

# DECISION DOCUMENT

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Former Andor Medical Systems  
Brownfield Cleanup Program  
Astoria, Queens County  
Site No. C241234  
August 2020



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

# **DECLARATION STATEMENT - DECISION DOCUMENT**

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Former Andor Medical Systems  
Brownfield Cleanup Program  
Astoria, Queens County  
Site No. C241234  
August 2020

## **Statement of Purpose and Basis**

This document presents the remedy for the Former Andor Medical Systems 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 Former Andor Medical Systems 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**

The existing on-site building(s) will be demolished and materials which cannot be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy.

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

- Grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination; and
- 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.

Excavation and off-site disposal of all on-site soils which exceed unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8. If a Track 1 cleanup is achieved, a Cover System will not be a required element of the remedy. Approximately 6,000 cubic yards of contaminated soil will be removed from the site.

## **3. Backfill**

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.

## **4. Groundwater Extraction & Treatment**

Groundwater extraction and treatment as needed will be implemented to treat VOCs in groundwater. The groundwater extraction system will be designed and installed so that the capture zone is sufficient to dewater the site to allow removal of all soil contaminants above UUSCOs and address chlorinated VOCs in on-site groundwater. The extraction system will create a depression of the water table so that contaminated groundwater is directed toward the extraction points within the plume area. The extracted groundwater will be treated if needed using granular activated carbon and discharged to the New York City sewer system.

Monitoring will be required downgradient of the treatment zone. Pre- and post-dewatering monitoring will be conducted for VOCs at two monitoring wells downgradient of the treatment zone.

## **5. Local Institutional Controls**

If no EE or SMP is needed to achieve soil or soil vapor remedial action objectives,

then the following local use restriction will be relied upon to prevent ingestion of groundwater: Article 141 of the NYCDOH code which prohibits potable use of groundwater without prior approval.

## **6. Vapor Intrusion Evaluation**

As part of the remedy, a soil vapor intrusion evaluation will be completed. The evaluation will include a provision for implementing actions recommended to address exposures related to soil vapor intrusion.

### **Conditional Track 1**

The intent of the remedy is to achieve a Track 1 unrestricted use; therefore, no environmental easement or site management plan is anticipated. If the soil vapor intrusion (SVI) evaluation is not completed prior to completion of the Final Engineering Report, then a Site Management Plan (SMP) and Environmental Easement (EE) will be required for the entire site to address the SVI evaluation and implement actions as needed; if a mitigation or monitoring action is needed, a Track 1 cleanup can only be achieved if the mitigation system or other required action is no longer needed within 5 years of the date of the Certificate of Completion. In the event that Track 1 unrestricted use is not achieved, including achievement of groundwater and soil vapor remedial objectives, the remedial elements listed below, will be required, and the remedy will achieve a Track 4 cleanup.

## **7. Cover System**

A site cover will be required to allow for restricted residential use of the site in areas where the upper two feet 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 two feet 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.

## **8. Institutional Control**

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 restricted residential 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 cover system discussed in paragraph 7 above.

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 groundwater uses restrictions;
  - A provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
  - A provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 6 above will be placed in any areas where the upper two feet 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, 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 on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

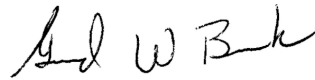
### **Declaration**

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.

August 14, 2020

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Date



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Gerard Burke, Director  
Remedial Bureau B

# DECISION DOCUMENT

Former Andor Medical Systems  
Astoria, Queens County  
Site No. C241234  
August 2020

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## **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:

DECInfo Locator - Web Application  
<https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C241234>

Queens Library at Astoria  
14-01 Astoria Blvd  
Astoria, NY 11102  
Phone: (718) 278-2220

Queens Community Board 1  
45-02 Ditmars Blvd  
Astoria, NY 11106  
Phone: (718) 626-1021

### **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 0.584-acre site is located in the Astoria neighborhood of Queens, NY and is identified as Block 910, Lots 9 and 35.

#### **Site Features:**

The site is improved with a one-story 20,000 square foot building constructed in approximately 1961 on Lot 9. The building is currently vacant. Lot 35 is a paved parking area which was previously used by the former Lot 9 tenant. The entire site is covered by either the concrete building slab or the asphalt parking lot with no exposed soil.

#### **Current Zoning and Land Use:**

The lots are currently zoned R6 Residential. These districts accommodate a variety of residential building types ranging from single-family homes to multi-story towers.

Surrounding land use includes industrial / manufacturing facilities north of 26th Avenue and a large multi-family, multi-building apartment complex south of 27th Avenue. Adjacent properties to the east and west include a mix of commercial (contractor yards, warehouses, manufacturing) with single and multi-family residential properties interspersed among the commercial lots.

#### **Past Use of the Site:**

The site has been developed since at least 1898 with a residential home located on each lot through at least 1950. The present one-story building was constructed in 1961 and used for unidentified manufacturing. From 1977 to 2007 the building was reported to be used as a warehouse. City directory listings include SOS Distributors in 1983 and Andor Medical Systems in 1991. There were no other directory listings for the property. The building has been vacant since at least August 2018.



**Site Geology and Hydrogeology:**

Subsurface soils at the site consist of historic fill materials to a depth of approximately 4 feet below grade followed by native fine to medium sand. The area topography slopes steeply to the east. Groundwater occurs beneath the site is at a depth of 4.5 to 6.14 feet below grade under water table conditions. Based on on-site measurements, groundwater flow is to the north. However, the groundwater flow direction is expected to be influenced by building foundations and subsurface utility lines.

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 residential use (which allows for restricted-residential use, 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 Applicant(s) does/do not have an obligation to address off-site contamination. However, the Department has determined that this site does pose a significant threat to public health or the environment; accordingly, enforcement actions are 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
- 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:

tetrachloroethene (PCE)	chrysene
trichloroethene (TCE)	indeno(1,2,3-cd)pyrene
cis-1,2-dichloroethene	benzo(k)fluoranthene
acetone	barium
benzo(a)anthracene	arsenic
benzo(a)pyrene	mercury
benzo(b)fluoranthene	lead

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

- groundwater
- soil
- sub slab vapor

## **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.

### **Nature and Extent of Contamination:**

A site-wide investigation was conducted to delineate contamination in soil, groundwater, and soil vapor. Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), pesticides, the emerging contaminants per- and polyfluoroalkyl substances (PFAS), and 1,4 dioxane. Soil vapor was analyzed for VOCs. According to the most recent analytical results, the primary contaminants of concern at the site are chlorinated VOCs, SVOCs and metals in soil, and chlorinated VOCs in groundwater and soil vapor. Results are summarized below.

#### **Soil:**

Several VOCs were detected in the subsurface that exceeded their applicable unrestricted use soil cleanup objectives (UUSCOs) and protection of groundwater soil cleanup objectives (PGWSCOs); tetrachloroethene was detected up to 5.6 parts per million (ppm) (UUSCO and PGWSCO are 1.3 ppm), trichloroethene was detected up to 1.4 ppm (UUSCO and PGWSCO are 0.47 ppm), cis-1,2-dichloroethene was detected up to 0.32 ppm (UUSCO and PGWSCO are 0.25 ppm), and acetone up to 0.79 ppm (UUSCO and PGWSCO are 0.05 ppm).

Several SVOCs detected in the subsurface exceeded their respective UUSCOs: benzo(a)anthracene was detected up to 9.4 ppm (UUSCO is 1 ppm); benzo(a)pyrene up to 8.9 ppm (UUSCO is 1 ppm); benzo(b)fluoranthene up to 7.5 ppm (UUSCO is 1 ppm); chrysene up to 9.6 ppm (UUSCO is 1 ppm); indeno(1,2,3-cd)pyrene up to 6.0 ppm (UUSCO is 0.5 ppm); and benzo(k)fluoranthene up to 4.3 ppm (UUSCO is 0.8 ppm). Several metals exceeded their respective UUSCOs, including barium up to 407 ppm (UUSCO is 350 ppm), arsenic up to 14.2 ppm (UUSCO is 13 ppm), mercury up to 2.26 ppm (UUSCO is 0.18 ppm), lead up to 8,430 ppm (UUSCO is 63 ppm and PGWSCO is 450 ppm).

Based on the sampling results, only VOCs and lead required comparison to PGWSCO.

Also, based on the sampling results, there is no indication that these contaminants have migrated off-site in soil.

### **Groundwater:**

Several VOCs were detected in on-site groundwater at levels exceeding their respective ambient water quality standards (AWQSs); tetrachloroethene up to 43 parts per billion (ppb) (AWQS is 5 ppb), trichloroethene up to 10 ppb (AWQS is 5 ppb) and cis-1,2-dichloroethene up to 15 ppb (GWQS is 5 ppb). Also, metals such as lead was detected up to 84 ppb (AWQS is 25 ppb).

Based on the sampling results, there is no indication that these contaminants have migrated off-site in groundwater.

### **Sub Slab Soil Vapor:**

Petroleum-related VOCs such as benzene, toluene, ethylbenzene, and xylenes (BTEX) were low in all sub-slab soil vapor samples ranging from 9.2 micrograms per cubic meter (ug/m<sup>3</sup>) to 18.58 ug/m<sup>3</sup>. Chlorinated VOCs were reported in all of the sub-slab soil vapor samples with tetrachloroethene ranging from 6.07 ug/m<sup>3</sup> to 1,130 ug/m<sup>3</sup>, trichloroethene ranging from 8.32 ug/m<sup>3</sup> to 57.5 ug/m<sup>3</sup>, and cis-1,2-dichloroethene ranging from 0.66 ug/m<sup>3</sup> to 201 ug/m<sup>3</sup>.

Based on the sampling results, there is an indication that these contaminants may have migrated off-site.

### **Soil Vapor:**

BTEX were low in all soil vapor samples ranging from 5.6 ug/m<sup>3</sup> to 5.97 ug/m<sup>3</sup>. Chlorinated VOCs were reported in all of the soil vapor samples with tetrachloroethene ranging 9.9 ug/m<sup>3</sup> to 247 ug/m<sup>3</sup>, trichloroethene was detected up to 32.1 ug/m<sup>3</sup>, and cis-1,2-dichloroethene was detected up to 18.7 ug/m<sup>3</sup>.

Based on the sampling results, there is an indication that these contaminants may have migrated off-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*.

Direct contact with contaminants in the soil is unlikely because the entirety of the site is covered with the building slab and asphalt pavement. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into 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. Soil vapor intrusion is not a current concern on-site since the site is vacant. However, the potential exists for inhalation exposures to site contaminants via the soil vapor intrusion pathway both off-site and for any future on-site re-occupancy.

## **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**

- 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 Conditional Track 1 remedy.

The selected remedy is referred to as the Soil Excavation, Backfill and Groundwater Extraction & 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;
- 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**

The existing on-site building(s) will be demolished and materials which can't be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy.

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

- Grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination; and
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Excavation and off-site disposal of all on-site soils which exceed unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8. If a Track 1 cleanup is achieved, a Cover System will not be a required element of the remedy. Approximately 6,000 cubic yards of contaminated soil will be removed from the site.

### **3. Backfill**

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.

### **4. Groundwater Extraction & Treatment**

Groundwater extraction and treatment as needed will be implemented to treat VOCs in groundwater. The groundwater extraction system will be designed and installed so that the capture zone is sufficient to dewater the site to allow removal of all soil contaminants above UUSCOs and address chlorinated VOCs in on-site groundwater. The extraction system will create a depression of the water table so that contaminated groundwater is directed toward the extraction points within the plume area. The extracted groundwater will be treated if needed using granular activated carbon and discharged to the New York City sewer system.

Monitoring will be required downgradient of the treatment zone. Pre- and post-dewatering monitoring will be conducted for VOCs at two monitoring wells downgradient of the treatment zone.

### **5. Local Institutional Controls**

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## **7. Cover System**

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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.

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- Allow the use and development of the controlled property for restricted residential 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**

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- 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:

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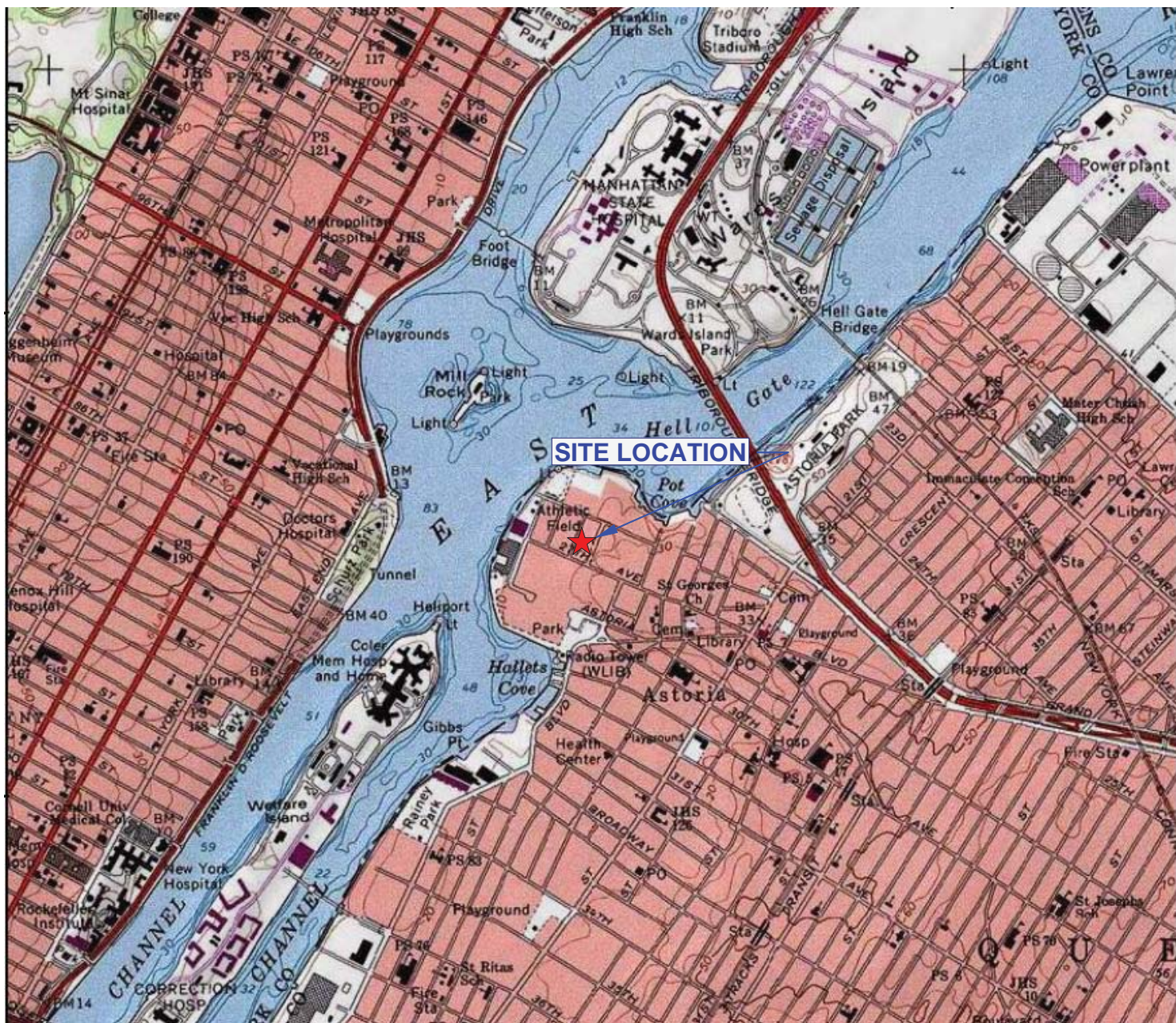
Engineering Controls: The cover system discussed in paragraph 7 above.

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 groundwater uses restrictions;



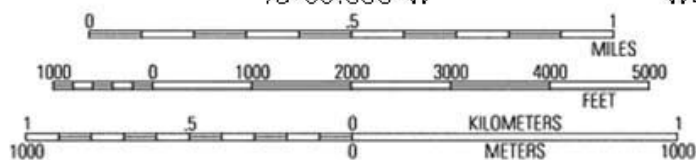
- A provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
  - A provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 6 above will be placed in any areas where the upper two feet 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, 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 on the site, as may be required by the Institutional and Engineering Control Plan discussed above.



73°57.000' W

73°56.000' W

WGS84 73°55.000' W



MN ↑ TN  
13°

04/14/19

USGS Brooklyn, NY Quadrangle 1995, Contour Interval = 10 ft.





3RD STREET

SIDEWALK

19B8 (8-10') 12/10/2019	
Metals (mg/Kg)	
Chromium	38.5
Nickel	31.7

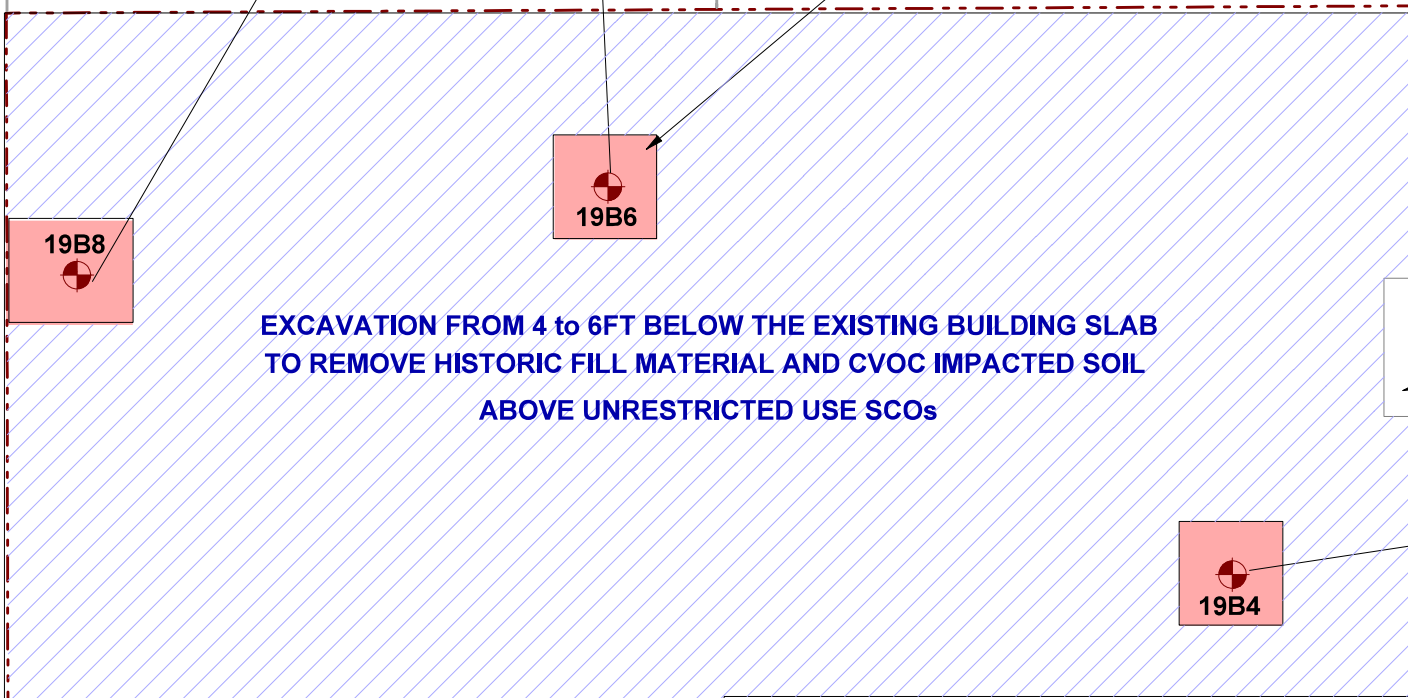
19B6 (8-10') 12/10/2019	
Metals (mg/Kg)	
Barium	407

Excavate each of the four red box areas to 10ft to Remove soil/fill above UUSCOs

Lot 29

SIDEWALK

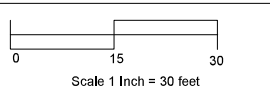
4TH STREET



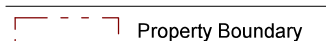
Remove the Underground Storage Tank

19B4 (8-10') 12/10/2019	
Pesticides (µg/Kg)	
4,4'-DDD	8.1

SCALE:

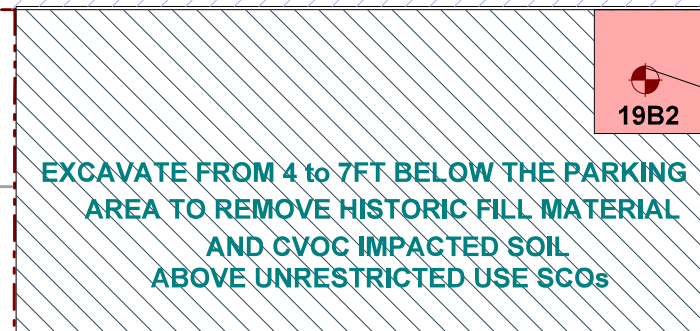


KEY:



Lot 8

Lot 7



19B2 (8-10') 12/10/2019	
Metals (mg/Kg)	
Chromium	40.7

Lot 37

4/13/2020



**AMC Engineering**  
1836 42nd Street  
Astoria, NY 11105

**Figure No.**  
**2**

Site Name: **FORMER ANDOR MEDICAL SYSTEMS**

Site Address: **26-22 4TH STREET, QUEENS, NY**

Drawing Title: **EXCAVATION PLAN**