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Interim Remedial Measure Work Plan

37-24 & 37-28 30th Street Redevelopment Site
37-24 through 37-28 30th Street
Queens, NY 11101
Site No. C241214

Prepared for:
Park Construction Corporation
1836 Gilford Avenue
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Submitted to:
New York State Department of Environmental Conservation
Region 2
47-40 21st Street
Long Island City, NY 11101

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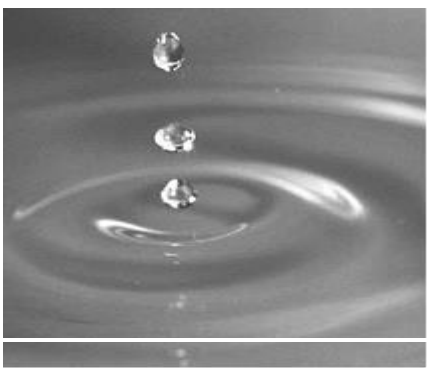

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Appendix

A Community Air Monitoring Program

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Certification

I, Gary A. Rozmus, certify that I am currently a NYS registered professional engineer and that this Interim Remedial Measure Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

NYS Professional Engineer # 056744

November 4, 2019

Date

1. Introduction

31st Avenue Associates LLC and 37-26 30th Street LLC (the "Applicants") entered into a Brownfield Cleanup Agreement (BCA) with the New York Department of Environmental Conservation (NYSDEC) on September 17, 2018 (Index No. C241214-08-13), to investigate and potentially remediate the 0.368-acre property. The property consists of two (2) congruent tax lots located at 37-24 through 37-28 30th Street (Tax Block 371, Tax Lots 33 and 34), in Long Island City, New York (Site). The Applicants are Volunteers in the Brownfield Cleanup Program (BCP).

The Site is currently vacant but was historically used for dry cleaning businesses and as an auto repair facility. Previous reports and limited investigations identified guidance value exceedances of compounds in soil and groundwater potentially indicative of historic fill, with elevated chlorinated compound exceedances in vapor sampling completed in soil, sub-slab, and indoor air. A more detailed history of the previous environmental work completed on-Site is included in the Remedial Investigation Work Plan (RIWP) dated January 2019.

Following implementation of the Remedial Investigation (RI), similar elevated chlorinated compound exceedances were documented and the Contaminants of Concern (COCs) for the Site were tentatively identified to be tetrachloroethene (PCE) and trichloroethene (TCE). Though PCE and TCE were observed throughout the Site in groundwater and soil vapor, a source area in the soil media was not identified.

Based on information collected during the RI, it is hypothesized that COC and petroleum-impacted soil are present at the Site. The purpose of this Interim Remedial Measure Work Plan (IRMWP) is to more efficiently identify impacted soil source areas via a systematic, grid-system excavation. This IRMWP presents the planned interim remedial steps that will be implemented at the Site to address unknown source areas with soil contamination. This IRMWP call for the removal and proper disposal of approximately 9,000-cubic yards (CYs) of material from the Site following screening, sampling, and segregation of COC or petroleum-impacted soils. Dewatering is unnecessary based on the depth to groundwater being approximately 26-feet below ground surface (ft. bgs) and the planned excavation depth is 15-ft. bgs.

Following the performance of the IRM, an IRM Report, Alternatives Analysis Report (AAR), and draft Remedial Action Work Plan (RAWP) will be submitted to the NYSDEC.

1.1 Project Background

The Site is located in the Long Island City section of Queens, New York and is identified as Block 371 and Tax Lot 33 (37-24 30th Street) and Lot 34 (37-26 and 37-28 30th Street) on the New York City Tax Map. A United States Geological Survey (USGS) topographical quadrangle map (**Figure 1**) shows the Site location. The Site is located within a primarily mixed use, industrial/warehouse, commercial, and residential area of Queens, New York. The 0.368-acre Site is bounded by a 2-story office building to the north, an auto repair shop and two residential houses to the south, 30th Road to the east, and Old Ridge Road to the west (**Figure 2**).

Until recently (August 2018), the Site was used for two (2) commercial dry-cleaning businesses and one (1) auto repair business and contained three (3) separate tenant spaces. The Site features included a one-story structure with partial two-story section and partial basement located within the auto repair business parcel that is approximately 400-square feet in size. Access to the Site is provided through bay doors on 30th Street and Old Ridge Road. The auto repair shop, Millennium Auto Collision, occupied half of Tax Lot 34 with the physical address of 37-28 30th Street; the first drycleaner, Enterprise Cleaners, occupied the remaining half of Tax Lot 34 with the physical address of 37-26 30th Street; and the second drycleaner, Season Wash, occupied Tax Lot 33 with the physical address of 37-24 30th Street. As of August 2018, the Site has been purchased and all tenants have vacated the properties with partial structural demolition completed as a component of the RIWP.

There are currently three inactive 275-gallon Aboveground Storage Tanks (ASTs) utilized for fuel oil storage located within the 37-26 30th Street tenant space, one inactive 275-gallon waste oil AST located within the 37-28 30th Street tenant space, and one approximately 2,500-gallon capacity heating oil AST utilized for fuel oil storage located within the partial basement below the former Millennium Auto Collision tenant.

1.2 Remedial Investigation Findings

The RIWP was implemented by GEI during February and March 2019 and encompassed the sampling of soil, groundwater, and soil vapor media. The results of the RI, and the previous investigations conducted at the Site, indicate that impacts are present primarily in groundwater and soil vapor, but a potential source of groundwater contamination was not identified during the RI. A summary of the RI findings are as follows:

<u>Soil</u>

Exceedances of the Title 6 New York Codes, Rules and Regulations (6NYCRR) Part 375 6.8 Unrestricted Use Soil Cleanup Objectives (UUSCOs) were limited to metals found within shallow soils that were identified as urban or historical fill material (0 to 5 ft. bgs) and a

minor pesticide detection in unsaturated soils. The metal concentrations are not considered COCs for the Site.

Groundwater

Groundwater exceedances of the 6NYCRR Part 703.5 Class GA Ambient Water Quality Standards (AWQS) included volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals. The SVOC exceedances were limited to two (2) monitoring wells, were minor in nature, and are not considered COCs. The metal detections and exceedances in groundwater are most likely naturally occurring or related to road salt application and are not COCs for this Site.

VOC impacts in the groundwater were almost specifically limited to the COCs: PCE and TCE, excepting a minor chloroform exceedance, and were detected throughout the Site. TCE was detected at all shallow monitoring wells installed, but only exceeded the NYSDEC AWQS in MW-2S (concentration of 5.2 µg/L) and in the sole deep screened monitoring well MW-3D (concentration of 8.9 µg/L). PCE was detected at every temporary monitoring well with exceedances observed at eight (8) locations including the duplicate sample collected at MW-5I.

Emerging contaminants 1,4-Dioxane and PFAS compounds were sampled in the groundwater at an upgradient and downgradient monitoring well. 1,4-Dioxane was detected in one (1) monitoring well, MW-2S, above the screening level. Analytical results collected from monitoring wells MW-2S and MW-3S are below the health advisory level established for PFOA and PFOS. The total PFAS concentration at MW-2S and MW-3S are below the health advisory level established. No historical on or off-site sources were identified for 1,4-Dioxane, PFOA, or PFOS.

Based on the Site-specific groundwater depths and calculated elevations, groundwater flows beneath the Site in a westerly direction. Due to the location of the monitoring wells, the exceedances, and the groundwater contour direction, it is highly probable that residual contaminants are present in the groundwater as a result of a historic discharge from ASTs or machinery historically located in the dry cleaner on the eastern portion of Tax Lot 34.

Soil Vapor

Chlorinated VOCs, primarily PCE and TCE, were detected in all seven of the soil vapor sample locations. Elevated levels of chlorinated VOCs were generally found throughout the Site, with the highest detection located in the north and eastern portions of the Site. Consistent with groundwater contamination sources, soil vapor concentrations are likely related to the former dry-cleaning facilities that historically operated on-Site within the

eastern portion of Tax Lot 34. Petroleum-related VOCs were detected in four of the seven soil vapor samples collected. No other on or off-site sources were identified.

Based on these sub-surface concentrations detected at the elevation of the proposed building foundation (15-ft. bgs), it is likely that soil vapor intrusion could impact future buildings without Remedial Action and engineering controls.

1.3 Project Organization and Responsibility

Approval of this IRMWP by the NYSDEC Project Manager will be obtained prior to the commencement of field activities. GEI will coordinate with the NYSDEC, at minimum, 10 business days prior to implementing the IRM field activities.

The excavation subcontractor will be responsible for all excavation activities to include, but not be limited to, compliance with all applicable Occupational Safety and Health Administration (OSHA) regulations, personnel health and safety, and the installation of support of excavation as necessary.

GEI will be responsible for project management, subcontractor oversight, IRMWP compliance, determination of corrective measures when needed, monitoring for health and safety, perimeter-air monitoring activities, and collection of analytical samples. GEI will also serve as the Site Health and Safety Officer.

The following are the key personnel or agencies involved with RIWP activities at the Site:

NYSDEC:

Steven Walsh, Project Manager
NYSDEC
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625 Broadway
Albany, NY 12233-7017
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Dawn Hettrick, Project Manager
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Demolition Subcontractor:

To be selected

Excavation Subcontractor:

To be selected

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31st Avenue Associates LLC & 37-26 30th Street LLC

The authorized representative of the Volunteers, who is authorized to sign on behalf of both 31st Avenue Associates LLC and 37-26 30th Street LLC, is:

Park Construction Corporation
c/o Robert Cerrone
1836 Gilford Avenue
New Hyde Park, NY 11040
Phone: (516) 352-3599

2. Interim Remedial Measure Work Plan

This IRMWP is based on the review of the data collected during the RI and the previous investigations conducted at the Site. The scope of work for the proposed Work Plan is as follows, with work details provided in the subsequent subsections:

- Demolition of the current on-Site buildings;
- Removal of five (5) inactive ASTs located throughout the Site;
- Decommission/Removal of the temporary monitoring wells installed during implementation of the January 2019 RIWP to facilitate construction of the proposed development;
- Field screening, inspection and analysis of material and identification of potential hot spots, removal of approximately 9,000-CY of material, for off-Site disposal or treatment at a regulated facility, to the proposed redevelopment depth of 15-ft. bgs Sitewide;
- If necessary, dewatering of the excavation area and treatment of captured water; and
- Use of confirmatory end-point soil samples collected along the excavation sidewalls and bottom to show compliance with Restricted Residential Soil Cleanup Objectives (RRUSCOs).

Field work will follow the health and safety protocols detailed in the Site-specific Health and Safety Plan (HASP), which was included as appendix of the original January 2019 RIWP. During demolition and excavation activities a Community Air Monitoring Plan (CAMP) will be implemented to monitor and potentially mitigate any odors or fugitive dust that may be generated. This document is included as **Appendix A**.

Prior to initiating subsurface work, a licensed New York State professional land surveyor will be responsible for establishing a temporary benchmark on-site for use in determining excavation depth. The surveyor will also survey elevations across the work area prior to and subsequent to excavation that will be used to determine excavation and backfill quantities.

2.1 Summary of Remedial Alternatives

Remedial Alternatives Analysis will be performed as part of the RAWP.

2.2 Selection of the Preferred Remedy

The Remedial Action will be selected as part of the RAWP.

2.3 Execution of the Work Plan

Site work will commence no earlier than 7:00 a.m. Monday through Friday. All work must be completed, and the work area closed for the evening at 5:00 p.m., unless otherwise authorized by the property owner. During working hours, the demolition and excavation subcontractors will make every effort to minimize potential community impacts. These include, but are not limited to, noise and traffic concerns associated with the execution of the IRMWP.

The demolition and excavation subcontractor's work will be performed in accordance with OSHA, state, and industry safety standards. All on-Site personnel performing intrusive activities that have the potential to come in contact with impacted materials will have the requisite 1910.120 OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Training, as well as Site-specific training prior to intrusive activities. All personnel performing work associated with this IRMWP will be required to have both general and Site-specific training. The general training includes all applicable OSHA and state required training, such as 40-hour HAZWOPER and the 8-hour Refresher Training. Supervisory personnel will also have supervisory training. All personnel will be in a medical surveillance program. Also, Site-specific training will be given to all personnel performing fieldwork at the Site on a daily basis. This Site-specific training will include a review of potential Site hazards, required personal protective equipment (PPE), and Site warning and evacuation procedures.

The property owner will provide access to the Site for the IRMWP activities.

The excavation subcontractor will be responsible for contacting New York 811 to request that all utilities on the adjacent public right-of-ways be located and marked. The location of on-Site utilities has been previously marked and will be confirmed prior to the start of intrusive activities. The excavation subcontractor is responsible for resolving all potential conflicts. Underground utility protection, if necessary, will be the responsibility of the selected Contractor. When all utilities have been verified/confirmed/protected, then intrusive excavation activities may be initiated.

The selected demolition and excavation subcontractor(s) will mobilize all necessary labor, equipment, supplies and materials to complete the IRMWP. Lay down areas for equipment, supplies and materials, the appropriate exclusion zone(s) and support area(s) will be identified to conduct the planned activities safely and effectively. All equipment will be inspected prior to utilization for the IRMWP and checked periodically for performance and corrective repair. All equipment will be cleaned prior to arrival on the project Site.

2.4 Building Demolition

Prior to initiation of excavation work, the existing building will be demolished in accordance with all applicable rules and regulations. The buildings located on-Site were partially demolished to facilitate completion of a geotechnical subsurface investigation for New York City Department of Buildings permitting reasons and the completion of the January 2019 RIWP. The Volunteer will be performing this work directly; such is not described within this IRMWP. GEI will be on-site to observe the demolition and will implement the Site-specific CAMP as required.

2.5 Aboveground Storage Tank Removal

There are currently three (3) inactive 275-gallon ASTs utilized for fuel oil storage located within the 37-26 30th Street tenant space, one (1) inactive 275-gallon waste oil AST located within the 37-28 30th Street tenant space, and one (1) approximately 2,500-gallon capacity heating oil AST utilized for fuel oil storage located within the partial basement below the former Millennium Auto Collision tenant. These five (5) ASTs will be removed as a component of the building demolition and in compliance with all NYC Building department regulations prior to the start of IRM excavation activities.

Tank contents (i.e., liquids and tank sludge) will be removed from tank and connection lines, containerized and characterized for proper off-Site disposal. The tank contents will be properly disposed of by the contractor and disposal documentation will be provided. Water from the UST cleaning process will be contained in NYSDOT-approved 55-gallon drums or extracted using a vacuum truck, pending the volume needed to clean the USTs. Water will be properly disposed of by the contractor and disposal documentation will be provided. The USTs will be cut into manageable pieces and/or crushed and removed from the Site to be either recycled or disposed of at an approved disposal facility.

2.6 Monitoring Well Decommissioning

Prior to IRM soil removal activities, the 13-temporary groundwater monitoring wells installed during the RI will be removed by pulling the casings while grouting according to NYSDEC CP-43 Groundwater Monitoring Well Decommissioning Policy (November 3, 2009). The removed casings will be disposed of in a dumpster as solid waste. Any excess soils and any removed well sands/bentonite will be stored in drums on-site for future off-site disposal.

2.7 Grid-System Excavation

As discussed in the RI Report, a source of PCE and TCE contamination was unable to be identified in the soil media. Due to the chemical nature and mobility of the COCs, a grid-

system excavation is proposed to occur across the Site in an attempt to identify point-source discharge locations and material hot spots for the COCs and any other discharges associated with the historic use at the Site. The proposed excavation will include the screening, stockpile, removal and off-Site disposal of impacted and non-impacted soils at the Site. The existing grade and final excavation depths are to be verified via Global Positioning System (GPS) survey.

The Site footprint of 16,030-square feet (sf) will be managed as an 8-cell grid, where each cell will have a footprint of approximately 2,000-sf. Each proposed cell will be excavated in 5-foot intervals to the final depth of the excavation, identified to be the limits of the proposed redevelopment excavation of approximately 15-ft. bgs. During the excavation a GEI representative will screen the removed material for visual and olfactory observations and for the COCs using a photoionization detector (PID) utilizing a 11.7 eV photovoltaic lamp. PID measurements will be recorded and mapped as the excavation progress, to documented contamination areas throughout the Site.

There is a potential that petroleum or other similar impacts may be observed in the material that is planned to be removed due to the historic use of the Site as an auto shop. If petroleum-impacted material is observed, via staining or odor, the impacted material will be evaluated and may be handled separately from the other excavated materials at the Site.

In additional to the screening of the soils excavated, confirmatory grab samples will be completed of the stockpiled soils as described in Section 2.7.3 below. This confirmatory sampling will be used in addition to the screening to confirm contamination levels in material generated for off-Site disposal. Preferential sampling will be completed of the soils in areas where staining or elevated PID readings were recorded.

The proposed excavation grid and stockpile volume is included as **Figure 3**. A contemplated area of contaminated soils, based on the historic uses of the Site and the location of ASTs, is included as **Figure 4**.

2.7.1 Support of Excavation

Appropriate management of structural stability of on-Site or off-Site structures during on-Site activities including excavation is the sole responsibility of the Volunteer and its contractors. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this IRMWP. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals that may be required to perform work under this Plan. Further, the Volunteer and its contractors are solely responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved IRMWP.

2.7.2 Excavated Soil Management

Each proposed cell in the excavation grid is approximately 400-CY in volume. The excavated soils will be screened, stockpiled, and sampled prior to being loaded onto trucks for off-Site disposal. The stockpiled excavated soil will be placed on and covered during non-working hours by a minimum of double 6-mil polyethylene sheeting which is sufficiently anchored to prevent any wind and water erosion. The cover will be inspected at least once per day, with corrective action taken as needed. The inspections and any corrective actions will be documented in the daily field reports and will occur until the materials have been properly removed and disposed off-Site.

During excavation the soils removed will be screened periodically (i.e., every 10 to 20-CY of material) prior to stockpiling utilizing a PID with a 11.7 eV photovoltaic lamp to allow preferential screening for chlorinated compounds. Contaminated soil associated with the COCs is defined, for the purpose of this IRMWP, as soil with vapors greater than 100-parts per million (ppm) on the PID. If an excavated cell has over 50% of its screening level measurements greater than 100-ppm, without petroleum staining and/or odors, the entire cell shall be considered COC-contaminated material. If petroleum staining and/or odors is the predominant contamination noted in a cell, the cell will still be contaminated in nature, but not COC-impacted. If neither of the previously noted screening levels or observations are documented for the excavated soils, the soil will be considered non-impacted.

2.7.3 Excavated Soil Sampling

Due to the nature of the potential COCs and the historic use of the Site, the stockpiles will be sampled for solely VOCs by United States Environmental Protection Agency (USEPA) Method 8260C. For stockpiles where COC and petroleum-contamination are identified during excavation activities, a VOC grab sample will be collected at a frequency of 1-sample-per-100-CY (i.e., four [4] samples per stockpiled excavation cell). Stockpiles where no impacts are identified, via PID, olfactory, or staining, will have a single VOC grab sample collected to confirm lack of chemical impacts prior to off-Site disposal. In instances where stockpile chemical composition is confirmed to be of a similar nature following analytical testing, stockpiles may be combined for site management and off-loading purposes.

A maximum total of 96 VOC soil samples will be collected during implementation of the IRMWP to delineate source areas, if all material on-Site is confirmed to be impacted either by COCs or petroleum-impacts. Grab samples will be collected in a manner similar to that dictated in the NYSDEC DER Technical Guidance for Site Investigation and Remediation (DER-10) under Section 5.4(b)5.vi, dependent on the period of time following the disturbance of the soils and placement in the stockpile.

Soil is not planned to be reused on-Site. If soil is proposed for reuse off-Site, additional sampling shall be completed as noted in NYSDEC DER-10 Table 5.4(e)10. Waste characterization sampling for off-Site disposal shall be completed as necessary by the Volunteer.

2.7.4 Material Transport Off-Site

The estimated quantity of soil/fill expected to be excavated and disposed off-Site is 9,000-CY or approximately 13,500 tons. Excavated soils will be stockpiled prior to loading into dump trucks for off-Site disposal. Care will be taken to minimize dust formation during loading, and the excavation equipment will have sufficient boom length to allow for placement of soils into the truck bed. Side dumping (i.e., with a front-end loader) will only be permitted if fugitive dust can be consistently controlled within the CAMP action limits

For each disposal facility to be used in the IRM, a letter from the developer/QEP to the receiving facility requesting approval for disposal and a letter back to the developer/QEP providing approval for disposal will be submitted to NYSDEC prior to any transport and disposal of soil at a facility.

A self-contained decontamination station of sufficient size to decontaminate the largest piece of equipment leaving the Site will be established on-Site (if deemed necessary). The decontamination station will be lined with 60-mil HDPE and a protective geotextile fabric. The perimeter will be bermed approximately six inches above existing grade and sloped for collection and pumping of decontamination water. Decontamination will be performed with a high-pressure washer located within the decontamination basin. Decontamination water will be pumped to drums for off-site disposal.

Excavation equipment that remains at the Site during the week and weekends will be left within the temporary fenced areas within the work zone. Alternately, for security purposes, equipment may be decontaminated and removed from the Site for temporary storage at a secured area. Area streets will also be cleaned if necessary to mitigate dust or mud from vehicles entering/leaving the Site.

2.8 Excavation Dewatering

Based the planned excavation depth (approximately 15 ft. bgs) and the observed depth to groundwater at the Site (approximately 26 ft. bgs), it is unlikely that groundwater will be encountered in the excavation. However, contingent plans will be created to address stormwater, if any, in the excavation. These plans include the potential for pumping the excavation water using temporary sumps or a vacuum truck into frac tanks. Stored water will either be shipped for off-Site treatment at a licensed treatment facility or will be

characterized and treated, if necessary, on-Site and discharged to the sanitary sewer under NYC Department of Environmental Protection permitting.

If a minimal amount of perched groundwater is encountered at depths while excavating soils, then, as necessary, the groundwater will be pumped out of the excavation into appropriate containers (i.e. NYCDOT approved 55-gallon drums). The water will then be characterized, and arrangements will be made for off-Site disposal. Containers will be staged on pallets within a temporary secondary containment area, in accordance with applicable NYSDEC waste regulations

2.9 Confirmatory End-Point Sampling

Post-excavation end-point soil samples will be collected from the sidewalls and bottom of the excavation in accordance with NYSDEC DER-10 guidelines to confirm that the remaining soil meets the Part 375 RRUSCOs. One sidewall sample will be collected for every 30-linear feet per excavation sidewall, with a minimum of three (3) sidewall samples collected per excavation sidewall. A bottom excavation sample will be collected for every 900-sf of bottom excavation (i.e., two [2] bottom samples will be collected per completed excavation cell).

During implementation of the RI, soils were characterized to the groundwater table depth of approximately 25 ft. bgs. No RRUSCO exceedances were noted in soils during this previous investigation. As the purpose of this IRMWP is to identify the soil source area of the COCs, which are potentially the only soil impacts that may be present about RRUSCOs, end-point sampling will be only completed for VOCs by USEPA Method 8260C. Laboratory analysis will be performed by a NYSDEC-approved laboratory.

Proposed end-point sample locations are as shown on **Figure 5**. Following excavation of the Site to the final development elevation of 15 ft. bgs, no other redevelopment activities (e.g. pouring of concrete for foundation work) is to occur as part of this IRMWP or otherwise prior to NYSDEC issuance of a Decision Document. Redevelopment activities associated with the foundation or Remedial Action will only commence upon NYSDEC-approval.

2.10 Odor and Fugitive Dust Control

In accordance with NYSDEC and NYSDOH requirements, a CAMP will be implemented at the Site during demolition and excavation activities. The objective of the CAMP is to provide a measure of protection for the downwind community (i.e., off-Site receptors, including residences and businesses) from potential airborne contaminant releases as a direct result of intrusive IRM activities. Air monitoring stations will be placed upwind and downwind of the intrusive work area.

VOCs and respirable particulates (PM-10) will be monitored at the upwind and downwind stations on a continuous basis. In addition to the fixed stations, VOCs will be monitored in the work zone using hand held equipment by the GEI air monitoring personnel. The Site-specific CAMP was included as an appendix of the January 2019 RIWP and will be implemented during invasive IRM activities. This appendix is included for reference purposes in this IRMWP as **Appendix A**.

Dust will be controlled by spraying water mist over the work area if perimeters action levels established in the CAMP are exceeded. The water mist will be generated by connecting a misting device to a hose, which will be connected to any potable water source. The degree to which these measures will be used will depend on particulate levels in ambient air at the Site perimeter as determined through implementation of the CAMP. Gravel will be used on roadways to provide a clean and dust-free road surface, and on-Site roads will be limited in total area to minimize the area required for water spraying.

A foam unit will be used, if necessary, to suppress vapors and odors that are generated during the excavation. Foam will be applied, if warranted, to stockpiled soil and excavation sidewalls in an effort to maintain work zone and perimeter air monitoring criteria established in the CHASP and CAMP. Tarps will also be employed to suppress vapor and odors from stockpiled soil in the staging area, if necessary.

2.11 Monitoring Well Installation, Development and Sampling

A component of the to-be-submitted RAWP is the completion of a Qualitive Human Health Exposure Assessment (QHHEA). The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the COC that are present at, or migrating from, the Site. All monitoring wells installed during completion of the most recent RI were installed within Site-boundaries and identify potential exposure pathways on-Site and downgradient. To complete the QHHEA, an additional two (2) monitoring wells will be installed upgradient from the Site in the adjacent sidewalk.

The proposed monitoring wells will be installed, developed, and sampled in a manner similar to that completed during the March 2019 RI, specifically screened at the shallow interval of 25 to 35 ft. bgs. These monitoring wells will be completed with a J-plug and a flush mounted protective casing in a concrete pad located within the sidewalk.

The monitoring wells will be sampled for the following analytical:

- VOCs using USEPA Method 8260C;
- SVOCs using USEPA Method 8270D;
- TAL metals (including mercury) via USEPA Method 6010D and Method 7473;

- Pesticides via USEPA Method 8081B; and
- PCBs via USEPA Method 8082.

A single monitoring well will be sampled for TAL perfluoroalkyl and polyfluoroalkyl substances using a modified USEPA Method 537 and 1,4-Dioxane using a modified USEPA Method 8270 (with selective ion monitoring to be used during analysis). As the potential for these emerging contaminants at the Site is minimal, and the lack of impacts of either compound was noted in the temporary monitoring wells sampled during implementation of the RI, this sampling frequency should sufficiently document any emerging contaminant migration that may be originating upgradient of the Site.

These monitoring wells will be semi-permanent in nature and will be installed and sampled prior to submittal of the RAWP. A figure highlighting the proposed location is included as **Figure 6**.

3. Interim Remedial Measure Report

The results of the IRMWP and supporting documentation will be compiled in an IRM Report. The report will provide a summary of the fieldwork performed and an interpretation of the confirmatory sample analytical data. Supporting documentation will consist of tables containing the analytical results; figures showing the size and location of IRM activities along with confirmatory sample locations; pertinent photographic documentation of the activities completed; waste disposal documentation of the various material generated for disposal; and findings, conclusions and recommendations resulting from the IRM work. The report will be submitted to NYSDEC for review.

To facilitate the interpretation of data generated during the investigation activities, the data will be tabulated in data summary tables. Figures showing sampling locations with the corresponding analytical results will be prepared to enhance the overall understanding of Site conditions regarding the magnitude and location of contamination that may remain on-Site following redevelopment.

3.1 Quality Assurance/ Quality Control (QA/QC)

A Site-specific Quality Assurance Project Plan (QAPP) was generated and included as an appendix in the January 2019 RIWP. The QAPP presents the sampling procedures, analytical methods and QA/QC procedures associated with the activities planned for this BCP Site. Protocols for sample collection, sample handling and storage, Chain of Custody procedures, and laboratory and field analyses are described or specifically referenced to related investigation documents. Preparation of laboratory data for submittal to NYSDEC in the appropriate Electronic Data Deliverable (EDD) and third-party validation is also referenced in this document. All protocols outlined in the QAPP are applicable under the IRMWP.

4. Remedial Evaluation

Upon completion of the IRM, the need for additional remediation of other media (i.e., groundwater and soil vapor) will be evaluated. A draft RAWP will then be submitted to NYSDEC for comment and approval. The RAWP will include an evaluation of remedial alternatives. Data obtained during previous investigations and the IRM will be utilized along with the planned end use to identify, select, and evaluate remedial action alternatives for the Site. Potential Site constituents and migration pathways will be categorized as follows:

- soil/fill;
- groundwater; and
- indoor air and airborne dust.

Once the degree of contamination associated with these media and other Site characteristics are quantified, Remedial Alternatives for Site remediation will be defined. The Remedial Alternatives that are considered will include the "no action" measure as a baseline against which other remedial measures, if necessary, can be compared. The overall objective of the remedial alternatives evaluation process is to select a remedial action. The selected remedial action will exhibit the following characteristics:

- Protection of public health and the environment;
- Attains federal and state public health and environmental requirements identified for the Site;
- Utilizes permanent solutions and alternative treatment technologies to the most practical extent within proven technological feasibility and availability;
- Utilizes treatment to permanently reduce the toxicity, mobility, volume, or extent of contamination; and
- Minimizes costs.

As the redevelopment excavation is proposed to only extend to 15 ft. bgs, it is highly likely that soil vapor and groundwater concentrations will only experience minimal degradation following soil source area removal. The RAWP will also identify Engineering Controls (ECs) to be installed during implementation, most likely before the final foundation is completed. The ECs chosen will be utilized to treat and/or prevent migration of the groundwater and soil vapor impacts located at the Site.

To properly target the soil vapor impacts located in the vadose zone between the proposed redevelopment foundation and the groundwater water, a Soil Vapor Extraction (SVE) system

is the likely EC proposed to be completed during the RAWP implementation. The SVE system will use vacuum pressure to remove VOCs, specifically the COCs, from the unsaturated soil. The gas leaving the soil may be treated or destroyed, depending on local and state air discharge regulations. Extraction wells associated with the SVE system will be installed at depths directly below the foundation to the minimal depth of groundwater (approximately 25 ft. bgs).

To prevent groundwater from rising into the unsaturated zone as a result of the SVE vacuum pressure, and to treat impacted groundwater, an Air Sparge (AS) system will be used in conjunction with the SVE. The AS system will inject air directly into groundwater and volatilize the COCs and enhance biodegradation. As a majority of COC impacts in groundwater were identified in the shallow monitoring well screens (depths from approximately 25 to 35 ft. bgs), the AS system will be located at that depth and slightly below to enhance the removal of COCs. The AS air bubbles will carry vapor phase COCs to the vadose zone, where they will then be removed by the SVE system.

Design specifications for the SVE and AS systems will be fully discussed and included in the RAWP.

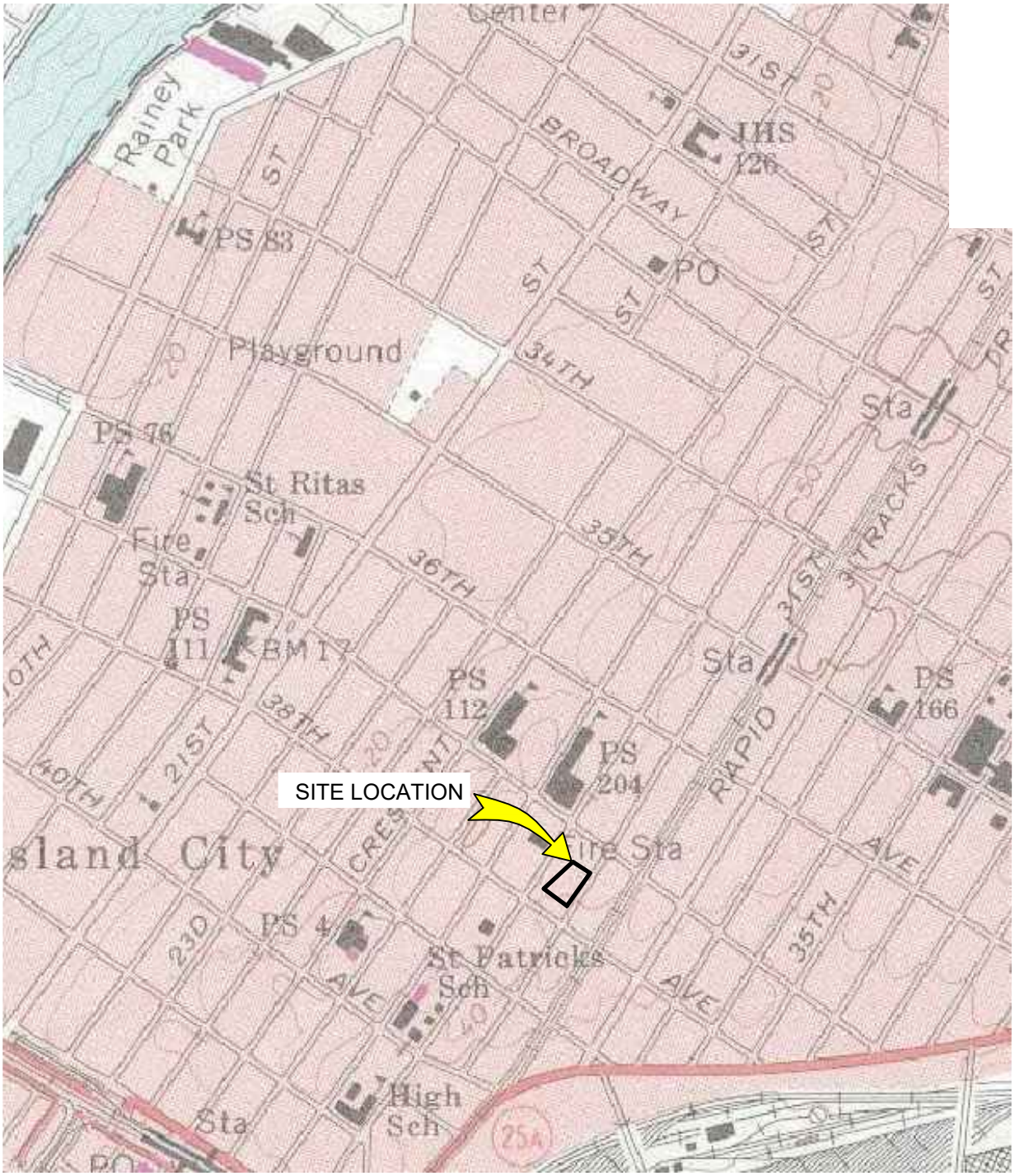
The RAWP will also include a Soil/Fill Management Plan, which will describe a plan for characterization and handling of excavated soil/fill based on NYSDEC Soil Cleanup Objectives as specified in 6 NYCRR Subpart 375-6.

5. Schedule

The proposed project schedule for implementation of the IRMWP activities is presented below. The schedule may be affected by regulatory review time periods, contractor response timeframes, timeframes necessary to negotiate access agreements with property owners, community issues, permit review and approval timeframes, or other unknown factors. In addition, if the scope of the proposed IRMWP changes as a result of negotiating access or regulatory review, then revisions to the work plan, and plans and specifications or change orders with the demolition subcontractor, excavation subcontractor, and/or GEI may be required and the schedule presented herein, may be impacted. Every effort, however, will be made to keep the project on the anticipated schedule.

MILESTONE	Time Frame (weeks)	
	Individual	Cumulative
Submittal of IRMWP for NYSDEC review	0	0
NYSDEC Approves IRMWP	2	2
IRMWP Implementation – Building Demolition	1	3
IRMWP Implementation – Monitoring Well Decommissioning	1	4
IRMWP Implementation – Grid-Excavation of Site	12	16
Submittal of IRM Report for NYSDEC review	5	21
Submittal of RAWP (in conjunction with IRMWP Implementation)	3	24
NYSDEC Approves RAWP	4	28

Figures



0 800 1600

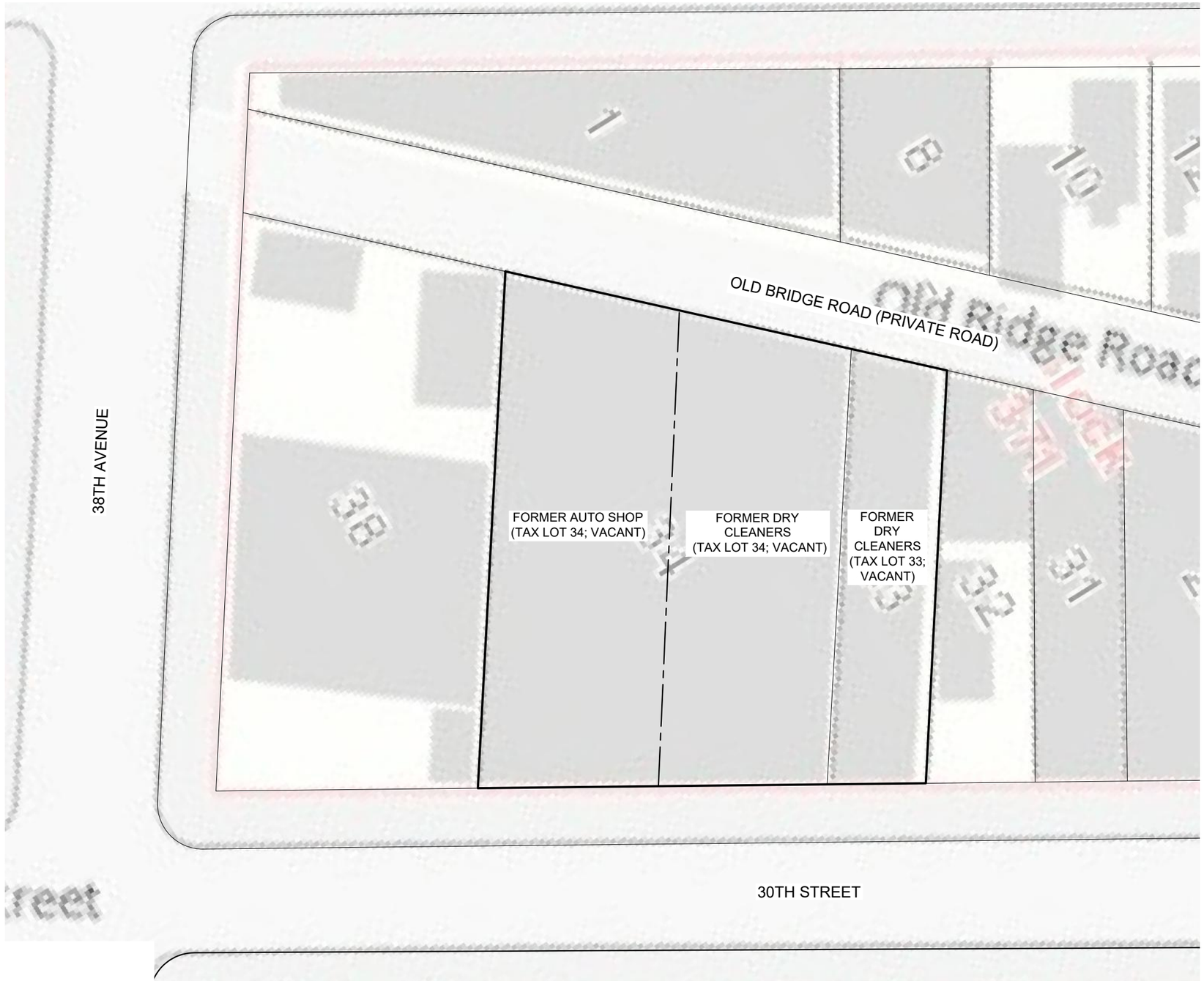
SCALE: 1" = 800'

SOURCE:

1. USGS CENTRAL PARK QUADRANGLE MAP.

Interim Remedial Measures Work Plan 37-24 & 37-28 30th Street Redevelopment Site Long Island City, New York	GEI Consultants	SITE LOCATION MAP
31st Avenue Associates LLC & 37-26 30th Avenue LLC New Hyde Park, New York	Project 1800522	June 2019 Fig. 1

\\hts1v-fs01\ I:\Tech\Environmental Projects\Park Construction\CAD\Figures\IRMWP\1800522 - FIG 1.dwg - 5/1/2019



LEGEND:

BROWNFIELD CLEAN UP PROGRAM SITE BOUNDARY

TAX LOT LINE

TAX LOT DIVISION LINE (2 PROPERTIES)

SOURCE:

1. PLAN BASED ON MAP BY NYS OASIS.

0 30 60

SCALE: 1" = 30'

Interim Remedial Measures Work Plan
37-24 & 37-28 30th Street Redevelopment Site
Long Island City, New York

31st Avenue Associates LLC & 37-26 30th Avenue LLC
New Hyde Park, New York

GEI Consultants

SITE MAP

Project 1800522 | June 2019 | Fig. 2

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ESTIMATED INTERIM REMEDIAL MEASURE EXCAVATION VOLUME CALCULATION

TOTAL BCP AREA EXCAVATION ESTIMATE

AREA FOOTPRINT: 16,040 SF
FINAL DEPTH OF INTERIM REMEDIAL MEASURE EXCAVATION: 15 FT
TOTAL VOLUME TO BE REMOVED: 16,040 SF x 15 FT = 240,600 CF

$\frac{240{,}600\ CF}{27\ CF}$ x CY = 8,911.11 CY ≈ 9,000 CY

INTERIM REMEDIAL EXCAVATION CELL ESTIMATE

PROPOSED DIVISION OF BCP AREA INTO 8 CELLS
AREA FOOTPRINT: 16,040 SF
AREA OF EACH CELL: 16,040 SF / 8 CELLS = 2,005 SF/CELL

INTERIM REMEDIAL EXCAVATION INTERVAL DEPTH: 5 FT
5 FT X 3 = 15 FT (FINAL DEPTH)

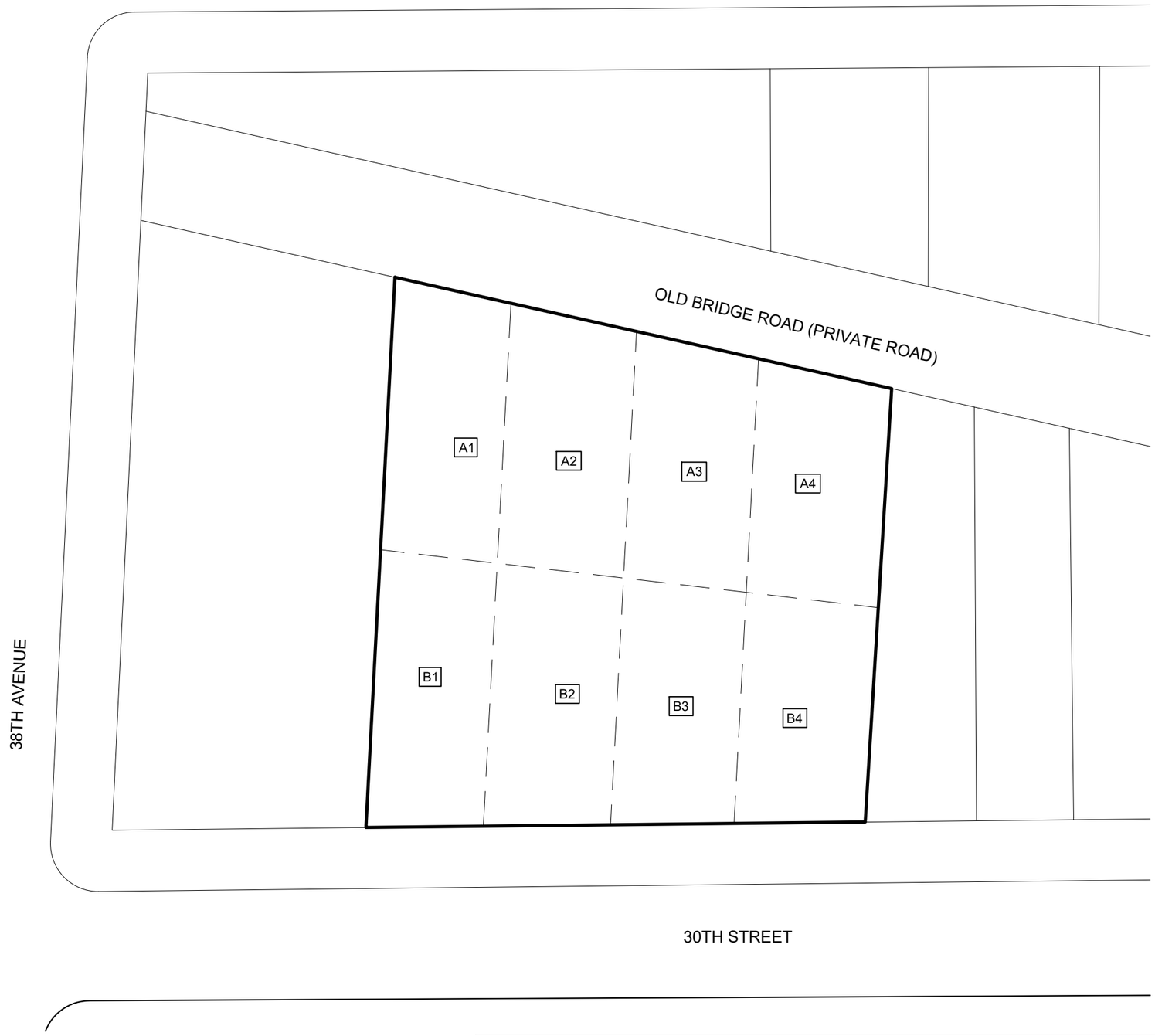
VOLUME OF SINGLE CELL INTERVAL (I.E., 5-FT INTERVAL TO BE STOCKPILED):
2,005 SF x 5 FT = 10,025 CF

$\frac{10{,}025\ CF}{27\ CF}$ x CY = 371.30 CY ≈ 400 CY STOCKPILE

TOTAL VOLUME TO BE REMOVED PER CELL: 2,005 SF x 15 FT = 30,075 CF

$\frac{30{,}075\ CF}{27\ CF}$ x CY = 1,113.89 CY ≈ 1,115 CY PER CELL TOTAL

NOTE: NO CONTINGENCY FACTOR USED IN ABOVE CALCULATION



LEGEND

BROWNFIELD CLEAN UP PROGRAM SITE BOUNDARY

PROPOSED EXCAVATION CELL BOUNDARY

SOURCE:

1. PLAN BASED ON MAP PREPARED BY NYS OASIS

0 30 60
SCALE: 1" = 30'

Interim Remedial Measure Work Plan
37-24 & 37-28 30th Street Redevelopment Site
Long Island City, New York

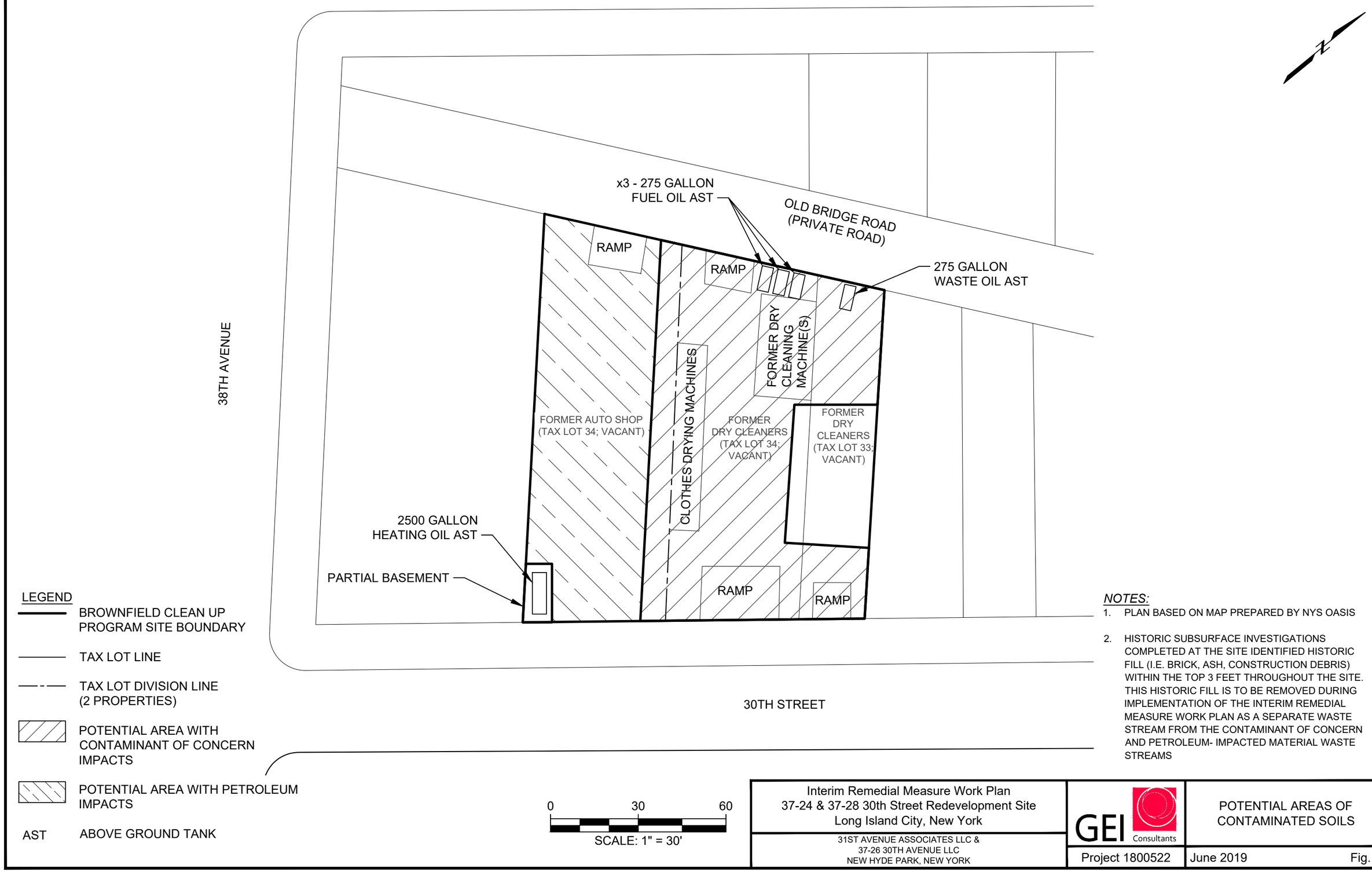
31ST AVENUE ASSOCIATES LLC &
37-26 30TH AVENUE LLC
NEW HYDE PARK, NEW YORK

GEI Consultants

PROPOSED EXCAVATION GRID AND EXCAVATION VOLUME

Project 1800522 | June 2019 | Fig. 3

\\hts1v-fs01\ I:\Tech\Environmental Projects\Park Construction\CAD\Figures\IRMWP\1800522 - FIG 3.dwg - 5/1/2019



LEGEND

- BROWNFIELD CLEAN UP PROGRAM SITE BOUNDARY
- TAX LOT LINE
- TAX LOT DIVISION LINE (2 PROPERTIES)
- POTENTIAL AREA WITH CONTAMINANT OF CONCERN IMPACTS
- POTENTIAL AREA WITH PETROLEUM IMPACTS
- AST — ABOVE GROUND TANK

0 30 60

SCALE: 1" = 30'

NOTES:

1. PLAN BASED ON MAP PREPARED BY NYS OASIS
2. HISTORIC SUBSURFACE INVESTIGATIONS COMPLETED AT THE SITE IDENTIFIED HISTORIC FILL (I.E. BRICK, ASH, CONSTRUCTION DEBRIS) WITHIN THE TOP 3 FEET THROUGHOUT THE SITE. THIS HISTORIC FILL IS TO BE REMOVED DURING IMPLEMENTATION OF THE INTERIM REMEDIAL MEASURE WORK PLAN AS A SEPARATE WASTE STREAM FROM THE CONTAMINANT OF CONCERN AND PETROLEUM- IMPACTED MATERIAL WASTE STREAMS

Interim Remedial Measure Work Plan
37-24 & 37-28 30th Street Redevelopment Site
Long Island City, New York

31ST AVENUE ASSOCIATES LLC &
37-26 30TH AVENUE LLC
NEW HYDE PARK, NEW YORK

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POTENTIAL AREAS OF CONTAMINATED SOILS

Project 1800522 | June 2019 | Fig. 4

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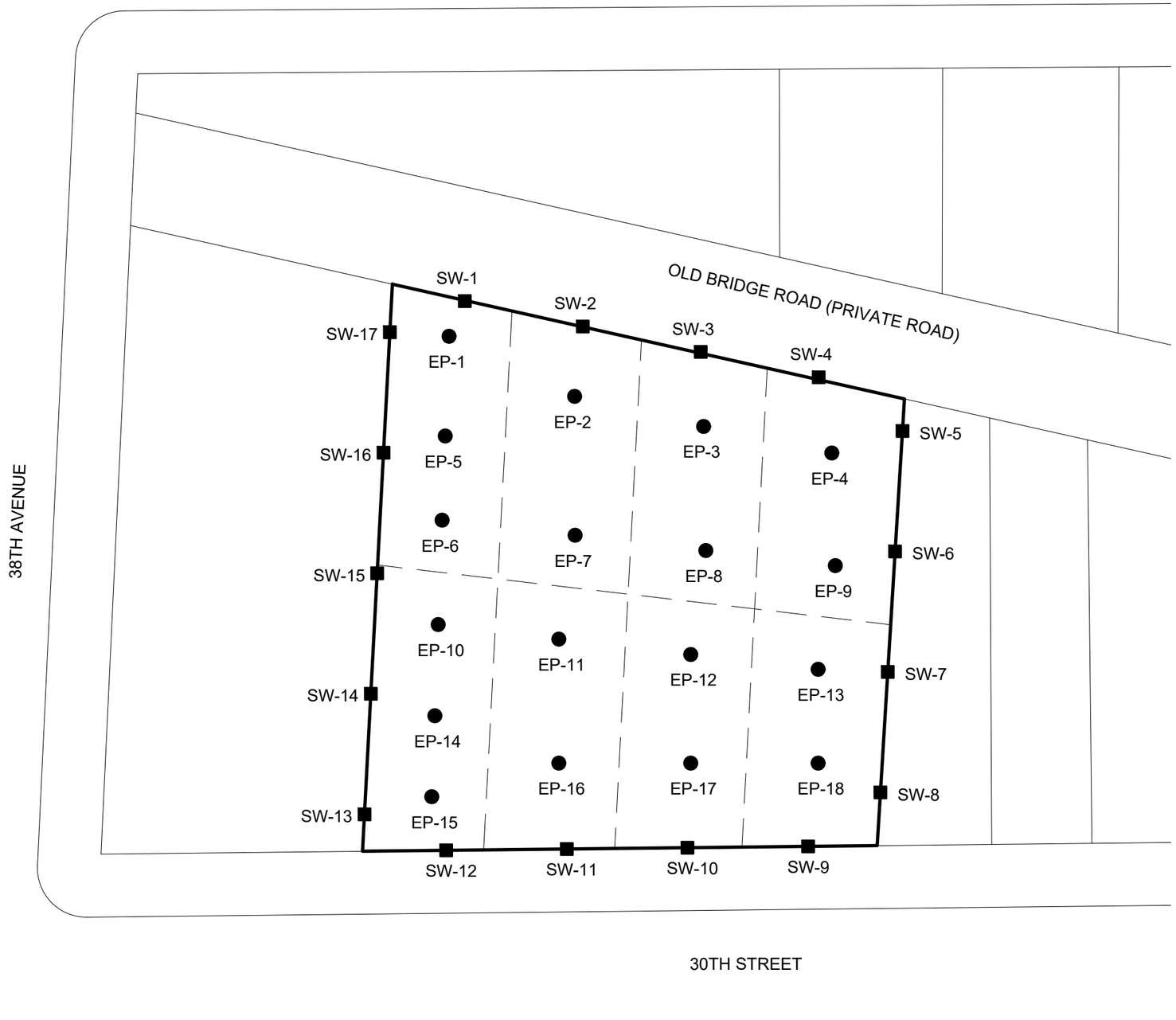

LEGEND

BROWNFIELD CLEAN UP PROGRAM SITE BOUNDARY

SW-1 ■ PROPOSED SIDEWALL SOIL END-POINT SAMPLE LOCATION

EP-1 ● PROPOSED BOTTOM SOIL END-POINT SAMPLE LOCATION

SOURCE:

1. PLAN BASED ON MAP PREPARED BY NYS OASIS

0 30 60

SCALE: 1" = 30'

Interim Remedial Measures Work Plan
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Long Island City, New York

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PROPOSED SOIL END-POINT SAMPLE LOCATIONS

Project 1800522 | June 2019 | Fig. 5

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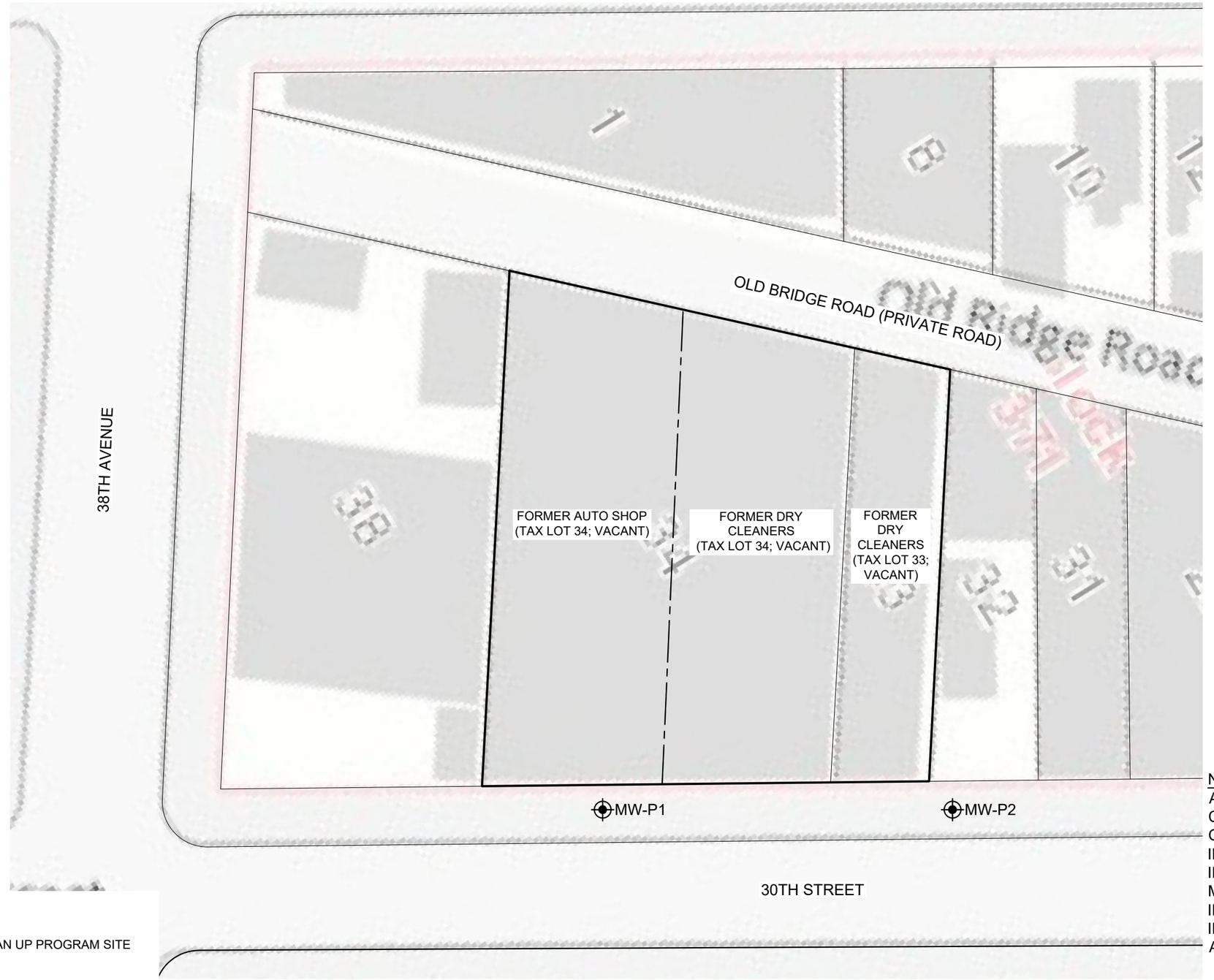

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NOTE:
AS PER THE OBSERVATIONS COMPLETED DURING IMPLEMENTATION OF THE MARCH 2019 REMEDIAL INVESTIGATION, GROUNDWATER FLOWS IN A WESTERLY DIRECTION. MONITORING WELLS WILL BE INSTALLED IN A MANNER SIMILAR TO PREVIOUS INSTALLATIONS IN THE SIDEWALK FLAGS ADJACENT TO THE SITE.

LEGEND:

- BROWNFIELD CLEAN UP PROGRAM SITE BOUNDARY
- TAX LOT LINE
- TAX LOT DIVISION LINE (2 PROPERTIES)
- MW-P1 PROPOSED SEMI-PERMANENT MONITORING WELL LOCATION

SOURCE:

1. PLAN BASED ON MAP BY NYS OASIS.

0 30 60
SCALE: 1" = 30'

Interim Remedial Measures Work Plan
37-24 & 37-28 30th Street Redevelopment Site
Long Island City, New York

31st Avenue Associates LLC & 37-26 30th Avenue LLC
New Hyde Park, New York

GEI Consultants

PROPOSED SEMI-PERMANENT UPGRADIENT MONITORING WELLS

Project 1800522 | June 2019 | Fig. 6

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Appendix A

Community Air Monitoring Program

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

Overview

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

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

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

Community Air Monitoring Plan

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

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

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

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

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

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

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

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

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

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

December 2009