REMEDIAL ACTION WORK PLAN
for
QUEENS FUTURE – INTEGRATED RESORT, PUBLIC REALM, & TASTE OF QUEENS

123-01 ROOSEVELT AVENUE
QUEENS, NEW YORK

CEQR No. 23DME006Q
OER Project No: 25TMP1421Q, 25EHAZ271Q
E-Designation No.: E-834

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LIST OF ACRONYMS

Acronym	Definition
AGVs	Air Guidance Values
AOC	Area of Concern
AWQS	Ambient Water Quality Standards
Bgs	Below Grade Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAMP	Community Air Monitoring Plan
C&D	Construction and Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
CHMM	Certified hazardous Material Manager
COC	Contaminants of Concern
CU	Commercial
DNAPL	Dense Non-Aqueous Phase Liquid
ECs/ICs	Engineering Controls and Institutional Controls
El.	Elevation
ELAP	Environmental Laboratory Approval Program
EM	Electromagnetic
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
ESI	Environmental Site Investigation
GPR	Ground Penetrating Radar
GPS	Global Positioning System
HAZWOPER	Hazardous Waste Operations Emergency Response
LEL	Lower Explosive Limit
LNAPL	Light Non-Aqueous Phase Liquid
µg/m^3	micrograms per cubic meter
µg/L	micrograms per liter
Mg/kg	milligrams per kilogram
MTA/NYCT	Metropolitan Transit Authority/New York City Transit
MBTE	methyl tert-butyl ether
NAVD88	North American Vertical Datum of 1988
NOC	Notice of Completion
NTU	Nephelometric Turbidity unit
NYSDEC	New York State Department of Environmental Conservation
NYCDEP	New York City Department of Environmental Protection
NYCDOB	New York City Department of Buildings

Acronym	Definition
NYCDOH	New York State Department of Health
NYSDEC	New York State Department of Environmental Conservation
DER	Division of Environmental Remediation
OER	Office of Environmental Remediation
OSHA	United States Occupational Health and Safety Administration
PAHs	Polynuclear aromatic hydrocarbons
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PFAS	Per-and polyfluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PG	Professional Geologist
PGW	Protection of Groundwater
PID	Photoionization Detector
PPE	Personal Protective Equipment
PPM	Parts Per Million
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RCNY	Rules of the City of New York
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RUC	Restricted Use Commercial
RUR	Restricted Use Residential
SCOs	Soil Cleanup Objectives
SCLs	Soil Cleanup Levels
SFMP	Soil/Fill Management Plan
SGVs	Standard Guidance Values
SMD	Sub-Membrane Depressurization
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semivolatile Organic Compound
SWPPP	Stormwater Pollution Prevention Plan

Acronym	Definition
TAL	Target Analyte List
TCL	Target Compound List
TCE	Trichloroethene
TOGS	NYSDEC Division of Water Technical and Operational Guidance Series
UST	Underground Storage Tank
UU	Unrestricted Use
VOC	Volatile Organic Compound
6 NYCRR	New York Codes, Rules, and Regulations

CERTIFICATION

I, Gerald F. Nicholls, am currently a registered professional engineer (PE) licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for designing the remedial program for the "Queens Future – Integrated Resort, Public Realm, and Taste of Queens" site located at 123-01 Roosevelt Avenue, New York City Office of Environmental Remediation (OER) site number 25TMP1421Q. I certify under the appropriate standard of care to the following:

- I have reviewed this document to which my signature and seal are affixed.
- Engineering Controls developed for this remedial action were designed by qualified professionals who presented documentation to me, including the following drawings from the 100% Design Development Submission, dated November 14, 2025, that I have reviewed and that I have determined are designed to achieve the goals established in this Remedial Action Work Plan for this site:
    - Architectural drawings prepared by SLCE Architects, LLP, SHoP Architects, and WATG
    - Foundation drawings prepared by Desimone Consulting Engineers
    - Structural drawings prepared by Desimone Consulting Engineers
- The Engineering Controls to be constructed during this remedial action are accurately reflected in the text and drawings of the Remedial Action Work Plan, including the following drawings from the 100% Design Development Submission, dated November 14, 2025, and are of sufficient detail to enable proper construction.
    - Foundation drawings prepared by Desimone Consulting Engineers
    - Structural drawings prepared by Desimone Consulting Engineers
    - Sub-Membrane Depressurization System drawings prepared by Langan
- This RAWP has a plan for handling, transport and disposal of remediation-related soil, fill and fluids removed from the site in accordance with applicable City, State and Federal laws and regulations. The RAWP also has a plan for importation of all soil, fill and other material from off-site in accordance with all applicable City, State and Federal laws and requirements. This RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

Gerald F. Nicholls
Name

090433
PE License Number

Gerry Nicholls
Signature

2/5/2026
Date

EXECUTIVE SUMMARY

Queens Future, LLC is working with the NYC Office of Environmental Remediation (OER) to investigate and remediate an about 59.1-acre site located at 123-01 Roosevelt Avenue in Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Background

The site is located at 123-01 Roosevelt Avenue in the Flushing section of Queens, New York, within portions of Block 1787, Lots 1 and 20, and the western portion of Block 2018, Lot 1500, as presented in the Queens County Tax Map. The following describes current use of each proposed development area included in this RAWP:

- Prior to redevelopment of the site, areas in the "Integrated Resort" (IR), IR Exterior, and "Public Realm" (PR) will be reconfigured to accommodate parking for events held at Citi Field during construction of Northfield and Southfield parking structures (Block 1787, Lot 20 and Block 2018, Lot 1500), which are part of the larger Queens Future development and detailed on a separate RAWP (NYCOER Project No. 26TMP016Q/26EHAZ065Q). Soil disturbances for pre-development operations are estimated over about non-contiguous 83,500 square feet. Pre-development operations will be performed in a portion of Block 1787, Lots 1 and 20 (Future Lots 1, 10, and 20);
- The "Integrated Resort" (IR) footprint has an about 19.4-acre area and is occupied by asphalt-paved parking lots west of Citi Field (in Block 1787, Lot 20);
- The "Integrated Resort (IR) Exterior" footprint has an about 7.4-acre area and is occupied by asphalt-paved parking lots and entrances west of Citi Field (in Block 1787, Lots 1 and 20);
- The "Public Realm" (PR) footprint has an about 30.5-acre area and is occupied by partially landscaped, asphalt-paved parking lots west and south of Citi Field (in Block 1787, Lot 1), and south of Roosevelt Avenue (western part of Block 2018, Lot 1500);
- The "Taste of Queens" (ToQ) footprint has an about 1.8-acre area and is occupied by an asphalt-paved parking lot south of Citi Field (in Block 1787, Lot 20).

Summary of Redevelopment Plan

The site summarized herein covers the footprint of the Integrated Resort (interior and exterior areas), the Taste of Queens building, and the Public Realm. These areas will be constructed as

part of the larger Queens Future development, which will also include the development of two parking structures, "Northfield" and "Southfield," and the relocation of a New York City Department of Environmental Protection (NYCDEP) sewer line (NYCOER Project No. 26TMP016Q/26EHAZ065Q). The following summarizes the proposed development areas that were assessed during this RAWP:

- Pre-development operations within the Integrated Resort (IR), IR Exterior, and Public Realm (PR) will include the removal of select concrete curbs/walkways and tree pits (with disturbed areas to be restored with concrete or asphalt), and excavation and removal of soil/fill at isolated locations for installation of new concrete curbs/walkways and 4-inch-diameter bollards.
- The Integrated Resort (IR) will be developed into a hotel and entertainment complex.
- The Integrated Resort (IR) Exterior will be connected to elevated vehicular egress and other ancillary structures
- The Public Realm (PR) will be developed into public space, including landscaped and/or paved walkways and plazas between the proposed buildings, pedestrian bridges, and outdoor recreational areas
- The Taste of Queens (ToQ) building will be developed into a retail food hall with commercial office space and a parking garage

Much of the proposed development areas will be excavated to about 1 foot below grade surface (bgs) for installation of the engineered composite cover system and SMD systems (IR and ToQ only) with deeper localized excavations in IR and ToQ to between 5.5 and 8 feet for building foundation elements (e.g., pile caps, grade beams, or elevator/sump pits). Grades will be raised in some areas of the PR, rather than excavated. Based on current development plans, the estimated quantities of soil/fill to be excavated are summarized as follows:

- Pre-development operations: About 800 cubic yards (CY) (estimated 1,320 tons)
- IR: About 89,000 CY (estimated 146,850 tons)
- IR Exterior: About 12,000 CY (estimated 19,800 tons)
- Taste of Queens: About 9,000 CY (estimated 14,850 tons)
- Public Realm: About 50,000 CY (estimated 82,500 tons)

Depth of groundwater during the RI was measured between about 3.5 and 7 feet bgs within the IR, between about 3.3 and 6 feet bgs in IR Exterior, between about 4.5 and 5.1 feet bgs in ToQ, and between about 3.7 and 13.5 feet bgs in the PR; therefore, groundwater is expected to be encountered during redevelopment. Dewatering will be performed, as needed, to facilitate remedial- or development-related excavation in accordance with this RAWP.

According to New York City Zoning maps, the site is classified as a Park District in the Public Realm, ToQ, and IR Exterior development areas and C8-4 (commercial) in the IR area.

The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

Summary of Surrounding Property

The surrounding properties are characterized by commercial and residential properties, vacant land, open/recreational space, and Flushing Bay. Adjoining properties are summarized below:

- The IR is surrounded by the IR Exterior. The two are adjoined by Shea Road, followed by Northern Boulevard, the Whitestone Expressway and Flushing Bay to the north; Citi Field followed by 126th Street (Seaver Way) to the east; Roosevelt Avenue and the Metropolitan Transit Authority/New York City Transit (MTA/NYCT) subway tracks followed by an asphalt-paved parking lot to the south (a portion of the proposed Public Realm development area); and Shea Road followed by Grand Central Parkway to the west.
- The PR is adjoined by Shea Road, followed by Northern Boulevard, the Whitestone Expressway and Flushing Bay to the north; Citi Field, followed by 126th Street (Seaver Way) to the east, an MTA/NYCT depot/train yard to the south; and Shea Road followed by Grand Central Parkway to the west.
- ToQ is adjoined by open space associated with the Public Realm and is surrounded by Citi Field to the north, 126th Street (Seaver Way) followed by the Willets Point development to the east; Roosevelt Avenue and the MTA/NYCT subway tracks followed by an asphalt-paved parking lot to the south; and the Public Realm and IR development areas to the west.

Sensitive receptors within a 500-foot radius of the site were not identified.

Summary of Past Site Uses and Areas of Concern

The following environmental reports have been prepared for portions of the larger Queens Future Development:

- February 2006 Phase II Environmental Site Investigation (ESI) for Shea Stadium, prepared by AKRF
- July 2006 Phase I ESA for Shea Stadium, prepared by AKRF
- August 2007 Remedial Action Plan for Citi Field, prepared by TRC
- September 2010 Remedial Closure Report for Citi Field, prepared by TRC
- October 18, 2010 NYCDEP Letter of Approval for Remedial Closure Report

- March 7, 2011 Site investigation Findings Report: Infrastructure Improvements for Willets Point Redevelopment, prepared by Environmental Planning and Management, Inc. (EPM)
- April 1, 2011 Letter from NYCDEP Regarding the March 7, 2011 Site Investigation Findings Report
- June 2013 Subsurface Investigation Sampling Protocol and Health and Safety Plan, prepared by AKRF
- December 2013 Final Environmental Impact Statement for Willets Point Development
- June 7, 2022 Phase I ESA for Queens Future, prepared by Langan
- August 16, 2023 Addendum to June 7, 2022 Phase I ESA, prepared by Langan

Based on information presented in the listed environmental reports, the following potential areas of concern (AOCs) were identified:

1. Fill Constituents

   Most of the site is within the former Corona Ash Dump that received coal furnace and incinerator ash beginning in the early 1900s until the area was leveled for redevelopment into the 1939 and 1964 World's Fairs, Shea Stadium, and ultimately, Citi Field and associated parking lots. Based on prior sub-surface investigations, the site is covered with approximately 8 to 12 feet of fill material placed prior to 1939 in the Flushing Meadow marshlands. Analytical data from the prior sub-surface investigations identified highly variable semivolatile organic compound (SVOC) and metal concentrations across the site, which is attributed to the quality of historic fill material.

2. Potential Petroleum Impacts

   The 2010 Remedial Closure Report for Citi Field mentions that petroleum-impacted soil and groundwater were encountered during construction, including 1,400 gallons of petroleum-impacted groundwater removed in 2006 and 20,186 gallons of oily groundwater removed in 2008. The closure report mentioned at least one source (hydraulic pistons) was found during excavation. The location of these impacts was not specified in previous environmental reports and the relation to the development site are not known.

   EPM's 2011 investigation report for a sanitary sewer line generally following Shea Road north and west of Citi Field identified stained and odorous soil; however, lab analysis did not reveal petroleum-related volatile organic compound (VOC) impacts. SVOC concentrations were mostly typical of fill material encountered throughout New York City.

   The 2010 closure report and 2011 EMP report mention instances of methyl tert-butyl ether (MTBE), a gasoline additive, in groundwater at concentrations greater than the

applicable groundwater standard to the northwest of the Citi Field and immediately adjacent to the open space to the west of Citi Field (per 2011 EPM report). The location of MTBE-impacted groundwater was not specified in the 2010 Closure Report.

3. Potential Underground Storage Tanks

   A 1931 Sanborn map included in Langan's 2022 Phase I ESA shows several auto sales/repair facilities along Roosevelt Avenue within the site. Thirty-two buried gasoline tanks were identified on the 1931 Sanborn map on the north site of Roosevelt Avenue while ten gasoline tanks were noted on the south side. There is no available documentation confirming that the tanks were removed. This AOC includes the southern part of the IR and Public Realm, and the entirety of the Taste of Queens footprint.

   Langan's August 16, 2023 Phase I Addendum summarized a geophysical survey by Hager-Richter Geoscience, Inc. (Hager-Richter) that was completed to scan the suspect area for anomalies consistent with buried tanks. The survey consisted of ground penetrating radar (GPR) and time domain electromagnetic induction metal detection (EM) to effective depths of 2 to 5 feet bgs. One underground storage tank (UST)-like anomaly was identified on the northside of Roosevelt Avenue (about 100 feet northwest of the defunct NYCT substation and within the IR Exterior development area). About 50 additional subsurface metal anomalies were identified within the scanned areas along the Roosevelt Avenue corridor; however, these anomalies were not conclusively identified as UST-like signatures and appear consistent with metallic debris identified in other parts of the site.

4. Methane and VOCs in Soil Vapor

   The 2006 Phase II Investigation identified methane at elevated concentrations (0 to 95% methane and 0 to 1,900% of the Lower Explosive Limit [LEL]) in soil vapor; methane was attributed to anaerobic decomposition of organic material in filled marshland. Per the September 2021 Remedial Closure Report, a sub-slab venting system was incorporated into Citi Field to mitigate this concern. EPM's 2011 sampling also identified several petroleum-related VOCs in soil vapor. AKRF's June 2013 Subsurface (Phase II) Investigation Sampling Protocol and Health and Safety Plan assumed that new buildings constructed at the site would incorporate soil vapor/methane mitigation.

5. Potential Impacts from Off-site Sources

   According to the Phase I ESAs, adjoining properties to the south (upgradient) and east (cross-gradient) have historically included auto repair services, gasoline filling stations, and bus garage/depots with petroleum bulk storage. Undocumented releases of petroleum products or hazardous substances at these locations may have migrated and impacted groundwater and/or soil vapor at the development site. The ongoing Willets Point

development (east of the development site) has remediated some of the impacts associated with the aforementioned off-site uses and migration of contaminants from Willets Point to the site was not apparent during remediation of the Willets Point development area.

Summary of Work Performed under the Remedial Investigation

The RI for the IR, IR Exterior, Public Realm, and ToQ was completed between July 7 and August 22, 2025. Samples collected during the RI were inclusive of the areas of planned pre-development operations (within the IR, IR Exterior, and PR) described in the "Summary of Redevelopment Plan" section. The RI included the following scope of work:

1. Geophysical survey mark-outs to clear proposed boring locations of sub-grade utilities and other anomalies.
2. In the IR development area:
    a. Advancement of 59 soil borings (SB-R-01 through SB-R-59) and collection of 104 soil samples for laboratory analysis
    b. Installation of 35 temporary groundwater monitoring wells (MW-R-01 through MW-R-45 [excluding MW-R-28, MW-R-31, and MW-R-37 through MW-R-44]) and collection of 35 groundwater samples for laboratory analysis
    c. Installation of 20 temporary soil vapor probes (SV-R-01 through SV-R-20) and collection of 19 soil vapor samples
3. In the IR Exterior development area:
    a. Advancement of 4 soil borings (SB-RE-01 through SB-RE-04) and collection of 8 soil samples for laboratory analysis
    b. Installation of 3 temporary groundwater monitoring wells (MW-RE-01 through MW-RE-03) and collection of 3 groundwater samples for laboratory analysis
    c. Installation of 2 temporary soil vapor probes (SV-RE-01 through SV-RE-02) and collection of 2 soil vapor samples
4. In the ToQ development area:
    a. Advancement of 6 soil borings (SB-M-01 through SB-M-06) and collection of 11 soil samples for laboratory analysis
    b. Installation of 4 temporary groundwater monitoring wells (MW-M-01 through MW-M-04) and collection of 4 groundwater samples for laboratory analysis
    c. Installation of 2 temporary soil vapor probes (SV-M-01 through SV-M-02) and collection of 2 soil vapor samples

5. In the Public Realm development area:
    a. Advancement of 16 soil borings (SB-P-01 through SB-P-16) and collection of 31 soil samples for laboratory analysis
    b. Installation of 10 temporary groundwater monitoring wells (MW-P-01 through MW-P-11 [excluding MW-P-07]) and collection of 10 groundwater samples for laboratory analysis
    c. Installation of 5 temporary soil vapor probes (SV-P-01 through SV-P-05) and collection of 5 soil vapor samples
6. Collection of quality assurance/quality control (QA/QC) samples, including duplicate soil and groundwater samples and field blanks.

Summary of Findings of Remedial Investigation

1. Elevation across the IR and ToQ development areas is about el. 8 to 10, referenced to the North American Vertical Datum of 1988 (NAVD88). Elevation across the IR Exterior and PR development areas ranges from about el. 10 to el. 22, NAVD88.
2. The site is underlain by fill, predominantly consisting of tan, brown, red, gray, and black fine- to coarse-grained sand with varying amounts of clay, silt, gravel, brick, ceramics, coal, concrete, construction and demolition (C&D) debris, glass, metal, shells, vegetation, and wood that extends from surface grade to depths between about 6.25 to at least 16 feet bgs (the termination depth of borings with the deepest observed fill). Clay was encountered below the fill layer with intermittent lenses of organic material (e.g., woody vegetation).
3. Depth to groundwater was measured in monitoring wells between about 3.5 and 7 feet bgs within the IR, between about 3.3 and 6 feet bgs in the IR Exterior, between about 4.5 and 5.1 feet bgs in ToQ, and between about 3.7 and 13.5 feet bgs in the Public Realm. Groundwater was intermittently encountered during pre-clearing (between about 0 and 5 feet bgs) and was suspected to be associated with perched groundwater above former concrete foundation elements or another unidentified confining layer. Groundwater is inferred to flow north-northeast towards Flushing Bay.
4. Bedrock was not encountered during this investigation.
5. Isolated observations of petroleum-like odors, staining, and/or PID readings above background conditions were observed in the IR (SB-R-01, SB-R-09, SB-R-25, and SB-R-39), IR Exterior (SB-RE-03), TOQ (SB-M-02 and SB-M-03), and PR (SB-P-05, SB-P-10 and SB-P-13) development areas; however, soil samples collected from these borings did not contain petroleum-related VOCs at concentrations above NYSDEC CP-51 Soil Cleanup

Levels (SCLs) for Fuel Oil or Gasoline Impacted soil. CP-51-listed SVOCs exceeded CP-51 SCLs; however, concentrations were similar to variable fill material throughout the site. Although petroleum-related VOCs in soil from corresponding borings did not exceed CP-51 SCLs, groundwater samples from wells MW-R-05 and MW-R-08 (within the proposed IR footprint) contained petroleum VOCs above NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) and Guidance Values (SGV) for Class GA water (collectively referred to as the "NYSDEC SGVs"); additional details are provided in Item 7 below.

These field observations and groundwater results were communicated to NYC OER on August 4, 2025. Subsequent sampling around wells MW-R-09 and MW-R-05 did not identify petroleum-related VOCs in soil or groundwater samples at concentrations above relevant criteria, indicating no wide-spread petroleum impacts. A spill was not reported to NYSDEC because of the limited extent of the observed impacts.

6. Soil sample analytical results were compared to New York State Department of Environmental Conservation (NYSDEC) Unrestricted Use (UU) and Restricted Use Commercial (RUC) soil cleanup objectives (SCOs) as presented in Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR) Part 375-6.8 and NYSDEC Commissioner Policy (CP)-51. Soil sample analytical results identified the following:

    a. The following VOCs exceeded UU SCOs but were below the RUC SCOs: acetone (maximum of 1.7 milligrams per kilogram [mg/kg] in SB-R-27_6-7) and methyl ethyl ketone (maximum of 0.28 mg/kg in SB-R-27_6-7).

    b. One or more of 14 SVOCs exceeded the UU and/or RUC SCOs in samples collected from each development area, including: acenaphthene (maximum of 52.5 mg/kg in SB-R-09_6-7); benzo(a)anthracene (maximum of 73.3 mg/kg in SB-R-16_5-7); benzo(a)pyrene (maximum of 46.5 mg/kg in SB-R-50_0-2); benzo(b)fluoranthene (maximum of 56.1 mg/kg in SB-R-50_0-2); benzo(k)fluoranthene (maximum of 38.9 mg/kg in SB-R-16_5-7); chrysene (maximum of 64 mg/kg in SB-R-16_5-7); dibenz(a,h)anthracene (maximum of 6.8 mg/kg in SB-R-33_8-10); dibenzofuran (maximum of 16.5 mg/kg in SB-R-33_8-10); fluoranthene (maximum of 150 mg/kg in SB-R-33_8-10); fluorene (maximum of 46.6 mg/kg in SB-R-16_5-7); indeno(1,2,3-cd)pyrene (maximum of 23.3 mg/kg in SB-R-50_0-2); naphthalene (maximum of 40.2 mg/kg in SB-R-09_6-7); phenanthrene (maximum of 146 mg/kg in SB-R-09_6-7); and pyrene (maximum of 142 mg/kg in SB-R-33_8-10). SVOC concentrations are largely attributed to variable fill quality at the site; however, naphthalene at SB-R-09 may be related to the observed petroleum-like impacts.

c. One or more of three pesticides exceeded the UU SCOs, but were below the RUC SCOs in samples collected from the IR and PR development areas, including 4,4'-DDD (maximum of 0.0183 mg/kg in SB-R-14_0-2), 4,4'-DDE (maximum of 0.0343 mg/kg in SB-R-14_0-2), and 4,4'-DDT (maximum of 0.0227 mg/kg in SB-R-14_0-2).

d. Total polychlorinated biphenyls (PCBs) exceeded the UU SCO, but were below the RUC SCO, in one soil sample collected from the PR development area (0.112 mg/kg in SB-P-07_0-2).

e. One or more of 12 metals exceeded the UU and/or RUC SCOs in samples collected from each development area, including, arsenic (maximum of 37.3 mg/kg in SB-M-DUP-01); barium (maximum of 2,160 mg/kg in SB-R-49_3-5); cadmium (maximum of 158 mg/kg in SB-R-47_6-8); hexavalent chromium (maximum of 2.3 mg/kg in SB-P-02_9-11); trivalent chromium (maximum of 729 mg/kg in SB-R-47_6-8); copper (maximum of 417,000 mg/kg SB-R-18_5-7); lead (maximum of 6,350 mg/kg in SB-R-47_6-8); mercury (maximum of 8.39 mg/kg in SB-P-03_5-7); nickel (maximum of 337 mg/kg in SB-M-DUP-01), selenium (maximum of 4.31 mg/kg in SB-R-25_4-6); silver (maximum of 49.4 mg/kg in SB-R-18_5-7), and zinc (maximum of 42,100 mg/kg in SB-R-18_5-7).

f. Herbicides and per-and polyfluoroalkyl substances (PFAS) were not detected above UU or RUC SCOs in soil samples.

7. Groundwater samples results were compared to NYSDEC SGVs and identified the following:

a. Nine VOCs, 1,2,4-trimethylbenzene (maximum of 66.9 micrograms per liter [µg/L] in MW-R-09_072125), 1,3,5-trimethylbenzene (maximum of 19.4 µg/L in MW-R-09_072125), benzene (maximum of 5.68 µg/L in MW-R-09_072125), ethylbenzene (maximum of 37.6 µg/L in MW-R-09_072125), isopropylbenzene (maximum of 5.59 µg/L in MW-R-09_072125), toluene (maximum of 36.4 µg/L in MW-R-09_072125), and total xylenes (maximum of 118 µg/L in MW-R-09_072125) were detected above the SGVs in groundwater samples. VOCs did not exceed SGVs in groundwater from wells other than MW-R-05 and MW-R-09, where VOCs are attributed to isolated petroleum impacts discussed under item 5.

b. Eleven SVOCs, 1,4-dioxane (maximum of 8.94 µg/L in MW-R-26_080125), 2,4-dinitrotoluene (maximum of 11.9 µg/L in MW-RE-03)080125), acenaphthene (maximum of 47 µg/L in MW-R-05_071725), benzo(a)anthracene (maximum of 1.81 µg/L in MW-R-19_081125), benzo(a)pyrene (maximum of 1.61 µg/L in MW-R-19_081125), benzo(b)fluoranthene (maximum of 2.02 µg/L in MW-R-19_081125), benzo(k)fluoranthene (maximum of 2.38 µg/L in MW-R-19_081125),

bis(2-ethylhexyl)phthalate (maximum of 22.3 µg/L in MW-R-11_072825), chrysene (maximum of 1.8 µg/L in MW-R-19_081125), indeno(1,2,3-cd)pyrene (maximum of 1.15 µg/L in MW-R-19_081125), and naphthalene (maximum of 24 µg/L in MW-R-05_071725) were detected above SGVs in groundwater samples.

Exceedances of polynuclear aromatic hydrocarbons (PAHs) were primarily limited to samples with turbidity over 50 Nephelometric Turbidity Unit (NTU), indicating entrained sediment may be contributing to the results. Naphthalene in MW-R-09 and acenaphthene in MW-R-05 are attributed to the previously discussed petroleum impacts. Bis(2-ethylhexyl) phthalate is a common component of plastic and field sampling materials and is not indicative of a release. A source of 2,4-dinitrotoluene was not identified in soil. A source of 1,4-dioxane in MW-R-06 and MW-R-26 was not identified in corresponding soil borings SB-R-06 and SB-R-26.

c. Nine dissolved metals, antimony (maximum of 7.18 µg/L in MW-R-04_071625), arsenic (maximum of 34.4 µg/L in MW-R-23_071825), barium (maximum of 2,430 µg/L in MW-R-12_080125), iron (maximum of 39,200 µg/L in MW-R-25_080525), lead (maximum of 48.8 µg/L in MW-R-19_081125), magnesium (maximum of 165,000 µg/L in MW-R-09_072125), manganese (maximum of 2,200 µg/L in MW-P-08_082225), selenium (maximum of 16.5 µg/L in MW-R-22_071825), and sodium (maximum of 2,460,000 µg/L in MW-R-09_072125) were detected above SGVs in groundwater samples. Dissolved iron, magnesium, manganese, sodium, and selenium are representative of regional groundwater conditions. Arsenic, lead, and barium in soil exceeded the Protection of Groundwater (PGW) SCO in more or more soil samples; there is no PGW SCO for antimony. Dissolved metals in groundwater have been identified at other remediation sites in the area.

d. Two PFAS compounds, perfluorooctanesulfonic acid (PFOS) (maximum of 0.0417 µg/L in MW-P-01_082025) and perfluorooctanoic acid (PFOA) (maximum of 0.175 µg/L in MW-R-11_072825) were detected above SGVs in groundwater samples; however. A site source of PFAS was not identified in soil.

e. Pesticides, herbicides, and PCBs were not detected above SGVs in any of the groundwater samples.

8. Soil vapor sample analytical results collected during the RI were compared to the decision matrices and air guidance values (AGVs) included in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006 (and subsequent updates), and to the Lower Explosive Limit (LEL) for methane (5%).

    a. Total VOCs concentrations were reported within the following ranges for each development area:

i. IR: 591.18 µg/m^3 in SV-R-08 to 5,038.76 µg/m^3 in SV-R-11

ii. IR Exterior: 2,926.8 µg/m^3 in SV-RE-02 to 2,983.4 in SV-RE-01

iii. ToQ: 83.44 µg/m^3 in SV-M-01 to 5,105.3 µg/m^3 in SV-M-02

iv. Public Realm: 344.22 µg/m^3 in SV-P-02 to 3,611 µg/m^3 in SV-P-04

Based on a conservative comparison (in the absence of indoor air data) against the NYSDOH decision matrices in the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and subsequent updates), monitoring or mitigation may be recommended based on concentrations of the following:

a. 1,1-dichloroethene (maximum of 13 µg/m^3 in SV-R-06), cis-1,2-dichloroethene (maximum of 27 µg/m^3 in SV-R-17), trichloroethene (TCE) (maximum of 53 µg/m^3 in SV-R-10), vinyl chloride (maximum of 60 µg/m^3 in SV-R-17), 1,2,4-trimethylbenzene (maximum of 100 µg/m^3 in SV-R-09), 1,3,5-trimethylbenzene (maximum of 94 µg/m^3 in SV-R-09), 2,2,4-trimethylpentane (maximum of 260 µg/m^3 in SV-R-14), benzene (maximum of 250 µg/m^3 in SV-R-09), cyclohexane (maximum of 170 µg/m^3 in SV-R-09), ethylbenzene (maximum of 160 µg/m^3 in SV-R-09), xylenes (maximum of 790 µg/m^3 in SV-R-10), heptane (maximum of 290 µg/m^3 in SV-R-09), and hexane (maximum of 650 µg/m^3 in SV-R-09) in IR

b. 2,2,4-trimethylpentane (maximum of 350 µg/m^3 in SV-RE-01) in IR Exterior

c. cis-1,2-dichloroethene (maximum of 8.5 µg/m^3 in SV-M-02), 2,2,4-trimethylpentane (maximum of 230 µg/m^3 in SV-M-02), benzene (maximum of 230 µg/m^3 in SV-M-02), cyclohexane (maximum of 250 µg/m^3 in SV-M-02), heptane (maximum of 360 µg/m^3 in SV-M-02), and hexane (maximum of 650 µg/m^3 in SV-M-02) in ToQ

d. 2,2,4-trimethylpentane (maximum of 670 µg/m^3 in SV-P-04), benzene (maximum of 130 µg/m^3 in SV-P-03), cyclohexane (maximum of 140 µg/m^3 in SV-P-04), heptane (maximum of 320 µg/m^3 in SV-P-04), and hexane (maximum of 420 µg/m^3 in SV-P-04) in PR

9. Methane results in soil vapor ranged from non-detect at samples SV-R-08 and SV-M-01 to 59.6% in sample collected at SV-R-01, above the LEL of 5%. Of the 10 total soil vapor samples analyzed for methane, 5 samples (3 from the IR, 1 from the IR Exterior, and 1 from the PR) exceeded the LEL.

Summary of the Proposed Remedy

The proposed remedy achieves protection of public health and the environment for the intended use of the site, achieves the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance; is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants; is cost effective and implementable; and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. As a pre-requisite to site remediation, surface debris/refuse removal by the contractor, including handling and disposal as hazardous building material waste or C&D debris in accordance with Part 360 and 361 regulations. Review and certification of C&D and refuse transport and disposal methodologies is not a requirement of the remedial engineer. The remedial engineer is responsible for documenting that C&D debris and refuse is not comingled with contaminated site soil/fill.
2. Pre-development operations, to reconfigure the existing asphalt- and concrete-paved lots to accommodate parking for events held at Citi Field during construction of Northfield and Southfield parking structures (under a separate RAWP) and to refine design parameters for the proposed buildings, consisting of:
    a. Restriping the existing parking lot, including the removal of select concrete curbs/walkways and tree pits (with disturbed areas to be restored with concrete or asphalt), and excavation and removal of soil/fill at isolated locations for installation of new concrete curbs/walkways and 4-inch-diameter bollards.
    b. Installing tree protection around select trees planned to remain in place until construction for the new buildings.
    c. Excavating geotechnical and site civil test pits to identify the extents of existing utilities or foundation elements from former site structures.
    d. Pile load testing.
3. Site mobilization involving equipment mobilization, utility mark outs, and marking out excavation areas.
4. Segregation and stockpiling of current pavement subbase (gravel and recycled concrete aggregate [RCA]) for reuse as subbase under new site pavement.
5. Performance of a Community Air Monitoring Program (CAMP) for particulates and VOCs.
6. Establishment of Track 4 Site-Specific SCOs.

7. Abandonment of geotechnical observation wells in accordance with NYSDEC CP-43 policy.
8. Protection or decommissioning/removal/abandonment of above- or below-grade telecommunication, electrical, stormwater collection, and potable water utilities.
9. Completion of waste characterization sampling; it is anticipated that preliminary, bid-phase in-situ waste characterization will be supplemented by construction-phase waste characterization sampling. Soil samples will be collected at a frequency dictated by selected disposal facility(ies).
10. Excavation and removal of soil/fill as follows for the proposed development:
    a. Pre-development operations in the IR, IR Exterior, and PR will include excavation to depths between about 18 and 24 inches bgs for installation of new concrete curbs/walkways and 4-inch-diameter bollards. About 800 CY will be excavated.
    b. The IR will be excavated to about 1-foot bgs for installation of the composite cover system and the sub-membrane depressurization (SMD) system with deeper localized excavations to between about 5.5 and 8 feet bgs for installation of building foundation elements. Based on current development plans, about 89,000 CY will be excavated.
    c. The Taste of Queens will be excavated to about 1-foot bgs for installation of the composite cover system and the SMD system with deeper localized excavations to between about 5.5 and 8 feet bgs for installation of building foundation elements. Based on current development plans, about 9,000 CY will be excavated.
    d. The IR Exterior will be excavated from surface grade up to about 1-foot bgs, as needed, for installation of the composite cover system, and between about 2 and 8 feet bgs for installation of subsurface utilities. Grades will be raised in some areas of IR Exterior, rather than excavated. Based on current development plans, about 12,000 CY will be excavated.
    e. The Public Realm will be excavated from surface grade up to about 1-foot bgs, as needed, for installation of the composite cover system, and between about 2 and 8 feet bgs for installation of subsurface utilities. Grades will be raised in some areas of Public Realm, rather than excavated. Based on current development plans, about 31,000 CY will be excavated.
11. Excavation and removal of soil/fill from seven hotspots based on concentrations of metals or SVOCs above the Track 4 Site-Specific SCOs in soil or the PGW SCOs while also exceeding the NYSDEC SGVs in groundwater (with turbidity less than 100 NTU)

at associated sample locations. Each hotspot will measure about 20-feet-long by 20-feet-wide and will be excavated from surface grade to the groundwater table, centered at the referenced RI soil sample locations. An additional hotspot was added based on concentrations of copper detected in soil boring SB-R-18 (417,000 mg/kg); however, copper was not detected in groundwater at this location.

a. SB-R-02, SB-R-03, SB-R-18 and SB-R-19 (IR) based on concentrations of barium, copper, or lead
b. SB-R-16 (IR) and SB-P-09 (PR) based on concentrations of total SVOCs
c. SB-R-05 and SB-R-09 (IR) where field indications of petroleum-impacts to soil coincided with groundwater samples with petroleum-related VOCs above SGVs

12. Excavation and removal of soil/fill from 3 hotspots based on concentrations of metals (arsenic, barium, or copper) above the RUC or Track 4 Site-Specific SCOs in the upper 1 foot in potential landscaped areas. Each hotspot will measure about 20-feet-long by 20-feet-wide and will be excavated from surface grade to 1-foot bgs, centered at the following RI soil sample locations:

    a. SB-RE-04 in the IR and SB-P-01 and SB-P-08 in the PR, based on concentrations of arsenic, barium, or copper

    Based on the NYSDEC Part 375 description of Track 4 cleanups, additional hotspot excavations are not proposed because proposed site use is commercial and remaining exceedances of site-specific SCOs outside of planned impervious building footprints were deeper than 1 foot bgs. Regardless, most of the soil within the 0 to 1-foot bgs interval will be removed as part of the general development cut.

13. Acquisition of permits required to complete remediation
14. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
15. Management of excavated materials including temporarily stockpiling and segregating waste in accordance with defined material types and to prevent co-mingling of waste streams.
16. Reuse of excavated site soil that does not exhibit petroleum-like staining or odors or PID readings above site background, in accordance with NYSDEC Part 360.12(c)(1)(iv) and CEQR Manual 2025 Chapter 12, for backfill/grading in areas with similar physical characteristics. On-site reuse of excavated material will only be performed if the material is also structurally suitable. Excavated soil that cannot be reused onsite will be transported off-site to a permitted facility for disposal.

17. Localized dewatering is anticipated and, if field conditions permit, dewatered groundwater/and or accumulated rainwater may be recharged into adjacent soil. If water exhibits odors or petroleum-like sheen, it will not be recharged back into the site. If required, excess, extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from NYCDEP to meet pre-treatment requirements prior to discharge to the combined sewer system.
18. Collection and laboratory analysis of 431 post-excavation documentation soil samples at development subgrade to document post-remediation soil quality that will remain on-site.
19. Removal, registration and appropriate closure of any USTs encountered during soil/fill removal, and reporting and closing of any associated petroleum spills in compliance with applicable local, state and federal laws and regulations.
20. Transportation and off-site disposal of excess soil/fill at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan.
21. Import of soil or fill meeting the lower of the NYSDEC Restricted Use – Residential (RUR) and/or protection of groundwater (PGW) SCOs for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations. The estimated quantity of soil/fill to be imported into the site is about 83,000 CY (about 24,000 CY of imported soil/fill for installation of the building foundation slabs and SMD systems in IR and ToQ, about 53,000 CY of imported soil/fill for installation of the composite cover system in IR Exterior and Public Realm, and about 6,000 CY of imported soil/fill for foundation element and subsurface utility subbase).
22. Construction of parking garages that are either open-air or ventilated in accordance with the 2022 NYCDOB Mechanical Code.
23. Construction of an engineered composite cover system consisting of a minimum of one foot of imported fill meeting the lower or the NYSDEC Part 375 Restricted Use – Residential (RUR) and/or PGW SCOs (underlain by a demarcation layer) in landscaped areas; concrete foundation slabs for the future buildings; concrete or asphalt pavement; or another cover system acceptable to the NYCOER. The composite cover system is an engineering control (EC) for the remedial action. The remedial engineer will certify in the Remedial Action Report (RAR) that the composite cover system was properly installed.
24. The waterproofing/vapor barrier system for enclosed, occupied spaces in the IR and ToQ has not been specified, but will consist of a minimum 20-mils thick, VOC- and methane-resistant membrane. The lowest levels in the remainder of the IR and ToQ

buildings will primarily be occupied by parking garages that are either open-air or ventilated spaces in accordance with the 2022 NYCDOB mechanical code (without continuously occupied spaces such as offices or conference rooms); therefore, a vapor barrier is not proposed in those portions of the building footprint. The waterproofing/vapor barrier system may consist of GCP Applied Technologies Preprufe® 300R Plus Membrane (46 mils) or another NYCOER-approved equivalent. Welds, seams, and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system is an EC for the remedial action. The remedial engineer will certify in the RAR that the vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building. The vapor barrier product and its manufacturing specifications will be provided in a future stipulation letter provided to NYCOER.

25. Installation of an active sub-membrane depressurization (SMD) system beneath portions of the building foundation slab of IR and ToQ where occupied spaces (e.g. offices and conference rooms) are proposed. The lowest levels in the remainder of the IR and ToQ buildings will primarily be occupied by parking garages that are either open-air or ventilated spaces in accordance with the 2022 NYCDOB mechanical code (without continuously occupied spaces such as offices or conference rooms); therefore, an SMD system is not proposed in those portions of the building footprint. The SMD systems in each building will consist of a network of horizontal pipes set into a gas permeable aggregate layer beneath the building slab and vapor barrier system. The horizontal subgrade piping will consist of fabric wrapped, perforated, Schedule 80, 4-inch-diameter polyvinyl chloride (PVC) pipe connected to a 4-inch-diameter riser pipe that penetrates the building foundation slab and travels through the building to an explosion-proof roof-mounted blower fan within an enclosure. The active SMD system is an EC for the remedial action. The remedial engineer will certify in the RAR that the SMD system was designed and properly installed to establish a vacuum in the gas permeable aggregate layer and a negative (decreasing outward) pressure gradient across the depressurized area to prevent vapor migration into the building.
26. The lowest levels of the IR and ToQ buildings will be primarily occupied by parking garages that are either open-air or ventilated in accordance with NYC Department of Buildings (NYCDOB) mechanical code; therefore, an active SMD is not required in these spaces. Should the design change and enclosed spaces are proposed, an active SMD will be required.

27. Implementation of storm-water pollution prevention measures in compliance with a pending site-specific Stormwater Pollution Prevention Plan (SWPPP), which will be approved by NYCDEP.
28. Submission of an RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the site boundaries, lists any changes from this RAWP, and describes all ECs and Institutional Controls (ICs) to be implemented at the site.
29. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of ECs and ICs and reporting at a specified frequency. ICs will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.
30. The site will continue to be registered with an E-Designation at the NYCDOB.
31. Placement of a deed notice to record the ECs/ICs on the deed to ensure that future owners of the site continue to comply with the SMP, as required.

REMEDIAL ACTION WORK PLAN

1.0 PROJECT BACKGROUND

Queens Future, LLC is working with the NYC Office of Environmental Remediation (OER) to investigate and remediate the site located at 123-01 Roosevelt Avenue in the Flushing section of Queens, New York (the "site"). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, and complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Background

The site is located at 123-01 Roosevelt Avenue in the Flushing section of Queens, New York, within portions of Block 1787, Lots 1 and 20, and the western portion of Block 2018, Lot 1500, as presented in the Queens County Tax Map. The following describes current use of each proposed development area included in this RAWP:

- Prior to redevelopment of the site, areas in the "Integrated Resort" (IR), IR Exterior, and "Public Realm" (PR) will be reconfigured to accommodate parking for events held at Citi Field during construction of Northfield and Southfield parking structures (Block 1787, Lot 20 and Block 2018, Lot 1500), which are part of the larger Queens Future development and detailed on a separate RAWP (NYCOER Project No. 26TMP016Q/26EHAZ065Q). Soil disturbances for pre-development operations are estimated over about non-contiguous 83,500 square feet. Pre-development operations will be performed in a portion of Block 1787, Lots 1 and 20 (Future Lots 1, 10, and 20);
- The "Integrated Resort" (IR) footprint has an about 19.4-acre area and is occupied by asphalt-paved parking lots west of Citi Field (in Block 1787, Lot 20);
- The "Integrated Resort (IR) Exterior" footprint has an about 7.4-acre area and is occupied by asphalt-paved parking lots and entrances west of Citi Field (in Block 1787, Lots 1 and 20);
- The "Public Realm" (PR) footprint has an about 30.5-acre area and is occupied by partially landscaped, asphalt-paved parking lots west and south of Citi Field (in Block 1787, Lot 1), and south of Roosevelt Avenue (western part of Block 2018, Lot 1500);

The "Taste of Queens" (ToQ) footprint has an about 1.8-acre area and is occupied by an asphalt-paved parking lot south of Citi Field (in Block 1787, Lot 20). A site location map is shown on Figure 1 and a site layout plan is shown on Figure 2.

1.2 Redevelopment Plan

The site summarized herein covers the footprint of the Integrated Resort (interior and exterior areas), the Taste of Queens building, and the Public Realm. These areas will be constructed as part of the larger Queens Future development, which will also include the development of two parking structures, "Northfield" and "Southfield," and the relocation of a New York City Department of Environmental Protection (NYCDEP) sewer line (NYCOER Project No. 26TMP016Q/26EHAZ065Q). The following summarizes the proposed development areas that were assessed during this RAWP:

- Pre-development operations within the Integrated Resort (IR), IR Exterior, and Public Realm (PR) will include the removal of select concrete curbs/walkways and tree pits (with disturbed areas to be restored with concrete or asphalt), and excavation and removal of soil/fill at isolated locations for installation of new concrete curbs/walkways and 4-inch-diameter bollards.
- The Integrated Resort (IR) will be developed into a hotel and entertainment complex
- The Integrated Resort (IR) Exterior will be connected to elevated vehicular egress and other ancillary structures
- The Public Realm (PR) will be developed into public space, including landscaped and/or paved walkways and plazas between the proposed buildings, pedestrian bridges, and outdoor recreational areas
- The Taste of Queens (ToQ) building will be developed into a retail food hall with commercial office space and a parking garage

Much of the proposed development areas will be excavated to about 1 foot below grade surface (bgs) for installation of the engineered composite cover system and SMD systems (IR and ToQ only) with deeper localized excavations in IR and ToQ to between 5.5 and 8 feet for building foundation elements (e.g., pile caps, grade beams, or elevator/sump pits). Grades will be raised in some areas of the PR, rather than excavated. Based on current development plans, the estimated quantities of soil/fill to be excavated are summarized as follows:

- Pre-development operations: About 800 cubic yards (CY) (estimated 1,320 tons)
- IR: About 89,000 CY (estimated 146,850 tons)
- IR Exterior: About 12,000 CY (estimated 19,800 tons)
- Taste of Queens: About 9,000 CY (estimated 14,850 tons)

- Public Realm: About 50,000 CY (estimated 82,500 tons)

Depth of groundwater during the RI was measured between about 3.5 and 7 feet bgs within the IR, between about 3.3 and 6 feet bgs in IR Exterior, between about 4.5 and 5.1 feet bgs in ToQ, and between about 3.7 and 13.5 feet bgs in the PR; therefore, groundwater is expected to be encountered during redevelopment. Dewatering will be performed, as needed, to facilitate remedial- or development-related excavation in accordance with this RAWP.

According to New York City Zoning maps, the site is classified as a Park District in the Public Realm, ToQ, and IR Exterior development areas and C8-4 (commercial) in the IR area.

The redevelopment plans are included in Appendix A. The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

1.3 Description of Surrounding Property

The surrounding properties are characterized by commercial and residential properties, vacant land, open/recreational space, and Flushing Bay. Adjoining properties are summarized below:

- The IR is surrounded by the IR Exterior. The two are adjoined by Shea Road, followed by Northern Boluevard, the Whitestone Expressway and Flushing Bay to the north; Citi Field followed by 126th Street (Seaver Way) to the east; Roosevelt Avenue and the Metropolitan Transit Authority/New York City Transit (MTA/NYCT) subway tracks followed by an asphalt-paved parking lot to the south (a portion of the proposed Public Realm development area); and Shea Road followed by Grand Central Parkway to the west.
- The PR is adjoined by Shea Road, followed by Northern Boluevard, the Whitestone Expressway and Flushing Bay to the north; Citi Field, followed by 126th Street (Seaver Way) to the east, an MTA/NYCT depot/train yard to the south; and Shea Road followed by Grand Central Parkway to the west.
- ToQ is adjoined by open space associated with the Public Realm and is surrounded by Citi Field to the north, 126th Street (Seaver Way) followed by the Willets Point development to the east; Roosevelt Avenue and the MTA/NYCT subway tracks followed by an asphalt-paved parking lot to the south; and the Public Realm and IR development areas to the west.

Sensitive receptors within a 500-foot radius of the site were not identified. Surrounding land uses are shown on Figure 3.

1.4 Previous Environmental Reports and Areas of Concern

The following environmental reports have been prepared for portions of the larger Queens Future Development:

- February 2006 Phase II Environmental Site Investigation (ESI) for Shea Stadium, prepared by AKRF
- July 2006 Phase I ESA for Shea Stadium, prepared by AKRF
- August 2007 Remedial Action Plan for Citi Field, prepared by TRC
- September 2010 Remedial Closure Report for Citi Field, prepared by TRC
- October 18, 2010 NYCDEP Letter of Approval for Remedial Closure Report
- March 7, 2011 Site investigation Findings Report: Infrastructure Improvements for Willets Point Redevelopment, prepared by Environmental Planning and Management, Inc. (EPM)
- April 1, 2011 Letter from NYCDEP Regarding the March 7, 2011 Site Investigation Findings Report
- June 2013 Subsurface Investigation Sampling Protocol and Health and Safety Plan, prepared by AKRF
- December 2013 Final Environmental Impact Statement for Willets Point Development
- June 7, 2022 Phase I ESA for Queens Future, prepared by Langan
- August 16, 2023 Addendum to June 7, 2022 Phase I ESA, prepared by Langan

These listed reports are included in Appendix B.

Based on information presented in the listed environmental reports, the following potential areas of concern (AOCs) were identified:

1. Fill Constituents

   Most of the site is within the former Corona Ash Dump that received coal furnace and incinerator ash beginning in the early 1900s until the area was leveled for redevelopment into the 1939 and 1964 World's Fairs, Shea Stadium, and ultimately, Citi Field and associated parking lots. Based on prior sub-surface investigations, the site is covered with approximately 8 to 12 feet of fill material placed prior to 1939 in the Flushing Meadow marshlands. Analytical data from the prior sub-surface investigations identified highly variable semivolatile organic compound (SVOC) and metal concentrations across the site, which is attributed to the quality of historic fill material.

2. Potential Petroleum Impacts

   The 2010 Remedial Closure Report for Citi Field mentions that petroleum-impacted soil and groundwater were encountered during construction, including 1,400 gallons of petroleum-impacted groundwater removed in 2006 and 20,186 gallons of oily groundwater removed in 2008. The closure report mentioned at least one source

(hydraulic pistons) was found during excavation. The location of these impacts was not specified in previous environmental reports and the relation to the development site are not known.

EPM's 2011 investigation report for a sanitary sewer line generally following Shea Road north and west of Citi Field identified stained and odorous soil; however, lab analysis did not reveal petroleum-related volatile organic compound (VOC) impacts. SVOC concentrations were mostly typical of fill material encountered throughout New York City.

The 2010 closure report and 2011 EMP report mention instances of methyl tert-butyl ether (MTBE), a gasoline additive, in groundwater at concentrations greater than the applicable groundwater standard to the northwest of the Citi Field and immediately adjacent to the open space to the west of Citi Field (per 2011 EPM report). The location of MTBE-impacted groundwater was not specified in the 2010 Closure Report.

3. Potential Underground Storage Tanks

A 1931 Sanborn map included in Langan's 2022 Phase I ESA shows several auto sales/repair facilities along Roosevelt Avenue within the site. Thirty-two buried gasoline tanks were identified on the 1931 Sanborn map on the north site of Roosevelt Avenue while ten gasoline tanks were noted on the south side. There is no available documentation confirming that the tanks were removed. This AOC includes the southern part of the IR and Public Realm, and the entirety of the Taste of Queens footprint.

Langan's August 16, 2023 Phase I Addendum summarized a geophysical survey by Hager-Richter Geoscience, Inc. (Hager-Richter) that was completed to scan the suspect area for anomalies consistent with buried tanks. The survey consisted of ground penetrating radar (GPR) and time domain electromagnetic induction metal detection (EM) to effective depths of 2 to 5 feet bgs. One underground storage tank (UST)-like anomaly was identified on the northside of Roosevelt Avenue (about 100 feet northwest of the defunct NYCT substation and within the IR Exterior development area). About 50 additional subsurface metal anomalies were identified within the scanned areas along the Roosevelt Avenue corridor; however, these anomalies were not conclusively identified as UST-like signatures and appear consistent with metallic debris identified in other parts of the site.

4. Methane and VOCs in Soil Vapor

The 2006 Phase II Investigation identified methane at elevated concentrations (0 to 95% methane and 0 to 1,900% of the Lower Explosive Limit [LEL]) in soil vapor; methane was attributed to anaerobic decomposition of organic material in filled marshland. Per the September 2021 Remedial Closure Report, a sub-slab venting system was incorporated into Citi Field to mitigate this concern. EPM's 2011 sampling also identified several

petroleum-related VOCs in soil vapor. AKRF's June 2013 Subsurface (Phase II) Investigation Sampling Protocol and Health and Safety Plan assumed that new buildings constructed at the site would incorporate soil vapor/methane mitigation.

Methane was detected in soil vapor at concentrations exceeding the LEL of 5%. Although it is not an NYSDEC Part 375-listed contaminant, methane is listed as a "hazardous material" in Chapter 12 of the 2021 CEQRA Manual. Methane venting is not proposed for the site because: 1) Site excavation and grading during remediation and redevelopment are expected to off-gas subsurface methane prior to building construction, which will reduce concentrations, and 2) SMD systems within the two proposed building (IR and ToQ) will contribute to methane ventilation.

5. Potential Impacts from Off-site Sources

   According to the Phase I ESAs, adjoining properties to the south (upgradient) and east (cross-gradient) have historically included auto repair services, gasoline filling stations, and bus garage/depots with petroleum bulk storage. Undocumented releases of petroleum products or hazardous substances at these locations may have migrated and impacted groundwater and/or soil vapor at the development site. The ongoing Willets Point development (east of the development site) has remediated some of the impacts associated with the aforementioned off-site uses and migration of contaminants from Willets Point to the site was not apparent during remediation of the Willets Point development area.

1.5 Summary of Work Performed under the Remedial Investigation

The RI for the IR, IR Exterior, Public Realm, and ToQ was completed between July 7 and August 22, 2025. Samples collected during the RI were inclusive of the areas of planned pre-development operations (within the IR, IR Exterior, and PR) described in Section 1.2. The RI included the following scope of work:

1. Geophysical survey mark-outs to clear proposed boring locations of sub-grade utilities and other anomalies.
2. In the IR development area:
   a. Advancement of 59 soil borings (SB-R-01 through SB-R-59) and collection of 104 soil samples for laboratory analysis
   b. Installation of 35 temporary groundwater monitoring wells (MW-R-01 through MW-R-45 [excluding MW-R-28, MW-R-31, and MW-R-37 through MW-R-44]) and collection of 35 groundwater samples for laboratory analysis

c. Installation of 20 temporary soil vapor probes (SV-R-01 through SV-R-20) and collection of 19 soil vapor samples

3. In the IR Exterior development area:

    a. Advancement of 4 soil borings (SB-RE-01 through SB-RE-04) and collection of 8 soil samples for laboratory analysis

    b. Installation of 3 temporary groundwater monitoring wells (MW-RE-01 through MW-RE-03) and collection of 3 groundwater samples for laboratory analysis

    c. Installation of 2 temporary soil vapor probes (SV-RE-01 through SV-RE-02) and collection of 2 soil vapor samples

4. In the ToQ development area:

    a. Advancement of 6 soil borings (SB-M-01 through SB-M-06) and collection of 11 soil samples for laboratory analysis

    b. Installation of 4 temporary groundwater monitoring wells (MW-M-01 through MW-M-04) and collection of 4 groundwater samples for laboratory analysis

    c. Installation of 2 temporary soil vapor probes (SV-M-01 through SV-M-02) and collection of 2 soil vapor samples

5. In the Public Realm development area:

    a. Advancement of 16 soil borings (SB-P-01 through SB-P-16) and collection of 31 soil samples for laboratory analysis

    b. Installation of 10 temporary groundwater monitoring wells (MW-P-01 through MW-P-11 [excluding MW-P-07]) and collection of 10 groundwater samples for laboratory analysis

    c. Installation of 5 temporary soil vapor probes (SV-P-01 through SV-P-05) and collection of 5 soil vapor samples

6. Collection of quality assurance/quality control (QA/QC) samples, including duplicate soil and groundwater samples and field blanks.

1.6 Summary of Findings of Remedial Investigation

1. Elevation across the IR and ToQ development areas is about el. 8 to 10, referenced to the North American Vertical Datum of 1988 (NAVD88). Elevation across the IR Exterior and PR development areas ranges from about el. 10 to el. 22, NAVD88.

2. The site is underlain by fill, predominantly consisting of tan, brown, red, gray, and black fine- to coarse-grained sand with varying amounts of clay, silt, gravel, brick, ceramics,

coal, concrete, construction and demolition (C&D) debris, glass, metal, shells, vegetation, and wood that extends from surface grade to depths between about 6.25 to at least 16 feet bgs (the termination depth of borings with the deepest observed fill). Clay was encountered below the fill layer with intermittent lenses of organic material (e.g., woody vegetation).

3. Depth to groundwater was measured in monitoring wells between about 3.5 and 7 feet bgs within the IR, between about 3.3 and 6 feet bgs in the IR Exterior, between about 4.5 and 5.1 feet bgs in ToQ, and between about 3.7 and 13.5 feet bgs in the Public Realm. Groundwater was intermittently encountered during pre-clearing (between about 0 and 5 feet bgs) and was suspected to be associated with perched groundwater above former concrete foundation elements or another unidentified confining layer. Groundwater is inferred to flow north-northeast towards Flushing Bay.
4. Bedrock was not encountered during this investigation.
5. Isolated observations of petroleum-like odors, staining, and/or PID readings above background conditions were observed in the IR (SB-R-01, SB-R-09, SB-R-25, and SB-R-39), IR Exterior (SB-RE-03), TOQ (SB-M-02 and SB-M-03), and PR (SB-P-05, SB-P-10 and SB-P-13) development areas; however, soil samples collected from these borings did not contain petroleum-related VOCs at concentrations above NYSDEC CP-51 Soil Cleanup Levels (SCLs) for Fuel Oil or Gasoline Impacted soil. CP-51-listed SVOCs exceeded CP-51 SCLs; however, concentrations were similar to variable fill material throughout the site. Although petroleum-related VOCs in soil from corresponding borings did not exceed CP-51 SCLs, groundwater samples from wells MW-R-05 and MW-R-08 (within the proposed IR footprint) contained petroleum VOCs above NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) and Guidance Values (SGV) for Class GA water (collectively referred to as the "NYSDEC SGVs"); additional details are provided in Item 7 below.

   These field observations and groundwater results were communicated to NYC OER on August 4, 2025. Subsequent sampling around wells MW-R-09 and MW-R-05 did not identify petroleum-related VOCs in soil or groundwater samples at concentrations above relevant criteria, indicating no wide-spread petroleum impacts. A spill was not reported to NYSDEC because of the limited extent of the observed impacts.
6. Soil sample analytical results were compared to New York State Department of Environmental Conservation (NYSDEC) Unrestricted Use (UU) and Restricted Use Commercial (RUC) soil cleanup objectives (SCOs) as presented in Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR) Part 375-6.8 and NYSDEC Commissioner Policy (CP)-51. Soil sample analytical results identified the following:

a. The following VOCs exceeded UU SCOs but were below the RUC SCOs: acetone (maximum of 1.7 milligrams per kilogram [mg/kg] in SB-R-27_6-7) and methyl ethyl ketone (maximum of 0.28 mg/kg in SB-R-27_6-7).

b. One or more of 14 SVOCs exceeded the UU and/or RUC SCOs in samples collected from each development area, including: acenaphthene (maximum of 52.5 mg/kg in SB-R-09_6-7); benzo(a)anthracene (maximum of 73.3 mg/kg in SB-R-16_5-7); benzo(a)pyrene (maximum of 46.5 mg/kg in SB-R-50_0-2); benzo(b)fluoranthene (maximum of 56.1 mg/kg in SB-R-50_0-2); benzo(k)fluoranthene (maximum of 38.9 mg/kg in SB-R-16_5-7); chrysene (maximum of 64 mg/kg in SB-R-16_5-7); dibenz(a,h)anthracene (maximum of 6.8 mg/kg in SB-R-33_8-10); dibenzofuran (maximum of 16.5 mg/kg in SB-R-33_8-10); fluoranthene (maximum of 150 mg/kg in SB-R-33_8-10); fluorene (maximum of 46.6 mg/kg in SB-R-16_5-7); indeno(1,2,3-cd)pyrene (maximum of 23.3 mg/kg in SB-R-50_0-2); naphthalene (maximum of 40.2 mg/kg in SB-R-09_6-7); phenanthrene (maximum of 146 mg/kg in SB-R-09_6-7); and pyrene (maximum of 142 mg/kg in SB-R-33_8-10). SVOC concentrations are largely attributed to variable fill quality at the site; however, naphthalene at SB-R-09 may be related to the observed petroleum-like impacts.

c. One or more of three pesticides exceeded the UU SCOs, but were below the RUC SCOs in samples collected from the IR and PR development areas, including 4,4'-DDD (maximum of 0.0183 mg/kg in SB-R-14_0-2), 4,4'-DDE (maximum of 0.0343 mg/kg in SB-R-14_0-2), and 4,4'-DDT (maximum of 0.0227 mg/kg in SB-R-14_0-2).

d. Total polychlorinated biphenyls (PCBs) exceeded the UU SCO, but were below the RUC SCO, in one soil sample collected from the PR development area (0.112 mg/kg in SB-P-07_0-2).

e. One or more of 12 metals exceeded the UU and/or RUC SCOs in samples collected from each development area, including, arsenic (maximum of 37.3 mg/kg in SB-M-DUP-01); barium (maximum of 2,160 mg/kg in SB-R-49_3-5); cadmium (maximum of 158 mg/kg in SB-R-47_6-8); hexavalent chromium (maximum of 2.3 mg/kg in SB-P-02_9-11); trivalent chromium (maximum of 729 mg/kg in SB-R-47_6-8); copper (maximum of 417,000 mg/kg SB-R-18_5-7); lead (maximum of 6,350 mg/kg in SB-R-47_6-8); mercury (maximum of 8.39 mg/kg in SB-P-03_5-7); nickel (maximum of 337 mg/kg in SB-M-DUP-01), selenium (maximum of 4.31 mg/kg in SB-R-25_4-6); silver (maximum of 49.4 mg/kg in SB-R-18_5-7), and zinc (maximum of 42,100 mg/kg in SB-R-18_5-7).

f. Herbicides and per-and polyfluoroalkyl substances (PFAS) were not detected above UU or RUC SCOs in soil samples.

7. Groundwater samples results were compared to NYSDEC SGVs and identified the following:

   a. Nine VOCs, 1,2,4-trimethylbenzene (maximum of 66.9 micrograms per liter [µg/L] in MW-R-09_072125), 1,3,5-trimethylbenzene (maximum of 19.4 µg/L in MW-R-09_072125), benzene (maximum of 5.68 µg/L in MW-R-09_072125), ethylbenzene (maximum of 37.6 µg/L in MW-R-09_072125), isopropylbenzene (maximum of 5.59 µg/L in MW-R-09_072125), toluene (maximum of 36.4 µg/L in MW-R-09_072125), and total xylenes (maximum of 118 µg/L in MW-R-09_072125) were detected above the SGVs in groundwater samples. VOCs did not exceed SGVs in groundwater from wells other than MW-R-05 and MW-R-09, where VOCs are attributed to isolated petroleum impacts discussed under item 5.

   b. Eleven SVOCs, 1,4-dioxane (maximum of 8.94 µg/L in MW-R-26_080125), 2,4-dinitrotoluene (maximum of 11.9 µg/L in MW-RE-03)080125), acenaphthene (maximum of 47 µg/L in MW-R-05_071725), benzo(a)anthracene (maximum of 1.81 µg/L in MW-R-19_081125), benzo(a)pyrene (maximum of 1.61 µg/L in MW-R-19_081125), benzo(b)fluoranthene (maximum of 2.02 µg/L in MW-R-19_081125), benzo(k)fluoranthene (maximum of 2.38 µg/L in MW-R-19_081125), bis(2-ethylhexyl)phthalate (maximum of 22.3 µg/L in MW-R-11_072825), chrysene (maximum of 1.8 µg/L in MW-R-19_081125), indeno(1,2,3-cd)pyrene (maximum of 1.15 µg/L in MW-R-19_081125), and naphthalene (maximum of 24 µg/L in MW-R-05_071725) were detected above SGVs in groundwater samples.

      Exceedances of polynuclear aromatic hydrocarbons (PAHs) were primarily limited to samples with turbidity over 50 Nephelometric Turbidity Unit (NTU), indicating entrained sediment may be contributing to the results. Naphthalene in MW-R-09 and acenaphthene in MW-R-05 are attributed to the previously discussed petroleum impacts. Bis(2-ethylhexyl) phthalate is a common component of plastic and field sampling materials and is not indicative of a release. A source of 2,4-dinitrotoluene was not identified in soil. A source of 1,4-dioxane in MW-R-06 and MW-R-26 was not identified in corresponding soil borings SB-R-06 and SB-R-26.

   c. Nine dissolved metals, antimony (maximum of 7.18 µg/L in MW-R-04_071625), arsenic (maximum of 34.4 µg/L in MW-R-23_071825), barium (maximum of 2,430 µg/L in MW-R-12_080125), iron (maximum of 39,200 µg/L in MW-R-25_080525), lead (maximum of 48.8 µg/L in MW-R-19_081125), magnesium (maximum of 165,000 µg/L in MW-R-09_072125), manganese (maximum of 2,200 µg/L in MW-

P-08_082225), selenium (maximum of 16.5 µg/L in MW-R-22_071825), and sodium (maximum of 2,460,000 µg/L in MW-R-09_072125) were detected above SGVs in groundwater samples. Dissolved iron, magnesium, manganese, sodium, and selenium are representative of regional groundwater conditions. Arsenic, lead, and barium in soil exceeded the Protection of Groundwater (PGW) SCO in more or more soil samples; there is no PGW SCO for antimony. Dissolved metals in groundwater have been identified at other remediation sites in the area.

d. Two PFAS compounds, perfluoroctanesulfonic acid (PFOS) (maximum of 0.0417 µg/L in MW-P-01_082025) and perfluorooctanoic acid (PFOA) (maximum of 0.175 µg/L in MW-R-11_072825) were detected above SGVs in groundwater samples; however. A site source of PFAS was not identified in soil.

e. Pesticides, herbicides, and PCBs were not detected above SGVs in any of the groundwater samples.

8. Soil vapor sample analytical results collected during the RI were compared to the decision matrices and air guidance values (AGVs) included in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006 (and subsequent updates), and to the Lower Explosive Limit (LEL) for methane (5%).

    a. Total VOCs concentrations were reported within the following ranges for each development area:

        i. IR: 591.18 µg/m^3 in SV-R-08 to 5,038.76 µg/m^3 in SV-R-11

        ii. IR Exterior: 2,926.8 µg/m^3 in SV-RE-02 to 2,983.4 in SV-RE-01

        iii. ToQ: 83.44 µg/m^3 in SV-M-01 to 5,105.3 µg/m^3 in SV-M-02

        iv. Public Realm: 344.22 µg/m^3 in SV-P-02 to 3,611 µg/m^3 in SV-P-04

    Based on a conservative comparison (in the absence of indoor air data) against the NYSDOH decision matrices in the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and subsequent updates), monitoring or mitigation may be recommended based on concentrations of the following:

    b. 1,1-dichloroethene (maximum of 13 µg/m^3 in SV-R-06), cis-1,2-dichloroethene (maximum of 27 µg/m^3 in SV-R-17), trichloroethene (TCE) (maximum of 53 µg/m^3 in SV-R-10), vinyl chloride (maximum of 60 µg/m^3 in SV-R-17), 1,2,4-trimethylbenzene (maximum of 100 µg/m^3 in SV-R-09), 1,3,5-trimethylbenzene (maximum of 94 µg/m^3 in SV-R-09), 2,2,4-trimethylpentane (maximum of 260 µg/m^3 in SV-R-14), benzene (maximum of 250 µg/m^3 in SV-R-09), cyclohexane (maximum of 170 µg/m^3 in SV-R-09), ethylbenzene (maximum of 160 µg/m^3 in SV-

R-09), xylenes (maximum of 790 µg/m^3 in SV-R-10), heptane (maximum of 290 µg/m^3 in SV-R-09), and hexane (maximum of 650 µg/m^3 in SV-R-09) in IR

c. 2,2,4-trimethylpentane (maximum of 350 µg/m^3 in SV-RE-01) in IR Exterior

d. cis-1,2-dichloroethene (maximum of 8.5 µg/m^3 in SV-M-02), 2,2,4-trimethylpentane (maximum of 230 µg/m^3 in SV-M-02), benzene (maximum of 230 µg/m^3 in SV-M-02), cyclohexane (maximum of 250 µg/m^3 in SV-M-02), heptane (maximum of 360 µg/m^3 in SV-M-02), and hexane (maximum of 650 µg/m^3 in SV-M-02) in ToQ

e. 2,2,4-trimethylpentane (maximum of 670 µg/m^3 in SV-P-04), benzene (maximum of 130 µg/m^3 in SV-P-03), cyclohexane (maximum of 140 µg/m^3 in SV-P-04), heptane (maximum of 320 µg/m^3 in SV-P-04), and hexane (maximum of 420 µg/m^3 in SV-P-04) in PR

9. Methane results in soil vapor ranged from non-detect at samples SV-R-08 and SV-M-01 to 59.6% in sample collected at SV-R-01, above the LEL of 5%. Of the 10 total soil vapor samples analyzed for methane, 5 samples (3 from the IR, 1 from the IR Exterior, and 1 from the PR) exceeded the LEL.

2.0 REMEDIAL ACTION OBJECTIVES

Based on the results of the RI, the following Remedial Action Objectives (RAOs) have been identified for this site:

2.1 Soil

- Prevent direct contact with contaminated soil/fill.
- Prevent exposure to contaminants volatilizing from contaminated soil/fill.

2.2 Groundwater

- Prevent direct exposure to groundwater.
- Prevent exposure to contaminants volatilizing from contaminated groundwater.

2.3 Soil Vapor

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into dwelling and other enclosed, occupied structures.

3.0 REMEDIAL ACTION

3.1 Summary of the Proposed Remedy

The proposed remedy is a Track 4 Commercial (CU) and will achieve protection of public health and the environment consistent with the intended use of the site.

The proposed remedial action achieves the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance; is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants; is cost effective and implementable; and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. As a pre-requisite to site remediation, surface debris/refuse removal by the contractor, including handling and disposal as hazardous building material waste or C&D debris in accordance with Part 360 and 361 regulations. Review and certification of C&D and refuse transport and disposal methodologies is not a requirement of the remedial engineer. The remedial engineer is responsible for documenting that C&D debris and refuse is not comingled with contaminated site soil/fill.
2. Pre-development operations, to reconfigure the existing asphalt- and concrete-paved lots to accommodate parking for events held at Citi Field during construction of Northfield and Southfield parking structures (under a separate RAWP) and to refine design parameters for the proposed buildings:
    a. Restriping the existing parking lot, including the removal of select concrete curbs/walkways and tree pits (with disturbed areas to be restored with concrete or asphalt), and excavation and removal of soil/fill at isolated locations for installation of new concrete curbs/walkways and 4-inch-diameter bollards.
    b. Installing tree protection around select trees planned to remain in place until construction for the new buildings.
    c. Excavating of geotechnical and site civil test pits to identify the extents of existing utilities or foundation elements from former site structures.
    d. Pile load testing
3. Site mobilization involving equipment mobilization, utility mark outs, and marking out excavation areas.
4. Segregation and stockpiling of current pavement subbase (gravel and recycled concrete aggregate [RCA]) for reuse as subbase under new site pavement.

5. Performance of a Community Air Monitoring Program (CAMP) for particulates and VOCs.
6. Establishment of Track 4 Site-Specific SCOs.
7. Abandonment of geotechnical observation wells in accordance with NYSDEC CP-43 policy.
8. Protection or decommissioning/removal/abandonment of above- or below-grade telecommunication, electrical, stormwater collection, and potable water utilities.
9. Completion of waste characterization sampling; it is anticipated that preliminary, bid-phase in-situ waste characterization will be supplemented by construction-phase waste characterization sampling. Soil samples will be collected at a frequency dictated by selected disposal facility(ies).
10. Excavation and removal of soil/fill as follows for the proposed development:
    a. Pre-development operations in the IR, IR Exterior, and PR will include excavation to depths between about 18 and 24 inches bgs for installation of new concrete curbs/walkways and 4-inch-diameter bollards. About 800 CY will be excavated.
    b. The IR will be excavated to about 1-foot bgs for installation of the composite cover system and the sub-membrane depressurization (SMD) system with deeper localized excavations to between about 5.5 and 8 feet bgs for installation of building foundation elements. Based on current development plans, about 89,000 CY will be excavated.
    c. The Taste of Queens will be excavated to about 1-foot bgs for installation of the composite cover system and the SMD system with deeper localized excavations to between about 5.5 and 8 feet bgs for installation of building foundation elements. Based on current development plans, about 9,000 CY will be excavated.
    d. The IR Exterior will be excavated from surface grade up to about 1-foot bgs, as needed, for installation of the composite cover system, and between about 2 and 8 feet bgs for installation of subsurface utilities. Grades will be raised in some areas of IR Exterior, rather than excavated. Based on current development plans, about 12,000 CY will be excavated.
    e. The Public Realm will be excavated from surface grade up to about 1-foot bgs, as needed, for installation of the composite cover system, and between about 2 and 8 feet bgs for installation of subsurface utilities. Grades will be raised in some

areas of Public Realm, rather than excavated. Based on current development plans, about 31,000 CY will be excavated.

11. Excavation and removal of soil/fill from seven hotspots based on concentrations of metals or SVOCs above the Track 4 Site-Specific SCOs in soil or the PGW SCOs while also exceeding the NYSDEC SGVs in groundwater (with turbidity less than 100 NTU) at associated sample locations. Each hotspot will measure about 20-feet-long by 20-feet-wide and will be excavated from surface grade to the groundwater table, centered at the referenced RI soil sample locations. An additional hotspot was added based on concentrations of copper detected in soil boring SB-R-18 (417,000 mg/kg); however, copper was not detected in groundwater at this location.
    a. SB-R-02, SB-R-03, SB-R-18 and SB-R-19 (IR) based on concentrations of barium, copper, or lead
    b. SB-R-16 (IR) and SB-P-09 (PR) based on concentrations of total SVOCs
    c. SB-R-05 and SB-R-09 (IR) where field indications of petroleum-impacts to soil coincided with groundwater samples with petroleum-related VOCs above SGVs
12. Excavation and removal of soil/fill from 3 hotspots based on concentrations of metals (arsenic, barium, or copper) above the RUC or Track 4 Site-Specific SCOs in the upper 1 foot in potential landscaped areas. Each hotspot will measure about 20-feet-long by 20-feet-wide and will be excavated from surface grade to 1-foot bgs, centered at the following RI soil sample locations:
        a. SB-RE-04 in the IR and SB-P-01 and SB-P-08 in the PR, based on concentrations of arsenic, barium, or copper

    Based on the NYSDEC Part 375 description of Track 4 cleanups, additional hotspot excavations are not proposed because proposed site use is commercial and remaining exceedances of site-specific SCOs outside of planned impervious building footprints were deeper than 1 foot bgs. Regardless, most of the soil within the 0 to 1-foot bgs interval will be removed as part of the general development cut.
13. Acquisition of permits required to complete remediation
14. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
15. Management of excavated materials including temporarily stockpiling and segregating waste in accordance with defined material types and to prevent co-mingling of waste streams.

16. Reuse of excavated site soil that does not exhibit petroleum-like staining or odors or PID readings above site background, in accordance with NYSDEC Part 360.12(c)(1)(iv) and CEQRA Manual 2021 Chapter 12, for backfill/grading in areas with similar physical characteristics. On-site reuse of excavated material will only be performed if the material is also structurally suitable. Excavated soil that cannot be reused onsite will be transported off-site to a permitted facility for disposal.
17. Localized dewatering is anticipated and, if field conditions permit, dewatered groundwater/and or accumulated rainwater may be recharged into adjacent soil. If water exhibits odors or petroleum-like sheen, it will not be recharged back into the site. If required, excess, extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from NYCDEP to meet pre-treatment requirements prior to discharge to the combined sewer system.
18. Collection and laboratory analysis of 431 post-excavation documentation soil samples at development subgrade to document post-remediation soil quality that will remain on-site.
19. Removal, registration and appropriate closure of any USTs encountered during soil/fill removal, and reporting and closing of any associated petroleum spills in compliance with applicable local, state and federal laws and regulations.
20. Transportation and off-site disposal of excess soil/fill at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan.
21. Import of soil or fill meeting the lower of the NYSDEC Restricted Use – Residential (RUR) and/or protection of groundwater (PGW) SCOs for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations. The estimated quantity of soil/fill to be imported into the site is about 83,000 CY (about 24,000 CY of imported soil/fill for installation of the building foundation slabs and SMD systems in IR and ToQ, about 53,000 CY of imported soil/fill for installation of the composite cover system in IR Exterior and Public Realm, and about 6,000 CY of imported soil/fill for foundation element and subsurface utility subbase).
22. Construction of parking garages that are either open-air or ventilated in accordance with the 2022 NYCDOB Mechanical Code.
23. Construction of an engineered composite cover system consisting of a minimum of one foot of imported fill meeting the lower or the NYSDEC Part 375 Restricted Use – Residential (RUR) and/or PGW SCOs (underlain by a demarcation layer) in landscaped areas; concrete foundation slabs for the future buildings; concrete or asphalt pavement; or another cover system acceptable to the NYCOER. The composite cover

system is an engineering control (EC) for the remedial action. The remedial engineer will certify in the Remedial Action Report (RAR) that the composite cover system was properly installed.

24. The waterproofing/vapor barrier system for enclosed, occupied spaces in the IR and ToQ has not been specified, but will consist of a minimum 20-mils thick, VOC- and methane-resistant membrane. The lowest levels in the remainder of the IR and ToQ buildings will primarily be occupied by parking garages that are either open-air or ventilated spaces in accordance with the 2022 NYCDOB mechanical code (without continuously occupied spaces such as offices or conference rooms); therefore, a vapor barrier is not proposed in those portions of the building footprint. The waterproofing/vapor barrier system may consist of GCP Applied Technologies Preprufe® 300R Plus Membrane (46 mils) or another NYCOER-approved equivalent. Welds, seams, and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system is an EC for the remedial action. The remedial engineer will certify in the RAR that the vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building. The vapor barrier product and its manufacturing specifications will be provided in a future stipulation letter provided to NYCOER.

25. Installation of an active sub-membrane depressurization (SMD) system beneath portions of the building foundation slab of IR and ToQ where occupied spaces (e.g. offices and conference rooms) are proposed. The lowest levels in the remainder of the IR and ToQ buildings will primarily be occupied by parking garages that are either open-air or ventilated spaces in accordance with the 2022 NYCDOB mechanical code (without continuously occupied spaces such as offices or conference rooms); therefore, an SMD system is not proposed in those portions of the building footprint. The SMD systems in each building will consist of a network of horizontal pipes set into a gas permeable aggregate layer beneath the building slab and vapor barrier system. The horizontal subgrade piping will consist of fabric wrapped, perforated, Schedule 80, 4-inch-diameter polyvinyl chloride (PVC) pipe connected to a 4-inch-diameter riser pipe that penetrates the building foundation slab and travels through the building to an explosion-proof roof-mounted blower fan within an enclosure. The active SMD system is an EC for the remedial action. The remedial engineer will certify in the RAR that the SMD system was designed and properly installed to establish a vacuum in the gas permeable aggregate layer and a negative (decreasing outward) pressure gradient across the depressurized area to prevent vapor migration into the building.

26. The lowest levels of the IR and ToQ buildings will be primarily occupied by parking garages that are either open-air or ventilated in accordance with NYC Department of Buildings (NYCDOB) mechanical code; therefore, an active SMD is not required in these spaces. Should the design change and enclosed spaces are proposed, an active SMD will be required.
27. Implementation of storm-water pollution prevention measures in compliance with a pending site-specific Stormwater Pollution Prevention Plan (SWPPP), which will be approved by NYCDEP.
28. Submission of an RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the site boundaries, lists any changes from this RAWP, and describes all ECs and Institutional Controls (ICs) to be implemented at the site.
29. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of ECs and ICs and reporting at a specified frequency. ICs will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.
30. The site will continue to be registered with an E-Designation at the NYCDOB.
31. Placement of a deed notice to record the ECs/ICs on the deed to ensure that future owners of the site continue to comply with the SMP, as required.

3.2 Soil Cleanup Objectives and Soil/Fill Management

The SCOs for this property will be RUC SCOs for the top one foot of the property as amended by the following Track 4 Site-Specific SCO's within the top one foot:

Contaminant	**Site-Specific SCO's**
Total SVOCs	250 mg/kg
Barium	820 mg/kg (Protection of Groundwater SCO)

SCOs for contaminants not listed above align with RUC SCOs. Soil/fill management on-site and off-site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Fill Management Plan (SFMP) in Appendix C. Discrete contaminant sources (such as hotspots) identified during the remedial investigation will be identified by global positioning system (GPS) or surveyed. This information will be provided in the RAR.

3.3 Pre-Development Operations

Prior to site remediation, pre-development operations will be necessary to reconfigure the existing asphalt- and concrete-paved lots to accommodate parking for events held at Citi Field during construction of Northfield and Southfield parking structures (under a separate RAWP) and to refine design parameters for the proposed buildings. Pre-development operations will be performed prior to the remedial excavation outlined in Section 3.3, and are expected to include:

a. Restriping the existing parking lot, including the removal of select concrete curbs/walkways and tree pits (with disturbed areas to be restored with concrete or asphalt), and excavation and removal of soil/fill at isolated locations for installation of new concrete curbs/walkways and 4-inch-diameter bollards. Drawings for the planned restriping project are included in Appendix A.

b. Installing tree protection around select trees planned to remain in place until construction for the new buildings.

c. Excavating geotechnical and site civil test pits to identify the extents of existing utilities or foundation elements from former site structures.

d. Pile load testing.

Ground-intrusive activities associated with the pre-development operations described above will be performed in accordance with the SFMP included as Appendix C and in accordance with the CAMP outlined in Section 4.5.

3.4 Soil/Fill Excavation and Removal

The quantity of soil/fill expected to be excavated and disposed of off-site during development is about 141,000 CY (estimated 232,500 tons). A key plan for the overall site is shown on Figure 4. Pre-development operations are shown on Figure 5 and the anticipated excavation extents for redevelopment are shown on Figures 6, 6A, and 6B. Anticipated excavation areas are summarized as follows:

1. Pre-development operations in the IR, IR Exterior, and PR will include excavation to depths between about 18 and 24 inches bgs for installation of new concrete curbs/walkways and 4-inch-diameter bollards. About 800 CY will be excavated.

2. The IR will be excavated to about 1-foot bgs for installation of the composite cover system and the SMD system with deeper localized excavation to between about 5.5 and 8 feet bgs for installation of building foundation elements. Based on current development plans, about 89,000 CY will be excavated.

3. The Taste of Queens will be excavated to about 1-foot bgs for installation of the composite cover system and the SMD system with deeper localized excavation

to between about 5.5 and 8 feet bgs for installation of building foundation elements. Based on current development plans, about 9,000 CY will be excavated.

4. The IR Exterior will be excavated from surface grade up to about 1-foot bgs for installation of the composite cover system, and between about 2 and 8 feet bgs for installation of subsurface utilities. Grades will be raised in some areas of IR Exterior, rather than excavated. Based on current development plans, about 12,000 CY be excavated.
5. The Public Realm will be excavated to about 1-foot bgs for installation of the composite cover system, and between about 2 and 8 feet bgs for installation of subsurface utilities. Grades will be raised in some areas of Public Realm, rather than excavated. Based on current development plans, about 31,000 CY will be excavated.
6. Excavation and removal of soil/fill from seven hotspots based on concentrations of metals or SVOCs above the PGW or Track 4 Site-Specific SCOs in soil while exceeding the NYSDEC SGVs in groundwater (with turbidity less than 100 NTU) at associated sample locations. Each hotspot will measure about 20-feet-long by 20-feet-wide and will be excavated from surface grade to the groundwater table, centered at the below RI soil sample locations. An additional hotspot was added based on concentrations of copper detected in soil boring SB-R-18 (417,000 mg/kg); however, copper was not detected in groundwater at this location.
    a. SB-R-02, SB-R-03, SB-R-18 and SB-R-19 (IR) based on concentrations of barium, copper, or lead
    b. SB-R-16 (IR) and SB-P-09 (PR) based on concentrations of total SVOCs
    c. SB-R-05 and SB-R-09 (IR) where field indications of petroleum-impacts to soil coincided with groundwater samples with petroleum-related VOCs above SGVs
7. Excavation and removal of soil/fill from 3 hotspots based on concentrations of metals (arsenic, barium, copper, or lead) or SVOCs above the RUC or Track 4 Site-Specific SCOs in the upper 1 foot in potential landscaped areas. Each hotspot will measure about 20-feet-long by 20-feet-wide and will be excavated from surface grade to 1-foot bgs, centered at the following RI soil sample locations:
    a. SB-RE-04 in the IR and SB-P-01 and SB-P-08 in the PR, based on concentrations of arsenic, barium, or copper

Based on the NYSDEC Part 375 description of Track 4 cleanups, additional hotspot excavations are not proposed because proposed site use is commercial and remaining exceedances of site-specific SCOs outside of planned impervious building footprints were deeper than 1-foot bgs. Regardless, most of the soil within the 0 to 1-foot bgs interval will be removed as part of the general development cut.

Excavated soil will be reused onsite in accordance with Section 3.7 (except for soil/fill generated from hotspot excavations); however, excavated soil that is not considered reusable will be transported off-site for disposal. For each disposal facility to be used in the remedial action, a letter from the developer/Qualified Environmental Professional (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 OER prior to any transport and disposal of soil/fill at a facility.

3.5 Documentation Endpoint Sampling

To evaluate attainment of site-specific SCOs and to document residual contamination beneath the composite cover system, post-excavation documentation soil samples will be collected and analyzed utilizing the analytical methods specified below:

- VOCs by Environmental Protection Agency (EPA) Method 8260;
- SVOCs by EPA Method 8270;
- Target Analyte List Metals; and
- Pesticides/PCBs by EPA Method 8081/8082.

A total of 431 base of excavation documentation samples (141 from IR, 54 from IR Exterior, 14 from ToQ, and 222 from Public Realm [about 1 per 6,000 square feet]) will be collected from the base of the excavation at the approximate locations shown on Figures 7A through 7D. Additional endpoint samples will be collected from the proposed hotspot removals, as described in Section 3.5.1.

New York State Environmental Laboratory Approval Program (ELAP)-certified labs will be used for all documentation sample analyses. The RAR will provide tabulated analytical data with comparison to the site-specific SCOs, documentation endpoint sampling location maps with summaries of analytical data, and copies of the analytical laboratory reports.

3.5.1 Hotspot Endpoint Sampling

Following excavation of hotspots listed in this RAWP (Section 3.4) and additional, unknown hotspots identified during this remedial program, (e.g. grossly contaminated soil/fill), end-point samples will be collected at the following frequency:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff; however, if the hotspot extends to groundwater, a base sample will not be collected.
2. For excavations 20 to 300 feet in perimeter, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area; however, if the hotspot extends to groundwater, a base sample will not be collected.
3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation, and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches.
4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to bullets 1-3 above.

Confirmation endpoint soil samples will not be collected from hotspots that have been horizontally and vertically delineated prior to removal (with confirmation from NYCOER).

Laboratory analysis for confirmation samples will be limited to the contaminant of concern at each location as follows:

- SB-R-02: Barium
- SB-R-03: Barium
- SB-R-05: CP-51 VOCs
- SB-R-09: CP-51 VOCs
- SB-R-16: SVOCs
- SB-R-18: Copper
- SB-R-19: Lead
- SB-P-01: Arsenic, Barium, and Copper
- SB-P-08: Barium
- SB-P-09: SVOCs
- SB-RE-04: Barium

If either light non-aqueous phase liquid (LNAPL) and/or dense non-aqueous phase liquid (DNAPL) are detected, appropriate samples will be collected for characterization and "finger print analysis" and required regulatory reporting (i.e. spills hotline) will be performed, as needed.

3.6 Quality Assurance/Quality Control

The fundamental quality assurance objective, with respect to accuracy, precision, and sensitivity of laboratory analytical data, is to achieve the quality control outlined in the analytical protocol. The accuracy, precision, and completeness requirements will be addressed by the laboratory for all data generated.

One blind duplicate sample will be collected for every 20 documentation endpoint samples submitted to the approved laboratory for analysis of the same parameters. Collected samples will be appropriately packaged, placed in coolers, and shipped via overnight courier or delivered directly to the analytical laboratory by a laboratory courier. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or "cold-packs" to maintain temperatures of 4°C.

Dedicated disposable sampling materials will be used for the collection of documentation endpoint samples, eliminating the need to prepare field blanks. However, if non-disposable equipment is used, (e.g., stainless steel scoop) field blanks will be prepared at the rate of 1 for every 20 samples collected. Decontamination of non-dedicated sampling equipment will consist of the following:

1. Gently tap or scrape to remove adhered soil
2. Rinse with tap water
3. Wash with Alconox® solution and scrub
4. Rinse with tap water
5. Rinse with distilled or deionized water

Field blanks will be prepared by pouring distilled or deionized water over decontaminated equipment and collecting the water into laboratory-provided containers.

Trip blanks will be used whenever aqueous samples are transported to the laboratory for analysis of VOCs.

3.7 Reuse of On-Site Soil

Excavated site soil that does not exhibit petroleum-like staining or odors of PID readings above site background will be reused on site, provided it is structurally suitable, in accordance with NYSDEC Part 360.12(c)(1)(iv), Part 360.13, and Chapter 12 of the 2021 CEQRA Manual (as applicable) for backfill/grading in areas with similar physical characteristics and in conformance with the Soil/Fill Management Plan in Appendix C. Reused RCA (originating on-site) will consist of recognizable concrete without evidence of environmental contamination. OER will be notified prior to any reuse of on-site soil or RCA.

3.8 Import Backfill

Import of soil onto the site will be performed in conformance with the SFMP in Appendix C and will meet the lower of RUR and PGW SCOs. Sampling frequencies for imported clean fill and stone shall be in accordance with the SFMP. Soil import is expected to be limited to landscaped areas within the IR Exterior or Public Realm. In addition to soil, imported clean fill is expected to include crushed virgin stone for installation of the SMD system in the IR and ToQ, and sub-grade aggregate (stone or RCA) for building slabs, asphalt pavement, and utilities.

The estimated quantity of soil/fill to be imported into the site is about 83,000 CY (about 24,000 CY of imported soil/fill for installation of the building foundation slabs and SMD systems in IR and ToQ, about 53,000 CY of imported soil/fill for installation of the composite cover system in IR Exterior and Public Realm, and about 6,000 CY of imported soil/fill for foundation element and subsurface utility subbase).. A map of proposed backfill placement locations is included in Figure 8. NYCOER will be informed before any import occurs to the site.

3.9 Engineering Controls

ECs will be employed in the remedial action to address residual contamination remaining at the site. The site has four primary EC systems, including:

1. Composite Cover System
2. Waterproofing/Vapor Barrier System beneath occupied spaces in IR and ToQ
3. Grade-level Ventilated Garages
4. Active SMD System in IR and ToQ

Areas within the IR and ToQ buildings that are not subject to active depressurization through the SMD system will primarily be occupied by parking garages (without continuously occupied spaces such as offices or conference rooms) that are either open-air or ventilated in accordance with the 2022 NYCDOB mechanical code.

3.9.1 Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the site. This composite cover system will be comprised of concrete building foundation slabs for the future parking structures, asphalt or concrete pavement, or a minimum of 1 foot of imported fill from an approved facility/source meeting the lower of the RUR and PGW SCOs (underlain by a demarcation layer) in landscaped areas (if any), or another cover type acceptable to the NYCOER. Figure 9 shows the anticipated extent of the composite cover system.

The composite cover system will be a permanent EC. The system will be inspected and its performance certified at specified intervals as required by this RAWP and the SMP. An SFMP will be included in the SMP and will outline the procedures to be followed in the event that the

composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Requirements for maintenance of this composite cover system will be described in the SMP in the RAR.

3.9.2 Waterproofing/Vapor Barrier System

A waterproofing/vapor barrier system will be installed beneath the building foundation slab of the IR and ToQ buildings where occupied spaces (e.g., offices and conference rooms) are proposed to mitigate the potential for soil vapor intrusion. A vapor barrier is not needed as an EC in the IR Exterior or Public Realm as they are outdoor spaces. The waterproofing/vapor barrier system for the IR and ToQ buildings has not been specified, but will consist of a minimum 20-mils thick, VOC- and methane-resistant membrane. The waterproofing/vapor barrier system may consist of GCP Applied Technologies Preprufe® 300R Plus Membrane (46 mils) or another NYCOER-approved equivalent. The vapor barrier product and its manufacturing specifications will be provided in a future Stipulation letter provided to NYCOER.

The waterproofing/vapor barrier system will be installed in accordance with manufacturer specifications. Welds, seams, and penetrations will be properly sealed to prevent preferential pathways for vapor migration. Product data sheets for GCP Applied Technologies waterproofing systems are provided as Appendix D. A plan view showing the location of the proposed waterproofing/vapor barrier system is provided in Figure 10.

The RAR will include as-built drawings and diagrams; manufacturer documentation; photographs of the installation, and a professional engineer (PE)-certified letter (on company letterhead) from the primary contractor responsible for installation oversight and field inspections and a copy of the manufacturer's certificate of warranty.

The vapor barrier is a permanent EC and shall be maintained, as specified in the forthcoming SMP. An SFMP will be included in the SMP and will outline the procedures to be followed in the event that the composite cover system and underlying vapor barrier system is disturbed after the remedial action is complete. Maintenance of these systems will be described in the SMP in the RAR.

3.9.3 Grade-level Ventilated Parking

Areas within the IR and ToQ buildings that are not subject to active depressurization through the SMD system will primarily be occupied by parking garages that are either open-air or ventilated in accordance with the 2022 NYCDOB Mechanical Code.

3.9.4 Sub-Membrane Depressurization System

An SMD system will be installed to depressurize enclosed, occupied spaces on the first floor of the IR and ToQ buildings.

The collective SMD system in the IR building will consist of three independent blower loops, each with a dedicated riser, as summarized below:

- SMD System 1 will be located in the southeastern part of the building, beneath a theatre space, and will include six vacuum monitoring points (VMPs);
- SMD System 2 will be located in the eastern part of the building, beneath a proposed lobby and storage area, and will include two VMPs; and
- SMD System 3 will be located in the eastern part of the building, beneath proposed auxiliary spaces intended to support the overall entertainment complex/hotel and will include four VMPs.

The finalized building design for ToQ is still being contemplated; however, a preliminary piping layout for the proposed building is provided in Appendix E. In accordance with the forthcoming RAWP Stipulation Letter, finalized design drawings will be provided to NYCOER for review and approval prior to installation. The currently contemplated design for the ToQ building includes potentially three independent blower loops, each with a dedicated riser, as summarized below:

- SMD System 1 will be located in the western part of the building, beneath an annex intended for future occupancy by the New York Police Department, and will include 2 VMPs;
- SMD System 2 will be located in the south-central part of the building, beneath the building lobby, and will include 2 VMPs; and
- SMD System 3 will be located in the northern part of the building, beneath restrooms and storage areas, and will include 2 VMPs.

Fewer blowers may be sufficient for TOQ based on pending design changs. The SMD systems for both buildings will consist of a network of horizontal pipes set into a gas permeable aggregate layer beneath the building slabs and vapor barrier systems. The gas permeable aggregate layer will be a minimum of 8 inches thick and will consist of 3/4-inch virgin, coarse, angular, washed stone meeting the gradation requirements for ASTM #5 stone (or remedial engineer--approved equivalent). The horizontal subgrade piping will consist of fabric wrapped, perforated, Schedule 80, 4-inch-diameter polyvinyl chloride (PVC) pipe connected to a 4-inch-diameter riser pipe that penetrates the building foundation slab and travels through the building to a roof-mounted explosion-proof blower fan within an enclosure. Air intakes for each blower will be coordinated with the architect and mechanical engineer and will be:

- Above the eave of the roof;
- At least 10 feet above ground level;

- At least 10 feet away from any operable air intake that is less than 2 feet below the exhaust point; and
- 10 feet from any adjoining or adjacent buildings, or HVAC intakes or supply registers.

The SMD systems are a permanent engineering control and will be installed beneath the building slabs and vapor barrier systems. The remedial engineer will certify in the RAR that the SMD systems were designed and properly installed to establish a vacuum in the gas permeable aggregate layer and a negative (decreasing outward) pressure gradient across the depressurized area to prevent vapor migration into the building.

Preliminary plans for the SMD system are included in Appendix E. In accordance with the forthcoming RAWP Stipulation Letter, finalized design drawings will be provided to NYCOER for review and approval prior to installation. The systems will be inspected and their performance certified at specified intervals as required by this RAWP and the SMP. Maintenance of this SMD system will be described in the SMP included in the RAR. The location and extent of the SMD system is shown on Figure 10.

Methane was detected in soil vapor at concentrations exceeding the LEL of 5%. Although it is not an NYSDEC Part 375-listed contaminant, methane is listed as a "hazardous material" in Chapter 12 of the 2021 CEQRA Manual. Methane venting is not proposed for the site because: 1) Site excavation and grading during remediation and redevelopment are expected to off-gas subsurface methane prior to building construction, which would reduce concentrations; 2) future structures will primarily be occupied by open-air parking garages with natural or mechanical ventilation at the ground level, and 3) the SMD systems in enclosed/occupied spaces the IR and ToQ buildings will contribute to methane ventilation.

3.10 Institutional Controls

A series of ICs are required under this remedial action to assure permanent protection of public health by elimination of exposure to residual materials. These ICs define the program to operate, maintain, inspect and certify the performance of ECs and ICs on this site. ICs would be implemented in accordance with an SMP included in the final RAR and will consist of:

- Placement of a deed restriction on the property to inform future owners and to document ongoing Site Management Requirements.
- Continued registration of the E-Designation for the site. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the SMP which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- Submittal of an SMP in the RAR that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and IC's for approval by NYCOER. The

SMP will require that the property owner and property owner's successors and assigns will submit to NYCOER a periodic written statement that certifies that: (1) controls employed at the site are unchanged from the previous certification or that any changes to the controls were approved by NYCOER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYCOER retains the right to enter the site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by NYCOER in the SMP and will comply with Rules of the City of New York (RCNY) §43-1407(l)(3).

- Vegetable gardens and farming that is in contact with residual soil/fill materials are prohibited;
- Use of groundwater underlying the site is prohibited without treatment rendering it safe for its intended use;
- Future activities on the site that will disturb residual soil/fill must be conducted pursuant to the soil/fill management provisions in an approved SMP;
- The site will be used for commercial and park use and will not be used for a higher level of use without prior approval by NYCOER.

3.11 Site Management Plan

Site management is the last phase of remediation and begins with the approval of the RAR and issuance of the Notice of Completion (NOC) for the remedial action. The SMP describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. The SMP is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site management continues until terminated in writing by NYCOER. The property owner is responsible to ensure that all site management responsibilities defined in the SMP are implemented.

The SMP will provide a detailed description of the procedures required to manage residual impacted-soil, groundwater, and soil vapor left in place following completion of the remedial action. This includes a plan for: (1) implementation of EC's and ICs; (2) operation and maintenance of EC's; (3) inspection and certification of IC's and EC's.

Site management activities and EC/IC certification will be scheduled by NYCOER on a periodic basis to be established in the RAR and the SMP and will be subject to review and modification by NYCOER. The SMP will be based on a calendar year and certification reports will be due for submission to NYCOER by July 30 of the year following the reporting period.

3.12 Qualitative Human Health Exposure Assessment

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the contaminants of concern (COCs) that are present at, or migrating from, the site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

Data and information reported in the RIR are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA) for this project. A QHHEA was performed to determine whether the site poses an existing or future health hazard to the site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk under current and future conditions by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This QHHEA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC Draft Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation (May 2010).

3.12.1 Known and Potential Contaminant Sources

Based on the results of the RIR, the COCs are:

Soil (above RUC SCOs):

- SVOCs (including benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene)
- Metals (including arsenic, barium, copper, cadmium, copper, lead, mercury, nickel, and zinc)

Groundwater:

- VOCs (including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, toluene, and total xylenes)
- SVOCs (including 1,4-dioxane, 2,4-dinitrotoluene, acenaphthene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, indeno[1,2,3-cd]pyrene, and naphthalene)
- Dissolved metals (including antimony, arsenic, barium, iron, lead, magnesium, manganese, selenium, and sodium)
- PFAS

Soil Vapor:

- VOCs, including 1,1,-dichloroethene, cis-1,2-dichloroethene, trichloroethene, vinyl chloride, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2,2,4-trimethylpentane, benzene, cyclohexane, ethylbenzene, xylenes, heptane, hexane, and methane.

3.12.2 Nature, Extent, Fate and Transport of Contaminants

Data collected during the RI confirmed the presence of non-native fill extending about 16 feet bgs. Fill material was found to contain SVOCs and metals at varying concentrations above the Track 4 RUC and Site-Specific SCOs.

Total SVOCs exceeded the site-specific SCO of 250 mg/kg in four soil samples (SB-R-15, SB-R-16, SB-R-33, and SB-P-09) while also exceeding the NYSDEC SGVs for one or more individual compounds in associated groundwater samples collected from the same location; however, exceedances of SVOCs in groundwater samples collected from monitoring wells at SB-R-15 and SB-R-33 were associated with high turbidity (over 100 NTU) during sample collection, which is indicative of entrained sediment in groundwater samples.

Dissolved metals in groundwater (including iron, magnesium, manganese, sodium, and selenium) are generally representative of regional groundwater conditions. Antimony and arsenic were detected in dissolved groundwater at concentrations exceeding the NYSDEC SGVs; however, were not detected at concentrations above the PGW SCOs in associated soil samples collected from the same location and no source was identified. Lead and barium exceeded the NYSDEC SGVs in dissolved groundwater while also exceeding the PGW SCOs in associated soil samples at three locations (SB-R-02, SB-R-03, and SB-R-19).

Hotspots will be established around soil sample locations where exceedances of the Track 4 Site-Specific SCOs (for total SVOCs, with the exception of SB-R_15 and SB-R-33) or the PGW SCOs (for metals) coincide with exceedances of the NYSDEC SGVs in groundwater, and these areas will be addressed through hotspot removal as a component of this RAWP.

Two PFAS compounds (PFOS and PFOA) were identified in groundwater at concentrations above the NYSDEC SGVs but did not exceed the PGW SCOs in soil from samples collected throughout the site.

Methane results ranged from non-detect in samples collected at SV-R-08 (IR) and SV-M-01 (ToQ) to 59.6% in the sample collected at SV-R-01 (IR), which is above the LEL for methane of 5%. Of the 10 total soil vapor samples analyzed for methane, 5 samples (3 from the IR, 1 from the IR Exterior, and 1 from the PR) exceeded the LEL. The presence of methane is attributed to organic decomposition within the historically infilled site.

There are no standards in New York State for VOCs in soil vapor; however, based on a conservative comparison (in the absence of indoor air data) against the NYSDOH decision

matrices in the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and subsequent updates), monitoring or mitigation may be recommended for 1,1,-dichloroethene, cis-1,2-dichloroethene, trichloroethene, vinyl chloride, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2,2,4-trimethylpentane, benzene, cyclohexane, ethylbenzene, xylenes, heptane, hexane, and methane in IR; 2,2,4-trimethylpentane and methane in IR Exterior; cis,1,2-dichloroethene, 2,2,4-trimethylpentane, benzene, cyclohexane, heptane, and hexane in ToQ; and 2,2,4-trimethylpentane, benzene, cyclohexane, heptane, and hexane, in PR.

3.12.3 Receptor Populations

On-Site Receptors: Tas of the date of this RAWP, the site is used for event parking and driveways for Citi Field and MTA/NYCT, as well as public space, and access is restricted by dedicated security. On-site receptors include the public, trespassers, site representatives and visitors granted access to the site. During RAWP implementation and construction, the work area will be restricted to remediation and construction workers and approved personnel under. Under proposed future conditions, potential on-site receptors include the public, workers and visitors.

Off-Site Receptors: Potential off-site receptors within a 500-foot radius of the site include adult and child residents; commercial and construction workers; pedestrians; and trespassers based on the following land uses within 500 feet of the site:

1. Commercial Businesses – existing and future
2. Residential Buildings – existing and future
3. Building Construction/Renovation – existing and future
4. Pedestrians, Trespassers, Cyclists – existing and future

3.12.4 Potential Routes of Exposure

Three potential primary routes exist by which chemicals can enter the body: ingestion, inhalation, and dermal absorption. Exposure can occur based on the following potential media:

- Ingestion of groundwater or soil/fill;
- Inhalation of vapors or particulates; and
- Dermal absorption of groundwater or soil/fill.

3.12.5 Potential Exposure Points

Current Conditions: With the exception of scattered tree pits, the site is currently covered with asphalt there are no potential exposure pathways from ingestion, inhalation, or dermal absorption of soil/ fill. Access to the site is limited to gameday visitors and is restricted by hired security. Groundwater is not exposed at the site. The site is served by the public water supply and groundwater is not used at the site for potable supply and there is no potential for exposure.

Construction/Remediation Conditions: During the remedial action, onsite workers will come into direct contact with surface and subsurface soil/fill as a result of on-site construction and excavation activities. On-site construction workers potentially could ingest, inhale or have dermal contact with exposed impacted soil/fill, soil vapor, and/or groundwater. Similarly, off-site receptors could be exposed to dust and vapors from on-site activities. Due to the depth of groundwater, direct contact with groundwater by site workers will be likely. During RAWP implementation and construction, on-site and off-site exposures to contaminated dust from on-site will be addressed through the SFMP, dust controls, and through the implementation of the CAMP and a Construction Health and Safety Plan (CHASP).

Proposed Future Conditions: Under future remediated conditions, the site will be fully capped, preventing potential direct exposure to soil/fill and groundwater remaining in-place. The site is served by the public water supply, and groundwater is not used as a potable water source. Potential soil vapor intrusion into the future buildings will be mitigated through the installation of ventilated or open-air parking garages and/or an active SMD system. ICs will render ECs effective for the long-term. In the future and with these ECs and ICs in place, there would be no off-site pathways for ingestion, inhalation, or dermal exposure to contaminants derived from the site.

3.12.6 Overall Human Health Exposure Assessment

There are no complete exposure pathways for the current site conditions or under future conditions after the site is developed. This assessment takes into consideration the reasonably anticipated use of the site, which includes a hotel, a retail food hall, commercial spaces, parking garages, public space, and a site-wide composite cover system. During remedial construction, on-site and off-site exposures to dust from non-native fill material will be addressed through dust controls, and through the implementation of the CAMP, the SFMP, and a CHASP. Potential post-construction use of groundwater is not considered an option because groundwater in New York City is not used as a potable water source. There are no surface waters in close proximity to the site that could be impacted or threatened. Exposure pathways to soil vapor beneath future buildings will be mitigated through the installation of ECs, including a composite cover system and an SMD system (IR and ToQ) with a vapor barrier membrane or ventilated/open-air parking garages (IR and ToQ).

4.0 REMEDIAL ACTION MANAGEMENT

4.1 Project Organization and Oversight

Principal Langan personnel who will participate in the remedial action include the following:

- Madelyn Fleming, as Field Team Coordinator
- Michal Au, PE, as Field Manager
- Jennifer Armstrong, Certified Hazardous Materials Manager (CHMM), as Senior Project Manager
- William Bohrer, Professional Geologist (PG) as Site Safety Coordinator
- Michael D. Burke, PG, CHMM, as Qualified Environmental Professional/QA/QC Manager
- Gerald Nicholls, PE, as Remedial Engineer of Record

4.2 Site Security

Site access will be controlled construction fencing and gated entrances. Access will be limited to remediation and construction workers, project team members, and approved visitors.

4.3 Work Hours

The hours for operation of cleanup will comply with the NYCDOB construction code requirements or according to specific variances issued by that agency. The hours of operation will be conveyed to NYCOER during the pre-construction meeting.

4.4 Construction Health and Safety Plan

The CHASP is included in Appendix F. The Site Safety Coordinator will be William Bohrer of Langan. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including site and Occupational Safety and Health Administration (OSHA) worker safety requirements and Hazardous Waste Operations Emergency Response (HAZWOPER) requirements. While not anticipated, confined space entry, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the CHASP and applicable laws and regulations. The CHASP pertains to remedial and invasive work performed at the site until the issuance of the NOC.

Field personnel involved in remedial activities will participate in training required under 29 Code of Federal Regulations (CFR) 1910.120, such as 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the CHASP and will comply with all requirements of 29 CFR 1910.120. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; personal protective equipment (PPE) levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

An emergency contact sheet with names and phone numbers is included in the CHASP. That document will define the specific project contacts for use in case of emergency.

4.5 Community Air Monitoring Plan

Real-time air monitoring for VOCs and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling and test pit excavation or trenching.

Periodic monitoring for VOCs will be performed 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, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed 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. Exceedances of action levels observed during performance of the CAMP will be reported to the NYCOER Project Manager and included in the Daily Report.

4.5.1 VOC Monitoring, Response Levels, and Actions

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

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

All 15-minute readings must be recorded and be available for NYCOER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

4.5.2 Particulate Monitoring, Response Levels, and Actions

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for OER personnel to review.

4.6 Agency Approvals

Permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction. Approval of this RAWP by NYCOER does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

4.7 Site Preparation

4.7.1 Pre-Construction Meeting

NYCOER will be invited to attend the pre-construction meeting at the site with all parties involved in the remedial process prior to the start of remedial construction activities.

4.7.2 Mobilization

Mobilization will be conducted as necessary for each phase of work. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the site, health and safety requirements, and field procedures.

4.7.3 Utility Marker Layouts, Easement Layouts

The presence of utilities and easements will be investigated prior to the performance of invasive work, such as excavation or drilling under this plan, by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. Invasive activities will be performed in compliance with applicable laws and regulations including NYC Building Code to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Mark-Out Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

Proper safety and protective measures pertaining to utilities and easements, and compliance with applicable laws and regulations will be employed during invasive and other work contemplated under this RAWP. The integrity and safety of on-site and off-site structures will be maintained during ground-invasive work, excavation, or other remedial activity performed under the RAWP.

4.7.4 Dewatering

Localized dewatering is anticipated and, if field conditions permit, dewatered groundwater/and or accumulated rainwater may be recharged into adjacent soil. If water exhibits odors or petroleum-like sheen, it will not be recharged back into the site.

Dewatering fluids to be removed from the site will be handled, transported, and disposed of by the contractor in accordance with applicable laws and regulations. The methods of dewatering shall be at the option of the contractor, provided dewatering complies with applicable regulations. Dewatering fluid disposal can be managed through permitted discharge to the NYCDEP municipal sewer system or containerization and off-site disposal at a permitted or licensed treatment, storage, or disposal facility.

4.7.5 Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations.

4.7.6 Stabilized Construction Entrance

Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-site. Such actions may include use of cleaned asphalt or concrete pads or use of stone or other aggregate-based egress paths between the truck inspection station and the site exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soil, fill, and debris.

4.7.7 Truck Inspection Station

An outbound truck inspection station will be set up close to the site exit. Before exiting the site, trucks will be required to stop at the truck inspection station and will be examined for evidence of soil/fill on the undercarriage, body, and wheels. Soil/fill and debris will be removed, as necessary, using brooms, shovels and clean water.

4.7.8 Extreme Storm Preparedness and Response Contingency Plan

Damage from flooding or storm surge can include dislocation of soil/fill and stockpiled materials, dislocation of site structures and construction materials and equipment, and dislocation of support of excavation structures. Damage from wind during an extreme storm event can create unsafe or unstable structures, damage safety structures and cause downed power lines creating dangerous site conditions and loss of power. In the event of emergency conditions caused by an extreme storm event, the enrollee will undertake the following steps for site preparedness prior to the event and response after the event.

4.7.9 Storm Preparedness

Preparations in advance of an extreme storm event will include the following:

- Containerized hazardous materials and fuels will be removed from the site;
- Loose materials will be secured to prevent dislocation and blowing by wind or water;
- Heavy equipment such as excavators and generators will be removed from excavated areas, trenches and depressions on the site to high ground or removed from the site;
- An inventory of the site with photographs will be performed to establish conditions for the site and equipment prior to the event;
- Stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers;
- Stockpiled hazardous wastes will be removed from the site (if encountered); and
- Stormwater management systems will be inspected and fortified, including, as necessary:
    - Clean and reposition silt fences, hay bales;
    - Clean storm sewer filters and traps; and
    - Secure and protect pumps and hosing.

4.7.10 Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the site, a complete inspection of the site will be performed. A site inspection report will be submitted to NYCOER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYSDEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to NYCOER.

Safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil/fill including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation (SOE) structures will be inspected and fortified as required by the NYCDOB. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Stormwater control systems and structures will be inspected and maintained as necessary.

If remediation-related soil/fill materials are discharged off site to adjacent properties, property owners and NYCOER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to NYCOER and implemented following approval by NYCOER and granting of site access by the property owner.

Impacted off-site areas may require characterization based on site conditions, at the discretion of NYCOER. If on-site petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYSDEC's spill hotline at DEC 800-457-7362 within statutory defined timelines. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYSDEC.

4.7.11 Storm Response Reporting

A site inspection report will be submitted to NYCOER at the completion of site inspection. An inspection report established by NYCOER is available on NYCOER's website (www.nyc.gov/oer) and will be used for this purpose. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. The site inspection report will be sent to the NYCOER project manager and will include the site name, address, tax block and lot, site primary and alternate contact name and phone number. Damage and soil/fill release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil/fill from the site was dislocated and whether any of the soil/fill left the site; estimates of the volume of soil/fill that left the site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of on-site or off-site exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYSDEC; description of corrective actions; schedule for corrective actions. This report should be completed and submitted to NYCOER project manager with photographs within 24 hours of the time of safe entry to the site after the storm event.

4.8 Traffic Control

Drivers of trucks leaving the site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. Local truck routes in proximity to the site are shown on Figure 11.

4.9 Demobilization

Demobilization will include:

- As necessary, restoration of temporary access areas and areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management areas, and access area);
- Removal of sediment from erosion control measures and truck wash and disposal of materials in accordance with applicable laws and regulations;
- Equipment decontamination, and;
- General refuse disposal.

Equipment will be decontaminated and demobilized at the completion of field activities. Investigation equipment and large equipment (e.g., soil excavators) will be washed at the truck inspection station as necessary. In addition, investigation and remediation derived waste will be appropriately disposed.

4.10 Reporting and Record Keeping

4.10.1 Daily Reports

Daily reports providing a general summary of activities for each day of active remedial work will be emailed to the NYCOER Project Manager by the end of the following business day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of excavation and other remedial work performed;
- Quantities of material imported and exported from the site;
- Status of on-site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP results noting all excursions. CAMP data may be reported;
- Photograph of notable site conditions and activities.

The frequency of the reporting period may be revised in consultation with NYCOER project manager based on planned project tasks. Daily reports are not intended to be the primary mode of communication for notification to NYCOER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the NYCOER project manager by personal communication. Daily reports will be included as an appendix to the RAR.

4.10.2 Record Keeping and Photo Documentation

Jobsite record keeping for all remedial work will be performed. These records will be maintained on-site during the project and will be available for inspection by NYCOER staff. Representative photographs will be taken of the site prior to any remedial activities and during major remedial activities to document remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RAR.

4.11 Complaint Management

All complaints from citizens will be promptly reported to NYCOER. Complaints will be addressed and outcomes will also be reported to NYCOER in daily reports. Notices to OER will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

4.12 Deviations from The Remedial Action Work Plan

All changes to the RAWP will be reported to, and approved by, the NYCOER Project Manager and will be documented in daily reports and reported in the RAR. The process to be followed if there are any deviations from the RAWP will include a request for approval for the change from NYCOER noting the following:

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy; and
- Determination with basis that the remedial action with the deviation(s) is protective of public health and the environment.

5.0 REMEDIAL ACTION REPORT

A RAR will be submitted to NYCOER following implementation of the remedial action defined in this RAWP. The RAR will document that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The RAR will include:

- Information required by this RAWP;
- Text description with thorough detail of all ECs and ICs
- As-built drawings for all constructed remedial elements;
- Manifests for all soil or fill disposal;
- Photographic documentation of remedial work performed under this remedy;
- SMP;
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all documentation endpoint sampling results (including all soil sample analytical results from the remedial investigation for soil/fill that will remain on site) and all soil/fill waste characterization results, QA/QC results for documentation endpoint sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all soil or fill material removed from the site including a map showing the location of these excavations and hotspots, tanks or other contaminant source areas;
- Full accounting of the disposal destination of all contaminated material removed from the site. Documentation associated with disposal of all soil/fill will include transportation and disposal records, and letters approving receipt of the soil/fill;
- Account of the origin and required chemical quality testing for material imported onto the site;
- Continued registration of the site with an E-Designation by the NYCDOB (if Track 1 remedial action is not achieved);
- The RAWP and RIR will be included as appendices to the RAR;
- Reports and supporting material will be submitted in digital form and final portable document format's will include bookmarks for each appendix.

5.1 Remedial Action Report Certification

I, Gerald F. Nicholls, certify the following:

- I am currently a registered PE licensed by the State of New York.
- I performed professional engineering services and had primary direct responsibility for implementation of the remedial program for the "Queens Future – Integrated resort, Public Realm and Taste of Queens" site, OER site number 26TMP1421Q.
- I have reviewed this document, to which my signature and seal are affixed.
- ECs implemented during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the RAWP for this site.
- The ECs constructed during this remedial action were professionally observed by me or by a person under my direct supervision and (1) are consistent with the EC design established in the RAWP and (2) are accurately reflected in the text and drawings for as-built design reported in this RAR.

Gerald F. Nicholls

Name

092433

PE License Number

_____

Signature

_____

Date

6.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to NYCOER.

Schedule Milestone	**Anticipated Date**	**Duration (weeks)**
OER Approval of RAWP	February 2026	-
Mobilization	February 2026	1
RAWP Implementation	March 2026	90
Demobilization	December 2028	1
Submit Remedial Action Report	January 2029	98