

# DECISION DOCUMENT

---

Busy Bee Cleaners  
Voluntary Cleanup Program  
Merrick, Nassau County  
Site No. V00376  
October 2012



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

# **DECLARATION STATEMENT - DECISION DOCUMENT**

---

Busy Bee Cleaners  
Voluntary Cleanup Program  
Merrick, Nassau County  
Site No. V00376  
October 2012

## **Statement of Purpose and Basis**

This document presents the remedy for the Busy Bee Cleaners site, a voluntary cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and applicable guidance.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Busy Bee Cleaners site and the public's input to the proposed remedy presented by the Department.

## **Description of Selected Remedy**

The elements of the remedy are as follows:

### 1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, 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 gas 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. Air Sparge/SVE

Air sparging is an in-situ technology used to treat groundwater contaminated with volatile organic compounds (VOCs). The process physically removes contaminants from the groundwater by injecting air into a well that has been installed into the groundwater. As the injected air rises through the groundwater it volatilizes the VOCs from the groundwater into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system is used to remove the injected air. The SVE system pulls a vacuum on wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The SVE system will also draw air through the soil matrix which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then run through activated carbon (or other air treatment as applicable) which removes VOCs from the air before it is discharged to the atmosphere.

At this site, air injection wells will be installed into shallow and deep intervals of the on-site plume to depths of approximately 16 ft. and 46 ft. deep, which is 10 feet and 40 feet below the water table. To capture the volatilized contaminants, 4 SVE wells will be installed in the vadose zone to a depth of approximately 6 ft. below ground surface. The air containing VOCs extracted from the SVE wells will be treated with activated carbon (or other air treatment as applicable).

## 3. In-Situ Chemical Oxidation

In-situ chemical oxidation is a technology used to treat chlorinated ethene compounds (a type of volatile organic compound) in the soil and groundwater. The process injects a chemical oxidant into the subsurface via injection wells or an infiltration gallery. The method of injection and depth of injection is determined by location of the contamination. As the chemical oxidant comes into contact with the contaminant, an oxidation reaction occurs that breaks down the contaminant into relatively benign compounds such as carbon dioxide and water. Several chemical oxidants are commercially available. For the purpose of this discussion Potassium Permanganate will be the chemical oxidant evaluated. At this site, the chemical oxidant will be applied through 6 off-site injection wells screened from 40 to 45 feet to target the VOCs, primarily PCE and its degradation products TCE, and DCE.

## 4. Institutional Control

Imposition of an institutional control in the form of a deed restriction 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 DER 10;
- allows the use and development of the controlled property for commercial use as defined by DER 10, 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 County DOH;
- prohibits agriculture or vegetable gardens on the controlled property; and
- requires compliance with the Department approved Site Management Plan.

## 5. 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: Imposition of an institutional control in the form of a deed restriction that restricts land use and groundwater use as discussed above.

Engineering Controls: Air Sparging along with Soil Vapor Extraction and In-Situ Chemical Oxidation will be utilized to remediate the Site. The proposed remedy will treat impacted groundwater on-site and will achieve mass reduction of volatile organic compounds in on-site and off-site groundwater to the extent practicable as discussed 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 use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion if use of PCE in the on-site building is discontinued 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;
- monitoring for vapor intrusion for any buildings 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, 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;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

**Declaration**

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

---

Date

---

James Harrington, Director  
Remedial Bureau A

# DECISION DOCUMENT

Busy Bee Cleaners  
Merrick, Nassau County  
Site No. V00376  
October 2012

---

## **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 Voluntary Cleanup Program (VCP) is a voluntary program. The goal of the VCP is to enhance private sector cleanup of brownfields by enabling parties to remediate sites using private rather than public funds and to reduce the development pressures on "greenfields." 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:

North Merrick Public Library  
Attn: Reference Desk  
1691 Meadowbrook Road  
North Merrick, NY 11566  
Phone: (516) 378-7474

New York State Department of Environmental Conservation  
Attn: Mr. Bill Fonda  
50 Circle Road  
Stony Brook, NY 11790-2356  
Phone: (631) 444-0350

## **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:** Busy Bee Dry Cleaners is located in a suburban portion of Nassau County, NY. The site is located in Merrick on Merrick Road between Montauk Ave and Beach Drive.

**Site Features:** The main site feature is the existing one-story building that is currently used for dry cleaning operations. The building is surrounded by parking areas and has an access road on the west side.

**Current Zoning/Use:** The site is zoned commercial and is located in the commercial corridor along Merrick Road. A residential neighborhood is located directly south of the Site.

**Historic Use:** Historic use as a dry cleaning facility and releases of dry cleaning wastes (tetrachloroethylene - PCE) have caused soil, soil vapor, and groundwater contamination at the Site. A soil vapor extraction system was installed in August 1994 and operated through April 1996.

**Site Geology and Hydrogeology:** Site contamination has impacted the groundwater of the Upper Glacial Aquifer. Groundwater is approximately 5 ft below the ground surface on-site and it flows in a south-southeast direction. The geology of the Site consists of sand with minor amounts of fines from grade down to 47 feet. A clay-confining unit was identified at approximately 47 feet below land surface.

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, at a minimum, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in DER-10, Technical Guidance for Site Investigation and Remediation were/was evaluated.

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 voluntary cleanup agreement is with a responsible party. The agreement requires the party to address on-site and off-site contamination. Accordingly, no 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
- 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:

TETRACHLOROETHYLENE (PCE)      DICHLOROETHYLENE  
TRICHLOROETHENE (TCE)

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

- groundwater

### **6.2: Interim Remedial Measures**

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

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

### **6.3: Summary of Environmental Assessment**

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

Nature and Extent of Contamination: Based upon investigations conducted to date, the primary contaminants of concern are PCE and its breakdown products TCE and DCE. Results indicate contaminated groundwater exists on-site and off-site with results exceeding standards, criteria and guidance (SCGs).

Groundwater

Contaminants Detected: Based upon investigations conducted to date, PCE and its breakdown products TCE and DCE have impacted the groundwater in excess of SCGs.

Areal/depth extent of contamination: The groundwater plume appears to emanate from the rear parking area of the Busy Bee site. Groundwater contamination is present from the top of the water table down to approximately 47 ft deep where it is bounded by a confining clay layer. The groundwater plume has migrated off-site with the flow of groundwater to the south-southeast.

Contaminant Concentrations: The maximum groundwater concentrations were found in on-site shallow groundwater; PCE 9,800 ug/l, TCE 1,200 ug/l and DCE 3,300 ug/l. The deep on-site groundwater contained higher TCE. Wells screened at 45 ft bgs reported PCE 5,800 ug/l, TCE 16,000 ug/l and DCE 2,700 ug/l. The off-site groundwater maximum concentrations were PCE 1,700 ug/l, TCE 15,000 ug/l and DCE 6,300 ug/l.

#### Soil

Prior venting remedial efforts have reduced soil concentrations at the site. Recent results are below SCGs.

#### Soil Vapor

PCE was detected in soil vapor under the rear parking area. These results led to additional sub-slab, crawl space and indoor air analysis in off-site structures. Concentrations of COCs present in the sub-slab soil vapor samples collected from off-site structures do not represent a soil vapor intrusion concern. Therefore, no further action was recommended for the off-site structures sampled.

### **6.4: Summary of Human Exposure Pathways**

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

People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Access to the site is partially restricted, however, contact with contaminated groundwater is unlikely unless people dig below the ground surface. 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 any future on-site development or if the site use changes. 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.
- Remove the source of ground or surface water contamination.

## **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.

The selected remedy is referred to as the On-site Air Sparge/Soil Vapor Extraction and Off-site In-Situ Chemical Oxidation 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, 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 gas 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. Air Sparge/SVE

Air sparging is an in-situ technology used to treat groundwater contaminated with volatile organic compounds (VOCs). The process physically removes contaminants from the groundwater by injecting air into a well that has been installed into the groundwater. As the injected air rises through the groundwater it volatilizes the VOCs from the groundwater into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system is used to remove the injected air. The SVE system pulls a vacuum on wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The SVE system will also draw air through the soil matrix which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then run through activated carbon (or other air treatment as applicable) which removes VOCs from the air before it is discharged to the atmosphere.

At this site, air injection wells will be installed into shallow and deep intervals of the on-site plume to depths of approximately 16 ft. and 46 ft. deep, which is 10 feet and 40 feet below the water table. To capture the volatilized contaminants, 4 SVE wells will be installed in the vadose zone to a depth of approximately 6 ft. below ground surface. The air containing VOCs extracted from the SVE wells will be treated with activated carbon (or other air treatment as applicable).

## 3. In-Situ Chemical Oxidation

In-situ chemical oxidation is a technology used to treat chlorinated ethene compounds (a type of volatile organic compound) in the soil and groundwater. The process injects a chemical oxidant into the subsurface via injection wells or an infiltration gallery. The method of injection and depth of injection is determined by location of the contamination. As the chemical oxidant comes into contact with the contaminant, an oxidation reaction occurs that breaks down the contaminant into relatively benign compounds such as carbon dioxide and water. Several chemical oxidants are commercially available. For the purpose of this discussion Potassium Permanganate will be the chemical oxidant evaluated. At this site, the chemical oxidant will be applied through 6 off-site injection wells screened from 40 to 45 feet to target the VOCs, primarily PCE and its degradation products TCE, and DCE.

## 4. Institutional Control

Imposition of an institutional control in the form of a deed restriction 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 DER 10;
- allows the use and development of the controlled property for commercial use as defined by DER 10, 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 County DOH;
- prohibits agriculture or vegetable gardens on the controlled property; and
- requires compliance with the Department approved Site Management Plan.

## 5. 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: Imposition of an institutional control in the form of a deed restriction that restricts land use and groundwater use as discussed above.

Engineering Controls: Air Sparging along with Soil Vapor Extraction and In-Situ Chemical Oxidation will be utilized to remediate the Site. The proposed remedy will treat impacted groundwater on-site and will achieve mass reduction of volatile organic compounds in on-site and off-site groundwater to the extent practicable as discussed above.

This plan includes, but may not be limited to:

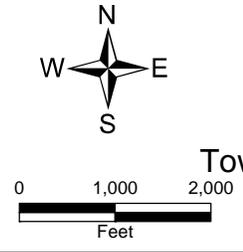
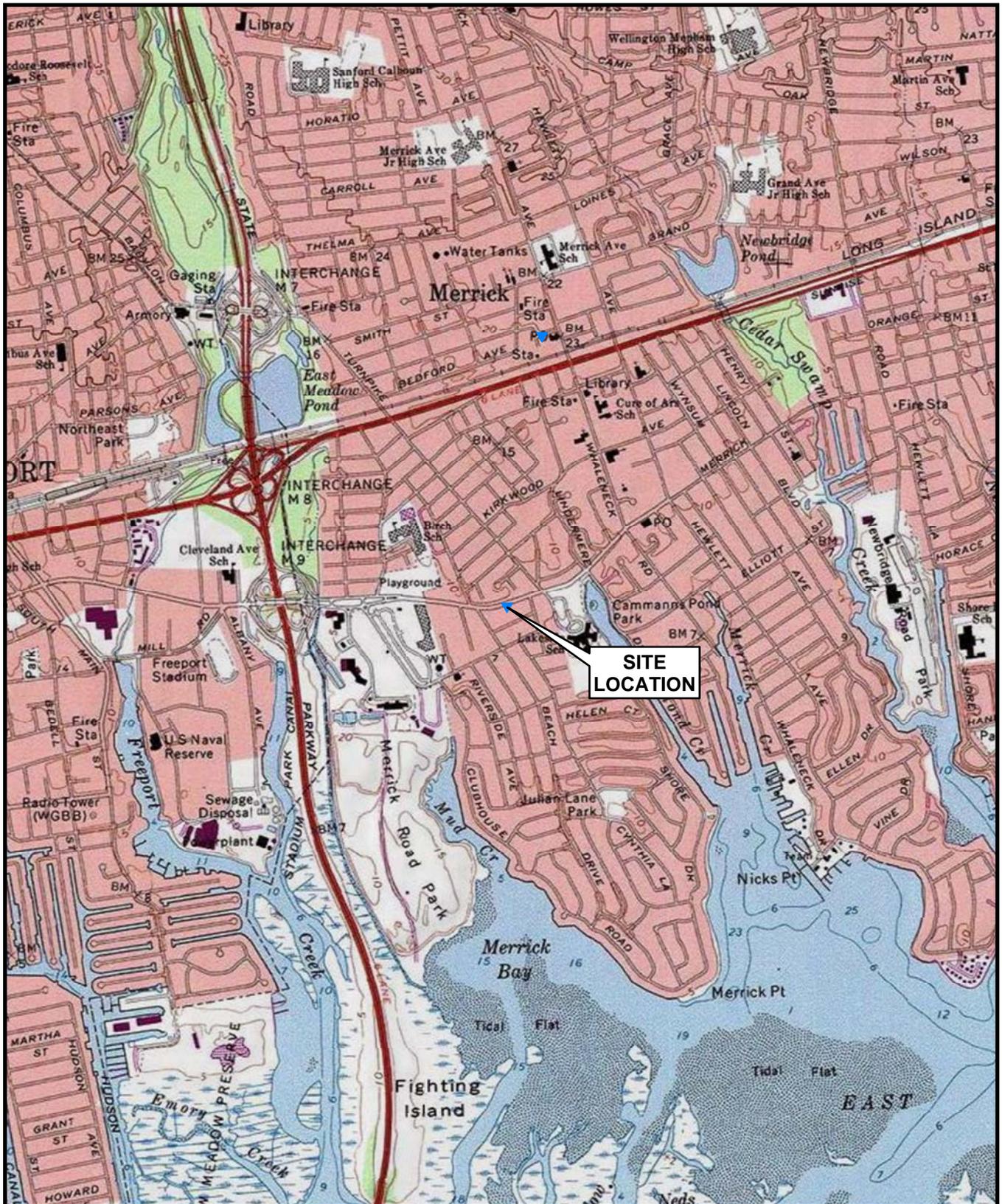
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion if use of PCE in the on-site building is discontinued 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;
- monitoring for vapor intrusion for any buildings occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

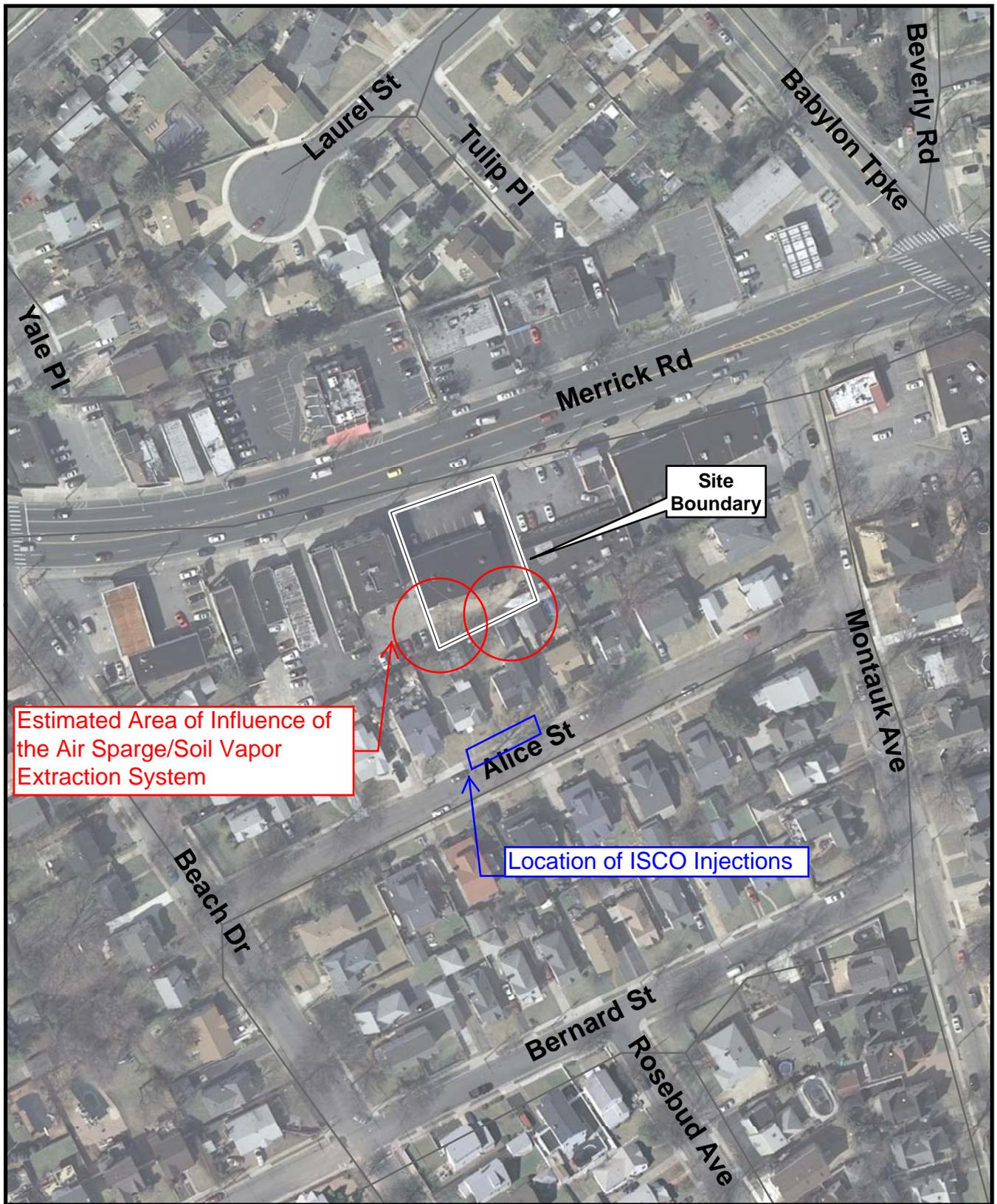
c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

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



**Figure 1**  
 Site Location Map  
 Busy Bee Cleaners  
 Town of Hempstead, Nassau County  
 Site No. V00376

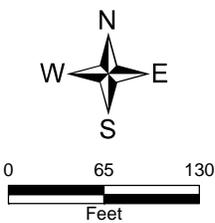




Estimated Area of Influence of the Air Sparge/Soil Vapor Extraction System

Site Boundary

Location of ISCO Injections



**Figure 2**  
 Elements of the Proposed Remedy  
 Busy Bee Cleaners  
 Town of Hempstead, Nassau County  
 Site No. V00376

