL ABOVE THE INTERMEDIATE CONFINING LAYER
- 2020-2021 RI INTERMEDIATE SOIL BORING LOCATION
- 2021 SRI DEEP SOIL BORING LOCATION
- 2020-2021 RI DNAPL DELINEATION SOIL BORING LOCATION
- SI #2 STEP-OUT CONFIRMATORY SOIL BORING LOCATION
- SI #2 LIF SOIL BORING LOCATION
- SI #2 LIF BORING WITH CO-LOCATED CONFIRMATORY SOIL BORING LOCATION
- SI #2 LIF BORING WITH SHALLOW REFUSAL
- APPROXIMATE SUBSURFACE LOCATION OF SUSPECTED FORMER TIMBER BULKHEAD
- CROSS SECTION LOCATION

B B'

NOTES:

1. COAL TAR SOURCE MATERIAL IS DEFINED BY SOIL MATERIALS IMPACTED BY COAL TAR INDICATIVE OF DNAPL, INCLUDING AREAS DEFINED IN THE SIR #2 AS TARGET GROUP "COAL TAR" LIF RESPONSES WITH %RE > 20%).

2. COAL TAR RESIDUAL IMPACTS ARE DEFINED BY COAL TAR IMPACTS THAT WERE LIMITED TO SHEEN/STAINING, COAL TAR ODORS, AND/OR ELEVATED PID READINGS, INCLUDING AREAS DEFINED IN THE SIR #2 BY TARGET GROUP "COAL TAR" LIF RESPONSES WITH %RE BETWEEN 5% AND 20%; AND SECONDARY GROUP "RESIDUAL" LIF RESPONSES WITH %RE GREATER THAN 20%).

CT: Coal Tar
DNAPL: Dense Non-Aqueous Phase Liquid
LIF: Laser Induced Fluorescence
RE: Reference Emitter

0 50 100
SCALE IN FEET

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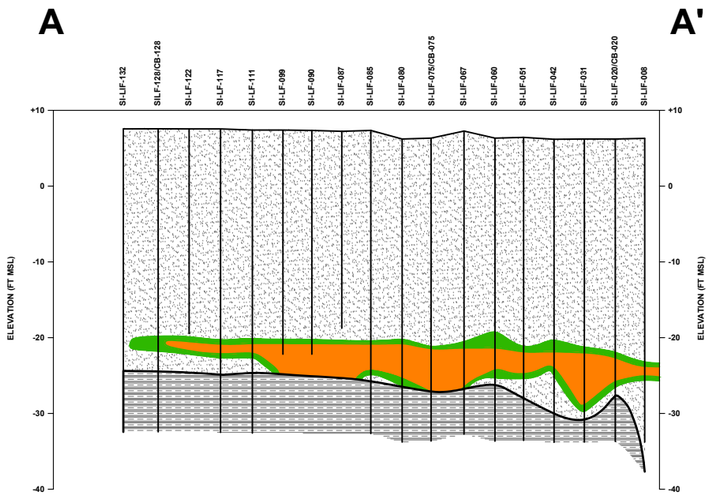
FORMER EXCELSIOR BAG
Yonkers, New York

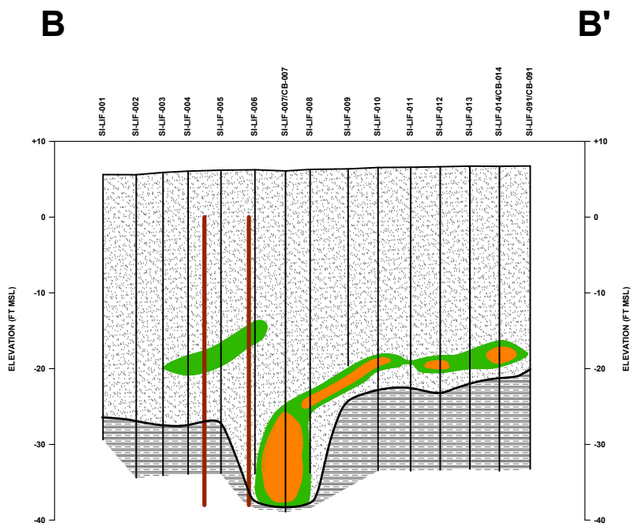
REFINED DELINEATED EXTENT OF COAL TAR DNAPL (PLAN VIEW)

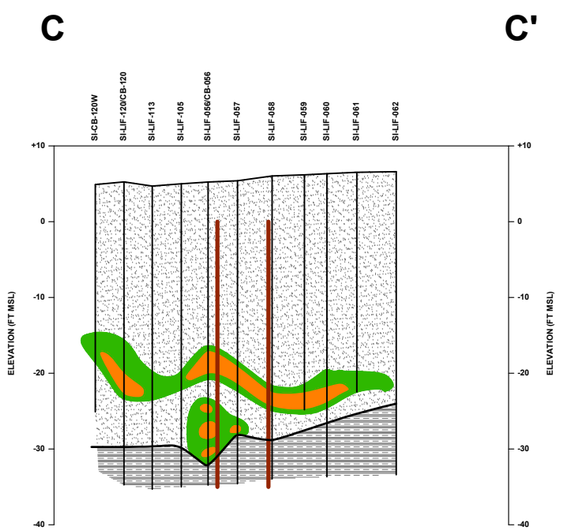
DATE
8/4/2023

PROJECT NO.
200131

FIGURE
9A







LEGEND

- REFINED EXTENT OF COAL TAR RESIDUAL IMPACTS ABOVE THE INTERMEDIATE CONFINING LAYER
- REFINED EXTENT OF COAL TAR SOURCE MATERIAL ABOVE THE INTERMEDIATE CONFINING LAYER
- HISTORIC FILL/NATIVE SANDS
- INTERMEDIATE CONFINING LAYER
- APPROXIMATE SUBSURFACE LOCATION OF SUSPECTED FORMER TIMBER BULKHEAD

NOTES:

1. COAL TAR SOURCE MATERIAL IS DEFINED BY SOIL MATERIALS IMPACTED BY COAL TAR INDICATIVE OF DNAPL, INCLUDING AREAS DEFINED IN THE SIR #2 AS TARGET GROUP "COAL TAR" LIF RESPONSES WITH %RE > 20%).
2. COAL TAR RESIDUAL IMPACTS ARE DEFINED BY COAL TAR IMPACTS THAT WERE LIMITED TO SHEEN/STAINING, COAL TAR ODORS, AND/OR ELEVATED PID READINGS, INCLUDING AREAS DEFINED IN THE SIR #2 BY TARGET GROUP "COAL TAR" LIF RESPONSES WITH %RE BETWEEN 5% AND 20%; AND SECONDARY GROUP "RESIDUAL" LIF RESPONSES WITH %RE GREATER THAN 20%).
3. CROSS SECTIONS WERE APPROXIMATED UTILIZING LIF DATA MODELING TOOLS PROVIDED BY DAKOTA AND SUPPLEMENTAL DATA OBTAINED FROM CONFIRMATORY SOIL BORING VISUAL OBSERVATIONS.
4. ELEVATIONS SHOWN ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM NAVD88).

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FORMER EXCELSIOR BAG
Yonkers, New York

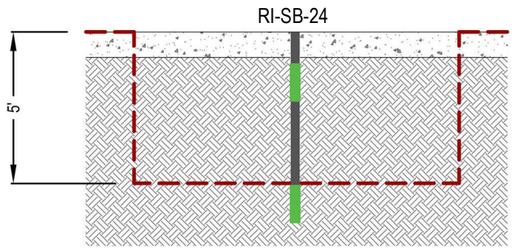
REFINED DELINEATED EXTENT OF COAL TAR DNAPL (CROSS SECTIONS)

DATE
8/4/2023

PROJECT NO.
200131

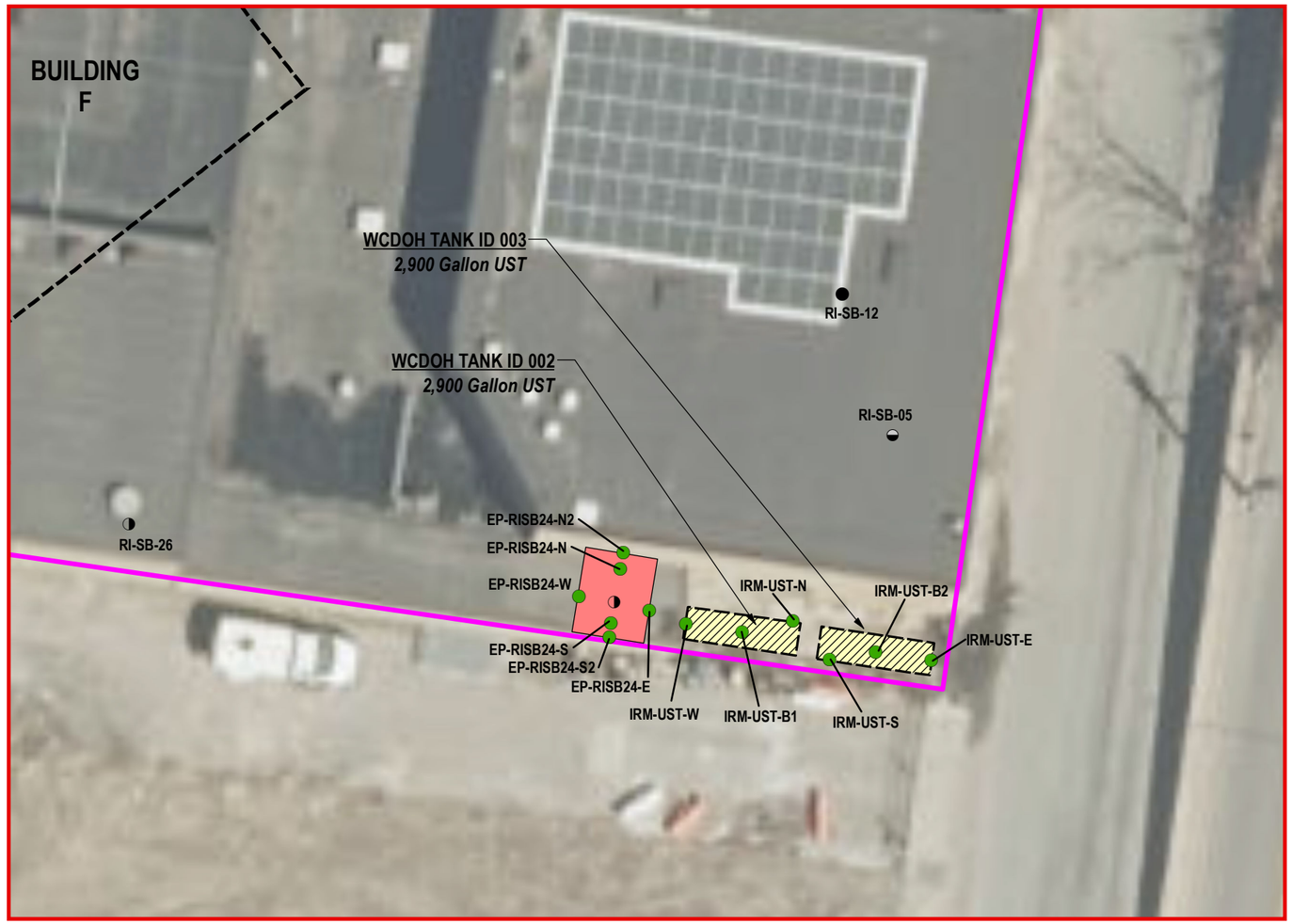
FIGURE
9B

 Q:\Projects\200131 - EXTELL FORMER EXCELSIOR BAG\Technical\Hazmat\CAD\BCP\RAWP\200131 Fig 9B Refined Delineated Extent of Coal Tar DNAPL_Cross Sections.dwg last save: mvielleux 3/27/2023 8:53 AM



EXISTING ASPHALT/CONCRETE
FILL
SOIL BORING
SAMPLE INTERVAL
EXTENT OF EXCAVATION (BACKFILLED WITH NYSDEC-APPROVED IMPORT MATERIALS)

DETAIL 1 - SVOC SOURCE AREA EXCAVATION



KEY MAP
Scale: 1" = 200'

Note:

1. Further detail on IRM field activities, including UST and SVOC Source Area endpoint sample results, will be provided in a forthcoming IRM Construction Completion Report (CCR).

LEGEND

BCP SITE BOUNDARY
PROPOSED LOCATION OF FUTURE BUILDING
IRM ENDPOINT SAMPLE LOCATION
2020-2021 RI SHALLOW SOIL BORING LOCATION
2020-2021 RI INTERMEDIATE SOIL BORING LOCATION
2021 SRI DEEP SOIL BORING LOCATION
SVOC SOURCE AREA EXCAVATION (ADDRESSED AS PART OF IRM ACTIVITIES)
2,900 GALLON UST LOCATION (CLOSED-IN PLACE AS PART OF IRM ACTIVITIES)

UST = UNDERGROUND STORAGE TANK
IRM = INTERIM REMEDIAL MEASURE
RI = REMEDIAL INVESTIGATION
SRI = SUPPLEMENTAL REMEDIAL INVESTIGATION

Aerial Source:
2018 New York State ITS GIS Orthoimagery.

Map Sources:
BCP Site Boundary from Ward Carpenter Engineers, Inc.
"Survey of Property prepared for Extell Hudson Waterfront LLC in the City of Yonkers" - dated May 16, 2019, revised June 26, 2019.

Proposed Location of Future Building from PS&S, PC. "Utility Construction Phasing Plan Phase 1" - dated 5-13-2021.

Boring locations obtained from PS&S survey "Sample Location Map, dated 6/2/21 (revised 9/20/21)

0 10 20 40
SCALE IN FEET

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FORMER EXCELSIOR BAG
Yonkers, New York

IRM SITE PLAN AND ENDPOINT SAMPLE LOCATIONS

DATE
8/4/2023
PROJECT NO.
200131
FIGURE
10

TABLES

Table 1
Remedial Alternatives Technology Screening

Applicable General Response Action	Remedial Technology Type / Process Option	Technical Implementability	Effectiveness in achieving RAOs	Relative Cost	Screening Result
No Action	No Action	Implementable	Ineffective	No Cost	Retained for alternative development as a baseline as required by DER-10.
Extraction and Off-Site Disposal/Treatment	Excavation/Disposal & Dewatering/Treatment	Implementable for shallow fill materials/ intermediate coal tar impacts & associated groundwater contamination. Not considered implementable for deep coal tar impacts and associated groundwater contamination.	Effective in eliminating source materials reasonably accessible for excavation. Effective in achieving RAOs if used in combination with other technology types./process options.	Relatively low capital costs for excavation above the groundwater table. Relatively high capital costs for excavation below the groundwater table (requires support of excavation and dewatering/treatment operations). No O&M costs.	Retained for alternative development, particularly to be used in combination with other technology types to achieve RAOs.
	Recovery Wells	Implementable for intermediate coal tar source material & groundwater recovery. Not considered implementable for deep coal tar impacts.	Minimum short-term effectiveness, however, can be effective in achieving RAOs over long duration if used in combination with other technology types.	Relatively low capital costs for well installation. Moderate to high O&M costs	Retained for alternative development, particularly to be used in combination with other technology types to achieve RAOs.
	Sub-Slab Depressurization System (SSDS)	Implementable	Effective for achieving soil vapor RAOs (mitigating impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a Site).	Low to moderate capital and O&M costs.	Retained for alternative development, particularly to be used in combination with other technology types to achieve soil vapor RAOs.
Containment	Site-Wide Cover System	Implementable	Effective in preventing contact with subsurface contaminated soil/groundwater. Can achieve RAOs if used in combination with other technology types./process options.	Relatively low capital and O&M costs.	Retained for alternative development, particularly to be used in combination with other technology types to achieve RAOs.
	Slurry Walls, Secant Pile Walls, Sheet Piling	Implementable	Effective for preventing further migration of coal tar impacts but does not eliminate source material. Can achieve RAOs if used in combination with other technology types./process options.	Moderate to high capital costs. Indirect high O&M costs (likely to be combined with long term recovery)	Retained for alternative development, particularly to be used in combination with other technology types to achieve RAOs.
In-Situ Treatment	Monitored Natural Attenuation (MNA)	Implementable	Effective over time in areas of residual coal tar impacts. Ineffective for source areas.	Low capital and O&M costs	Retained for alternative development, particularly to be used in combination with other technology types to achieve RAOs.
	In-Situ Chemical Oxidation (ISCO) / Enhanced Bioremediation	Considered implementable for addressing deep coal tar impacts (required for Track 1 remedy). Not implementable for addressing contamination in shallow fill materials and for intermediate coal tar impacts due to the heterogeneous nature of the fill materials and high quantities of coal tar source materials encountered.	Effective in achieving RAOs if used in combination with other technology types./process options.	Moderate capital costs. High O&M costs.	Retained for alternative development, particularly to be used in the Track 1 remedial alternative to eliminate deep DNAPL contamination.
	In-Situ Soil Solidification (ISS)	Implementable for intermediate coal tar impacts. Not considered implementable for deep coal tar impacts.	Effective in achieving RAOs, particularly for addressing coal tar source material beneath the groundwater table.	High capital costs. Low O&M costs.	Retained for alternative development, particularly to be used in combination with other technology types to achieve RAOs.
Institutional Controls (ICs)	Site Management Plan, Environmental Easement, Groundwater Use Restrictions	Implementable	Effective in preventing exposure to subsurface soil and groundwater contamination. Not effective in eliminating and/or preventing further migration of contaminants.	Low capital and O&M costs	Retained for alternative development, particularly to be used in combination with other technology types to achieve RAOs.

Table 2A
Remedial Alternative 2 - Track 1 UUSCOs
Cost Estimate Summary Table

DIRECT COSTS					
Item	**Task**	**Quantity**	**Unit**	**Unit Cost**	**Total**
1	Excavation of Shallow Fill Materials (Track 1)	180,700	Cubic Yard	$25	$4,517,500
2	Disposal of Shallow Fill Materials	271,100	Ton	$70	$18,977,000
3	Excavation of Intermediate Coal Tar Impacted Soil	23,800	Cubic Yard	$30	$714,000
4	Disposal of Intermediate Coal Tar Impacted Soil	35,700	Ton	$120	$4,284,000
5	Tent Enclosure (Odor Control During Excavation)	1	Allowance	$2,000,000	$2,000,000
6	Dewatering Equipment and Treatment O&M	29	Month	$70,000	$2,045,300
7	Foundation & Utility Underpinning	1	Allowance	$1,000,000	$1,000,000
8	Excavation Support	2,300	Linear Feet	$2,000	$4,600,000
9	Excavation Backfill & Compaction	204,500	Cubic Yard	$40	$8,180,000
10	Installation of Deep ISCO Injection Wells	50	Well	$25,000	$1,250,000
11	ISCO Injection Events	4	Event	$300,000	$1,200,000
12	Site Restoration (General Grading, Utilities/Foundations)	243,952	Square Feet	$10	$2,439,500
13	Engineering Deign, Oversight, and Project Support Costs	10%	% of Costs		$5,120,700
14	General Conditions (Contractor Procurement/Support, Mob/Demob, Site Controls, Etc.)	10%	% of Costs		$5,120,700
15	Construction Management	10%	% of Costs		$5,120,700
16	Insurance	10%	% of Costs		$5,120,700
17	Contingency	20%	% of Costs		$10,241,500
				DIRECT COST SUBTOTAL	**$81,931,600**
SHORT/LONG TERM O&M COSTS					
Item	**Task**	**Quantity**	**Unit**	**Unit Cost**	**Total**
18	None				$0
				O&M COST SUBTOTAL	**$0**
REMEDIAL ALTERNATIVE 2 TOTAL					
					$81,931,600

General Assumptions/Limitations:

1. The above estimate contains conclusions that are based upon currently available data.
2. This estimate is intended for use solely by the Volunteer and NYSDEC for purposes of evaluating remedial alternatives within this RAA Report.
3. Estimated costs are based upon AKRF experience, and/or consultation with subcontractors/the Volunteer.
4. Cost estimates assume the wastes generated at the site during remediation/construction will be classified as non-hazardous.
5. For purposes of this RAA, it is assumed that all excavated fill will not be accepted for reuse and require off-site disposal.
6. O&M costs projected as average over 30 years unless anticipated to be completed sooner. Actual costs for NAPL recovery, monitoring, and maintenance would be higher initially and decrease over time.

Table 2B
Remedial Alternative 3 – Track 4 Site-Specific SCOs: Intermediate Coal Tar Source Material Excavation and Off-site Disposal
Cost Estimate Summary Table

DIRECT COSTS					
Item	**Task**	**Quantity**	**Unit**	**Unit Cost**	**Total**
1	Excavation of Shallow Fill Materials	27,200	Cubic Yard	$25	$680,000
2	Disposal of Shallow Fill Materials	40,800	Ton	$70	$2,856,000
3	Excavation of Intermediate Coal Tar Source Material	20,400	Cubic Yard	$30	$612,000
4	Disposal of Intermediate Coal Tar Source Material	30,600	Ton	$120	$3,672,000
5	Tent Enclosure (Odor Control During Excavation)	1	Allowance	$2,000,000	$2,000,000
6	Dewatering Equipment and Treatment O&M	7	Month	$70,000	$476,000
7	Foundation & Utility Underpinning	1	Allowance	$1,000,000	$1,000,000
8	Excavation Support	1,350	Linear Feet	$2,000	$2,700,000
9	Excavation Backfill & Compaction	47,600	Cubic Yard	$40	$1,904,000
10	Installation of Groundwater/DNAPL Monitoring Wells	6	Well	$19,000	$114,000
11	Site Restoration (General Grading, Utilities, Site-Cap, SSDS)	243,952	Square Feet	$10	$2,439,500
12	Engineering Deign, Oversight, and Project Management Costs	10%	% of Costs		$1,845,400
13	General Conditions (Contractor Procurement/Support, Mob/Demob, Site Controls, Etc.)	10%	% of Costs		$1,845,400
14	Construction Management	10%	% of Costs		$1,845,400
15	Insurance	10%	% of Costs		$1,845,400
16	Contingency	20%	% of Costs		$3,690,700
				DIRECT COST SUBTOTAL	**$29,525,800**
SHORT/LONG TERM O&M COSTS					
Item	**Task**	**Quantity**	**Unit**	**Unit Cost**	**Total**
17	Semi-Annual NAPL/Groundwater Monitoring	4	Semi-Annual	$16,000	$64,000
18	Annual SSDS O&M	30	Year	$8,000	$240,000
19	Annual Site Inspection and Report	30	Year	$10,000	$300,000
				O&M COST SUBTOTAL	**$604,000**
REMEDIAL ALTERNATIVE 3 TOTAL					
					$30,129,800

General Assumptions/Limitations:

1. The above estimate contains conclusions that are based upon currently available data.
2. This estimate is intended for use solely by the Volunteer and NYSDEC for purposes of evaluating remedial alternatives within this RAA Report.
3. Estimated costs are based upon AKRF experience, and/or consultation with subcontractors/the Volunteer.
4. Cost estimates assume the wastes generated at the site during remediation/construction will be classified as non-hazardous.
5. For purposes of this RAA, it is assumed that all excavated fill will not be accepted for reuse and require off-site disposal.
6. O&M costs projected as average over 30 years unless anticipated to be completed sooner. Actual costs for NAPL recovery, monitoring, and maintenance would be higher initially and decrease over time.

Table 2C

Remedial Alternative 4 – Track 4 Site-Specific SCOs: Intermediate Coal Tar Source Material Containment/Extraction and DNAPL Off-site Disposal

Cost Estimate Summary Table

DIRECT COSTS					
Item	**Task**	**Quantity**	**Unit**	**Unit Cost**	**Total**
1	Installation of Slurry Wall	35,200	Square Feet	$50	$1,760,000
2	Excess Fill Materials Generated During Slurry/Secant Wall Construction	1,600	Cubic Yard	$25	$40,000
3	Disposal of Excess Fill Materials	2,400	Ton	$70	$168,000
4	Installation of Intermediate DNAPL Recovery Wells	15	Well	$19,000	$285,000
5	Installation of Groundwater/DNAPL Monitoring Wells	6	Well	$19,000	$114,000
6	Dewatering Equipment and Treatment O&M	2	Month	$70,000	$140,000
7	Site Restoration (General Grading, Utilities, Site-Cap, SSDS)	243,952	Square Feet	$10	$2,439,500
8	Engineering Deign, Oversight, and Project Management Costs	10%	% of Costs		$494,700
9	General Conditions (Contractor Procurement/Support, Mob/Demob, Site Controls, Etc.)	10%	% of Costs		$494,700
10	Construction Management	10%	% of Costs		$494,700
11	Insurance	10%	% of Costs		$494,700
12	Contingency	20%	% of Costs		$989,300
				DIRECT COST SUBTOTAL	**$7,914,600**
SHORT/LONG TERM O&M COSTS					
Item	**Task**	**Quantity**	**Unit**	**Unit Cost**	**Total**
13	Monthly NAPL Recovery and NAPL Disposal	360	Month	$9,500	$3,420,000
14	Semi-Annual NAPL/Groundwater Monitoring	60	Semi-Annual	$11,000	$660,000
15	Annual Maintenance, Additional NAPL Wells and/or Additional NAPL Recovery Equipment	30	Year	$80,500	$2,415,000
16	Annual SSDS O&M	30	Year	$8,000	$240,000
17	Annual Site Inspection and Report	30	Year	$10,000	$300,000
				O&M COST SUBTOTAL	**$7,035,000**
REMEDIAL ALTERNATIVE 4 TOTAL					
					$14,949,600

General Assumptions/Limitations:

1. The above estimate contains conclusions that are based upon currently available data.
2. This estimate is intended for use solely by the Volunteer and NYSDEC for purposes of evaluating remedial alternatives within this RAA Report.
3. Estimated costs are based upon AKRF experience, and/or consultation with subcontractors/the Volunteer.
4. Cost estimates assume the wastes generated at the site during remediation/construction will be classified as non-hazardous.
5. For purposes of this RAA, it is assumed that all excavated fill will not be accepted for reuse and require off-site disposal.
6. O&M costs projected as average over 30 years unless anticipated to be completed sooner. Actual costs for NAPL recovery, monitoring, and maintenance would be higher initially and decrease over time.

Table 2D
Remedial Alternative 5 – Track 4 Site-Specific SCOs: Intermediate Coal Tar Source Material In-Situ Solidification (ISS)
Cost Estimate Summary Table

DIRECT COSTS					
Item	**Task**	**Quantity**	**Unit**	**Unit Cost**	**Total**
1	Excavation of Shallow Fill Materials	6,800	Cubic Yard	$25	$170,000
2	Disposal of Shallow Fill Materials	10,200	Ton	$70	$714,000
3	ISS (Bucket/Auger Mixing)	40,800	Cubic Yard	$115	$4,692,000
4	Dewatering Equipment and Treatment O&M	2	Month	$70,000	$140,000
5	Disposal of Subsurface Debris During ISS	1	Allowance	$50,000	$50,000
6	ISS QA/QC Borings	18	Core	$3,000	$54,000
7	ISS QA/QC Samples	82	Sample	$200	$16,300
8	Pile Modifications (pre-drill & grout columns for piles through ISS)	210	Pile	$1,400	$294,000
9	Installation of Groundwater/DNAPL Monitoring Wells	6	Well	$19,000	$114,000
10	Site Restoration (General Grading, Utilities, Site-Cap, SSDS)	243,952	Square Feet	$10	$2,439,500
11	Engineering Deign, Oversight, and Project Management Costs	10%	% of Costs		$868,400
12	General Conditions (Contractor Procurement/Support, Mob/Demob, Site Controls, Etc.)	10%	% of Costs		$868,400
13	Construction Management	10%	% of Costs		$868,400
14	Insurance	10%	% of Costs		$868,400
15	Contingency	20%	% of Costs		$1,736,800
				DIRECT COST SUBTOTAL	**$13,894,200**
SHORT/LONG TERM O&M COSTS					
Item	**Task**	**Quantity**	**Unit**	**Unit Cost**	**Total**
16	Semi-Annual NAPL/Groundwater Monitoring	4	Semi-Annual	$16,000	$64,000
17	Annual SSDS O&M	30	Year	$8,000	$240,000
18	Annual Site Inspection and Report	30	Year	$10,000	$300,000
				O&M COST SUBTOTAL	**$604,000**
REMEDIAL ALTERNATIVE 5 TOTAL					
					$14,498,200

General Assumptions/Limitations:

1. The above estimate contains conclusions that are based upon currently available data.
2. This estimate is intended for use solely by the Volunteer and NYSDEC for purposes of evaluating remedial alternatives within this RAA Report.
3. Estimated costs are based upon AKRF experience, and/or consultation with subcontractors/the Volunteer.
4. Cost estimates assume the wastes generated at the site during remediation/construction will be classified as non-hazardous.
5. For purposes of this RAA, it is assumed that all excavated fill will not be accepted for reuse and require off-site disposal.
6. O&M costs projected as average over 30 years unless anticipated to be completed sooner. Actual costs for NAPL recovery, monitoring, and maintenance would be higher initially and decrease over time.

APPENDIX A – JANUARY 12, 2023 NYSDEC COMMENTS

From:	Starr, Justin C (DEC)
To:	Scott Caporizzo
Cc:	"Botnick, Moshe"; Marc Godick; "Masters, Ryan"; "Mellick, Jay"; O"Neil, Eamonn M (HEALTH); Deyette, Scott (DEC); Omorogbe, Amen (DEC); John Sulich; Rebecca A. Kinal; "yborg@extell.com"
Subject:	RE: Extell Former Excelsior Bag (C360190): Remedial Alternatives Analysis (RAA) - NYSDEC Submission
Date:	Thursday, January 12, 2023 8:55:29 AM
Attachments:	image002.png image003.png image004.png image005.png image006.png

Greetings Scott,

DEC and DOH have completed our preliminary review of the Remedial Alternatives Analysis (RAA) and the proposed remedy described therein. In general, we are agreeable to the proposed remedy with two caveats.

The first caveat is, as previously discussed, the need to install NAPL monitoring wells for the deep contamination in the southeastern portion of the site with a provision for the potential recovery of NAPL should it be found to accumulate to recoverable levels. Simply leaving the deep contamination to “naturally degrade” without any monitoring or provision to address contamination should conditions change is insufficient. Deep monitoring wells with provisions for recovery would assuage our concerns here.

The second caveat concerns the presence of the timber bulkhead and its potential effect on implementation of the ISS. DEC and DOH have concerns that the presence of the bulkhead may limit the effectiveness of the ISS. The RAWP / remedial design should specifically address the timber bulkhead and describe what actions will be taken to ensure it does not limit remedy implementation, particularly if removal of the bulkhead or fully encapsulating the bulkhead prove impractical (the latter is especially true for where the bulkhead meets the southern property boundary).

Lastly, DEC and DOH have several comments on the RAA itself. These comments are relatively minor and in the interest of continuing to make forward progress, we will hold onto these comments until the RAWP review is complete and comments on both documents can be provided simultaneously.

Please provide the RAWP, with appropriate revisions to address the two caveats described above, for regulatory review and public comment at your earliest convenience. As always, feel free to reach out if you have any questions or comments.

Thanks,

Justin Starr, P.G.
he/him/his
Assistant Geologist, Remedial Bureau C,
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233-7014
P: (518) 402-9662 | F: (518) 402-9679 | Justin.Starr@dec.ny.gov

From: Scott Caporizzo <scaporizzo@akrf.com>
Sent: Thursday, December 08, 2022 2:29 PM
To: Starr, Justin C (DEC) <Justin.Starr@dec.ny.gov>
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Subject: Extell Former Excelsior Bag (C360190): Remedial Alternatives Analysis (RAA) - NYSDEC Submission

Good afternoon Justin,

Attached to this email for NYSDEC review is the Former Excelsior Bag (C360190) Remedial Alternatives Analysis (RAA). We understand that your review of the RAA cannot be completed until you've completed your review of the final SIR #2 and until we've finalized the IRM Work Plan field activities. We also understand the RAA will need to go out to public comment alongside the forthcoming RAWP, however, as discussed, before finalizing the RAWP for submission to NYSDEC/public comment, we are requesting NYSDEC preliminary review of the attached RAA.

Please feel free to reach out if you have any questions/concerns.

Regards,

Scott Caporizzo
Technical Director

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