

APPENDIX G
COMMUNITY AIR MONITORING PLAN

Community Air Monitoring Plan

Excavation & Capping of the Filled First Street Turning Basin, Gowanus Canal

Borough of Brooklyn, New York

Project ID: PW77GOWAN

Contract No. HWDRCW02

Prepared for:



Submitted by:



MAY 2019

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	CAMP Objectives.....	1
1.2	Revisions to the CAMP	1
1.3	Potential Air Emissions Related to Remedial Activities	1
1.4	Vapor/Dust/Odor Emissions and Control Measures.....	2
2.0	AIR MONITORING PROCEDURES	3
2.1	Selection of Monitoring Locations	3
2.2	VOC Monitoring	3
2.3	Total Particulates Monitoring	3
2.4	Periodic Monitoring for Odors	4
2.5	Action Levels.....	4
2.5.1	Action Levels for Organic Vapors	4
2.5.2	Action Levels for PM ₁₀	5
2.6	Meteorological Monitoring.....	5
2.7	Instrument Calibration.....	5
3.0	MONITORING SCHEDULE AND DATA COLLECTION/REPORTING.....	6
3.1	Monitoring Schedule	6
3.2	Data Collection and Reporting	6
4.0	REFERENCES	8

FIGURE

Figure 1: Site Plan

APPENDICES

Appendix A: Appendix 1A and 1B of NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) May 3, 2010

LIST OF ACRONYMS

Acronym	Definition
AKRF-KSE JV	AKRF Engineering, P.C./KS Engineers, P.C. Joint Venture
CAMP	Community Air Monitoring Plan
DER	Division of Environmental Remediation
DWN	Downwind Location
EPA	United States Environmental Protection Agency
NOB	Nearest Occupied Building
NYCDDC	New York City Department of Design and Construction
NYSDEC	New York State Department of Environmental Conservation
PCBs	Polychlorinated biphenyls
PID	Photoionization Detector
PM ₁₀	Particulate matter less than 10 microns in diameter
ppm	parts per million
SVOCs	Semi-Volatile Organic Compounds
UPW	Upwind Location
VOCs	Volatile Organic Compounds

1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared by AKRF Engineering, P.C./KS Engineers, P.C. Joint Venture (AKRF-KSE JV), on behalf of the New York City Department of Design and Construction (NYCDDC), to support the implementation of the remedial action associated with the Excavation and Capping of the former filled First Street Turning Basin adjacent to the Gowanus Canal in Brooklyn, New York (the Site). A Site Plan is provided as Figure 1. Details related to the removal activities are presented in the 100% Design Report, to which this CAMP is included as an appendix and as a supporting plan. Technical Specifications supporting this CAMP are included in Appendix F of the 100% Design Report.

This CAMP fulfills the routine monitoring requirements provided in *Superfund Remedial Design and Remedial Action Guidance* Office of Solid Waste and Emergency Response Directive 93550-4a [United States Environmental Protection Agency (EPA) 1986], as well as the more specific requirements set forth in the New York State Department of Environmental Conservation (NYSDEC) document entitled Division of Environmental Remediation *Technical Guidance for Site Investigation and Remediation* (DER-10) issued on May 3, 2010 (NYSDEC 2010). Appendix 1A of DER-10 (included as Appendix A) provides general guidance and protocols for the preparation and implementation of a CAMP. Appendix 1B of DER-10 (included as Appendix A) supplements the contents of Appendix 1A of DER-10 and provides additional requirements for fugitive dust/particulate monitoring.

This CAMP identifies the required air monitoring to protect the community during the implementation of the selected remedy as described below.

1.1 CAMP Objectives

The overall objective of the CAMP is to establish requirements for protection measures for downwind receptors from potential airborne releases of constituents of concern during intrusive and/or potential dust generating remedial construction activities. As summarized in the 100% Design Report, laboratory analysis indicates that constituents of concern at the Site include polychlorinated biphenyls (PCBs), metals, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs). This CAMP identifies potential air emissions, and describes air monitoring procedures, the monitoring schedule, data collection, and reporting requirements for the remedial action to be completed by the Contractor.

The Engineer will implement this CAMP and will provide all labor, materials, and equipment necessary to implement the monitoring program specified in this CAMP, as well as any required contractor worker documentation and monitoring described in the Environmental Health and Safety Plan prepared for the implementation of the project.

1.2 Revisions to the CAMP

Any changes to the scope or procedures in this CAMP will be formally documented as a revision to this document. A revision number will be indicated on the front page of any revised document and will serve as a historical record of any and all revisions made to the document. For changes requiring immediate resolution during the implementation of this CAMP, approval will be secured from EPA and their representative and, if applicable, the Responsible Parties.

1.3 Potential Air Emissions Related to Remedial Activities

Intrusive construction activities have the potential to generate localized impacts to air quality. Construction components that are considered intrusive for the purposes of this CAMP and that have the potential to generate air emissions are anticipated to include, but may not be limited to the following:

- Excavation at the Site;
- Material handling and storage [e.g., manipulation of excavated materials to render them suitable for off-site treatment/disposal, stockpiling of materials, loading of materials for transport to the off-site treatment and/or disposal facility(ies), etc.];
- Backfilling/restoring remediated and other disturbed areas; and
- Other ancillary intrusive activities, such as utility location during Site preparation and Site restoration (potential for particulate emissions only).

1.4 Vapor/Dust/Odor Emissions and Control Measures

Air emissions control and fugitive dust suppression measures will be implemented concurrently with the activities identified above (as needed) to limit the potential for organic vapor, dust, and odor emissions from the Site. Such control measures are anticipated to include the following:

- Applying a potable water spray to suppress dust originating from excavation and in-barge mixing;
- Applying a foam or Biosolve® spray that uses encapsulation and chemical masking to suppress vapors/odors originating from the excavation, excavator bucket, or staging areas;
- Minimizing the number and size of excavation areas open at one time; and
- Covering the excavation and materials in the staging area(s) using ultraviolet resistant polyethylene sheeting.

Supplies for these vapor, dust, and odor control measures will be mobilized to the Site by the Contractor at the beginning of the project and will be maintained on-site in sufficient supply throughout the work. Control measures will be implemented as necessary based on visual or olfactory observations, and the results of community air monitoring for organic vapors (including VOCs), and particulate matter less than 10 microns in diameter (PM₁₀) as described in Section 2.0. Control measures are specified in Technical Specification 01 57 19 – Temporary Environmental Controls.

2.0 AIR MONITORING PROCEDURES

Real-time community air monitoring for VOCs, particulates, and odors will be performed at representative locations, upwind and downwind, at the Site during construction activities. In addition, during work hours, hourly or more frequent monitoring for Site-related odors at the perimeter of the work area will be performed. Additional information regarding representative monitoring locations, equipment, and action levels is presented below.

2.1 Selection of Monitoring Locations

Upwind and downwind monitoring station locations for VOCs and PM₁₀ will be determined daily based on data from an on-site meteorological monitoring station (predominant wind direction) and the nature and location of the anticipated construction activities. Initially, published information from Windfinder.com (a website that provides wind and weather statistics), will be used to predict the prevailing and predominant wind direction during the year for the Site. During the construction activities, a meteorological station will be used to establish real-time wind direction and facilitate any changes required during the daily monitoring.

An upwind location (station “UPW”) for both VOCs and PM₁₀ will be confirmed at the start of each workday, based upon the use of the meteorological station and the location of the proposed construction activities. A downwind location (station “DWN 1”) (based upon prevalent wind direction) for both VOCs and PM₁₀ will also be selected. Another downwind monitoring location (regardless of wind direction) will be used to monitor for both VOCs and PM₁₀ at the closest sensitive receptor (i.e., nearest occupied building [NOB]), determined at the date of construction.

If wind directions shift radically during the workday and for an extended period such that the upwind direction and downwind locations no longer fall within acceptable guidelines (+/-60 degrees compass change from the original wind direction), the monitoring stations will be relocated so that the upwind and downwind locations are maintained. Any changes will be documented in the CAMP reports.

If multiple work zones are present at the same time, additional upwind and downwind monitoring stations will be established, in coordination with EPA, their representatives, and the Responsible Parties.

2.2 VOC Monitoring

VOCs will be monitored continuously during the intrusive and/or potential dust-generating remedial construction activities with instrumentation equipped with electronic data-logging capabilities. Because real-time monitors are not available for PCBs, metals, or SVOCs, the real-time VOC monitors will serve as surrogate indicators for emissions (if any) of PCBs, metals, and SVOCs during the construction work.

A real-time VOC monitor (RAE MultiRae 3000 or equivalent) equipped with a Photoionization Detector (PID) will be used for monitoring. All 15-minute average concentrations, as well as any instantaneous readings taken to facilitate activity decisions, will be recorded, stored on-site and summarized in weekly CAMP reports to EPA, their representatives, and the Responsible Parties.

2.3 Total Particulates Monitoring

Total particulates will also be monitored continuously during intrusive and/or potential dust-generating remedial construction activities using instrumentation equipped with electronic data-logging capabilities. The particulate monitoring equipment will also be equipped with an audible alarm to indicate exceedances of the action levels identified below in Section 2.5. A TSI DustTrak II 8530 (or equivalent) will be used to conduct the real-time PM₁₀ monitoring during the remedial

construction activities. All 15-minute average concentrations, as well as any instantaneous readings taken to facilitate activity decisions, will be recorded, stored on-site, and summarized in weekly CAMP reports to EPA, their representatives, and the Responsible Parties. Fugitive dust migration will be visually assessed during all work activities, and reasonable dust suppression techniques will be used during any remedial construction activities that may generate fugitive dust.

2.4 Periodic Monitoring for Odors

During work hours, hourly or more frequent walks around the perimeter of the work area will be performed to qualitatively monitor for the presence and intensity of Site-related odors. Perimeter checks will be performed more frequently, as necessary, depending on the nature and location of work being performed. If odors are noted at the perimeter of the 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 odors persist at the perimeter of the work area at an unacceptable intensity, work will be stopped while activities are re-evaluated. The source or cause of the 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 odors at the perimeter of the work area.

2.5 Action Levels

The action levels provided below are to be used to initiate corrective actions, if necessary, based upon the real-time monitoring. If the action levels are exceeded at the perimeter locations for VOCs or PM₁₀, work will be suspended and engineering controls will be implemented to bring concentrations back down to acceptable levels. Each piece of monitoring equipment will have alarm capabilities (audible and/or visual) to indicate exceedances of the action levels specified below. All readings will be recorded and available for EPA's, their representatives', and the Responsible Parties' review.

2.5.1 Action Levels for Organic Vapors

If the ambient air concentration of total VOCs at the downwind perimeter of the work area, Exclusion Zone, or opposite the nearest occupied building exceeds 5 parts per million (ppm) above the background (upwind) concentration for the 15-minute average, work activities will be temporarily halted while monitoring continues. If the total VOC concentration readily decreases (through observation of instantaneous readings) below 5 ppm above the background (upwind) concentration, work activities will resume with continued monitoring.

If the ambient air concentration of total VOCs at the downwind perimeter of the work area, Exclusion Zone, or opposite the nearest occupied building persists at levels in excess of 5 ppm but less than 25 ppm above the background (upwind) concentration: (1) work activities will be halted; (2) the source of the elevated total VOC concentration will be identified; (3) corrective actions will be implemented to reduce or abate the emissions; and (4) air monitoring will be continued. Once these activities have been implemented, work activities will resume provided the following two (2) conditions are met:

- The 15-minute average VOC concentrations remain below 5 ppm above background (upwind); and
- The total VOC concentration 200 feet downwind of the work area/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 the background (upwind) concentration for the 15-minute average.

If the ambient air concentration of total VOCs at the downwind perimeter of the work area, Exclusion Zone, or opposite the nearest occupied building exceeds 25 ppm above the background (upwind) concentration, work activities will stop, and corrective actions will be implemented to reduce or abate the emissions.

When work shutdown occurs, as directed by the Environmental Monitor, Contractor's on-site manager, or by the Engineer, corrective actions will be implemented to ensure that vapor emission does not impact the nearest occupied structure at levels exceeding the action levels specified herein. If following work shutdown, or as the result of an emergency, VOC concentrations persist above 5 ppm above background (upwind) 200 feet downwind (or half the distance to the nearest occupied structure), then air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20-foot zone).

2.5.2 Action Levels for PM₁₀

If the ambient air concentration of PM₁₀ at the downwind perimeter of the work area, Exclusion Zone, or nearest occupied building exceeds 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) above the background (upwind) concentration, or if airborne dust is observed leaving the work area, dust suppression techniques will be employed. Work will continue with dust suppression techniques provided the downwind PM₁₀ concentration does not exceed 150 $\mu\text{g}/\text{m}^3$ above the background (upwind) concentration. If, after implementation of dust suppression techniques, the downwind PM₁₀ concentration is greater than 150 $\mu\text{g}/\text{m}^3$ above the background (upwind) concentration, work will be stopped while activities are re-evaluated. Work will resume provided the dust suppression techniques and other controls are successful in: (1) reducing the downwind PM₁₀ concentration to less than 150 $\mu\text{g}/\text{m}^3$ above the background (upwind) concentration; and (2) preventing visible dust from leaving the work area.

2.6 Meteorological Monitoring

Meteorological monitoring will be conducted continuously using a portable meteorological monitoring system equipped with electronic data-logging capabilities. The meteorological monitoring system will be installed in a prominent location to provide representative observations of the local meteorological conditions. Security and accessibility to the meteorological monitoring system will also be considered during the selection of the meteorological monitoring system location. At a minimum, the meteorological monitoring system will monitor wind speed, wind direction, relative humidity, and ambient temperature. A digital meteorological monitoring system will be used to collect the meteorological data.

2.7 Instrument Calibration

Calibration of the VOC, PM₁₀, and meteorological monitoring instrumentation will be conducted in accordance with each of the equipment manufacturer's calibration and quality assurance requirements. The VOC and PM₁₀ monitoring equipment will be calibrated or zeroed, respectively, daily (at a minimum), and such calibrations will be recorded in the field logbook.

3.0 MONITORING SCHEDULE AND DATA COLLECTION/REPORTING

The following identifies the monitoring schedule and data collection/reporting requirements.

3.1 Monitoring Schedule

Community air monitoring will be conducted prior to initiating remedial construction activities to establish adequate baseline data and until such time that intrusive and/or potential dust generating activities are complete. 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. Air monitoring for VOCs and dust may be discontinued during periods of heavy precipitation that would otherwise result in unreliable data or damage to monitoring equipment. Meteorological monitoring will be performed continuously during work activities.

3.2 Data Collection and Reporting

Community air monitoring data will be collected continuously from VOC and PM₁₀ monitors during all intrusive and/or potential dust-generating activities by the electronic data-logging systems, except as discussed above in Section 3.1. The data management software will be set up to continuously monitor instantaneous readings and record average concentrations (calculated for continuous 15-minute increments: i.e., 08:00 to 08:15, 08:15 to 08:30, etc.), including meteorological data. Results of the perimeter/community air monitoring for total organic vapors and particulates (both instantaneous readings and 15-minute average concentrations) will be recorded by the monitoring instruments (data loggers).

The Environmental Monitor will prepare weekly CAMP reports that will include, but not be limited to, the following:

- A brief memorandum summarizing the air monitoring work activities and results for the monitoring period, including an in-text table that presents a “dashboard” view of the organic vapor and particulate concentrations measured at each station during the period. A summary of the qualitative perimeter monitoring for the presence and intensity of Site-related odors will also be included. The memorandum will be supported by two attachments: (1) Attachment A showing air monitoring station daily locations; and (2) Attachment B presenting graphs of the 15-minute time-weighted average VOC and particulate concentrations recorded at each of the sampling stations (one graph for each station showing the weekly results relative to action levels).
- A “zip” file that contains the raw data files from the individual monitors and meteorological data from the weather station.

The Environmental Monitor will submit weekly CAMP reports (via e-mail) to EPA, EPA’s representative, the Responsible Parties, and the Contractor.

In the event that an exceedance of a community air monitoring action level (for either PM₁₀ or VOCs), the Environmental Monitor will notify EPA and EPA’s representative (via telephone), and the Engineer (in person) as soon as possible (i.e., real time). Within 24 hours of the observed exceedance, the Environmental Monitor will send a follow-up e-mail to EPA, EPA’s representative, the Engineer, the Contractor, and the Responsible Parties summarizing the data, the cause of the exceedance, and any corrective measures implemented (or to be implemented) as a result of the exceedance. The information will also be documented in the weekly CAMP report.

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

- Date and time of complaint;
- Location and nature of 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, EPA, EPA's representative (via telephone), the Engineer (in person), and the Responsible Parties (via telephone) 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.

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 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.

4.0 REFERENCES

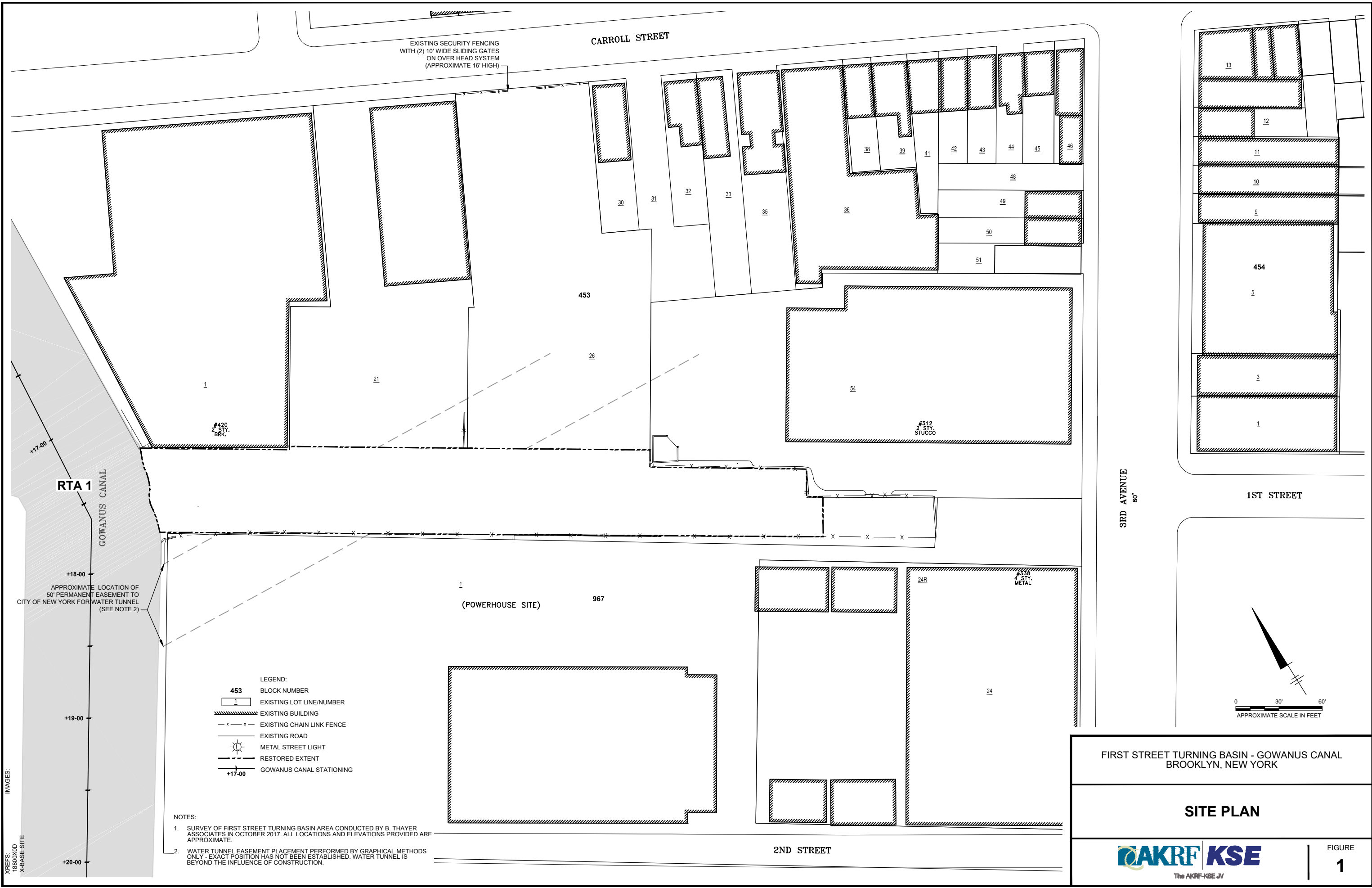
AKRF-KSE JV. 2019. 100% Design Report. Excavation & Capping of Filled First Street Turning Basin Gowanus Canal, Borough of Brooklyn, New York. January.

EPA. 1986. Superfund Remedial Design and Remedial Action Guidance. Office of Solid Waste and Emergency Response Directive.

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

www.Windfinder.com - various wind direction monitoring stations.

FIGURE



APPENDIX A

**NYSDEC DER-10 TECHNICAL GUIDANCE FOR SITE INVESTIGATION
AND REMEDIATION (DER-10) MAY 3, 2010.**

APPENDIX 1A OF DER-10

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 (mcg/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

APPENDIX 1B OF DER-10

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/m³ (1 to 400,000 :ug/m³);
 - (c) Precision (2-sigma) at constant temperature: +/- 10 :g/m³ for one second averaging; and +/- 1.5 g/m³ 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/m³, 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/m³ (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/m³, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m³ 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/m³ 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 PM₁₀ 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/m³ 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.