

PROPOSED DECISION DOCUMENT

388 Bridge Street
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224134
June 2012



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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing 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 proposed by this Proposed Decision Document (PDD). The disposal or release of contaminants at this site, as more fully described in Section 6 of 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 Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all Proposed Decision Documents. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

Brooklyn Central Library
10 Grand Army Plaza
Brooklyn, NY 11238
Phone: 718-230-2792

A public comment period has been set from:

6/28/2012 to 8/12/2012

Written comments may be sent through 7/23/2012 to:

Michael MacCabe
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
mdmaccab@gw.dec.state.ny.us

The proposed remedy may be modified based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein.

Receive Site Citizen Participation Information By Email

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

SECTION 3: SITE DESCRIPTION AND HISTORY

Location:

The 388 Bridge Street site consists of two lots situated between Willoughby and Fulton Streets. Lot 118 occupies 141 to 145 Lawrence St. and Lot 37 occupies 384 to 388 Bridge St.

Current Zoning and Uses:

The site is located in a mixed use commercial / residential area of Brooklyn. Historically, the site has been used for both residential and commercial purposes and will continue to be used for similar purposes once redeveloped. The site is zoned RM (Mixed Residential and Commercial Building (Mixed Residential and Commercial Condo Building Classification Codes)).

Site Features:

On-site structures were demolished and the entire footprint of the site was excavated to a depth of up to 25 feet below surface grade (bsg) in preparation for redevelopment. The site was temporarily backfilled under the direction of the NYC building department to ensure the stability of adjacent structures. Prior to redevelopment, the temporary fill will be excavated down to 25 feet bsg.

Historical Use:

One of the former commercial operations on the site was a dry cleaner in the northeast corner of the site. Site investigations indicate that improper handling and disposal of the dry cleaning

solvent, tetrachloroethene (PCE), resulted in soil, groundwater and soil vapor impacts from PCE and its breakdown products.

Site Geology and Hydrogeology:

The site has been excavated to a depth of up to 25 feet bsg. Below the excavation, brown, medium- to coarse-grained sand intermixed with some gravel is present to a depth of 42 feet bsg. Below that, the glacial till stratum extends to 100 feet bsg and is underlain by highly consolidated Gardiner's clay.

The groundwater table is approximately 43 to 45 feet bsg. Due to regional topography and the nearby presence of the East River, the local groundwater flow was assumed to be to the south/southwest toward New York Harbor. However, groundwater at the site has been determined to be flowing to the northeast. This localized groundwater flow direction may be influenced by the subway tunnels located north and southwest of the site and pumping operations at a Metropolitan Transportation Authority (MTA) de-watering station located within 1.5 miles northeast of the Site.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, an alternative that restricts 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) is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation 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 Remedial Investigation (RI) Report.

SECTION 5: ENFORCEMENT STATUS

One or more of the Applicants under the Brownfield Cleanup Agreement is a Participant. The Participant(s) has/have an obligation 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

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 contaminants of concern identified at this site is/are:

tetrachloroethene (PCE)
trichloroethene (TCE)

cis-1,2-dichloroethene (DCE)

The contaminants of concern exceed the applicable SCGs for:

- groundwater

- soil vapor
- indoor air

6.2: Interim Remedial Measures

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

The following IRMs has been completed at this site based on conditions observed during the RI.

Off-Site Vapor Intrusion Mitigation System

A sub-slab depressurization system has been installed and is operating in an adjacent building near the site.

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:

Contamination associated with the site is the dry cleaning solvent tetrachloroethene (PCE) and its breakdown products trichloroethene (TCE) and dichloroethene (DCE).

Prior to the site entering the Brownfield Cleanup Program (BCP), the entire site was excavated to a depth of up to 25 feet below grade (street level) for site redevelopment. Soil sampling conducted during the BCP remedial investigation found no PCE contamination remaining in on-site soil.

The data indicate that the on-site source was removed during the initial excavation. Contamination is now limited to groundwater and soil vapor. With the source removed, groundwater contaminant concentrations have been declining over the course of the BCP project. However, as discussed below, contamination in soil vapor immediately adjacent to the site remains elevated.

PCE concentrations are generally decreasing in on-site and off-site groundwater. PCE in a down gradient off-site monitoring well decreased from 988 ppb in November 2008 to 117 ppb in July 2010. The highest on-site PCE contamination detected was 585 ppb in MW-1 in November 2008. However, the PCE concentration in MW-1 in July 2011 was 30.2 ppb. One on-site well (MW-5) has shown an increasing trend of PCE concentration up to maximum of 20.2 ppb in July 2011.

Significant soil vapor impacts remain present on-site and off-site. The highest on-site PCE concentration in soil vapor was 213,000 micrograms/cubic meter.

Site-related contaminants were observed in indoor air in an adjacent building; a sub-slab depressurization system was installed in that adjacent building, as discussed above in Section 6.2.

The site presents a significant threat to public health due to the presence of elevated concentrations of PCE, TCE and DCE in on and off-site soil vapor.

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*.

Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. A combination of mitigation measures have been installed at an adjacent property to prevent vapors beneath the slab from entering the building. Environmental sampling has identified soil vapor contamination that is not related to the site. A separate investigation to determine the source or sources of the contamination is on-going.

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 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 PROPOSED REMEDY

The alternatives developed for the site and 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 remedy proposed is a Track 2: Restricted use with generic soil cleanup objectives remedy.

The proposed remedy is referred to as the on-site soil vapor extraction and vapor mitigation system remedy.

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

Remedial Design

1. 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. Soil Vapor Extraction

Soil vapor extraction (SVE) is an in-situ technology used to treat volatile organic compounds (VOCs) in soil. The process physically removes contaminants from the soil by applying a vacuum to a SVE well that has been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws 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 an activated carbon treatment canister (or other air treatment process as applicable) to remove the VOCs before the air is discharged to the atmosphere.

As described in the Summary of Environmental Assessment, above, contaminated soils at the site have been removed, groundwater contamination has been declining, but adjacent soil vapor concentrations remain elevated. There is the potential for residual soil contamination to be present in inaccessible soils under an adjacent building. The SVE system will address contaminated vapors, and if present, will address residual contamination in inaccessible soils immediately adjacent to the site. At this site six SVE wells will be installed in the vadose zone and screened from 29 feet below the ground surface to a depth of approximately 39 feet. The air containing VOCs extracted from the SVE wells will be treated using activated carbon.

3. Vapor Mitigation

The SVE system will also act as a sub-slab depressurization system, thereby preventing the migration of vapors into the on-site building from groundwater. It will operate as long as vapor mitigation is necessary at the site.

4. Institutional Controls

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

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for residential, 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 City DOH; 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 engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 4 above.

Engineering Controls: The soil vapor extraction and vapor mitigation system discussed above.

This plan includes, but may not be limited to:

- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- provisions for further evaluation of the potential for soil vapor intrusion for any future 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 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 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;
 - periodic monitoring of off-site soil vapor to assess other possible off-site impacts; and
 - continued groundwater monitoring to evaluate the effectiveness of the remedy; although not anticipated, if this monitoring indicates levels of concern, additional remedial measures may be evaluated to address the situation.
- 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;
 - providing the Department access to the site and O&M records; and
 - the continued operation, maintenance and periodic monitoring of the off-site sub- slab depressurization system (installed as an IRM, as discussed above in Section 6.2) with the same aforementioned notifications and documentation.