NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau B
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June 30, 2022

Ryan Bathie
28-90 Review Ave Property Owner LLC
c/o Innovo Property Group
1370 Avenue of the Americas, 19th Floor
New York, NY 10019

Re: 28-90 Review Avenue Development
Site ID No. C241236
Queens, Queens County
Remedial Work Plan & Decision Document

Dear Ryan Bathie:

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health (NYSDOH) have reviewed the Remedial Action Work Plan (RWP) for the 28-90 Review Avenue Development site dated June 29, 2022 and prepared by Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. on behalf of 28-90 Review Ave Property Owner LLC. The RWP is hereby approved. Please ensure that a copy of the approved RWP is placed in the document repository(ies). The draft plan should be removed.

Attached is a copy of the Department's Decision Document for the site. The remedy is to be implemented in accordance with this Decision Document. Please ensure that a copy of the Decision Document is placed in the document repository(ies).

Please contact the Department's Project Manager, Charles Post, at (518) 402-9793 or Charles.Post@dec.ny.gov at your earliest convenience to discuss next steps. Please recall the Department requires seven days notice prior to the start of field work.

Sincerely,

/for

Gerard Burke
Director
Remedial Bureau B
Division of Environmental Remediation

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Enclosure

ec *w/attachments*:

A. Guglielmi
G. Burke
S. Quandt
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ver 2018-04-16

DECISION DOCUMENT

28-90 Review Avenue Development
Brownfield Cleanup Program
Queens, Queens County
Site No. C241236
June 2022

Department of Environmental Conservation

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - DECISION DOCUMENT

28-90 Review Avenue Development
Brownfield Cleanup Program
Queens, Queens County
Site No. C241236
June 2022

Statement of Purpose and Basis

This document presents the remedy for the 28-90 Review Avenue Development site, a brownfield cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the 28-90 Review Avenue Development site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design
A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at

a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Excavation

Excavation and off-site disposal of contaminant hot spot source areas, including:

- soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead.

In the area of the In-Situ Stabilization remedy outlined in element 4, excavation of soil will be required to a depth of up to four feet below ground surface to allow for the placement of stabilizing material, including:

- removal of soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Approximately 350 cubic yards of contaminated soil will be removed from the site's lead hot spot. In addition, excavation and removal of any underground storage tanks (USTs), fuel dispensers, or underground piping encountered during the remedial activities will be performed.

3. Backfill

On-site soil which does not exceed the above excavation criteria may be used below the cover system described in remedy element 5 to backfill the excavation to the extent that a sufficient volume of on-site soil is available and to establish the designed grades at the site.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in as necessary to raise the existing grades to design grades at the site. The site will be re-graded to accommodate installation of a cover system as described in remedy element 5.

4. In-Situ Stabilization

In-situ stabilization (ISS) will be in an approximately 38,000 square foot area located in the western area of the site, as indicated on Figure 2 where non-aqueous phase liquid has been identified. Although it will vary throughout the target treatment area, the ISS monolith (solidified mass) will start at approximately six feet below existing ground surface and extend to 15 to 20 feet below existing ground surface. ISS is a process that uses a stabilizing agent which chemically changes contamination to make it less soluble. The contaminated soil will be mixed in place with stabilizing agents (likely a mixture of Portland cement and/or bentonite) using an excavator or augers. The stabilized soil will then be covered with a cover system as described in remedy element 5 to prevent direct exposure. This treatment changes the contamination from a soluble form to a stable, insoluble compound to reduce or eliminate the matrix as a source of groundwater contamination.

5. Cover System

A site cover will be required to allow for commercial use of the site in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for

the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

Where a soil cover is required over the ISS treatment area, it will consist of a minimum of four feet of soil meeting the SCOs for commercial use. For areas where solidified material underlies the cover, the solidified material itself will serve as the demarcation layer due to the nature of the material.

6. Vapor Mitigation
Any on-site buildings will be required to have a sub-slab depressurization system (SSDS), or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface.

7. Monitored Natural Attenuation
Groundwater contamination remaining after active remediation will be addressed with monitored natural attenuation (MNA). Groundwater will be monitored for site related contamination and for MNA indicators which will provide an understanding of the biological activity breaking down the contamination. MNA monitoring wells will be located along Dutch Kills Creek to ensure contaminant levels remain below standard and migration into the creek is not occurring. Reports of the attenuation will be provided at 5 and 10 years, and active remediation will be proposed if it appears that natural processes alone will not address the contamination. Any potential contingency remedial action will depend on the information collected from future sampling events.

8. Institutional Controls
Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for commercial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

9. Site Management Plan
A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

- Institutional Controls: The Environmental Easement discussed in Paragraph 8 above.
- Engineering Controls: The ISS mass discussed in Paragraph 4, the cover system discussed in Paragraph 5, and the SSDS discussed in Paragraph 6 above.

This plan includes:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 5 above will be placed in any areas where the upper one foot of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes:
   - monitoring of soil vapor and groundwater to assess the performance and effectiveness of the remedy;
   - a schedule of monitoring and frequency of submittals to the Department;
   - monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization inspection, and reporting of any mechanical or physical components of the remedy. The plan includes:
   - procedures for operating and maintaining the remedy;
   - compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
   - maintaining site access controls and Department notification; and
   - providing the Department access to the site and O&M records.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

6/30/22
Date

/for
Gerard Burke, Director
Remedial Bureau B

DECISION DOCUMENT

28-90 Review Avenue Development
Queens, Queens County
Site No. C241236
June 2022

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance, based on the reasonably anticipated use of the property.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C241236

Queens Library at Court Square
25-01 Jackson Avenue
Queens, NY 11101
Phone: (718) 937-2790

Queens Community Board 2
43-22 50th Street, Room 2B
Queens, NY 11377
Phone: (718) 533-8777

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The 4.43-acre site is located in the Long Island City neighborhood of Queens, New York at 28-90 Review Avenue. The site is bounded by 29th Street to the east, an at-grade Long Island Rail Road Metropolitan Transportation Authority (LIRR MTA) railroad to the south, the Dutch Kills to the west, and an asphalt parking lot to the north.

Site Features: The site is comprised of one tax parcel Block 294, Lot 106. The site is relatively flat, and all on-site structures have been razed. The site is covered with either asphalt or asphalt millings and includes approximately 240-linear feet of waterfront along the Dutch Kills near the confluence of Newtown Creek.

Current Zoning and Land Use: The site is zoned M3 (heavy manufacturing) which allows for certain retail and commercial uses. Currently, the site is used for vehicle parking. The surrounding area is predominantly commercial and industrial.

Past Use of the Site: Historical operations at the site include a Texaco petroleum tank farm which operated between approximately 1915 and 1971. The facility contained: six 275,000-gallon aboveground storage tanks (ASTs) containing crude oil, fuel oil, kerosene, naphthalene and gasoline; two 20,000-gallon ASTs containing an unknown petroleum; four 15,000-gallon underground storage tanks (USTs) containing diesel fuel; and various other smaller petroleum tanks. Subsequent operations include a trucking depot and automobile repair and storage facility. The AST tanks have been taken out of service and removed at various times. The USTs have been closed and either removed or closed in place in accordance with DEC regulations. Multiple releases were reported for the site between 1994 and 2019.

Site Geology and Hydrogeology: The site is generally flat with a few areas of mounded soil and slopes steeply downward to the Dutch Kills along the northwestern site boundary. The site is underlain by historic urban fill that extends to depths ranging from eight to 25 feet below ground surface (bgs). The historic urban fill generally consists of fine to coarse sand and gravel with concrete, asphalt, wood and brick fragments. The fill material is underlain by an approximately

1.5- to 20-foot-thick stratum of former marsh deposits consisting of clay, silt, sand, and peat. Bedrock underlying the site is part of the Hartland Formation. Competent mica schist bedrock is present at depths ranging from 58- to 74-feet bgs. Groundwater is present at depths ranging from about 2.8- to 7-feet bgs and flows northwesterly toward the Dutch Kills, which is immediately adjacent to the site.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

The Applicant under the Brownfield Cleanup Agreement is a Volunteer. The Applicant does not have an obligation to address off-site contamination. The Department has determined that this site does not pose a significant threat to public health or the environment.

Off-site contamination is located to the south along the MTA railroad tracks. The off-site area is being investigated by Chevron U.S.A. Inc. Therefore, enforcement actions are not necessary.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and

groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

benzene
methylene chloride
n-propylbenzene
sec-butylbenzene
arsenic
cadmium
copper
lead
mercury
nickel
zinc
1,2,4-TMB
1,2,4,5-tetramethylbenzene
ethylbenzene
isopropylbenzene
toluene
xylenes
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(k)fluoranthene
chrysene
indeno(1,2,3-cd)pyrene
pyrene
n-butylbenzene
sec-butylbenzene
tetrachloroethene (PCE)
trichloroethene (TCE)
vinyl chloride
carbon tetrachloride
petroleum products

The contaminant(s) of concern exceed the applicable SCGs for:

- soil
- groundwater

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), pesticides, and per- and polyfluoroalkyl substances (PFAS). Soil vapor was analyzed for VOCs. The primary contaminants of concern are petroleum-related VOCs, including nonaqueous phase liquid (NAPL), and SVOCs in soil and groundwater and metals in soil.

Soil - Petroleum product (NAPL) was identified at depths from six to 20 bgs in an approximately 38,000 square foot area of the site (Figure 2).

VOCs were not detected above commercial soil cleanup objectives (CSCOs) in on-site soil, however the following petroleum-related VOCs were detected above applicable protection of groundwater SCOs (PGWSCOs): benzene up to 0.064 ppm (PGWSCO of 0.06 ppm), methylene chloride up to 0.074 (PGWSCO of 0.05 ppm), n-butylbenzene up to 41 ppm (PGWSCO of 12 ppm), n-propylbenzene up to 210 ppm (PGWSCO of 3.9 ppm), and sec-butylbenzene up to 23 ppm (PGWSCO of 3.9 ppm).

The following SVOCs attributed to historic fill are present at levels exceeding CSCOs and/or PGWSCOs to depths from four to 12.5 feet below ground surface (bgs): benzo(a)anthracene up to 5.58 ppm (CSCO of 5.5 ppm, PGWSCO of 1 ppm), benzo(a)pyrene up to 8.31 ppm (CSCO of 1 ppm), benzo(b)fluoranthene up to 6.44 ppm (CSCO of 5.6 ppm, PGWSCO of 1.7 ppm), benzo(k)fluoranthene up to 5.5 ppm (PGWSCO of 1.7 ppm), chrysene up to 6.88 ppm (PGWSCO of 1 ppm), and dibenzo(a,h)anthracene up to 1.33 ppm (CSCO of 0.56 ppm).

The following metals were detected at levels exceeding CSCOs: arsenic up to 58.7 ppm (CSCO of 16 ppm), cadmium up to 144 ppm (CSCO of 9.3 ppm), copper up to 1910 ppm (CSCO of 270

ppm), lead up to 37,200 ppm (CSCO of 1,000 ppm), mercury up to 18 ppm (CSCO of 2.8 ppm), nickel up to 630 ppm (CSCO of 310 ppm), and zinc up to 10,100 (CSCO of 10,000 ppm).

For PFAS, perfluorooctanoic acid (PFOA) was detected at a maximum concentration of 2.88 parts per billion (ppb) and perfluorooctanesulfonic acid (PFOS) up to 0.675 ppb, both below their Commercial Guidance Values of 500 ppb and 440 ppb, respectively.

One soil sample had a total PCB concentration of 1.29 ppm (CSCO of 1.0 ppm).

No pesticides were detected above the CSCOs in on-site soil. 1,4-dioxane was not detected in soil samples.

The data indicate the potential for off-site impacts in soil related to this site.

Groundwater - The following VOCs were detected in on-site groundwater exceeding their Class GA Ambient Water Quality Standards (AWQS) of 5 ppb: 1,2,4-trimethylbenzene up to 14 ppb, 1,2,4,5-tetramethylbenzene up to 239 ppb, ethylbenzene up to 14.5 ppb, isopropylbenzene up to 282 ppb, m-p-xylenes up to 49.1, o-xylene up to 20.1, n-butylbenzene up to 469 ppb, n-propylbenzene up to 469 ppb, sec-butylbenzene up to 52.8 ppb, toluene up to 113 ppb and total xylenes up to 69.2 ppb). Benzene was also detected up to 119 ppb, above its AWQS of 1 ppb.

The following SVOCs were detected above AWQS: benzo(a)anthracene up to 239 ppb (AWQS is 0.002 ppb), benzo(a)pyrene up to 14 ppb (AWQS is non-detect), benzo(b)fluoranthene up to 119 ppb (AWQS is 0.002 ppb), benzo(k)fluoranthene up to 14.5 ppb (AWQS is 0.002 ppb), chrysene up to 282 ppb (AWQS is 0.002 ppb), and indeno(1,2,3-cd) pyrene up to 49.1 ppb (AWQS is 0.002 ppb).

The dissolved metals iron, magnesium, manganese, selenium and sodium, were detected at levels exceeding AWQS but are considered naturally occurring. The pesticide chlordane was detected in one groundwater sample at 0.11 ppb, above its AWQS of 0.05 ppb.

For PFAS, PFOS and PFOA were detected at concentrations up to 32.3 parts per trillion (ppt) and 66.9 ppt, respectively, exceeding the Maximum Contaminant Level (MCL) (drinking water standard) of 10 ppt each in groundwater. There are no public water supply wells within a half a mile and there is a municipal prohibition for use of groundwater at the site.

1,4-Dioxane was detected in one monitoring well at a concentration of 0.62 ppb (AWQS is 0.35 ppb).

The data indicate the potential for off-site impacts in groundwater related to this site.

Soil Vapor - The following chlorinated VOCs were detected in on-site soil vapor: tetrachloroethene (PCE) up to 850 micrograms per cubic meter (µg/m3), trichloroethene (TCE) up to 0.478 µg/m3, vinyl chloride up to 41.3 µg/m3 and carbon tetrachloride up to 6.9 µg/m3. Numerous petroleum-related VOCs were also detected in soil vapor throughout the site.

The data do not indicate any off-site impacts in soil vapor related to this site.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

People will not come into contact with contaminated soil since the site is comprised of asphalt-paved and asphalt milling-covered parking areas. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil), may move into structures and affect the indoor air quality. This process, which is similar to the movement of radon gas, from the subsurface into the indoor air of structures, is referred to as soil vapor intrusion. Because the site is vacant, inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern on-site; however, soil vapor intrusion represents a potential concern for any future on-site redevelopment / occupancy. Environmental sampling indicates that vapor intrusion in not a concern for off-site structures.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation, In-Situ Stabilization, Cover System, Vapor Mitigation and Monitored Natural Attenuation remedy.

The elements of the selected remedy, as shown in Figure 2, are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to

improve energy efficiency as an element of construction.

2. Excavation

Excavation and off-site disposal of contaminant hot spot source areas, including:

- soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead.

In the area of the In-Situ Stabilization remedy outlined in element 4, excavation of soil will be required to a depth of up to four feet below ground surface to allow for the placement of stabilizing material, including:

- removal of soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Approximately 350 cubic yards of contaminated soil will be removed from the site's lead hot spot. In addition, excavation and removal of any underground storage tanks (USTs), fuel dispensers, or underground piping encountered during the remedial activities will be performed.

3. Backfill

On-site soil which does not exceed the above excavation criteria may be used below the cover system described in remedy element 5 to backfill the excavation to the extent that a sufficient volume of on-site soil is available and to establish the designed grades at the site.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in as necessary to raise the existing grades to design grades at the site. The site will be re-graded to accommodate installation of a cover system as described in remedy element 5.

4. In-Situ Stabilization

In-situ stabilization (ISS) will be in an approximately 38,000 square foot area located in the western area of the site, as indicated on Figure 2 where non-aqueous phase liquid has been identified. Although it will vary throughout the target treatment area, the ISS monolith (solidified mass) will start at approximately six feet below existing ground surface and extend to 15 to 20 feet below existing ground surface. ISS is a process that uses a stabilizing agent which chemically changes contamination to make it less soluble. The contaminated soil will be mixed in place with stabilizing agents (likely a mixture of Portland cement and/or bentonite) using an excavator or augers. The stabilized soil will then be covered with a cover system as described in remedy element 5 to prevent direct exposure. This treatment changes the contamination from a soluble form to a stable, insoluble compound to reduce or eliminate the matrix as a source of groundwater contamination.

5. Cover System

A site cover will be required to allow for commercial use of the site in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and

components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

Where a soil cover is required over the ISS treatment area, it will consist of a minimum of four feet of soil meeting the SCOs for commercial use. For areas where solidified material underlies the cover, the solidified material itself will serve as the demarcation layer due to the nature of the material.

6. Vapor Mitigation
Any on-site buildings will be required to have a sub-slab depressurization system (SSDS), or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface.

7. Monitored Natural Attenuation
Groundwater contamination remaining after active remediation will be addressed with monitored natural attenuation (MNA). Groundwater will be monitored for site related contamination and for MNA indicators which will provide an understanding of the biological activity breaking down the contamination. MNA monitoring wells will be located along Dutch Kills Creek to ensure contaminant levels remain below standard and migration into the creek is not occurring. Reports of the attenuation will be provided at 5 and 10 years, and active remediation will be proposed if it appears that natural processes alone will not address the contamination. Any potential contingency remedial action will depend on the information collected from future sampling events.

8. Institutional Controls
Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for commercial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

9. Site Management Plan
A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

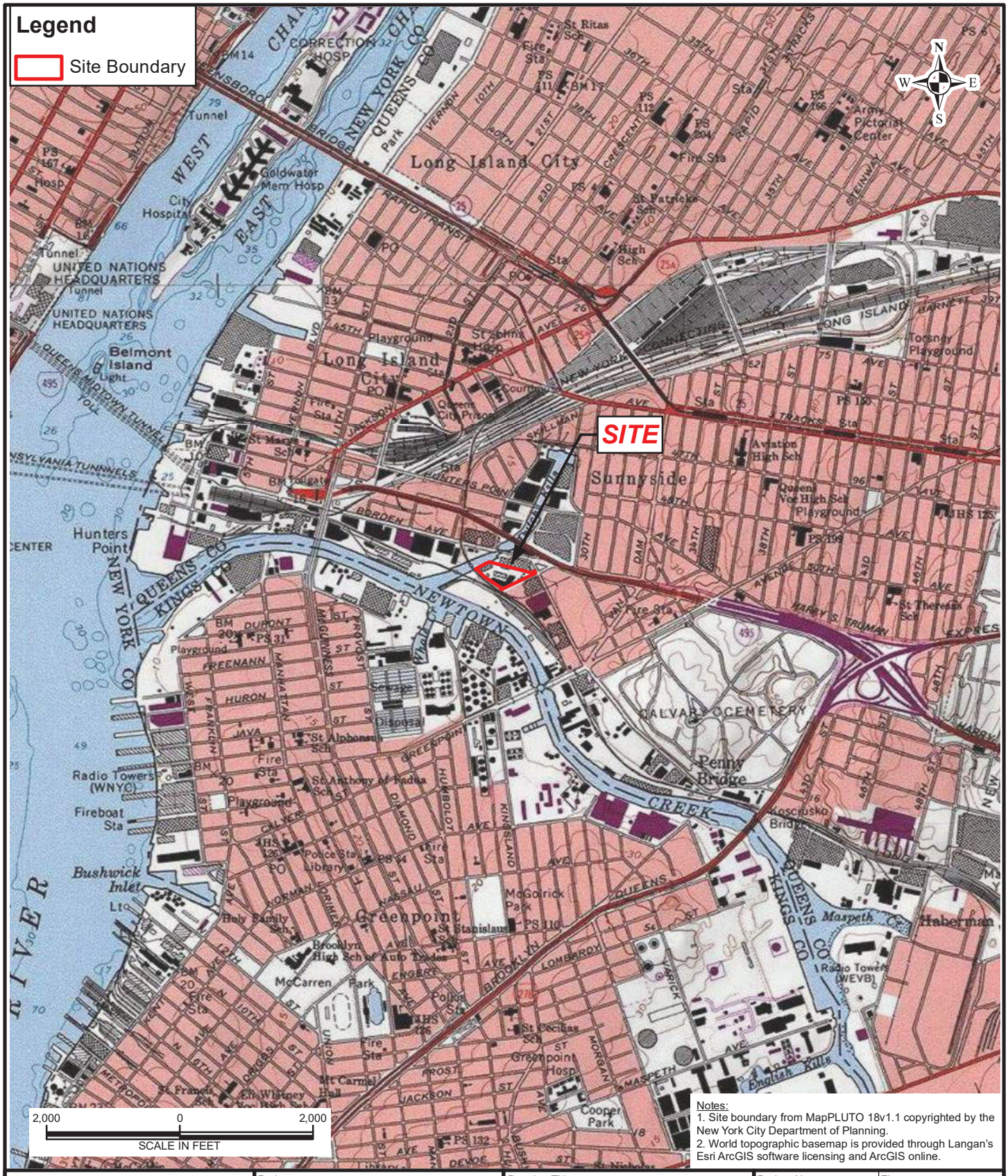
- Institutional Controls: The Environmental Easement discussed in Paragraph 8 above.
- Engineering Controls: The ISS mass discussed in Paragraph 4, the cover system discussed in Paragraph 5, and the SSDS discussed in Paragraph 6 above.

This plan includes:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 5 above will be placed in any areas where the upper one foot of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes:
   - monitoring of soil vapor and groundwater to assess the performance and effectiveness of the remedy;
   - a schedule of monitoring and frequency of submittals to the Department;
   - monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization inspection, and reporting of any mechanical or physical components of the remedy. The plan includes:
   - procedures for operating and maintaining the remedy;
   - compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
   - maintaining site access controls and Department notification; and
   - providing the Department access to the site and O&M records.



Notes:
1. Site boundary from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.
2. World topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online.

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Langan Engineering & Environmental Services, Inc.
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Langan International LLC
Collectively known as Langan

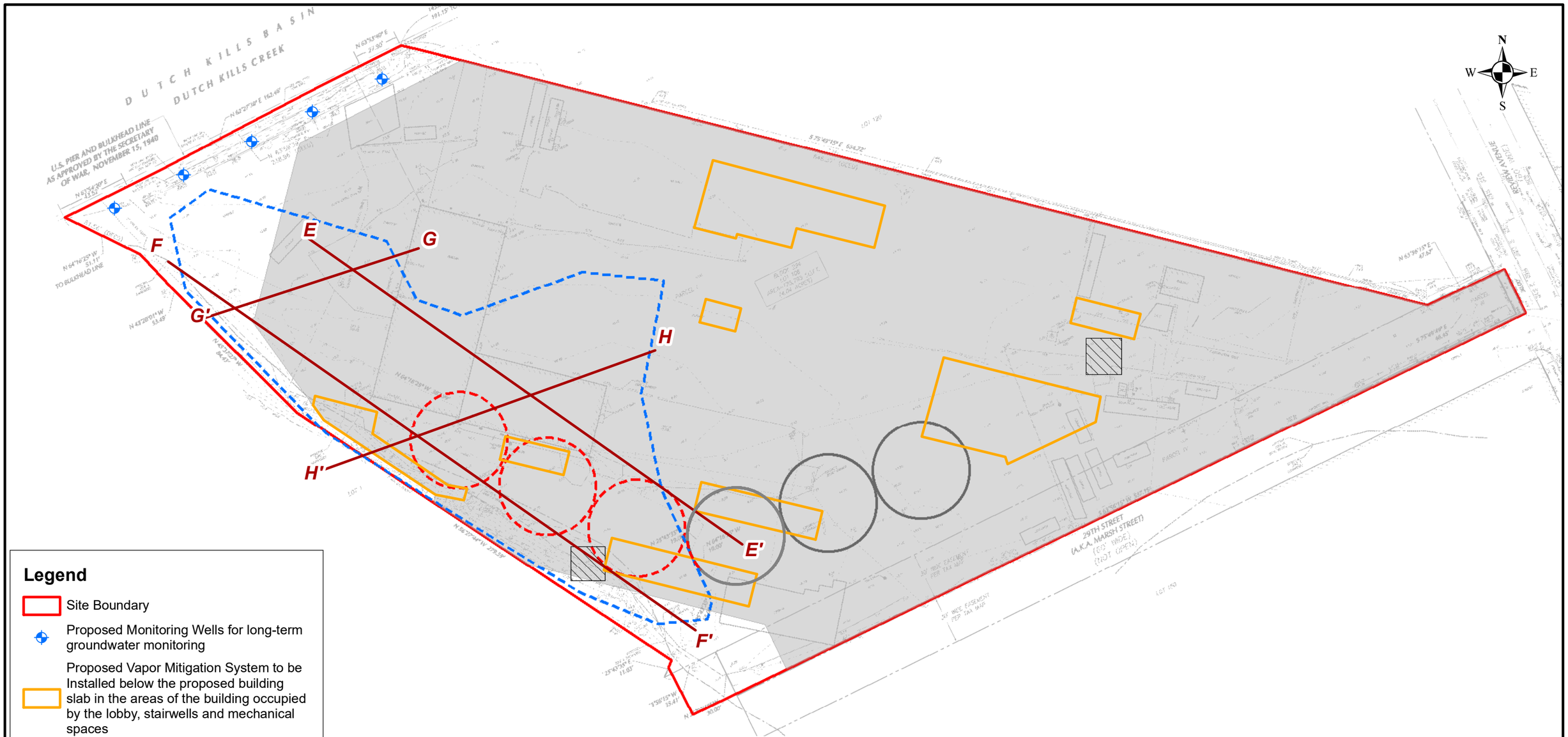
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project
28-90 REVIEW AVENUE
NYSDEC BCP Site No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
USGS SITE LOCATION MAP

Project No. 100652601	Figure 1
Date 1/8/2021	
Scale 1"=2,000'	
Drawn By AR	
Last Revised 1/22/2021	

Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2020-11 -BCP RAWP\Figure 1 - Site Location Map1.mxd Date: 1/22/2021 User: ibaker Time: 1:36:27 PM



Legend

- Site Boundary
- Proposed Monitoring Wells for long-term groundwater monitoring
- Proposed Vapor Mitigation System to be Installed below the proposed building slab in the areas of the building occupied by the lobby, stairwells and mechanical spaces
- Building Footprint
- Lead Hotspot to be excavated to 14 feet bgs
- Lateral Extents of ISS Remedy including excavation of up to approximately 4-feet of cover soil
- Former 275,000-gallon AST Foundation to be Removed
- Former 275,000-gallon AST Foundation to Remain
- Cross Section Delineation

60 0 60
SCALE IN FEET

Notes:
1. Basemap from "Draft Topographic, Boundary and Utility Survey" by Langan, dated 8/1/2018.
2. Building Extents from KSS Architects "Level 1 Floorplan" dated 10/27/2021.
3. Parcel information from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.

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Drawing Title
ALTERNATIVE II – TRACK 4 CLEANUP PLAN VIEW

Project No.	100652601
Date	6/30/2021
Scale	1"=60'
Drawn By	IHB
Last Revised	6/9/2022
Figure	2

Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2021-06\Figure 7A - Alternative II - Track 4 Cleanup.mxd Date: 6/9/2022 User: aruane Time: 3:57:59 PM