

# DECISION DOCUMENT

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Warburton Dry Cleaners Site  
Brownfield Cleanup Program  
Yonkers, Westchester County  
Site No. C360227  
July 2024



**Department of  
Environmental  
Conservation**

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

# DECLARATION STATEMENT - DECISION DOCUMENT

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## **Statement of Purpose and Basis**

This document presents the remedy for the Warburton Dry Cleaners 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 Warburton Dry Cleaners 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. Green Remediation/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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar Department accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

## 2. Excavation

The existing on-site buildings 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);
- soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead;
- concentrated solid or semi-solid hazardous substances per 6 NYCRR Part 375-1.2(au)(1);
- non-aqueous phase liquids;
- soil with visual waste material or non-aqueous phase liquid; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Excavation and off-site disposal of all on-site soils which exceed restricted-residential soil cleanup objectives (SCOs), as defined by 6 NYCRR Part 375-6.8 in the upper 15 feet of soil. Collection and analysis of confirmation and documentation samples at the remedial excavation depths will be used to verify that SCOs for the site have been achieved.

Approximately 8,000 cubic yards of contaminated soil will be removed from the site. Collection and analysis of confirmation samples at the remedial excavation depth will be used to verify that SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify the Department, submit the sample results and, and in consultation with the Department and New York State Department of Health (NYSDOH), determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state and local laws, rules, and regulations and facility-specific permits.

Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination will be completed.

### 3. Backfill

If the restricted residential SCOs are not achieved, on-site soil which does not exceed the above excavation criteria may be used below the 2-foot cover system described in paragraph No. 4 to backfill the excavation to the extent that a sufficient volume of on-site soil is available and establish the designed grades at the site.

On-site soil which does not exceed the above excavation criteria or the protection of groundwater SCOs 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 replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the site.

### 4. Cover System

A site cover will be required in areas where the upper two feet of exposed surface soil will exceed the applicable SCOs, to allow for future restricted residential use of the site.

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.

If a Track 2 restricted residential SCOs are achieved, a Cover System will not be a required element of the remedy.

## 5. Groundwater Remedies

Monitoring will be required up-gradient, down-gradient, within the treatment zone, or the barrier, and any groundwater extraction wells. Monitoring will be conducted for PCE, TCE, and breakdown compounds upgradient and downgradient of the treatment zone and/or barrier. For enhanced bio remedies, the treatment zone will be monitored for dissolved oxygen, and oxidation/reduction potential.

## 6. In-Situ Chemical Reduction

In-situ chemical reduction (ISCR) will be implemented to treat PCE, TCE, and other PCE breakdown compounds in groundwater as it passes through a permeable reactive barrier (PRB). Zero valent iron, a chemical reducing agent, or similar compound to be determined during the pre-design investigation, will be injected into the subsurface to reduce the contaminant concentrations in an approximately 3,400 square foot area. This area will extend approximately 170 feet in length by 20 feet in width and be in the upper eastern portion of the site where PCE, TCE, and other PCE breakdown compounds were elevated in the groundwater. The PRB will be placed via an infiltration gallery or injection wells screened from approximately 55 to 80 feet below ground surface (from the water table to the bedrock interface). The final method and depth of injections will be determined during the remedial design.

## 7. Vapor Mitigation

Any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from groundwater. A permit will be obtained from Westchester County Department of Health for a source of air contamination prior to installation and operation.

## 8. Institutional Control

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 Westchester County DOH; and
- requires compliance with the Department approved Site Management Plan.

## 9. Site Management Plan

A Site Management Plan (SMP) 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: Permeable reactive barrier discussed in paragraph 5, sub-slab depressurization system discussed in paragraph 7, and, if required, site cover as discussed in paragraph 4.

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;
- a description of the provisions of the environmental easement including any land use, and groundwater use 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 Remedy Element 4 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- a provision 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 effectiveness of the remedy in reducing groundwater contaminant levels;
- 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.

c. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system.(s). The plan includes, but is not limited to:

- procedures for operating and maintaining the system;(s); and
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

**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.

7/19/2024

Date

*Sarah Saucier*

Sarah Saucier, Director  
Remedial Bureau C

# DECISION DOCUMENT

Warburton Dry Cleaners Site  
Yonkers, Westchester County  
Site No. C360227  
July 2024

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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, 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 repository:

DECInfo Locator - Web Application  
<https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C360227>

Yonkers Public Library - Riverfront Branch  
Attn: Anne Campbell  
1 Larkin Center  
Yonkers, NY 10701  
Phone: (914) 375-7940



## 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 Warburton Dry Cleaners Site is a roughly 1.165-acre site comprised of 15 tax parcel lots, which are separated in two areas by Woodworth Avenue. The site is located in a mixed use commercial and residential area.

**Site Features:** The Site includes 15 tax lots currently comprised of 13 undeveloped lots, two vacant mixed-use commercial and residential buildings with a detached two bay garage. The undeveloped portions of the site are a mix of vegetated grassy areas, gravel, and paved parking areas. Topography slopes towards the West and the Hudson River with a surface grade change of 80 to 50 above mean sea level.

**Current Zoning and Land Use:** The site is currently located in an "A" district, which allows for high-rise apartment buildings and other high-density buildings. Surrounding parcels are also within this "A" district or other districts that allow for residential, business, and commercial uses. A mix of residential lots, undeveloped lots and commercial businesses are located to the north and south of the site, several vacant buildings to the east, and an undeveloped lot and residential buildings are located immediately west of the site. The Hudson River is approximately 0.2 miles to the west of the site.

**Past Use of the Site:** Historical records indicate that many of the tax lots that comprise the site were developed with residential or mixed-use commercial and residential buildings at least since the 1890s. Many of these original dwellings were demolished during the 1970s and early 1980s. There was a dry cleaner present on a portion of the site between 1976 and 1977 in addition to a building that historical reports referred to as a "laundry building". Another portion of the site is reported to have been operated as an "auto store", however the nature of this store is not clear based on the historical records provided.

**Site Geology and Hydrogeology:** Bedrock is approximately 70 to 100 feet below ground surface. Evidence of fill material (i.e., construction and demolition debris, brick, concrete, ash, wood, etc.) was observed in the upper 4 to 12 feet across a majority of the site. Groundwater was encountered at 30 to 33 feet below ground surface during investigations performed to date and is expected to flow west towards the Hudson River.

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) 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 but is obligated to address the chlorinated groundwater plume coming onto to the site, and any contamination that may leave the site. In addition, the Department has determined this site does pose a significant threat to public health and the environment; accordingly, enforcement actions are necessary for this off-site plume and the Department is taking necessary steps to initiate this work.

## **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:

tetrachloroethene (PCE)                      lead  
trichloroethene (TCE)

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.

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.

On-site and off-site environmental media were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, PCBs, pesticides, and PFAS during the remedial investigation. Based upon this investigation the contaminants of concern for the site are chlorinated volatile organic compounds (CVOCs) in groundwater and soil vapor, and lead in soil. Most, or all the, chlorinated groundwater plume appears to originate from off-site and contributes to the on-site impacts.

#### Soil:

On-site soil samples detected widespread lead contamination up to 2,110 parts per million (ppm), exceeding restricted residential use SCO (RRSCO) of 400 ppm. CVOCs, SVOCs, PCBs, pesticides, and PFAS were all detected below the RRSCOs. Data does not indicate any off-site impacts in soil related to this site.

#### Groundwater:

On-site groundwater contained detections of PCE up to 16,000 parts per billion (ppb) and detections of TCE up to 8.7 ppb, exceeding their groundwater standard of 5 ppb. Lead (total) was detected up to 50.41 ppb, exceeding the groundwater standard of 25 ppb. Chromium was detected at 82.7 ppb exceeding groundwater standard of 50 ppb. CVOCs, PCBs, and pesticides were all detected below their respective groundwater standards.

PFAS, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were reported at concentrations of up to 73.1 and 57.1 parts per trillion (ppt), respectively, exceeding the 6.7 parts per trillion (ppt) and 2.7 ppt respective water quality guidance values. 1,4-dioxane was detected at 0.188 ppb and 0.0758 ppb both below the 0.35 ppb water quality guidance value.

PCE was detected in the site's downgradient monitoring well, at 16,000 ppb. Groundwater contamination will likely continue to migrate in the general direction of groundwater flow until the source area of the contamination is identified and remediated.

#### Soil Vapor and Indoor Air:

Soil vapor samples collected on-site detected CVOC contaminants PCE and TCE up to 2,800 micrograms per cubic meter (ug/m<sup>3</sup>) and 35.3 ug/m<sup>3</sup>, respectively.

Off-site soil vapor samples detected PCE up to 530,000 ug/m<sup>3</sup> and TCE up to 9,900 ug/m<sup>3</sup>.

Collocated sub-slab vapor and indoor air samples, as well as an outdoor ambient sample, were collected to determine whether actions are needed to address exposure related to soil vapor intrusion. The maximum concentrations of PCE and TCE in sub-slab vapor samples were 59,000 ug/m<sup>3</sup> and 520 ug/m<sup>3</sup>, respectively. PCE was detected in indoor air at 0.556 ug/m<sup>3</sup> and TCE was not detected in indoor air. PCE and TCE were not detected in outdoor air samples.

Soil vapor contamination will likely continue to impact the site and surrounding properties until the source of this contamination is identified and remediated.

#### **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*.

Access is restricted by a fence. People who enter the site may come into contact with site-related soil and groundwater contamination if they dig below the surface. Contaminated groundwater at the site is not used for drinking 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 the groundwater and/or soil 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 site is vacant so inhalation of site contaminants in indoor air via vapor intrusion is not a current concern. However, the potential exists for inhalation of site contaminants due to soil vapor intrusion for any future on-site development. In addition, environmental sampling indicates soil vapor intrusion is 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.

##### **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 2: Restricted use with generic soil cleanup objectives remedy.

The selected remedy is referred to as the Soil Excavation, In-situ Groundwater Treatment and Vapor Mitigation remedy.

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

### 1. Green Remediation/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:

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- 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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

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environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar Department accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

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development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

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Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination will be completed.

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On-site soil which does not exceed the above excavation criteria or the protection of groundwater SCOs 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 replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the site.

### 4. Cover System

A site cover will be required in areas where the upper two feet of exposed surface soil will exceed the applicable SCOs, to allow for future restricted residential use of the site.

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.

If a Track 2 restricted residential SCOs are achieved, a Cover System will not be a required element of the remedy.

### 5. Groundwater Remedies



Monitoring will be required up-gradient, down-gradient, within the treatment zone, or the barrier, and any groundwater extraction wells. Monitoring will be conducted for PCE, TCE, and breakdown compounds upgradient and downgradient of the treatment zone and/or barrier. For enhanced bio remedies, the treatment zone will be monitored for dissolved oxygen, and oxidation/reduction potential.

## 6. In-Situ Chemical Reduction

In-situ chemical reduction (ISCR) will be implemented to treat PCE, TCE, and other PCE breakdown compounds in groundwater as it passes through a permeable reactive barrier (PRB). Zero valent iron, a chemical reducing agent, or similar compound to be determined during the pre-design investigation, will be injected into the subsurface to reduce the contaminant concentrations in an approximately 3,400 square foot area. This area will extend approximately 170 feet in length by 20 feet in width and be in the upper eastern portion of the site where PCE, TCE, and other PCE breakdown compounds were elevated in the groundwater. The PRB will be placed via an infiltration gallery or injection wells screened from approximately 55 to 80 feet below ground surface (from the water table to the bedrock interface). The final method and depth of injections will be determined during the remedial design.

## 7. Vapor Mitigation

Any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from groundwater. A permit will be obtained from Westchester County Department of Health for a source of air contamination prior to installation and operation.

## 8. Institutional Control

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 Westchester County DOH; and
- requires compliance with the Department approved Site Management Plan.

## 9. Site Management Plan

A Site Management Plan (SMP) 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: Permeable reactive barrier discussed in paragraph 5, sub-slab depressurization system discussed in paragraph 7, and, if required, site cover as discussed in paragraph 4.

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;
- a description of the provisions of the environmental easement including any land use, and groundwater use 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 Remedy Element 4 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- a provision 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 effectiveness of the remedy in reducing groundwater contaminant levels;
- 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.

c. dAn Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s). The plan includes, but is not limited to:

- procedures for operating and maintaining the system;(s); and
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.



**Subject Site**  
 Address: 305-321 Warburton Avenue,  
 32 Point Street, and 247-262A Woodworth Avenue  
 Approximate Acreage: 1.166

		<p align="center"><b>Site Location Map</b></p> <p align="center">Site No. C360227        Warburton Dry Cleaners Site        Yonkers, Westchester County</p>	<p><b>Legend</b></p> <ul style="list-style-type: none"> <li> Approximate Site Boundary</li> <li> Westchester Co. Tax Parcels (2019-2020)</li> </ul> <p align="center"> </p>
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**Warburton Avenue  
Apartments, LLC**  
Warburton Dry Cleaners Site  
City of Yonkers,  
Westchester County, NY

Remedial Action Work Plan



0 35 ft

1 inch equals 35 feet

- Site Boundary
- 2 ft bgs to achieve RRSCOs
- 4 ft bgs to achieve RRSCOs
- 6 ft bgs to achieve RRSCOs
- 8 ft bgs to achieve RRSCOs
- 10 ft bgs to achieve RRSCOs
- 12 ft bgs to achieve RRSCOs
- 15 ft bgs to achieve RRSCOs
- Areas to be Removed and Disposed of as Hazardous Waste
- Monitoring Wells
- Soil Boring Location
- High-Concentration Lead Area Delineation Boring Location
- Topographic Elevation Contour Line
- Tax lots

Extent of Excavation

**FIGURE 2**

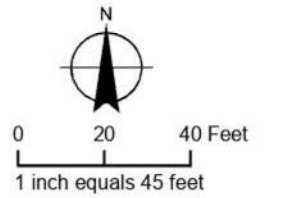


**NOTES:**  
1. Property boundaries obtained from Westchester County GIS 2015 and are considered approximate.  
2. Aerial Image obtained from New York State GIS Clearinghouse and may not represent current conditions.

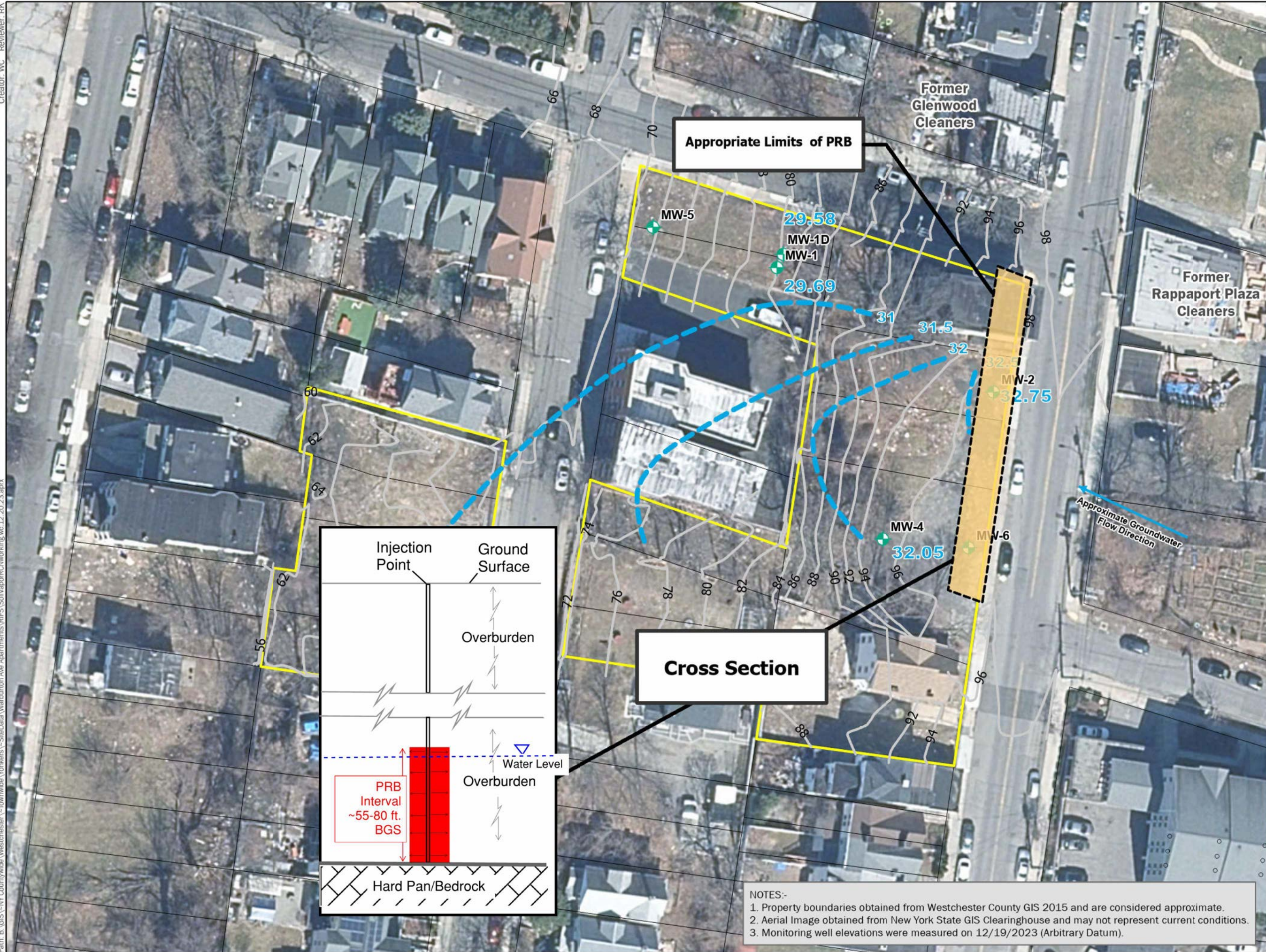
Path: B:\GIS\NY Countywide\Westchester\Townwide\Yonkers\SiteData\Warburton Ave Apartments\RRFS\Fig2\_ExtentofExcavation.aprx

**Warburton Avenue  
Apartments, LLC**  
Warburton Dry Cleaners Site  
City of Yonkers,  
Westchester County, NY

Remedial Action Work Plan



- Site Boundary
- Monitoring Well Location
- Topographic Elevation Contour Line
- Approximate Groundwater Contour Line



**Appropriate Limits of PRB**

**Cross Section**

- NOTES:-
1. Property boundaries obtained from Westchester County GIS 2015 and are considered approximate.
  2. Aerial Image obtained from New York State GIS Clearinghouse and may not represent current conditions.
  3. Monitoring well elevations were measured on 12/19/2023 (Arbitrary Datum).

**Groundwater Remedy  
Proposed Permeable Reactive  
Barrier**

**FIGURE 3**