

BT Red Hook, LLC

## **COMMUNITY AIR MONITORING PLAN**

Red Hook 3 Site No. C224213

68 and 100 Ferris Street/242 and 300 Coffey Street  
Borough of Brooklyn, Kings County, New York

and

Red Hook 4 Site No. C224214

44 and 62 Ferris Street/219 Sullivan Street  
Borough of Brooklyn, Kings County, New York

August 2019

Revised September 2019

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# COMMUNITY AIR MONITORING PLAN

Red Hook 3  
Site No. C224213

and

Red Hook 4  
Site No. C224214

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- Appendix B Fugitive Dust and Particulate Monitoring (Appendix 1B of DER-10)

## ACRONYMS AND ABBREVIATIONS

AMSL	above mean sea level
Arcadis	Arcadis of New York, Inc.
ASTM	ASTM International
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CAMP	Community Air Monitoring Plan
COC	constituent of concern
IRM	interim remedial measure
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	polycyclic aromatic hydrocarbon
PM <sub>10</sub>	particulate matter less than 10 micrometers in diameter
ppm	parts per million
Site	Red Hook 3 (Site No. C224213) and Red Hook 4 (Site No. C224214)
TWA	time-weighted average
VOC	volatile organic compound
µg/m <sup>3</sup>	micrograms per cubic meter

## COMMUNITY AIR MONITORING PLAN

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# 1 INTRODUCTION

## 1.1 General

This Community Air Monitoring Plan (CAMP) has been prepared by Arcadis of New York, Inc. (Arcadis), on behalf of BT Red Hook, LLC for the Interim Remedial Measures (IRMs) to be implemented at the Red Hook 3 (RH3) and Red Hook 4 (RH4) sites (hereinafter, the “Site”). The Site is subject to the New York State Department of Environmental Conservation’s (NYSDEC’s) Brownfield Cleanup Program (BCP), as described further below:

**RH3 (NYSDEC Brownfield Site No. C224213):** RH3 is located at 68 and 100 Ferris Street/242 and 300 Coffey Street in Brooklyn, New York (**Figure 1**, which includes block and lot boundaries). The RH3 Site is subject to a Brownfield Cleanup Agreement (BCA) among Red Hook Industrial Center, LLC (the most recent previous site owner and Volunteer in the Brownfield Cleanup Program [BCP]); BT Red Hook, LLC (site owner as of December 19, 2018); and NYSDEC. RH3 was entered into the BCP in August 2015 via an agreement between Red Hook 212, LLC (owner prior to Red Hook Industrial Center, LLC); and NYSDEC.

**RH4 (NYSDEC Brownfield Site No. C224214):** RH4 is located at 44 and 62 Ferris Street/219 Sullivan Street in Brooklyn, New York (**Figure 1**, which includes block and lot boundaries). The RH4 Site is subject to a BCA among Red Hook Industrial Center, LLC (the most recent previous site owner and Volunteer in the Brownfield Cleanup Program [BCP]); BT Red Hook, LLC (site owner as of December 19, 2018); and NYSDEC. RH4 was entered into the BCP in August 2015 via an agreement between Kenmare E4, LLC (owner prior to Red Hook Industrial Center, LLC); and NYSDEC.

As described in the Remedial Design (Arcadis 2019) Specification Section 01 11 00 (Summary of Work), the remedial construction activities will generally include the following:

- Site preparation.
- Excavation of non-aqueous phase liquid- (NAPL-) impacted soil from discrete remedial excavation areas as outlined in the Remedial Design.
- Backfilling remedial excavation areas.
- Removal of excavation and construction waste from the Site and disposal at appropriate facilities in accordance with Laws and Regulations.
- On-site treatment of construction wastewater from the Site prior to discharge to Buttermilk Channel in accordance with Laws and Regulations.
- Demobilization.

This CAMP fulfills the general requirements set forth in Appendices 1A and 1B of NYSDEC’s *Technical Guidance for Site Investigation and Remediation* (DER-10; NYSDEC 2010). Appendix 1A of DER-10, which is provided in Appendix A of this CAMP, includes general guidance and protocols for the preparation and implementation of a CAMP. Appendix 1B of DER-10, which is provided in Appendix B of this CAMP, supplements the contents of Appendix 1A and includes additional requirements for fugitive dust/particulate monitoring.

## 1.2 Site Location and Description

### RH3:

The RH3 Site is an approximately 9.1-acre paved, irregularly L-shaped parcel located within a mixed industrial, commercial, and residential area in an urban setting. The RH3 Site is zoned for manufacturing as M2-1, which allows manufacturing and certain commercial uses. RH3 consists of four adjoining parcels (**Figure 1**) bounded to the northeast by Wolcott Street (approximately 750-foot frontage) with NYSDEC Brownfield Site C224214 beyond (RH4 Site); to the southeast by Ferris Street (approximately 250-foot frontage) with NYSDEC Brownfield Site C224256 across Ferris Street (145-65 Wolcott Street Site); to the south and southwest by Dikeman Street; and to the west and northwest by Buttermilk Channel (approximately 900-foot frontage). Three buildings are located on RH3 as follows:

- A vacant, three-story, brick warehouse, constructed circa 1920 and occupying a footprint of approximately 100,000 square feet.
- A vacant, single-story, metal-sided warehouse constructed circa 1995 and occupying approximately 50,000 square feet.
- A single-story, masonry-sided building, occupied by U.S. government offices (United States Bureau of Alcohol, Tobacco, Firearms and Explosives and United States Drug Enforcement Administration), occupying approximately 37,000 square feet.

Areas not occupied by buildings are covered with impervious surfaces including pavement, concrete, or asphalt. A steel retaining wall is located along the bulkhead along Buttermilk Channel. Elevation across the RH3 Site ranges from approximately 8 feet above mean sea level (AMSL) at the extreme eastern corner near the intersection of Ferris and Wolcott Streets, to 11 feet AMSL along the retaining wall at the western/northwestern boundary along Buttermilk Channel. Portions of the RH3 Site where buildings do not front the street are enclosed by a 6-foot-high fence with locked gates along Wolcott Street, Dikeman Street and Coffey Street.

### RH4:

The RH4 Site is an approximately 2.29-acre paved, rectangular parcel located within a mixed industrial, commercial, and residential area in an urban setting. The RH4 Site is zoned for manufacturing as M2-1, which allows manufacturing and certain commercial uses. RH4 consists of two adjoining tax parcels bounded to the northeast by Sullivan Street (500-foot frontage), to the southeast by Ferris Street (200-foot frontage), and to the southwest by Wolcott Street (500-foot frontage), with the RH3 Brownfield site (No. C224213) beyond (**Figure 1**). A commercial building adjoins the RH4 Site to the northwest. Elevation across the RH4 Site ranges from approximately 5 feet AMSL at the extreme eastern corner near the intersection of Ferris and Sullivan Streets, to 9 feet AMSL along Wolcott Street on the southwest side of RH4. The RH4 Site was most recently used as a large commercial parking lot for truck, trailer, and car parking. The entire RH4 Site is surrounded by a 6-foot-high fence and locked gates along Wolcott Street and Sullivan Street. There are no buildings or other structures located at the RH4 Site, which is currently vacant.

### 1.3 Objective

Community air monitoring will be performed during the remedial construction activities to provide a measure of protection for the downwind community from: 1) potential airborne releases of Site-related constituents of concern (COCs) – specifically, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) and 2) nuisance Site-related odors. VOCs are more volatile (easily evaporated) than PAHs and, therefore, are generally of greater concern when monitoring air quality during the remediation of the Site. The airborne concentration of respirable dust (particulate matter less than 10 micrometers in diameter [PM<sub>10</sub>]) will also be monitored due to its ability to co-transport Site-related COCs.

### 1.4 Basis of Design

The community air monitoring program has been designed to:

- Establish baseline (pre-remediation) concentrations of Site-related COCs in ambient air before ground-intrusive or dust-generating activities are initiated at the Site;
- Provide an early warning system, through the use of alert levels and automated notifications, so that vapor and dust emissions can be controlled on-site at the source before action levels are exceeded at the downwind perimeter of the Site;
- Measure and document ambient air concentrations of the Site-related COCs at the downwind perimeter of each designated work area when certain activities are in progress for the Site to confirm compliance with the regulatory limits; and
- Evaluate the on-going effectiveness of vapor/dust controls and construction techniques to maintain or reduce airborne concentrations of the Site-related COCs below action levels at the downwind perimeter.

### 1.5 CAMP Organization

The remainder of this CAMP is organized into five sections as follows:

- Section 2 (Odor, Vapor, and Dust Controls), summarizes the odor, vapor, and dust controls that will be employed during the project;
- Section 3 (Alert and Action Levels), summarizes the alert and action levels during real-time monitoring activities;
- Section 4 (Real-Time Air Monitoring and Response Procedures), describes the air monitoring and responses for the community air monitoring program;
- Section 5 (Reporting), summarizes the reporting requirements for the community air monitoring program; and
- Section 6 (References), presents a list of reference documents used in the preparation of this CAMP.

COMMUNITY AIR MONITORING PLAN

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## 2 ODOR, VAPOR, AND DUST CONTROLS

Ground-intrusive and certain non-intrusive construction activities have the potential to generate localized impacts to air quality. Such activities are anticipated to include, but are not limited to, the following:

- Excavating and trenching;
- Handling (including loading and unloading) excavated material and clean fill material;
- Backfilling and grading excavation areas; and
- Cleaning/decontaminating personnel, equipment, and vehicles.

Odor, vapor, and dust emissions resulting from these activities will be controlled using a combination of one or more of the following: 1) water-based, biodegradable vapor mitigation agents – namely, BioSolve Pinkwater and Rusmar AC-645 Long-Duration Foam; 2) construction techniques; 3) site management practices; and 4) temporary enclosures.

A solution of BioSolve Pinkwater and water will be sprayed on exposed soils and excavation faces during active excavation/load-out activities. Rusmar AC-645 Long-Duration Foam will be sprayed on excavated soils and excavation faces to form a thick, viscous vapor barrier before extended work breaks and at the end of each work day. BioSolve Pinkwater and Rusmar AC-645 Long-Duration Foam will be mobilized to the Site before any ground-intrusive or dust-generating activities are initiated and will be maintained on-site in sufficient supply throughout the project. The following construction techniques and site management practices will also be used during the project to control odor, vapor, and dust emissions:

- Excavating and backfilling, and loading, handling, and unloading excavated material and clean fill material, in a manner that minimizes the generation of airborne dust;
- Hauling excavated material and clean fill material in properly covered vehicles;
- Restricting vehicle speeds on temporary access roads and active haul routes;
- Covering shallow excavations and stockpiles of clean fill material with polyethylene liners (anchored appropriately to resist wind forces) before extended work breaks and at the end of each work day;
- Holding to a minimum the areas of bare soil exposed at one time and complying with other applicable erosion and sediment control requirements of Specification Section 01 57 05 (Temporary Controls; Arcadis 2019); and
- Complying with cleaning and dust control requirements of Specification Section 01 55 13 (Temporary Access Roads and Parking Areas; Arcadis 2019) and progress cleaning requirements of Specification Section 01 74 05 (Cleaning; Arcadis 2019).

Temporary enclosures will also be erected above the remedial excavation areas with the exception of Area 3 on RH4 to mitigate odor, vapor, and dust emissions during the excavation, handling, and load-out of NAPL-impacted soils. Each enclosure will be equipped with a negative-pressure air treatment system generally comprising a series of blower (fan) units with particulate filters and activated carbon adsorption vessels. The enclosure will not be placed over Area 3 on RH4 due to the proximity of the excavation to the road (Sullivan Street) and an existing high pressure gas main as detailed in the Remedial Design.

## COMMUNITY AIR MONITORING PLAN

As required by Specification Section 01 57 05 (Temporary Controls; Arcadis 2019), odor, vapor, and dust controls will be proactively employed during the work to: 1) prevent exceedances of the total VOC and PM<sub>10</sub> action levels specified in Section 3 of this CAMP; and 2) mitigate Site-related odor emissions to the extent practicable and to the satisfaction of Arcadis, NYSDEC, and the New York State Department of Health (NYSDOH).

### 3 ALERT AND ACTION LEVELS

Table 1 summarizes the alert and action levels for total VOCs, benzene, PM<sub>10</sub>, and site-related odors.

**Table 1. Community Air Monitoring Alert and Action Levels**

Parameter	Basis of Measurement	Alert Level	Action Level
Total VOCs	15-Minute TWA Concentration	3.75 ppm	5.0 ppm
Benzene	Instantaneous Concentration	0.5 ppm	1.0 ppm
PM <sub>10</sub>	15-Minute TWA Concentration	0.100 mg/m <sup>3</sup>	0.150 mg/m <sup>3</sup>
	Visible Observation	NA	Visible Dust Leaving Site
Site-Related Odors	Intensity <sup>5</sup>	NA	3

**Notes:**

1. mg/m<sup>3</sup>, milligrams per cubic meter.
2. NA, not applicable.
3. ppm, parts per million.
4. TWA, time-weighted average.
5. Odor intensity will be measured on an eight-point n-butanol scale, as adapted from ASTM International (ASTM) E544.

The total VOC and PM<sub>10</sub> alert and action levels for the community air monitoring program are 15-minute time-weighted average (TWA) concentrations and are calculated as the difference between the 15-minute TWA concentrations measured at the upwind and downwind air monitoring stations. Action levels represent the maximum allowable concentrations above which respiratory protection or other engineering controls are required. Alert levels have been established, at concentrations less than the action levels, to provide an early warning to project personnel so that odor, vapor, and dust emissions can be controlled or mitigated before the action levels are exceeded.

Alert and action levels, if exceeded, trigger requirements for increased monitoring, corrective actions to abate emissions, and/or temporary work stoppages. The perimeter air monitoring system described in Section 4.2 of this CAMP will be programmed to immediately notify project personnel via e-mail or text message if alert or action levels are exceeded during the project.

COMMUNITY AIR MONITORING PLAN

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## 4 MONITORING AND RESPONSE PROCEDURES

### 4.1 General

This section describes the monitoring and response procedures for the community air monitoring program. Real-time air monitoring will be conducted at the downwind perimeter of each designated work area during all ground-intrusive or dust-generating construction activities. For the purpose of this CAMP, the “perimeter of the work area” is defined as the limits of the area where ground-intrusive or dust-generating work is being performed, or half the distance to the nearest potential receptor or occupied residential/commercial structure, whichever is less, but in no case less than 20 feet. The frequency of community air monitoring will be relative to the level of Site work activities being conducted, and may be adjusted as the work proceeds and in consideration of the monitoring results.

### 4.2 Perimeter Air Monitoring System

Real-time air monitoring for total VOCs and PM<sub>10</sub> will be performed at each designated work area using a perimeter air monitoring system generally consisting of four portable air monitoring stations and a portable weather station. Each of these components is described in further detail below.

#### 4.2.1 Air Monitoring Stations

Each air monitoring station will contain 1) a portable, data-logging photoionization detector (MiniRAE 3000 by RAE Systems, Inc. or equal) for monitoring the airborne concentration of total VOCs and 2) a portable, data-logging aerosol photometer (DustTrak II Aerosol Monitor Model 8530 by TSI, Inc. or equal) for monitoring the airborne concentration of PM<sub>10</sub>. The monitoring equipment will be housed in portable, weather-tight enclosures, which will be mounted on surveying tripods at a height of approximately 4.5 to 5.5 feet (breathing zone height).

Air monitoring stations will be deployed at the start of each work day before any ground-intrusive or dust-generating activities are initiated. Three downwind and one upwind monitoring locations will be selected based on the prevailing wind direction and the nature and location of the activities anticipated to be performed that day. Wind direction will be monitored throughout the day, and stations will be re-located or re-assigned, as appropriate, if the wind direction shifts more than 60 degrees from the original upwind direction. Any such changes in monitoring locations will be documented in a field log book.

Monitoring equipment will be calibrated on a daily basis or other frequency recommended by the manufacturers. Hourly or more frequent field checks of the monitoring equipment will also be performed during the work day to verify proper function. Damaged or malfunctioning equipment will be promptly removed from service and replaced. The date, time, and outcome of each equipment calibration and field check will be documented in a field log book.

Total VOC and PM<sub>10</sub> data will be downloaded from the air monitoring stations at the end of each work day. Data files will be stored on-site in a computer database, indexed by date, station number, and station location (upwind or downwind), and will be backed-up periodically to disc or a portable hard drive.

#### 4.2.2 Weather Station

A portable weather station (Wireless Vantage Pro2 by Davis Instruments Corporation, Inc. or equal) will be used to monitor local meteorological conditions during the project. The weather station will be installed in a prominent location at the Site to provide representative meteorological data, including wind speed, wind direction, dry-bulb temperature, and relative humidity. Security and accessibility will also be considered in selecting a location for the weather station.

#### 4.3 Periodic Monitoring for Site-Related Odors

During work hours, hourly or more frequent walks around the perimeter of each designated work area will be performed to monitor for the presence and intensity of Site-related odors. Odor intensity will be measured based on the eight-point n-butanol scale, as adapted from ASTM E544 (titled *Standard Practices for Referencing Suprathreshold Odor Intensity*; ASTM International 2018). Odor monitoring personnel will not be involved in the day-to-day remediation activities within the work area where they may become acclimated to Site-related odors. Perimeter checks will be performed more frequently, as necessary, depending on 1) the nature and location of work being performed and 2) local meteorological conditions. Meteorological conditions, including temperature, humidity, precipitation, atmospheric pressure, wind direction, and wind speed, can work synergistically with a positive or negative impact on the generation and dissemination of Site-related odors. For example, Site-related odors generally tend to be less prevalent with lower temperatures, precipitation, or high humidity. Site-related odor dissemination is greatly influenced by wind direction and wind speed.

If Site-related odors are noted at the perimeter of a work area, work will continue and odor, vapor, and dust controls will be employed to abate emissions. Additionally, construction techniques will be evaluated and modified, if necessary and appropriate, and more frequent checks of the perimeter of the work area will be performed. If Site-related odors persist at the perimeter of a work area at an intensity at or above the action level, work will be stopped while activities are re-evaluated. The source or cause of the Site-related odors will be identified and additional odor, vapor, and dust controls will be employed. Work will resume provided that the controls are successful in mitigating the intensity of Site-related odors at the perimeter of the work area to below the action level.

Odor complaints received from the public will be evaluated and verified based on the following:

- Date and time of complaint;
- Location and nature of project-related work activities being performed at the Site;
- Location and nature of non-project-related work activities being performed in the surrounding community; and
- Prevailing wind direction and other local meteorological conditions.

Regardless of the outcome of this evaluation, the NYSDEC and NYSDOH project managers will be notified of all odor complaints within 24 hours. In response to a verified odor complaint, perimeter monitoring will continue and additional odor, vapor, and dust controls will be employed to mitigate Site-related odor emissions. Construction techniques will also be evaluated and modified, if necessary and appropriate.

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The time and outcome of each perimeter check will be documented in a daily odor monitoring log, specifically noting the presence or absence of Site-related odors and identifying the intensity and general location(s) along the perimeter of the work area where Site-related odors (if any) are noted. The time and outcome of any odor complaints from the public will also be documented in the daily odor monitoring log.

Reporting requirements for the community air monitoring program are identified in the following section.

COMMUNITY AIR MONITORING PLAN

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## 5 REPORTING REQUIREMENTS

### 5.1 General

This section summarizes the reporting requirements for the community air monitoring program. As described below, the following reports will be prepared and submitted to document the monitoring results:

- Exceedance reports and notification to NYSDEC;
- Daily air monitoring reports;
- Weekly air monitoring reports; and
- Community air monitoring report.

### 5.2 Exceedance Reports and Notification to NYSDEC

Arcadis will notify the NYSDEC Project Manager by telephone or e-mail within two hours if the total VOC or PM<sub>10</sub> action level is exceeded during the project. Within 24 hours after the exceedance, an exceedance report will be prepared and submitted to the NYSDEC and NYSDOH Project Managers. Each exceedance report will include, at a minimum, the following:

- Date, day of the week, and time/duration of exceedance;
- Air monitoring station where exceedance was recorded;
- General location and brief description of work being performed at time of exceedance;
- Weather conditions at time of exceedance;
- For each air monitoring station, 15-minute TWA concentration of total VOCs and PM<sub>10</sub> at time of exceedance;
- Source or cause of exceedance;
- Corrective actions taken or to be taken in response to exceedance; and
- Date and time verbal or written notification was provided to NYSDEC.

A copy of the exceedance report will also be included in the daily air monitoring report, which is more fully described in Section 5.3 of this CAMP.

### 5.3 Daily Air Monitoring Reports

Air monitoring reports will be prepared on a daily basis throughout the project to summarize the monitoring results. Each daily report will include, at a minimum, the following:

- Date and day of the week;
- General location and brief description of work performed at the Site;

## COMMUNITY AIR MONITORING PLAN

- Daily weather conditions, including high and low temperature, humidity, wind direction and speed, and precipitation;
- Average concentrations and maximum 15-minute TWA concentrations of total VOCs and PM<sub>10</sub> measured at each air monitoring station;
- Exceedances, if any, of total VOC and PM<sub>10</sub> action levels, including copy of exceedance report(s);
- Copy of daily odor monitoring log;
- Odor complaints received, if any; and
- Site plan showing approximate locations of air monitoring stations and prevailing wind direction for the day.

Daily reports will be used to prepare the weekly air monitoring reports described in Section 5.4 below.

### 5.4 Weekly Air Monitoring Reports

Air monitoring reports will be prepared and submitted to the NYSDEC and NYSDOH Project Managers on a weekly basis throughout the project to summarize the: 1) real-time air monitoring results for each air monitoring station, including exceedances, if any, of total VOC and PM<sub>10</sub> action levels; and 2) periodic Site-related odor monitoring results and odor complaints received, if any. Each weekly report will also include copies of the daily air monitoring reports for the 7-day period covered in the report.

### 5.5 Community Air Monitoring Report

At the conclusion of the project, a comprehensive report will be prepared to summarize the scope and results of the community air monitoring program. The report will include, at a minimum, the following:

- Brief narrative describing the following:
  - Air monitoring objectives;
  - Alert and action levels; and
  - Monitoring equipment, procedures, dates of baseline and routine monitoring, and summary of results.
- Site plan showing approximate locations of air monitoring stations;
- Log of all total VOC and PM<sub>10</sub> action level exceedances;
- Equipment calibration records;
- Copies of weekly air monitoring reports;
- Raw air monitoring data for each air monitoring station; and
- Raw meteorological monitoring data.

The Community Air Monitoring Report will be submitted to NYSDEC and NYSDOH as part of the IRM Construction Completion Report and/or Final Engineering Report for the Site.

## 6 REFERENCES

Arcadis. 2019. Remedial Design for Red Hook 4 Interim Remedial Measure, BT Red Hook, LLC, 44 and 62 Ferris Street/219 Sullivan Street, Borough of Brooklyn, Kings County, New York.

ASTM International. 2018. *Standard Practices for Referencing Suprathreshold Odor Intensity*. ASTM E544. West Conshohocken, Pennsylvania.

NYSDEC. 2010. DER-10, Technical Guidance for Site Investigation and Remediation. Division of Environmental Remediation. May 2010.

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**FIGURE**

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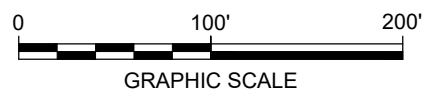
CITY: SYRACUSE, NY DIV/GROUP: IMDY, DR: B.SMALL, K.DAVIS, LD: B.SMALL, P/C: C.GERACI, PM: C.GERACI, TM: D.NODINE, L/R: ON="OFF" REF  
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XREFS: X00-IRMDWP-BLR



- LEGEND:**
- BLOCK/LOT BOUNDARY
  - RED HOOK 3 BROWNFIELD SITE (BCP: C224213)
  - RED HOOK 4 BROWNFIELD SITE (BCP: C224214)
  - BROWNFIELD BOUNDARY

- NOTES:**
1. BASED ON "EXISTING SITE" FIGURE (AESI MARCH 2017) AND "NY CITY DEPARTMENT OF FINANCE DIGITAL TAX MAP" (AUGUST 15, 2017).
  2. ALL BOUNDARIES ARE APPROXIMATE.



**145-65 WOLCOTT STREET BROWNFIELD SITE**  
(BCP: C224256)

BT RED HOOK, LLC - RED HOOK 3 AND RED HOOK 4 BROOKLYN, NEW YORK <b>INTERIM REMEDIAL MEASURE          COMMUNITY AIR MONITORING PLAN</b>	
<b>SITE PLAN</b>	
<b>ARCADIS</b>	Design & Consultancy for natural and built assets
FIGURE <b>1</b>	

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# APPENDIX A

New York State Department of Health Generic Community Air Monitoring Plan (Appendix 1A of DER-10)



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## Appendix 1A

### New York State Department of Health Generic Community Air Monitoring Plan

#### Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

#### Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

**Continuous monitoring** will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

**Periodic monitoring** for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

### VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

### Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.



1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{mcg}/\text{m}^3$ ) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed  $150 \text{ mcg}/\text{m}^3$  above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than  $150 \text{ mcg}/\text{m}^3$  above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within  $150 \text{ mcg}/\text{m}^3$  of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

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# APPENDIX B

Fugitive Dust and Particulate Monitoring (Appendix 1B of DER-10)



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## **Appendix 1B**

### **Fugitive Dust and Particulate Monitoring**

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.
3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:
  - (a) Objects to be measured: Dust, mists or aerosols;
  - (b) Measurement Ranges: 0.001 to 400 mg/m<sup>3</sup> (1 to 400,000 :ug/m<sup>3</sup>);
  - (c) Precision (2-sigma) at constant temperature: +/- 10 :g/m<sup>3</sup> for one second averaging; and +/- 1.5 g/m<sup>3</sup> for sixty second averaging;
  - (d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
  - (e) Resolution: 0.1% of reading or 1g/m<sup>3</sup>, whichever is larger;
  - (f) Particle Size Range of Maximum Response: 0.1-10;
  - (g) Total Number of Data Points in Memory: 10,000;
  - (h) Logged Data: Each data point with average concentration, time/date and data point number
  - (i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
  - (j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
  - (k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
  - (l) Operating Temperature: -10 to 50° C (14 to 122° F);
  - (m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.
4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.
5. The action level will be established at 150 ug/m<sup>3</sup> (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m<sup>3</sup>, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m<sup>3</sup> above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m<sup>3</sup> continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM<sub>10</sub> at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

- (a) Applying water on haul roads;
- (b) Wetting equipment and excavation faces;
- (c) Spraying water on buckets during excavation and dumping;
- (d) Hauling materials in properly tarped or watertight containers;
- (e) Restricting vehicle speeds to 10 mph;
- (f) Covering excavated areas and material after excavation activity ceases; and
- (g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m<sup>3</sup> action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

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