DECISION DOCUMENT

Paragon Paint and Varnish Corp
Brownfield Cleanup Program
Long Island City, Queens County
Site No. C241108
October 2015

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

DECLARATION STATEMENT - DECISION DOCUMENT

Paragon Paint and Varnish Corp
Brownfield Cleanup Program
Long Island City, Queens County
Site No. C241108
October 2015

Statement of Purpose and Basis

This document presents the remedy for the Paragon Paint and Varnish Corp 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 Paragon Paint and Varnish Corp 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; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation

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

- Grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- Removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination;
- Soil containing non-aqueous phase liquid (NAPL);
- Soil containing SVOCs exceeding 500 ppm;
- Soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards; and
- Soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

The source area excavation is contemplated in the courtyard, under the slab of the varnish shed, in the garage, and in the driveway. Approximately 1,025 cubic yards of contaminated soil will be removed from the site. On-site soil which does not exceed the above excavation criteria or the protection of groundwater PGWSCOs for any constituent may be used anywhere beneath the cover system, including below the water table, to backfill the excavation or re-grade the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site. The site will be re-graded to accommodate installation of a cover system as described in remedy element #3.

3. Cover System

A site cover will be required to allow for restricted residential use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

4. Groundwater & LNAPL Extraction and Treatment

Groundwater extraction and treatment will be implemented to treat contaminants and remove NAPL in groundwater. A groundwater extraction/excavation dewatering system will be designed and installed so that the capture zone is sufficient to cover the areal and vertical extent of the excavation area. The extracted groundwater will be containerized for off-Site disposal or treated and discharged. The groundwater will be extracted through the use of a vacuum truck, drainage sumps, and/or perimeter well points to maintain dry conditions in the excavation. The treatment system will entail a settling tank, oil/water separator, bag filters, and carbon filter vessels, if necessary. Further details of the extraction system will be determined during the remedial design.

Following completion of the excavation, a minimum of five product recovery wells equipped with automated product-only pumps will be installed at the excavation boundaries where the NAPL plume extends off-site or beneath existing buildings.

5. In-Situ Chemical Oxidation or Reduction

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in soil and groundwater beneath the basement slab of the warehouse building where excavation is infeasible. A chemical oxidant will be injected into the subsurface to destroy the contaminants. The method and depth of injection will be determined during the remedial design.

6. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- Requires 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);
- Allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- Restricts 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
- Requires compliance with the Department-approved Site Management Plan.

7. 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 bullet #6.

   – Engineering Controls: The site cover discussed in bullet #3, the NAPL recovery system discussed in bullet #4, and the ISCO injection system discussed in bullet #5.

   This plan includes, but may not be limited to:
   - 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/or groundwater use restrictions;

- a provision for evaluation of the potential for soil vapor intrusion should any of the on-site buildings become re-occupied and for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- 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, but may not be limited to:

monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings which are re-occupied or developed 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, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:
- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting; and
- 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 protected of public health and the environment.

October 8, 2015

Date

Robert Cozzy, Director
Remedial Bureau B

DECISION DOCUMENT

Paragon Paint and Varnish Corp
Long Island City, Queens County
Site No. C241108
October 2015

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, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

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:

Queens Borough Public Library
Court Square Branch
25-01 Jackson Ave
Long Island City, NY 11101
Phone: 718-392-5402

NYSDEC Region 2 Office
47-40 21st St
Long Island City, NY 11101
Phone: 718-482-4891

Community Board #2 Office
43-22 50TH St- 2nd FL
Woodside, NY 11377
Phone: 718-353-8773

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, Voluntary 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 Paragon Paint and Varnish site is located at 5-49 46th Avenue a.k.a. 45-40 Vernon Blvd, Long Island City. It is in an urban area, in Queens County (Block 26, Lot 4), in New York City.

Site Features:
The site currently includes a 4-story former paint manufacturing building connected to a 3-story warehouse with basement, and a 3-story garage. These buildings are currently vacant. A one-story shed has recently been demolished. A paved shipping and receiving courtyard is accessed by a narrow driveway connected to 46th Ave. along the western end of the warehouse building. Anable Basin is adjacent to the western portion of the northern boundary.

Current Zoning and Land Use:
The site is currently inactive, and is zoned for manufacturing. The surrounding area is a mixed-use area with industrial, commercial and residential buildings. Residential buildings are located adjacent to the site along Vernon Blvd.

Past Use of the Site:
The site had been used for industrial purposes for over 100 years, primarily as a paint manufacturing facility. The property was developed by Paragon Paint Company between 1915 and 1923 and operated as a paint manufacturing facility until 1998. Prior to Paragon Paint, tenants of the property included Ward and Company's Lard Oil Works, which was part of the larger D.D. Williamson Chemical Manufacturing and the Chalk Manufacturing Company. Little information regarding on-site operations prior to Paragon Paint Company is known. Subsurface investigations conducted prior to the acceptance into the Brownfield Cleanup Program (BCP) in September 2008 indicated the presence of contaminants in subsurface soil, groundwater, and soil gas throughout the property.

Site Geology and Hydrogeology:
The elevation of the Site is approximately seven feet above mean sea level. The Site topography slopes gently to the northwest toward Anable Basin. Depth to groundwater at the Site ranges from approximately 6 to 13 feet below land surface (bls). The regional groundwater flow direction is to the west. Local groundwater flows generally toward the west based on water level information collected during the RI. Approximately 5 to 11 feet of fill material is underlain by layered glacial deposits that consist of poorly-sorted sand, silt and gravel in a sand matrix. Most areas consist primarily of fine to medium sands, with various amounts of silt and lesser amounts of coarse sand and gravel. Peat was observed in borings at a few locations as thin lenses ranging in depth from approximately 8 to 15 feet bls and was often observed in a silt or sand matrix. Bedrock was encountered at depths ranging from 16 to 25 feet bls.

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 restricted-residential use (which allows for commercial use and 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(s) under the Brownfield Cleanup Agreement is a/are Volunteer(s). The Volunteer(s) does/do not have an obligation to address off-site contamination. The Department has determined that this site poses a significant threat to human health and the environment but there are no off-site impacts that require remedial activities; accordingly, enforcement actions are not necessary.

The Applicants under the Brownfield Cleanup Agreement are Volunteers. The Volunteers do not have an obligation to address off-site contamination. The Department has determined that this site poses a significant threat to human health and the environment. The Department will seek to identify any parties (other than the Volunteer(s)) known or suspected to be responsible for contamination at or emanating from the site, referred to as Potentially Responsible Parties (PRPs). The Department will bring an enforcement action against the PRPs. If an enforcement action cannot be brought, or does not result in the initiation of a remedial program by any PRPs, the Department will evaluate the off-site contamination for action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State incurs or has incurred.

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
- indoor air
- sub-slab 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:

xylene (mixed)	mercury
isopropylbenzene	lead
ethylbenzene	benzo(a)pyrene
methylene chloride	

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

- groundwater
- soil
- soil vapor intrusion

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.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

IRM - Vacuum Extraction

The approved work plan dated 12/18/2009 called for monthly vacuum extraction of light non-aqueous phase liquid (LNAPL) from monitoring wells. The approved revised plan dated 11/17/2011 changed the frequency to weekly and the method to manual bailing. A bi-weekly schedule replaced the weekly schedule after the remedial investigation was underway in 2014. This IRM is ongoing.

Removal of Tank Contents

The approved IRM work plan dated May 31, 2013 called for the removal of the tank contents of six underground storage tanks (USTs) in the courtyard and the garage. In 2015, 6 tanks in the courtyard area and 2 in the driveway were excavated and removed as part of Petroleum Bulk Storage facility closure. This IRM has been completed and the results will be documented in the Final Engineering Report.

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.

Nature and Extent of Contamination:
Based upon the investigations conducted at the Paragon Paint site, contamination is found in subsurface soil, groundwater, and soil vapor throughout the property. The primary contaminants of concern (COCs) for the site is LNAPL, primarily from mineral spirits in the form of volatile organic compounds (VOCs), and grossly contaminated soil. Soil and groundwater were analyzed for VOCs, semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides. Based upon the findings of the remedial investigation, the LNAPL plume most likely extends beneath the adjacent property along 46th Avenue.

Soil:
The main source of VOCs is the LNAPL plume, which likely occurred as a result of leaks and spills from on-site USTs and associated piping located in the courtyard. A secondary source of VOCs is contaminated soil beneath the basement slab of the warehouse building which likely occurred as a result of leaks and spills from the USTs and associated piping located in the garage. Contamination was detected both at the water table interface as well as in deeper, saturated soils.

VOCs - A total of 37 soil borings were installed and 122 soil samples were collected and analyzed. In the soil samples, VOCs were detected at concentrations exceeding protection of groundwater SCOs in 22 of the 37 borings. VOCs detected at concentrations exceeding SCOs include ethylbenzene (up to 31 parts per million, or ppm, compared to 1 ppm SCO); isopropylbenzene (up to 78 ppm, compared to 0.06 ppm SCO); xylenes (up to 77 ppm vs. 1.6 ppm); and methylene chloride (up to 1.4 ppm vs. 0.05 ppm).

SVOCs - Most exceedances of the applicable restricted residential SCO occur in the 0 to 2 feet bls interval. SVOCs detected at concentrations exceeding SCOs include benzo(a)pyrene (up to 35 ppm).

Metals - Metals detected at concentrations exceeding SCOs include mercury (at 7 locations and detected up to 5.2 ppm) and lead (at one location and detected at 1000 ppm).

PCBs/Pesticides - None of the samples analyzed for PCBs and Pesticides exceeded restricted residential SCOs.

Groundwater:
Non-aqueous phase liquid (NAPL) was observed in 17 of the 50 monitoring wells at thicknesses up to 5.09 feet in the July 2015 gauging/bailing event. The NAPL was identified as primarily paint thinner with weathered fuel oil mixed with paint thinner also identified in one monitoring well. Due to the location and degree of weathering of the product, the source of the NAPL appears to be the USTs and associated piping.

The remedial investigation included installation and sampling of 50 groundwater monitoring wells which have been gauged for NAPL periodically. Samples were collected from the 21 monitoring wells which did not contain NAPL and the exceedances of TOGS 1.1.1 Ambient Water Quality Standards (AWQS) included isopropylbenzene (at 13 locations in the garage, warehouse, and courtyard and detected up to 45 parts per billion (ppb)), xylenes (at two locations in the courtyard

and detected up to 5.9 ppb), and ethylbenzene (at one location in the garage and detected at 16.7 ppb).

Soil Vapor:
Three interior sub-slab soil vapor sampling points were installed and sampled in 2007 and hydrocarbon, alcohol, and solvent-related compounds were detected in sub-slab soil vapor and indoor air samples, which were performed in the area of the former paint factory. Methylene chloride was detected up to 69.2 µg/m3 in indoor air. An off-site investigation conducted in 2009-2010 did not indicate a need to implement actions to address exposures related to soil vapor intrusion in the adjacent buildings.

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*.

Direct contact with contaminants in the soil is unlikely because the majority of the site is covered with buildings and pavement. People are not drinking the contaminated groundwater because the area is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings 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 buildings, is referred to as soil vapor intrusion. The potential exists for the inhalation of site contaminants due to soil vapor intrusion for people entering on-site buildings. Sampling indicates soil vapor intrusion is not a concern for off-site buildings.

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, LNAPL Recovery and Groundwater Treatment 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; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation

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- Grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
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3. Cover System

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Groundwater extraction and treatment will be implemented to treat contaminants and remove NAPL in groundwater. A groundwater extraction/excavation dewatering system will be designed and installed so that the capture zone is sufficient to cover the areal and vertical extent of the excavation area. The extracted groundwater will be containerized for off-Site disposal or treated and discharged. The groundwater will be extracted through the use of a vacuum truck, drainage

sumps, and/or perimeter well points to maintain dry conditions in the excavation. The treatment system will entail a settling tank, oil/water separator, bag filters, and carbon filter vessels, if necessary. Further details of the extraction system will be determined during the remedial design.

Following completion of the excavation, a minimum of five product recovery wells equipped with automated product-only pumps will be installed at the excavation boundaries where the NAPL plume extends off-site or beneath existing buildings.

5. In-Situ Chemical Oxidation or Reduction

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in soil and groundwater beneath the basement slab of the warehouse building where excavation is infeasible. A chemical oxidant will be injected into the subsurface to destroy the contaminants. The method and depth of injection will be determined during the remedial design.

6. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- Requires 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);
- Allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- Restricts 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
- Requires compliance with the Department-approved Site Management Plan.

7. 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 bullet #6.

   – Engineering Controls: The site cover discussed in bullet #3, the NAPL recovery system discussed in bullet #4, and the ISCO injection system discussed in bullet #5.

   This plan includes, but may not be limited to:

   - 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/or groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion should any of the on-site buildings become re-occupied and for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- 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.

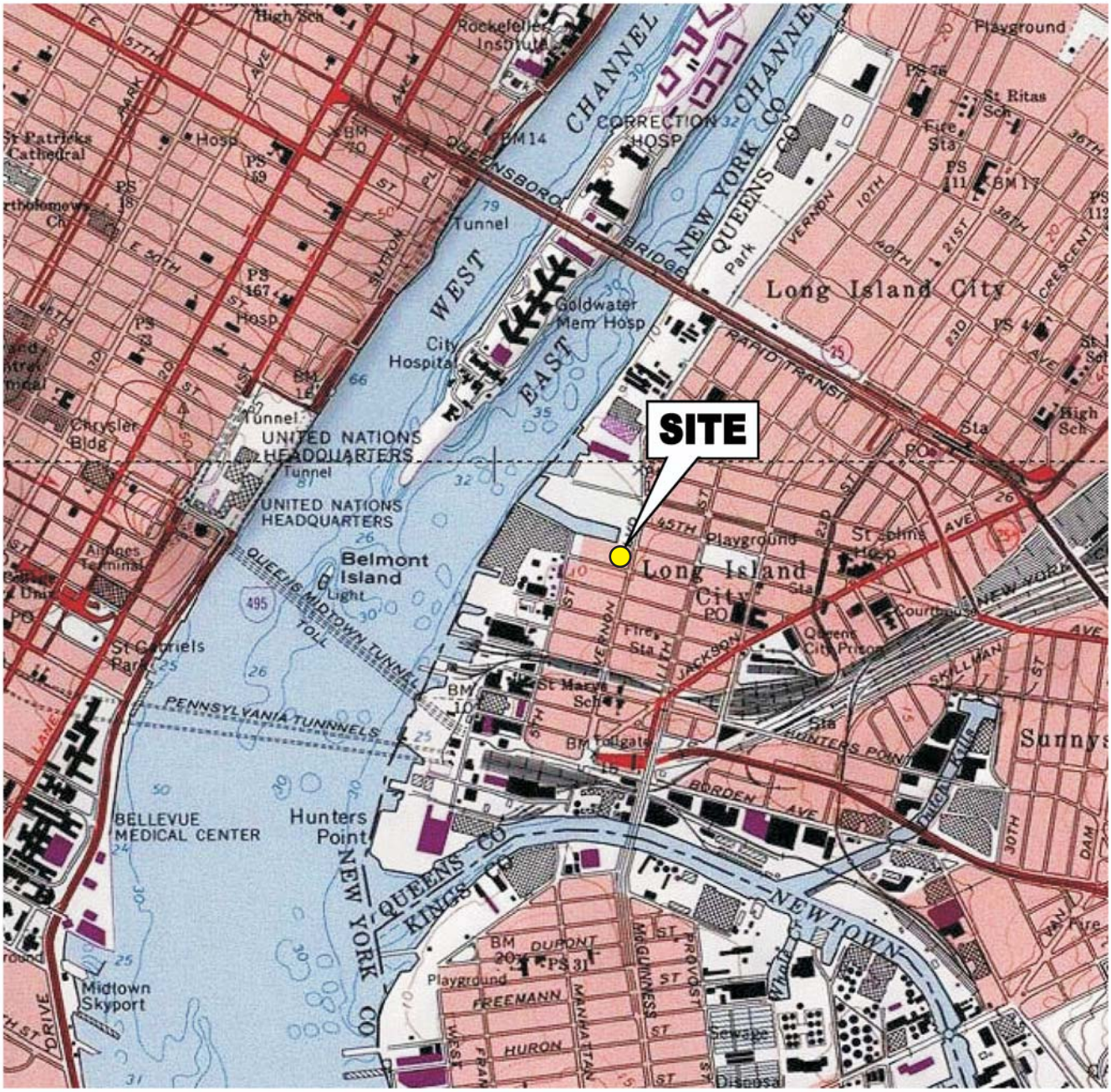
b. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

monitoring of groundwater to assess the performance and effectiveness of the remedy;

- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings which are re-occupied or developed 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, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting; and
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.



QUADRANGLE LOCATION

SOURCE:
USGS; 1995, Central Park & Brooklyn
7.5 Minute Topographic Quadrangle

N

0 2000'

Title:

SITE LOCATION MAP

FORMER PARAGON PAINT AND VARNISH
COMPANY MANUFACTURING FACILITY
5-49 46TH AVENUE & 45-40 VERNON BOULEVARD
LONG ISLAND CITY, NEW YORK

Compiled by: R.M.	Date: 15MAY15	FIGURE
Prepared by: B.H.C.	Scale: AS SHOWN	1
Project Mgr.: R.M.	Project No.: 2051.0001Y000	
File: 2051.0001Y180.03.CDR		

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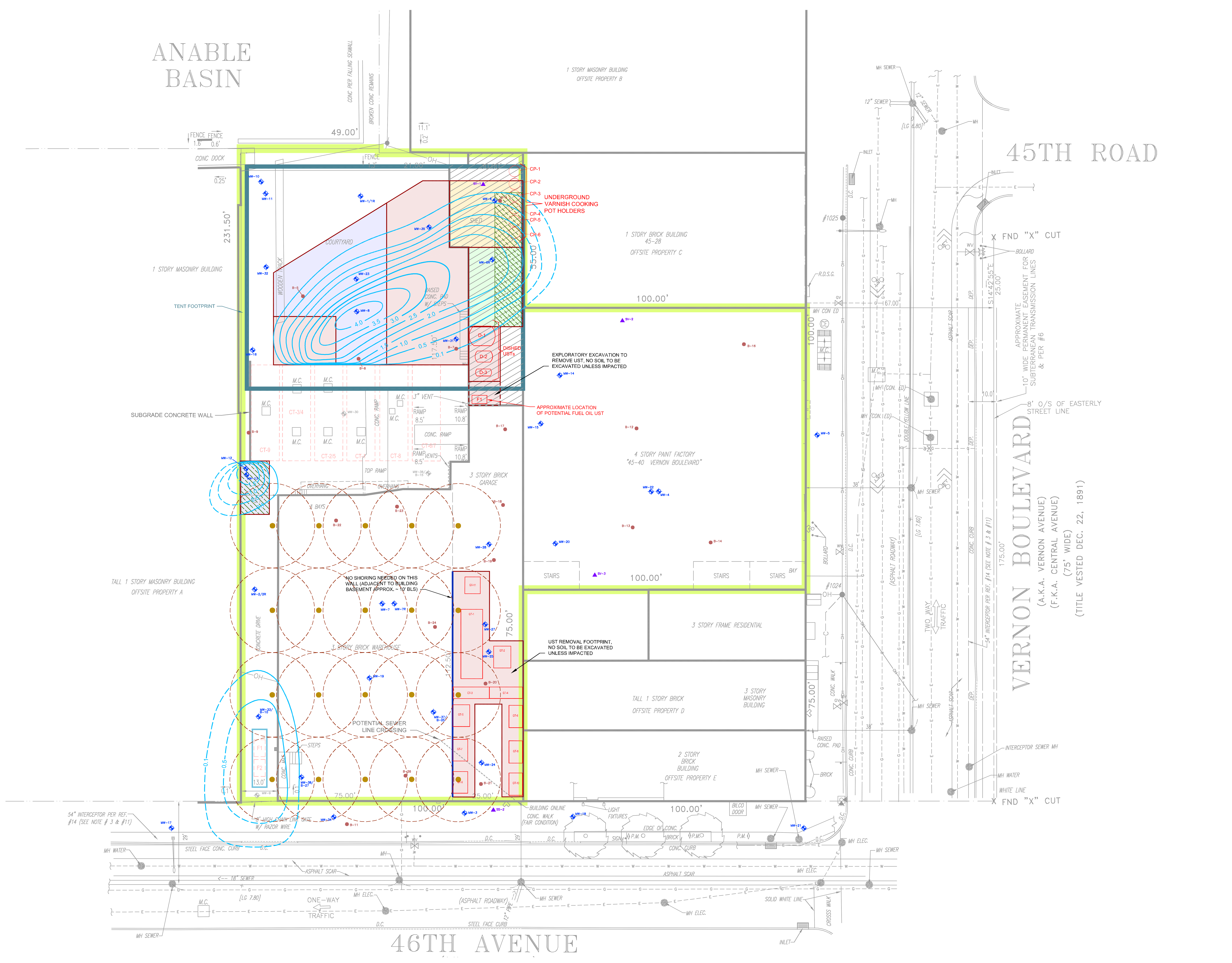

LEGEND

- SOIL BORING LOCATION AND DESIGNATION (B-6)
- MONITORING WELL LOCATION AND DESIGNATION (MW-5)
- DESTROYED MONITORING WELL LOCATION AND DESIGNATION (MW-5)
- SOIL VAPOR SAMPLE LOCATION AND DESIGNATION (SV-1)
- PROPERTY BOUNDARY
- LNAPL — LIGHT NON-AQUEOUS PHASE LIQUID
- 0.5 — APPROXIMATE LINE OF EQUAL LNAPL THICKNESS (FEET)
- APPROXIMATE LOCATION OF UNDERGROUND STORAGE TANK (UST)
- APPROXIMATE FORMER LOCATION OF UNDERGROUND STORAGE TANK (UST)
- APPROXIMATE LOCATION OF DISHED UNDERGROUND STORAGE TANK
- CP-1 — APPROXIMATE LOCATION OF UNDERGROUND VARNISH COOKING POT HOLDER
- CONCRETE VAULT (REMOVED)
- TO BE DEMOLISHED DURING RA
- BACKFILL WITH CLEAN STONE
- PROPOSED 9' BLS EXCAVATION FOOTPRINT
- PROPOSED 13' BLS EXCAVATION FOOTPRINT
- PROPOSED 19' BLS EXCAVATION FOOTPRINT
- PROPOSED 20' BLS EXCAVATION FOOTPRINT
- TENT BOUNDARY (APPROXIMATE)
- PROPOSED ISCO SOIL CONFIRMATION SAMPLE LOCATION (APPROXIMATE)
- APPROXIMATE ISCO INJECTION POINT RADIUS OF INFLUENCE

GARAGE TANK INFO

TANK	DEPTH TO BOTTOM (FT)	REPORTED CAPACITY (GAL)
GT-1	10	20,000
GT-2	10	<1,000
GT-3	10	<1,000
GT-4	10	<1,000
GT-5	10	<1,000
GT-6	10	<1,000
GT-7	10.08	<1,000
GT-8	10	<1,000
GT-9	10.21	<1,000
GT-10	10	<1,000
GT-11	10.01	<1,000
D-1	~10	<1,000
D-2	~10	<1,000
D-3	~10	<1,000
F-1	~10	<1,000

15' 0 15'

Title:

PROPOSED REMEDIAL ACTION REMEDIAL ALTERNATIVE 2

FORMER PARAGON PAINT & VARNISH FACTORY
LONG ISLAND CITY, NEW YORK

Compiled by: K.C.	Date: 30SEP15	Figure 2
Prepared by: B.H.C.	Scale: AS SHOWN	
Project Mgr: R.M.	Project: 2051.0001Y000	
File: 2051.0001Y180.07.DWG		