

# DECISION DOCUMENT

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CE - Pemart Ave-Peekskill MGP  
Voluntary Cleanup Program  
Peekskill, Westchester County  
Site No. V00566  
August 2014



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

# **DECLARATION STATEMENT - DECISION DOCUMENT**

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CE - Pemart Ave-Peekskill MGP  
Voluntary Cleanup Program  
Peekskill, Westchester County  
Site No. V00566  
August 2014

## **Statement of Purpose and Basis**

This document presents the remedy for the CE - Pemart Ave-Peekskill MGP 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 CE - Pemart Ave-Peekskill MGP site and the public's input to the proposed remedy presented by the Department.

## **Description of Selected Remedy**

For OU: 01

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, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;

- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

## 2. Excavation

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

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil containing SVOCs exceeding 500 ppm; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51, Section G.

Approximately 2,800 cubic yards of MGP impacted soil will be removed from the former holder source areas.

On-site soil which does not exceed the lower of commercial use SCOs or the protection of groundwater SCOs may be used to backfill the excavations and establish the design grades at the site below, the cover system described in remedy paragraph #3.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

## 3. Site Cover

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

The property may not be used for a higher level of use, such as unrestricted or restricted residential use, as defined by Part 375-1.8(g), without additional remediation and amendment of the deed restriction, as approved by the NYSDEC.

## 4. NAPL Recovery

Recovery wells will be installed on OU-1 to collect NAPL for treatment and/or disposal. Periodic NAPL monitoring/recovery will be conducted.

Prior to the full implementation of this technology, studies will be conducted to more clearly define design parameters, including extraction well spacing, well depth and method of collection (passive or active recovery). During the pilot scale implementation, it is estimated that in total eight shallow wells will be installed to extract NAPL for off-site treatment and/or disposal..

## 5. Institutional Controls

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 Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for commercial use and industrial use 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 County DOH;
- requires compliance with the Department approved Site Management Plan

## 6. Site Management Plan

A comprehensive Site Management Plan, addressing on-site and off-site, is required. For OU-1, the Site Management Plan 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 deed restriction discussed in Paragraph 5 above.

Engineering Controls: The soil cover discussed in Paragraph 3 and recovery wells 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;
- descriptions of the provisions of the deed restriction including any land use, and/or groundwater and/or surface water use restrictions;

- 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 and sediment to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department

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

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

For OU: 02

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, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;

- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

## 2. Barrier Wall

A NAPL migration barrier wall will be constructed to prevent the further migration of contamination towards Peekskill Bay. The barrier type will be determined during design but could consist of technologies such as a passive barrier wall, sheet piling or solidified soil. A passive barrier allows the passage of shallow groundwater while preventing the movement of deeper coal tar. The wall will be armored or otherwise protected from degradation due to its proximity to the river.

## 3. Sediment Removal

Sediment that is visually determined to contain coal tar impacts will be removed for off-site disposal. It is expected that approximately 6,600 cubic yards of impacted material, within the 0-5 foot depth interval, will be removed. Sediment removal limits and depths will be more precisely determined during the design phase and will be extended as needed to remove identified visually impacted sediment.

If no further visual tar impacts are present in an area where sediment has been removed to 5 feet below the existing river bed grade, then that area will be backfilled with a suitable backfill material to restore the sediment surface to the pre-existing grades. The top two feet of the backfill will be suitable for aquatic biota habitat. In areas where any deeper impacts remain, no further excavation will be required and an engineered cap will be constructed and the top two feet will be suitable for aquatic biota habitat. All remedial and restoration work will comply with the substantive requirements of ECL Article 15 and 6 NYCRR Part 608. Sediment backfill in the river will meet applicable sediment quality criteria.

## 4. NAPL Recovery

Recovery wells will be installed on shore to collect NAPL for off-site treatment and/or disposal. The wells will be designed to control any release of NAPL during flood conditions and will be protected from action of ice and debris as necessary. Periodic NAPL monitoring and recovery will be conducted.

Prior to the full implementation of this technology, studies will be conducted to define design parameters, including extraction well spacing, well depth and method of collection (passive or active recovery). During the pilot scale implementation, it is estimated that a total of eight shallow wells will be installed to extract NAPL for off-site treatment and/or disposal.

## 5. Site Management Plan

A comprehensive Site Management Plan, addressing on-site and off-site, is required. For OU-2, the Site Management Plan includes the following:

a. an Engineering Control Plan that identifies all use restrictions and engineering controls for the offsite areas and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Engineering Controls: The recovery wells discussed in Paragraph 4, barrier wall in Paragraph 2 and sediment cap in Paragraph 3.

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 deed restriction including any land use, and/or groundwater and/or surface water use restrictions;
  - 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. Details of the monitoring program will be developed during the remedial design. The plan will include, but may not be limited to:
- monitoring of groundwater, pore water in shallow sediment (0" - 6") and sediment to assess the performance and effectiveness of the remedy;
  - restoration monitoring of the Hudson River riverbed and bank areas. Restored areas will be inspected for erosion, settlement and establishment of plantings and seeding. Repairs will be made as necessary and as directed by the Department.
  - a schedule of monitoring and frequency of submittals to the Department

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

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

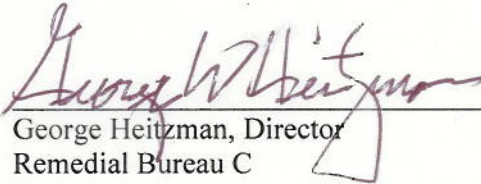
**Declaration**

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

August 15, 2014

George Heitzman, Director  
Remedial Bureau C





# DECISION DOCUMENT

CE - Pemart Ave-Peekskill MGP  
Peekskill, Westchester County  
Site No. V00566  
August 2014

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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 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:

Peekskill Library  
4 Nelson Avenue  
Peekskill, NY 10566  
Phone: (914) 737-1212

NYSDEC Region 3  
21 South Putt Corners Road  
New Paltz, NY 12561  
Phone: (845) 256-3154

### **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 site is a former Manufactured Gas Plant (MGP) located on Pemart Avenue in Peekskill, Westchester County (Figure 1). The site is bounded on the west by the Hudson River and Metro North railroad tracks. Vacant land and US Highway 6 border the site to the north and east. A city park and the Peekskill Landing Environmental Restoration Program (ERP) site are located to the south.

**Site Features:** Several buildings occupy the site including the former electric generating plant building. Remnants of one of the former MGP gas holders are still present on the hillside along the eastern part of the site. The Metro North railroad runs through the site.

**Current Zoning and Land Use:** The Site is located on inland property that is zoned WF-2. This zoning generally allows commercial uses, parks and playgrounds, and restaurants of limited size. A homeless shelter occupies one of the on-site buildings. Also a taxi service operates out of a garage. The remainder of the building space is vacant.

**Past Use of the Site:** The MGP operated from 1899 through 1931, when it was placed into stand-by status for several years prior to closure. The electric generating plant operated from 1905 to 1950. After closure of the MGP, the site operated as a gas storage station until 1966.

**Operable Units:** The site was divided into two operable units. An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

OU-1 is the contaminated area on-site. It consists of the upland area including the railroad tracks and the former MGP and electric generating plant structures.

OU-2 is the area of off-site contamination located west of the railroad tracks. It consists of a contaminated portion of land along the railroad tracks and contamination in the sediments of Peekskill Bay of the Hudson River.

**Site Geology and Hydrogeology:** The geology consists of fill underlain by sands, silt, clay and sediment. The fill unit varies across the site but is generally ten to fifteen feet thick. Below the fill is the silt and clay layer, which is located at various depths ranging from ten to twenty feet deep. There are interbedded layers of sand present in the silt/clay material. Groundwater is located at approximately 3 to 8 feet below ground surface. Groundwater flow is to the west

towards the Hudson River.

Operable Unit (OU) Numbers 01 and 02 are the subject of this document and are shown in Figure 2.

#### **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 Department and Consolidated Edison Company of New York, Inc. (Volunteer) entered into a multi-site Voluntary Cleanup Agreement on August 15th, 2002 (Index Number D2-0003-02-08), which included 45 former MGP sites. The Agreement obligates the responsible party to implement a full remedial program.

On-site and off-site contamination unrelated to the former MGP activities identified during the environmental investigations are being addressed separately by the NYSDEC.

#### **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
- sediment
- 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:

For OU: 01

COAL TAR  
Polycyclic Aromatic Hydrocarbons  
(PAHs), Total  
BENZENE  
ETHYLBENZENE  
TOLUENE  
XYLENE (MIXED)

BENZ(A)ANTHRACENE  
BENZO(A)PYRENE  
BENZO(B)FLUORANTHENE  
Chrysene  
DIBENZ[A,H]ANTHRACENE  
indeno(1,2,3-cd)pyrene

For OU: 02

|                                  |                |
|----------------------------------|----------------|
| COAL TAR                         | ETHYLBENZENE   |
| Polycyclic Aromatic Hydrocarbons | TOLUENE        |
| (PAHs), Total                    | XYLENE (MIXED) |
| BENZENE                          |                |

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

- groundwater
- soil
- sediment

## 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:

For OU 1: On Site Areas

Based upon investigations conducted to date, the primary contaminants of concern include benzene, toluene, ethylbenzene, xylene (BTEX), non-aqueous phase liquid (NAPL), in the form of coal tar and polyaromatic hydrocarbons (PAHs).

Soil – Soil exceeds cleanup goals for MGP related coal tar and PAHs. Areas of subsurface soil in the vicinity of the gas holders are grossly contaminated with coal tar. Significant non-aqueous phase liquid (NAPL) is present in the former holder areas at depths of approximately three to eight feet below ground surface (bgs). Grossly contaminated soil is evident to the west along the top of the silt and clay layer. In addition, PAH exceedances are found in the surface/subsurface soil across the site. The highest concentrations of total PAHs for surface soil samples were detected at 110 parts per million (ppm) of benzo(a)anthracene, 100 ppm of benzo(a)pyrene, 83 ppm of benzo(b)fluoranthene, 110 ppm of chrysene, 16 ppm of dibenzo(a,h)anthracene and 43 ppm of indeno(1,2,3-cd). In addition, total PAHs were detected in subsurface soil above 500 ppm at numerous locations. The highest detection of total PAHs was in the two to three foot interval of a soil boring at 52,630 ppm.

Groundwater - Overburden groundwater quality is impacted with coal tar. Several groundwater monitoring wells were observed to contain MGP related NAPL. The most highly contaminated wells are located downgradient (to the west) of the former gas holders. NAPL has been observed in wells screened at depths ranging from five to twenty feet. The contamination is generally observed in wells screened along the top of the confining silt and clay layer. BTEX compounds were detected in overburden groundwater above their respective groundwater standards. The highest detections of BTEX compounds were in a well located downgradient of the former gas holders screened from 4 - 14 feet below grade. In this well benzene was detected at 51 ppb, ethylbenzene at 560 ppb, toluene at 6.4 ppb and xylene (total) at 100 ppb. The standards are 5 parts per billion (ppb) for each compound except benzene which has a standard of 1 ppb. In general, BTEX was detected in areas where coal tar was observed. Wells which contained NAPL or sheen were not sampled.

Soil Vapor - Sub-slab and indoor air samples were collected from both on-site and off-site buildings during the heating season. In addition, five soil vapor samples were collected on-site. Some volatile organic compounds were detected in indoor air at both the on- and off-site sample locations, but at or below typical background concentrations. Upon comparison to corresponding sub-slab soil vapor concentrations and products used and stored within the buildings, it appears the indoor air detections are related to current or past operations within the buildings. Several chlorinated volatile organic compounds, not related to historic MGP operations, were detected at elevated concentrations in both on- and off-site sub-slab soil vapor samples. 1,1,1-trichloroethane (1,1,1-TCA), tetrachloroethene (PCE), and trichloroethene (TCE) were detected in on-site sub-slab soil vapor at concentrations as high as 50, 110, and 4,400 micrograms per cubic meter (mcg/m<sup>3</sup>), respectively. PCE was detected as high as 130 mcg/m<sup>3</sup> in sub-slab soil vapor at the off-site location. PCE and TCE were also detected in the on-site soil vapor samples as high as 1,000 mcg/m<sup>3</sup> and 170,000 mcg/m<sup>3</sup>, respectively.

Sampling indicates that exposure to site-related MGP contamination from soil vapor intrusion is not a concern for the site. However, exposure to volatile organic compounds unrelated to the former MGP facility through the soil vapor intrusion pathway represents a concern for one on-site building and exposure to non-MGP related volatile organic compounds represents a potential concern for one off-site building. The Volunteer, in accordance with the Voluntary Cleanup Agreement, is not responsible for remediation of non-MGP related contamination. The owners of affected properties have been notified where mitigation or monitoring of impacts to indoor air is required.

#### For OU 2: Off Site Areas

Based upon investigations conducted to date, the primary contaminants of concern include benzene, toluene, ethylbenzene, xylene (BTEX), non-aqueous phase liquid (NAPL) in the form of coal tar, and polyaromatic hydrocarbons (PAHs).

Soil - Off-site soil exceeds cleanup goals for MGP related coal tar and PAHs. Off-site areas of subsurface soil downgradient of the former gas holder are grossly contaminated with coal tar. The grossly contaminated soil is the result of coal tar migration to the west from the site along

the top of the silt and clay layer and is generally present at depths of approximately 20 to 25 feet in this area. In addition, PAH exceedances were found in the subsurface soil at concentrations above 500 ppm. The highest detection of PAHs was in the 17 to 19 foot interval of a soil boring at 2,034 ppm.

Groundwater - Several off-site groundwater monitoring wells were observed to contain MGP related NAPL. The most highly contaminated wells are located downgradient of the former gas holders. NAPL was observed in these wells at depths of approximately 20 to 25 feet below ground surface (bgs). NAPL is generally observed in wells screened along the top of the confining silt and clay layer. BTEX compounds were only detected in wells located in OU-2, which contained NAPL or sheens.

Sediment - Coal tar was observed in several sediment borings at depths ranging from five to ten feet below the riverbed in the impacted portion of the Hudson River. The contamination has migrated beneath the river along the top of the confining silt/clay layer and surface sediments. PAHs were also detected in sediment. The highest detection of PAHs was 117,362 ppm in a sediment sample from the 0.5 to 2 foot interval.

The sediment investigation indicated that PAH contamination is coincident with visual contamination.

Soil Vapor - There are no structures on OU-2 and thus no sampling was performed.

Special resources impacted/threatened: During the RI, a Fish and Wildlife Impact Assessment (FWIA) was completed. The FWIA documented that contamination has migrated into the nearby Hudson River sediments and is likely impacting the habitat in the river.

#### **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*.

Contact with contaminated soil or groundwater is unlikely unless an individual digs below the ground surface. Contaminated groundwater at the site is not used for drinking or other purposes and the surrounding community is served by a public water supply that obtains water from a distant source. People may come in contact with contaminants present in sediments while entering and exiting the river during recreational activities. Volatile organic compounds in the groundwater 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. Soil vapor intrusion sampling identified impacts beneath one on-site building but none in the indoor air. Therefore, inhalation of site contaminants in indoor air due to soil vapor intrusion does not represent a current concern. The potential, however, exists for the inhalation of non-MGP related contaminants due to soil vapor intrusion for any future on-site

redevelopment. Sampling indicates a similar soil vapor intrusion concern for one off-site building.

## **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:

For OU 01:

### **Groundwater**

#### **RAOs for Public Health Protection**

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

#### **RAOs for Environmental Protection**

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

### **Soil**

#### **RAOs for Public Health Protection**

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

#### **RAOs for Environmental Protection**

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

For OU 02:

### **Groundwater**

#### **RAOs for Public Health Protection**

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

#### **RAOs for Environmental Protection**



- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

## **Soil**

### **RAOs for Public Health Protection**

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

### **RAOs for Environmental Protection**

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

## **Sediment**

### **RAOs for Public Health Protection**

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination which may result in fish advisories.

### **RAOs for Environmental Protection**

- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria).
- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
- Restore sediments to pre-release/background conditions to the extent feasible.

## **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.

For OU 01: On site, the selected remedy is referred to as the Excavation, NAPL Recovery, Cover and IC/ECs remedy.

The elements of the selected remedy, as shown in Figure 3, for OU: 01 are as follows:

### **1. Remedial Design**

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

## 2. Excavation

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

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil containing SVOCs exceeding 500 ppm; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51, Section G.

Approximately 2,800 cubic yards of MGP impacted soil will be removed from the former holder source areas.

On-site soil which does not exceed the lower of commercial use SCOs or the protection of groundwater SCOs may be used to backfill the excavations and establish the design grades at the site below, the cover system described in remedy paragraph #3.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

## 3. Site Cover

A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable

commercial use soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

The property may not be used for a higher level of use, such as unrestricted or restricted residential use, as defined by Part 375-1.8(g), without additional remediation and amendment of the deed restriction, as approved by the NYSDEC.

#### 4. NAPL Recovery

Recovery wells will be installed on OU-1 to collect NAPL for treatment and/or disposal. Periodic NAPL monitoring/recovery will be conducted.

Prior to the full implementation of this technology, studies will be conducted to more clearly define design parameters, including extraction well spacing, well depth and method of collection (passive or active recovery). During the pilot scale implementation, it is estimated that in total eight shallow wells will be installed to extract NAPL for off-site treatment and/or disposal..

#### 5. Institutional Controls

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 Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for commercial use and industrial use 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 County DOH;
- requires compliance with the Department approved Site Management Plan

#### 6. Site Management Plan

A comprehensive Site Management Plan, addressing on-site and off-site, is required. For OU-1, the Site Management Plan 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 deed restriction discussed in Paragraph 5 above.

Engineering Controls: The soil cover discussed in Paragraph 3 and recovery wells 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;
- descriptions of the provisions of the deed restriction including any land use, and/or groundwater and/or surface water use restrictions;
- 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 and sediment to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department

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

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

For OU 02: Off site, the selected remedy is referred to as the Migration Barrier and Sediment Capping remedy.

The elements of the selected remedy, as shown in Figure 2, for OU: 02 are as follows:

## 1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

## 2. Barrier Wall

A NAPL migration barrier wall will be constructed to prevent the further migration of contamination towards Peekskill Bay. The barrier type will be determined during design but could consist of technologies such as a passive barrier wall, sheet piling or solidified soil. A passive barrier allows the passage of shallow groundwater while preventing the movement of deeper coal tar. The wall will be armored or otherwise protected from degradation due to its proximity to the river.

## 3. Sediment Removal

Sediment that is visually determined to contain coal tar impacts will be removed for off-site disposal. It is expected that approximately 6,600 cubic yards of impacted material, within the 0-5 foot depth interval, will be removed. Sediment removal limits and depths will be more precisely determined during the design phase and will be extended as needed to remove identified visually impacted sediment.

If no further visual tar impacts are present in an area where sediment has been removed to 5 feet below the existing river bed grade, then that area will be backfilled with a suitable backfill material to restore the sediment surface to the pre-existing grades. The top two feet of the

backfill will be suitable for aquatic biota habitat. In areas where any deeper impacts remain, no further excavation will be required and an engineered cap will be constructed and the top two feet will be suitable for aquatic biota habitat. All remedial and restoration work will comply with the substantive requirements of ECL Article 15 and 6 NYCRR Part 608. Sediment backfill in the river will meet applicable sediment quality criteria.

#### 4. NAPL Recovery

Recovery wells will be installed on shore to collect NAPL for off-site treatment and/or disposal. The wells will be designed to control any release of NAPL during flood conditions and will be protected from action of ice and debris as necessary. Periodic NAPL monitoring and recovery will be conducted.

Prior to the full implementation of this technology, studies will be conducted to define design parameters, including extraction well spacing, well depth and method of collection (passive or active recovery). During the pilot scale implementation, it is estimated that a total of eight shallow wells will be installed to extract NAPL for off-site treatment and/or disposal.

#### 5. Site Management Plan

A comprehensive Site Management Plan, addressing on-site and off-site, is required. For OU-2, the Site Management Plan includes the following:

a. an Engineering Control Plan that identifies all use restrictions and engineering controls for the offsite areas and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Engineering Controls: The recovery wells discussed in Paragraph 4, barrier wall in Paragraph 3 and sediment cap in Paragraph 3.

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 deed restriction including any land use, and/or groundwater and/or surface water use restrictions;
- 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. Details of the monitoring program will be developed during the remedial design. The plan will include, but may not be limited to:

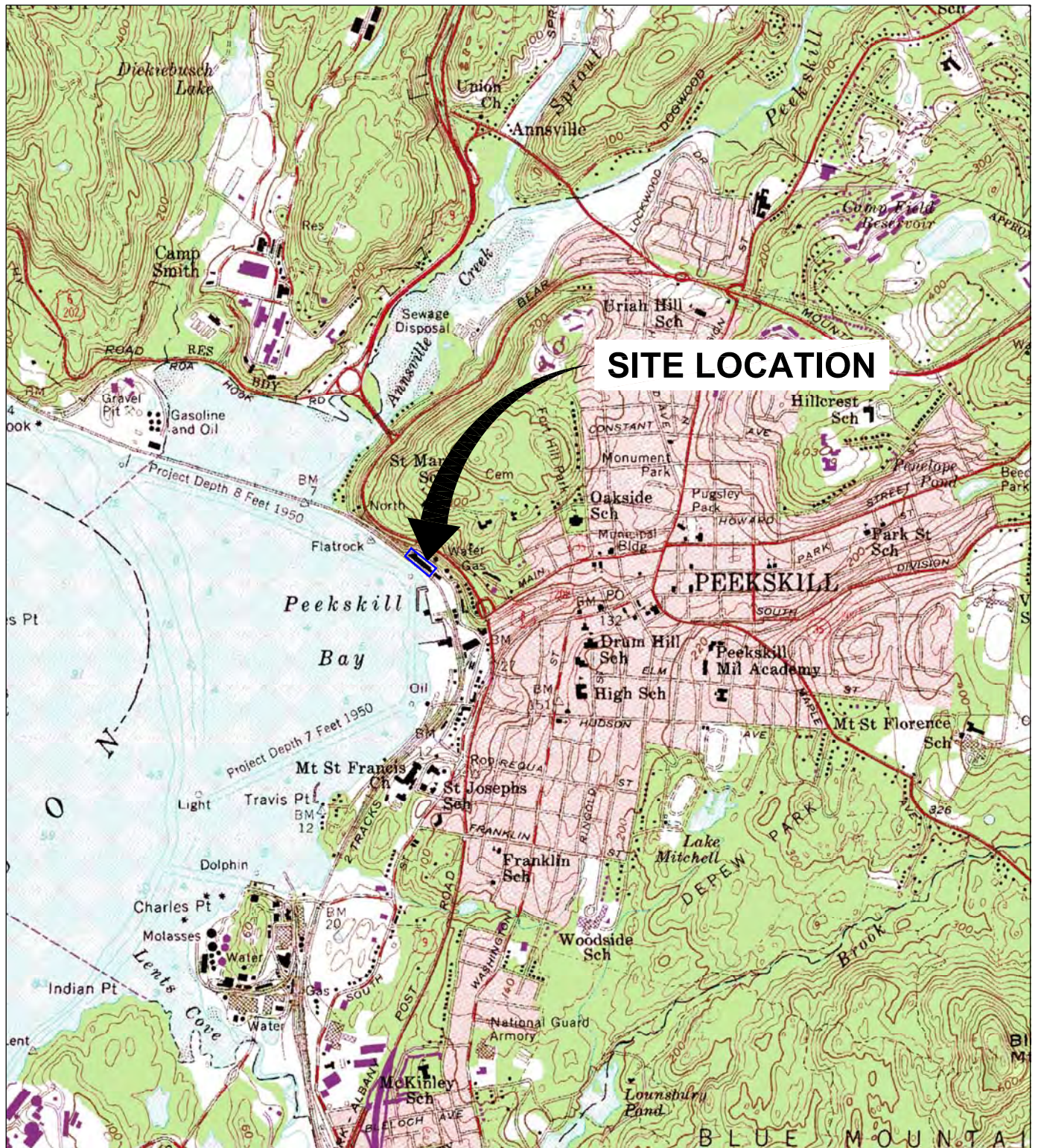
- monitoring of groundwater, pore water in shallow sediment (0" - 6") and sediment to assess the performance and effectiveness of the remedy;
- restoration monitoring of the Hudson River riverbed and bank areas. Restored areas will be inspected for erosion, settlement and establishment of plantings and seeding. Repairs will be made as necessary and as directed by the Department.
- a schedule of monitoring and frequency of submittals to the Department

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

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

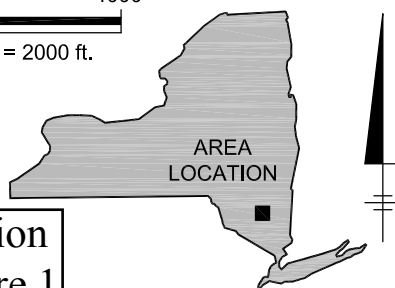


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 XREFS: IMAGES: PROJECTNAME: -- NY\_Peekskill.dwg



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., PEEKSKILL, NEW YORK, 1957, PHOTOREVISED 1981.

0 2000' 4000'  
 Approximate Scale: 1 in. = 2000 ft.



Proposed Decision  
 Document Figure 1

NEW YORK

CON EDISON  
 FORMER PEMART AVENUE WORKS MGP  
 PEEKSKILL, NEW YORK  
**FEASIBILITY STUDY REPORT**

**SITE LOCATION MAP**



FIGURE

**1**







