# 28 SOUTH DIVISION STREET

**NEW ROCHELLE, NEW YORK**

## Interim Remedial Measure Work Plan

**AKRF Project Number: 190188**

**NYSDEC BCP Number: C360198**

**Prepared for:**

28 South Division Owner LLC
℅ RXR Development Services
75 Rockefeller Plaza, Suite 1300
New York, New York 10019

**Prepared by:**

**AKRF, Inc.**
440 Park Avenue South, 7th Floor
New York, New York 10016

**JANUARY 2020**

# CERTIFICATIONS

I, Michelle Lapin, certify that I am currently a NYS registered professional engineer and that this Interim Remedial Measures (IRM) Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

NYS Professional Engineer # Date Signature

PE Stamp

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

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## APPENDICES

# 1.0 INTRODUCTION

This Interim Remedial Measure (IRM) Work Plan has been prepared by AKRF, Inc. (AKRF) on behalf of 28 South Division Owner LLC (the "Volunteer") for the 28 South Division Street project, New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site, located at 28 South Division Street in New Rochelle, New York (the "Site"). The 1.061-acre Site is also identified as Block 414, Lots 4, 5, 6, and 8.01. The Site is planned for redevelopment with a new multi-story residential/commercial structure. The Site location is shown on Figure 1 and a Site Plan is provided as Figure 2.

The purpose of this IRM Work Plan is to facilitate Site-wide removal of contaminated soil prior to redevelopment by presenting protocols for the removal. The IRM Work Plan is based upon the findings presented in previous investigations described below (discussed in more detail in Section 3.0). The Work Plan will be implemented in accordance with the Site Specific Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) provided in Appendix A.

Prior to implementation of this IRM Work Plan, a Remedial Investigation (RI), including a qualitative exposure assessment, will be conducted upon NYSDEC approval of AKRF's January 2020 Remedial Investigation Work Plan (RIWP). Estimated quantities of soil excavated for remediation presented herein would be updated upon receipt of the results of the RI. The findings of the RI will also be used to prepare a Remedial Action Work Plan (RAWP).

The current understanding of environmental conditions at the Site are based on the following previous environmental assessments and investigations:

- Phase I Environmental Site Assessment – 26 South Division Street, New Rochelle, NY, AKRF, Inc., August 2017.
- Draft Phase II Environmental Site Assessment Report, 26 South Division Street, SESI Consulting Engineers, DPC (SESI), January 2019.
- Limited Subsurface (Phase II) Investigation, 28 South Division Street, New Rochelle, New York, AKRF, Inc., June 2019.

The Phase I Environmental Site Assessment (ESA), prepared for a larger lot which included the Site, revealed that historical uses at the Site included dwellings, a garage with tire repairs, a plumbing shop, several upholsterers between circa 1892 and 1951, and a public parking garage (most recent). No underground storage tanks (USTs) or aboveground storage tanks (ASTs) were registered for the Site; however, the former buildings may have included undocumented USTs and/or ASTs with potential associated releases. Such tanks may have been associated with heating oil or automotive-related petroleum, chemicals or waste oil. The surrounding area has a long history of industrial and manufacturing uses, with suspected solvent and petroleum uses. A dry cleaner located approximately 100 feet west of the Site was listed on the regulatory database as a hazardous waste generator of chlorinated solvent wastes.

The identified environmental conditions were suspected to have affected subsurface conditions at the Site. Subsurface investigations were subsequently conducted, which identified contamination of soil, soil vapor, and groundwater, as summarized in the following sections.

*Soil*

Soil observed during previous subsurface investigations consisted of historical fill (sand with silt, gravel, glass, and brick) to an approximate depth of 10 feet below grade; borings and test pits were advanced to a maximum of approximately 12 feet below grade. The fill was underlain by presumed native sand and silt, gravel, and cobbles.

Lead was detected at a concentration of 8,160 parts per million (ppm) in sample TP-14 (8-10), located in the northeastern portion of the Site. In addition, elevated mercury and lead concentrations were detected above the NYSDEC 6 New York City Rules and Regulations (NYCRR) Part 375 Restricted Residential Soil Cleanup Objectives (RRSCOs) and/or Unrestricted Use Soil Cleanup Objectives (UUSCOs) across the Site within the historic fill, suggesting a Site-wide concern. These elevated concentrations could represent a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) under Title 40 of the Code of Federal Regulations (CFR) when analyzed via the Toxicity Characteristic Leaching Procedure (TCLP) (not conducted in the preliminary study). Elevated levels of semi-volatile organic compounds (SVOCs) and other metals detected in the shallow soil samples were also indicative of a contaminated historic fill layer, which ranged in thickness of up to 10 feet across the Site.

*Groundwater*

Low levels of metals were detected in the analyzed groundwater samples at concentrations above the NYSDEC Class GA (protection of drinking water) Ambient Water Quality Standards (AWQS). These findings were determined to be naturally occurring (in the case of the metals) and/or may attributed to suspended sediment/historic fill in the samples; however, some influence from historic on-site operations was not ruled out.

*Soil Vapor*

Tetrachloroethylene (PCE) was detected in five soil vapor samples at concentrations ranging from 1.73 to 45.2 micrograms per cubic meter ($\mu g/m^3$). The detection of chlorinated solvents at the Site were attributed, at least in part, to the historic on-site operations (a plumbing shop, a garage with tire repairs, and several upholsterers between circa 1892 and 1951).

# 2.0 SITE DESCRIPTION AND HISTORY

## 2.1 Site Description and Surrounding Land Use

The 1.061-acre vacant Site is bounded to the south by residential buildings; to the north by a redevelopment site (BCP Site Number C360187); to the east by Church Street; and to the west by South Division Street. A Site Location Map is provided as Figure 1. Uses in the surrounding areas are predominantly residential and commercial.

## 2.2 Proposed Redevelopment Plan

The redevelopment plan includes the construction of a new 28-story mixed-use residential and commercial building with approximately 390 units, approximately 7,730 square feet of retail space, a public pedestrian plaza, and a 429-space underground parking garage.

## 2.3 Site Geology, Hydrogeology and Subsurface Characteristics

Topography in the area slopes downward to the southeast. Based on the U.S. Geological Survey, Mount Vernon, NY Quadrangle map (2013), the Site is approximately 100 feet above the National Geodetic Vertical Datum of 1988 (an approximation of sea level).

Soil observed during previous subsurface investigations consisted of historical fill (sand with silt, gravel, glass, plant roots, and brick) to an approximate depth of 10 feet below grade; soil borings and test pits were advanced to a maximum of approximately 12 feet below grade. The fill was underlain by presumed native sand and silt, gravel, and cobbles. Groundwater was encountered above presumed bedrock at two locations: in a soil boring advanced in the southern portion of the Site and in a test pit advanced in the northeastern portion of the Site, at approximately 10 feet and 11.5 feet below grade, respectively. Groundwater was also measured at a depth of approximately

4.3 feet below sidewalk grade in the permanent monitoring well located in the sidewalk on Church Street. Groundwater is assumed to flow in a southeasterly direction towards the New Rochelle Harbor, approximately 2,000 feet away; however, actual groundwater flow can be affected by many factors including underground utilities, bedrock, and other factors beyond the scope of the studies performed to date. There are no surface water bodies at or near the Site.

### 2.4 Nearby Areas of Public Concern

The uses immediately surrounding the Site are predominantly residential and commercial. The proposed future use of the Site is residential with basement parking and lower level retail uses.

*On-Site Receptors:* As the Site is currently comprises an unpaved vacant lot with fencing (the former structures have been demolished), the only current on-site potential sensitive receptors are trespassers. During redevelopment, potential receptors will include construction workers and inspectors. Once the Site is redeveloped, potential receptors will include residents, maintenance staff, and retail workers/customers.

*Off-Site Receptors:* Potential off-site receptors within a 0.25-mile radius of the Site include: residents, commercial and construction workers, students, pedestrians, and cyclists, based on the following:

1. Commercial Businesses – existing and future
2. Residential Buildings – existing and future
3. Building Construction/Renovation – existing and future
4. Pedestrians, Trespassers, Cyclists – existing and future
5. Schools – existing and future

### 2.5 Site History

The historical uses at the Site included dwellings, a garage with tire repairs, a plumbing shop, several upholsterers circa 1892 to 1951, and a public parking garage (most recent). No underground storage tanks (USTs) or aboveground storage tanks (ASTs) were registered for the Site; however, the former buildings may have had undocumented USTs and/or ASTs with potential associated releases. Such tanks may have been associated with heating oil or automotive-related petroleum, chemicals or waste oil.

## 3.0 PREVIOUS INVESTIGATIONS

### 3.1 Summary of Reports

Three environmental studies have been completed for the Site to date. A Site plan showing sampling/testing locations is provided as Figure 2. A review of the previous investigations is summarized below:

*Phase I Environmental Site Assessment (ESA), 26 South Division Street, AKRF, Inc., August 2017*

A Phase I Environmental Site Assessment (ESA) was completed by AKRF that included a majority portion of the Site (Lot 8.01) in August 2017 in accordance with ASTM Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Practice.* A summary of the findings is as follows:

- Industrial and automotive uses were located on-site historically, including a plumbing shop, a garage with tire repairs, and several upholsterers between circa 1892 and 1951. No

underground storage tanks (USTs) or aboveground storage tanks (ASTs) were documented at the Site; however, the former buildings likely included undocumented USTs and/or ASTs with potential associated releases.

- The regulatory database identified a drycleaner listed as a hazardous waste generator of chlorinated solvent wastes approximately 120 feet west of the Site (on the west-adjacent block).
- Historical on-site (and nearby) uses with suspected solvent or petroleum use were identified, suggesting the potential for vapor encroachment into future on-site buildings.

*Draft Phase II Environmental Site Assessment Report, 26 South Division Street, SESI Consulting Engineers, DPC (SESI), January 2019,* and *Limited Subsurface (Phase II) Investigation, AKRF, Inc., June 2019*

A Subsurface (Phase II) Investigation was conducted by SESI in December 2018 (the report was issued in January 2019) and included the advancement of 7 soil borings and 8 test pits with the collection of 30 soil samples, collection of 1 groundwater sample, and 2 soil vapor samples. A Limited Subsurface (Phase II) Investigation was conducted by AKRF, with field work conducted on November 1 and 2, and on December 17 and 18, 2018, and on May 20, 2019 and included the advancement of 11 soil borings and 10 test pits with the collection and laboratory analysis of 41 soil samples, 1 groundwater sample and 6 soil vapor samples. A summary of the combined analytical results of both investigations is as follows:

1. Subsurface materials at the Site consisted of historical fill (sand with silt, gravel, glass, plant roots, and brick) to an approximate depth of 10 feet below grade. The fill was underlain by presumed native sand and silt, gravel, and cobbles. A maximum photoionization detector (PID) reading of 41 parts per million (ppm) was noted in the shallow fill layer at a test pit advanced in the central portion of the Site.
2. Groundwater was encountered above bedrock at two locations: in a soil boring advanced in the southern portion of the Site and in a test pit advanced in the northeastern portion of the Site, at approximately 10 feet and 11.5 feet below grade, respectively. Groundwater was measured at a depth of approximately 4.3 feet below sidewalk grade in the permanent monitoring well located in the sidewalk on Church Street. No evidence of contamination (i.e., sheen, odor, or floating product) was noted on the groundwater.
3. Lead was detected at a concentration of 8,160 ppm in sample TP-14 (8-10) located in the northeastern portion of the Site. In addition, elevated mercury and lead concentrations were detected above the RRSCOs and/or UUSCOs across the Site and within the historic fill, suggesting a Site-wide concern. These elevated concentrations could represent a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) under Title 40 of the Code of Federal Regulations (CFR) when analyzed via the Toxicity Characteristic Leaching Procedure (TCLP) (not conducted for this preliminary study). Elevated levels of semivolatile organic compounds (SVOCs) and other metals detected in the shallow soil samples were also indicative of a contaminated historic fill layer, which ranged in thickness of up to 10 feet across the Site.
4. PCE was detected in five soil vapor samples at concentrations ranging from 1.73 to 45.2 $\mu g/m^3$. The detection of chlorinated solvents at the Site was attributed, at least in part, to the historic on-site operations (a plumbing shop, a garage with tire repairs, and several upholsterers between circa 1892 and 1951).

5. Low levels of metals were detected in the analyzed groundwater samples at concentrations above the Ambient Water Quality Standards (AWQS). However, these Standards were developed assuming use as a drinking water supply; a scenario that does not, and would not occur, as the Site will be serviced by public water supply. These findings were concluded to be likely naturally occurring (in the case of the majority of the metals) and/or were attributed to suspended sediment in the samples; however, some influence from historical on-site releases was not ruled out.

# 4.0 INTERIM REMEDIAL MEASURES

The proposed IRM includes excavation and removal of soil above bedrock to approximately 17 to 22 feet below grade. Excavation will also include the removal of any petroleum storage tanks, fill ports, vent lines, etc. should they be encountered. Prior to any excavation and off-site disposal activities, soil will be characterized as described in Section 4.6. Furthermore, a comprehensive Remedial Investigation (RI) will be conducted in accordance with a NYSDEC-approved RIWP.

This section outlines the scope of work and ensures that proper monitoring procedures, Site controls, and handling and disposal of contaminated materials are implemented during the implementation of the IRM.

## 4.1 Site Preparation

The Site construction fence has been installed and all necessary permits pertaining to excavation will be procured prior to starting work. Site mobilization involving utility markouts will be performed prior to undertaking any excavation. The Volunteer and its contractors will be solely responsible for the identification of utilities that might be affected by excavation work and implementation of all required, appropriate, or necessary health and safety measures.

## 4.2 Soil Removal

The Site will be excavated to a depth of approximately 17 to 22 feet below grade. This will include excavation of soil/fill to bedrock with weathered seams to remove soil exceeding Unrestricted Use Soil Cleanup Objectives (UUSCOs) and any contaminated rock and bedrock in an attempt to achieve a BCP Track 1 Cleanup. Bedrock encountered will be excavated and removed, as required, to reach the proposed excavation depth.

The excavation will be consistent with the development-related excavation, which will be to approximately 17 to 22 feet across the Site. A Site plan depicting the proposed excavation area is provided as Figure 3. The removal of materials from the Site will include: (1) excavation and off-site disposal of soil; (2) removal of any petroleum storage tanks, fill ports, and vent lines encountered; and (3) removal of any subsurface construction and demolition (C&D) debris. In order to achieve the remedial action goal of a Track 1 Cleanup, approximately 45,000 tons of soil/fill and approximately 5,000 tons of bedrock (including weathered bedrock) is anticipated to be removed and disposed of at facilities licensed to accept such material.

The final volume of soil excavated as part of the remedial action will be provided in the IRM Construction Completion Report. A Remedial Investigation (RI) will be completed at the Site in accordance with the NYSDEC-approved Remedial Investigation Work Plan (RIWP) prior to start of any Site excavation and implementation of this work plan.

During excavation, excavated material will be inspected by AKRF field personnel for any evidence of contamination (e.g., staining or odors) and field-screened using a photoionization detector (PID), which screens for volatile organic compounds (VOCs). A particulate meter will be used to measure levels of airborne dust.

### 4.3 Support of Excavation (SOE)

Support of excavation (SOE) will be installed as necessary to enable excavation of contaminated soil. Additionally, underpinning of existing south- and southeast-adjacent buildings will be required prior to excavation and removal of contaminated soil. These activities will comply with applicable vibration monitoring and associated studies and plans and any local and state controlled inspections.

### 4.4 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed of in accordance with applicable local, state, and federal regulations. The dewatered fluids will be pumped to frac tanks for temporary storage, as needed, and disposed of at an approved facility off-site. As an alternate to the off-site transport of dewatered fluids, adequately treated fluids may be discharged to a sanitary sewer upon approval from City of New Rochelle, Westchester County Department of Environmental Facilities, and NYSDEC (as applicable). Dewatered fluids will not be recharged back to the land surface or subsurface of the Site without prior approval by NYSDEC. Discharge of water generated during remedial construction to surface waters (i.e., a local pond, stream or river) is prohibited without a State Pollutant Discharge Elimination System (SPDES) permit. Dewatering and treatment (if required) will be conducted in accordance with applicable local, state and federal regulation, as necessary, to enable the remedial excavation activities.

### 4.5 Post Excavation Endpoint Sampling

In the event that the excavation does not extend to bedrock, post-excavation endpoint samples will be collected to confirm that remaining soil does not exceed UUSCOs. The samples would be containerized in accordance with EPA analytical protocols and submitted to an ELAP-certified laboratory for analysis of VOCs via EPA Method 8260, SVOCs via EPA Method 8270, target compound list (TCL) Pesticides via EPA Method 8081, PCBs, and TAL Metals using EPA Method 6000/7000 series, 1,4-dioxane by EPA Method 8270, and the standard list of 21 per- and polyfluoroalkyl substances (PFAS) compounds by modified EPA Method 537. The laboratory will follow the NYSDEC Analytical Services Protocol dated 1995. The laboratory will compile and submit the data package using NYSDEC ASP Category B deliverables. Further details regarding the specific sampling methodology and analytical procedures are presented in the Quality Assurance Project Plan (QAPP), included as Appendix B. If a sample exceeds the UUSCOs, additional soil may be removed, if feasible, and the area re-sampled (if bedrock is not reached) to confirm that all soils above UUSCOs have been removed.

In the event that a UST is encountered and removed, typically five endpoint samples consisting of four sidewalls and one bottom sample will be obtained following removal of the tank and any associated petroleum-contaminated soil. The exact depths, locations and analytical parameters of any petroleum-related sampling will be coordinated with NYSDEC prior to initiating sampling, in accordance with NYSDEC DER-10.

### 4.6 Pre-Excavation Soil Characterization

Waste characterization samples will be collected prior to initiating excavation. Based on these sampling results, one or more appropriately permitted waste disposal facilities will be selected for off-site disposal. The disposal facility information, including locations, will be submitted to the NYSDEC Project Manager (PM) for approval and prior to commencing the disposal activities.

All soil/fill excavated and removed from the Site will be disposed of in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If any native soil from this Site is

proposed for unregulated disposal, a formal request with an associated plan will be submitted to the NYSDEC PM for approval.

Material that does not meet Track 1 UUSCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

The following documentation will be obtained and reported by the Qualified Environmental professional (QEP) [under supervision of the Remedial Engineer (RE)] for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the QEP or his/her designee or BCP Volunteer to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed of is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project identity and the name and phone number of the QEP or his/her designee. The letter will include an attachment summarizing all chemical data for the material being transported (including Site Characterization data); and (2) a letter from each receiving facilities stating that it is in receipt of the correspondence (noted above) and is approved to accept the material. These documents will be included in the Final Engineering Report (FER).

Non-hazardous historical fill and other non-native soil taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2.

Soil that exceeds UUSCOs and is non-native but non-hazardous and is being removed from the Site is considered by the NYSDEC Division of Materials Management (DMM) to be Construction and Demolition (C&D) debris with contamination not typical of virgin soil. These types of soil may be sent to a permitted Part 360 landfill. Such material may be sent to a permitted C&D processing facility without permit modifications only upon prior notification of NYSDEC Region 2 DMM. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by the DMM, special procedures will include, at a minimum, a letter to the C&D facility that provides a detailed explanation that the material is derived from a DER remediation Site, that the soil material is contaminated and that it must not be redirected to on-site or off-site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the RE. The letter will include a summary of all chemical data for the material being transported as an attachment.

The Final Engineering Report (FER) will include an accounting of the destination of all material removed from the Site during this IRM, including excavated soil, contaminated soil, historic fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. This information will be presented in tabulated form in the FER.

Bill of Lading system or equivalent will be used for off-site movement of non-hazardous wastes and contaminated soils. This information will be reported in the Final Engineering Report. Hazardous wastes derived from on-site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.

Appropriately licensed haulers will be used for material removed from this Site and will be in full compliance with all applicable local, State, and Federal regulations.

Waste characterization will be performed for off-site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC will be reported in the FER. All data available for soil/material to be disposed at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

### 4.7 Temporary Staging Procedures

The pre-excavation characterization results will be used to attain acceptance by a soil disposal facility prior to initiating soil removal. Direct loading of soil onto haul trucks will be performed to the extent feasible. If Site conditions require temporarily staging of soil prior to removal from the Site, stockpiled soil will be managed in accordance with appropriate guidelines. Staged soil will be placed on and covered with polyethylene sheeting and secured with large rocks or other appropriate weights to protect against leaching or runoff of contaminants into groundwater or stormwater. Staged soil will be managed to minimize dust generation, run-off and erosion, using water, plastic covers, silt fences, and/or hay bales, as necessary. A dedicated water hose connected to a fire hydrant will be available on-site for dust control.

If separate piles are needed to address different disposal requirements (hazardous or non-hazardous), each pile will be separated by a sufficient distance to ensure that mixing of dissimilar or potentially dissimilar materials does not occur. The location and classification of each staging area will be tracked on Site drawings and updated, as necessary, at the end of each workday. Copies of Site drawings will be kept in the field log book.

As applicable, manifest forms and shipment manifest records will be completed as required by the appropriate regulatory agencies for verifying the material and quantity of each load in unit of volume and weight.

### 4.8 Transportation

Transportation of material leaving the site for off-site disposal will be in accordance with Federal, State and local requirements (including 6 NYCRR Part 364 and U.S. DOT regulations) covering licensing of haulers and trucks, placarding, truck routes, manifesting, etc.

The schedule for truck arrival will be coordinated to meet the approved project schedule. The schedule will be compatible with the availability of equipment and personnel for material handling operations at the job site.

All vehicles leaving the project Site will be inspected to ensure that contaminated soil adhering to the wheels or under carriage are removed prior to the vehicle leaving the Site. Any situations involving material spilled in transit or mud and dust tracked off-site will be remedied. The access routes will be inspected for road conditions, overhead clearance, and weight restrictions.

Contaminated materials from other projects will not be combined with material from the construction area. The transporter will not deliver waste to any facility other than the disposal facility(s) listed on the shipping manifest.

### 4.9 Truck Inspection Station

An outbound-truck inspection station will be set up close to the Site exit using trap rock. A filter fabric will be placed prior to the installation of the trap rock. Before exiting the Site, trucks will be required to stop at the truck inspection station to be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed from vehicles and equipment using brooms, shovels and clean water, as necessary.

### 4.10 Site Control Measures

The potential off-site transport of sediment, dust and organic vapors potentially generated during soil excavation activities will be controlled by: covering soil stockpiles and/or open excavations with 6-mil polyethylene sheeting; backfilling open excavations with uncontaminated fill material; decontaminating equipment used for soil excavation/sampling; providing drainage inlet protection for catch basins; and/or the use of odor-controlling spray foam, as warranted. These

measures will be installed according to the requirements of all applicable or relevant and appropriate Federal, State and local laws.

### 4.11 Air Monitoring

Work zone and community air monitoring and will be conducted during all work identified in this IRM Work Plan. The protocol for implementing the work zone air monitoring will be completed in accordance with the site-specific HASP and CAMP, provided in Appendix A.

### 4.12 Quality Assurance/Quality Control

Measures will be taken to provide for Quality Assurance (QA) and maintain Quality Control (QC) of environmental sampling and remedial activities conducted under the IRM Work Plan. A QAPP that describes the QA/QC protocols and procedures that will be followed during implementation of the IRM is included in Appendix B. Adherence to the QAPP will ensure that defensible data will be obtained during the implementation of the IRM.

### 4.13 Surveying

The limits of the remedial excavation will be surveyed by a New York State-licensed surveyor and incorporated into the Site plan.

# 5.0 POST REMEDIATION DOCUMENTS

*Interim Remedial Measure Construction Completion Report/Final Engineering Report*

Upon completion of Site remediation, an IRM Report will be prepared for inclusion in the Final Engineering Report (FER) for submission to the NYSDEC and NYSDOH. The IRM Report will include:

- Photographs of excavation activities;
- Monitoring and endpoint sampling results collected during implementation of the remedy;
- An accounting of the final quantities and destination of all material removed from the Site and associated manifests/bills of lading and certificates of disposal from the receiving facilities;
- Any tank removal (if encountered) or spill remediation (if appropriate) documents; and
- Documentation of source approval and sampling for any imported backfill materials.

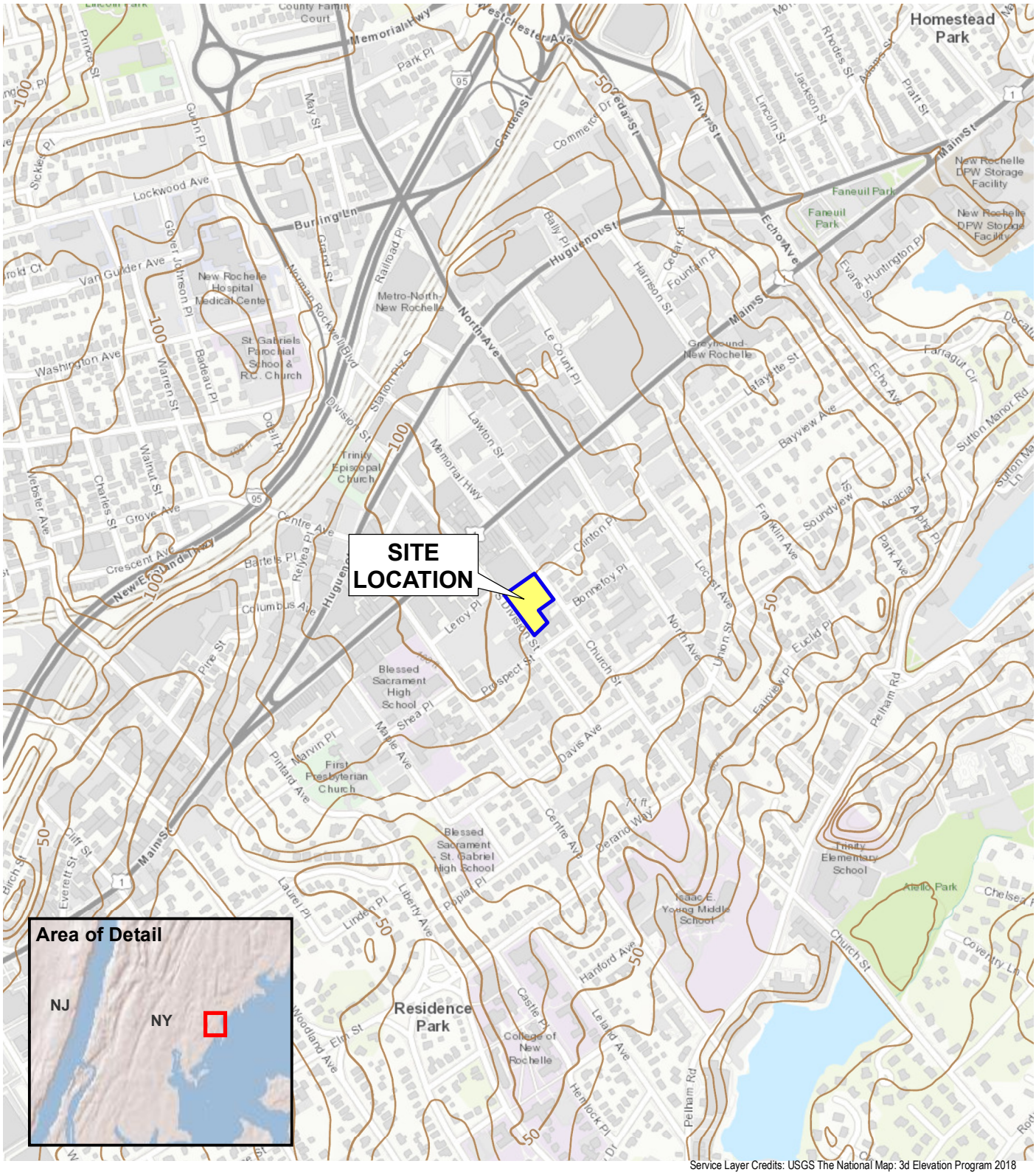
# 6.0 SCHEDULE OF WORK

The following tentative schedule has been developed for the project. The schedule would be subject to change to ensure that the data needs of the IRM work plan, RAWP, etc. are met to the satisfaction of the NYSDEC.

**Remedial Schedule**

| Activity | Time To Complete |
|---|---|
| BCP Application Public Comment Period Ends | February 20, 2020 |
| Draft RIWP and IRMWP Submitted | January 2020 |
| Draft RIWP Approved/Remedial Investigation Initiated | March 2020 |
| Issue IRM/Construction Notice Fact Sheet | May 2020 |
| Draft Remedial Investigation Report (RIR) Submitted to NYSDEC | June 2020 |
| Submittal of Draft Remedial Action Work Plan (RAWP) and Fact Sheet | July 2020 |
| 45-day Public Comment Period for RIR and RAWP is Initiated | July 30, 2020 |
| IRM Initiated | July 2020 |
| Public Comment Period for RIR and RAWP Ends | September 15, 2020 |
| Final RAWP Submitted/DEC Approves and Issues Decision Document | September 30, 2020 |
| Issue RAWP/Construction Notice Fact Sheet | October 2020 |
| Continue Redevelopment/Construction with Implementation of RAWP | October 2020 |
| Draft Site Management Plan (SMP) Submitted to NYSDEC | NA – Track 1 Site |
| Execution of Environmental Easement | NA – Track 1 Site |
| Draft Final Engineering Report and Fact Sheet | October 15, 2020 |
| Certificate of Completion and Fact Sheet | December 2020 |

# FIGURES




0 800 1,600

SCALE IN FEET

AKRF

440 Park Avenue South, New York, NY 10016

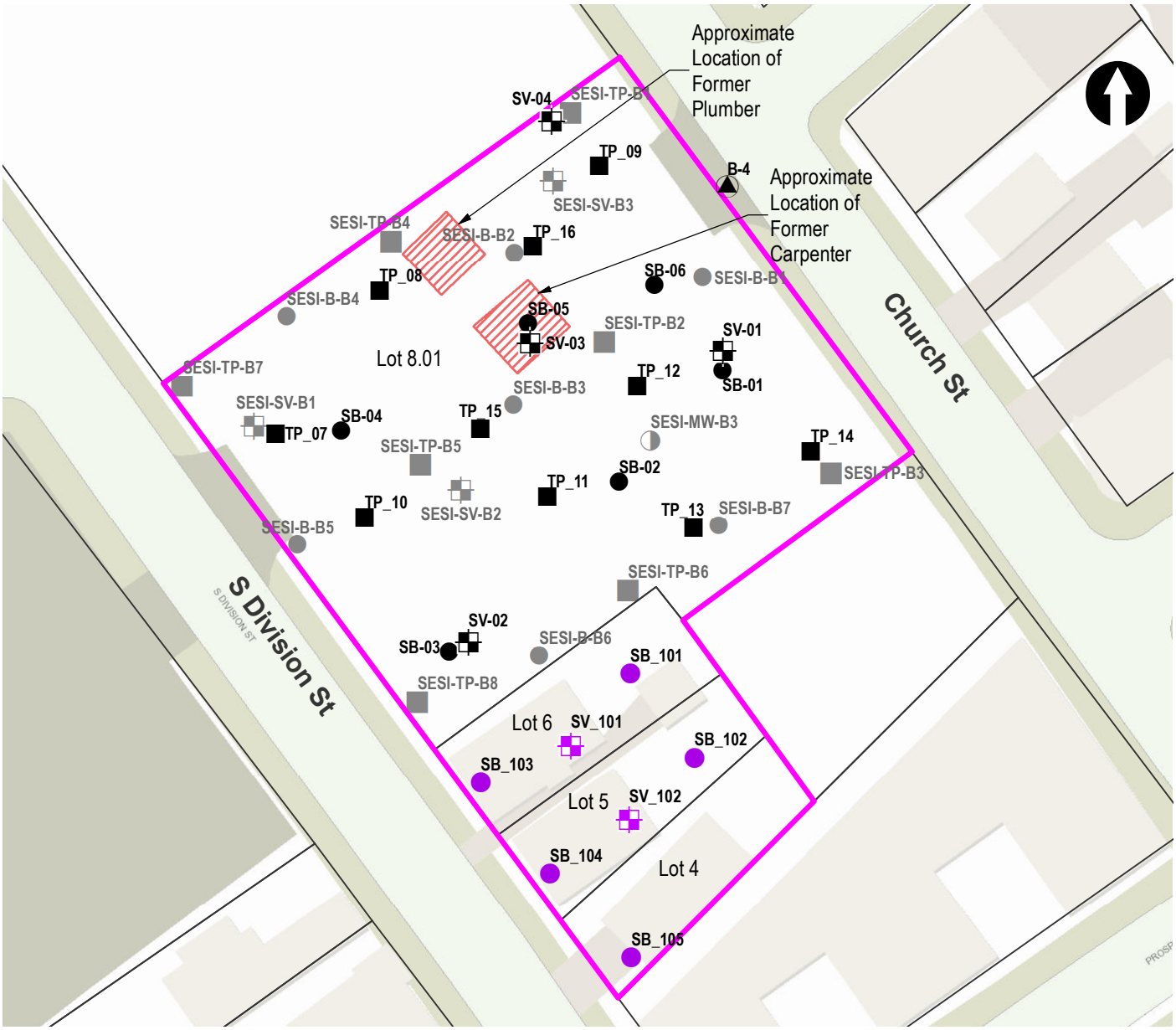
**28 South Division Street**
New Rochelle, New York

**SITE LOCATION**

DATE
**6/18/2019**

PROJECT NO.
**190188**

FIGURE
**1**




Map Source:
giswww.westchestergov.com (GIS database)

## LEGEND

- SOIL BORING
- TEMPORARY WELL
- TEST PIT LOCATION
- SOIL VAPOR POINT
- SITE BOUNDARY
- LOT BOUNDARY
- APPROXIMATE LOCATION OF FORMER STRUCTURES
- SOIL BORING (SESI DECEMBER 2018)
- MONITORING WELL (SESI DECEMBER 2018)
- TEST PIT LOCATION (SESI DECEMBER 2018)
- SOIL VAPOR POINT (SESI DECEMBER 2018)
- SOIL BORING (JUNE 2019)
- SOIL VAPOR POINT (JUNE 2019)

0 60 120
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

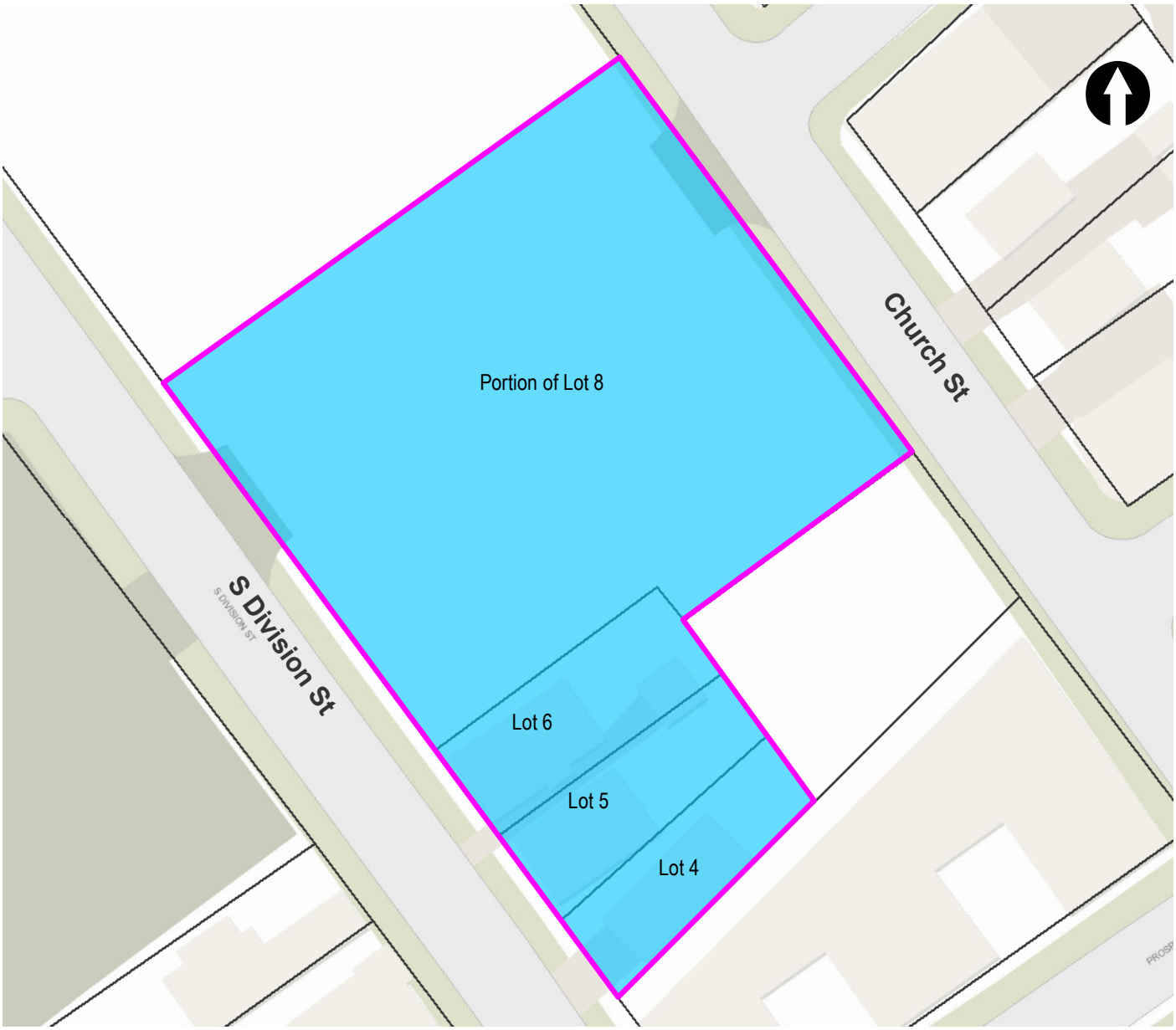
**28 South Division Street**
New Rochelle, New York

**SITE PLAN AND SAMPLE LOCATION MAP**

DATE
**8/1/2019**

PROJECT NO.
**190188**

FIGURE
**2**




Map Source:
giswww.westchestergov.com (GIS database)

**LEGEND**

- SITE BOUNDARY
- LOT BOUNDARY
- EXCAVATION TO APPROXIMATELY 17 TO 22 FEET BELOW GRADE

0 60 120

SCALE IN FEET

AKRF

440 Park Avenue South, New York, NY 10016

**28 South Division Street**
New Rochelle, New York

**PROPOSED REMEDIAL SITE EXCAVATION PLAN**

DATE
**2/3/2020**

PROJECT NO.
**190188**

FIGURE
**3**

# APPENDIX A

## HEALTH AND SAFETY PLAN & COMMUNITY AIR MONITORING PLAN

# 28 SOUTH DIVISION STREET

**NEW ROCHELLE, NEW YORK**

## Health and Safety Plan and
## Community Air Monitoring Plan

**AKRF Project Number: 190188**

**NYSDEC Site Number: C360198**

**Prepared for:**

28 South Division Owner LLC
% RXR Development Services
75 Rockefeller Plaza, Suite 1300
New York, New York 10019

**Prepared by:**

**AKRF, Inc.**
440 Park Avenue South, 7th Floor
New York, New York 10016
646-696-0670

**JANUARY 2020**

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# FIGURE



# APPENDICES

# 1.0 INTRODUCTION

This Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) were prepared by AKRF, Inc. (AKRF) on behalf of 28 South Division Owner LLC (the "Volunteer") for the 28 South Division Street project, New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site, located at 28 South Division Street in New Rochelle, New York (the "Site"). The 1.061-acre Site is also identified as Block 414, Lots 4, 5, 6, and 8.01. The Site is located in a mixed-use commercial and residential neighborhood and is bounded to the south by residential buildings; to the north by a redevelopment site (BCP Site Number C360187); to the east by Church Street; and to the west by South Division Street. Properties in the surrounding areas are predominantly mixed-use residential and commercial.

The historic uses at the Site included dwellings, a garage with tire repairs, a plumbing shop, several upholsterers between circa 1892 and 1951, and a public parking garage (recently demolished). No underground storage tanks (USTs) or aboveground storage tanks (ASTs) were registered for the Site; however, unregistered tanks may have been present.

Based on an evaluation of the data and information from previous investigations, there are concentrations of lead up to 8,160 parts per million (ppm) and mercury up to 1.82 ppm, as well as semi-volatile organic compounds (SVOCs) and other metals in the historical fill layer of the Site, which reaches a maximum depth of approximately 10 feet. Volatile organic compound (VOC) tetrachloroethylene (PCE), a chlorinated solvent, was detected in soil vapor samples which may be attributable to the past uses of the Site (garage with automotive repairs and upholsterer shops). No petroleum-related VOCs were detected in the soil samples collected to date; however, petroleum contamination may be present in untested areas. Metals were detected in the analyzed groundwater samples, in a few cases at concentrations above the Ambient Water Quality Standards (AWQS), i.e., drinking water standards. This Health and Safety Plan (HASP) has been designed to provide workplace safety while implementing the IRM.

# 2.0 HEALTH AND SAFETY GUIDELINES AND PROCEDURES

## 2.1 Hazard Evaluation

### 2.1.1 Hazards of Concern

| **Check all that apply** | | |
|---|---|---|
| (**X**) Organic Chemicals | (**X**) Inorganic Chemicals | ( ) Radiological |
| ( ) Biological | ( ) Explosive/Flammable | ( ) Oxygen Deficient Atm. |
| (**X**) Heat Stress | (**X**) Cold Stress | ( ) Carbon Monoxide |
| Comments:<br>No personnel are permitted to enter permit confined spaces. | | |

### 2.1.2 Physical Characteristics

| **Check all that apply** | | |
|---|---|---|
| (**X**) Liquid | (**X**) Solid | (**X**) Sludge |
| (**X**) Vapors | ( ) Unknown | ( ) Other |
| Comments: | | |

### 2.1.3 Hazardous Materials

| **Check all that apply** | | | | | |
|---|---|---|---|---|---|
| **Chemicals** | **Solids** | **Sludges** | **Solvents** | **Oils** | **Other** |
| ( ) Acids | (**X**) Ash | ( ) Paints | ( ) Halogens | ( ) Transformer | ( ) Lab |
| ( ) Caustics | ( ) Asbestos | ( ) Metals | (**X**) Petroleum | ( ) Other DF | ( ) Pharm |
| ( ) Pesticides | ( ) Tailings | ( ) POTW | (**X** ) Other Chlorinated Organic Solvents | (**X**) Motor or Hydraulic Oil | ( ) Hospital |
| (**X**)Petroleum | (**X**) Other | (**X**) Other | | (**X**) Gasoline | ( ) Rad |
| ( ) Inks | Fill material | Tank bottoms | | (**X**) Fuel Oil | ( ) MGP |
| ( ) PCBs | | | | (**X**) Waste Oil | ( ) Mold |
| (**X**) Metals | | | | | ( ) Cyanide |
| (**X**)Other: SVOCs | | | | | |

### 2.1.4 Chemicals of Concern

| Chemicals | REL/PEL/STEL (ppm) | Health Hazards |
|---|---|---|
| Lead | REL= 0.1 mg/$m^3$<br>PEL= 0.05 mg/$m^3$ | Weak, lassitude, insomnia; facial pallor, pale eye, anorexia, low-weight, malnutrition, constipation, abdominal pain, colic; anemia; gingival lead line; tremors, paralysis wrists and ankles; encephalopathy; kidney disease; irritation eyes; hypotension. |
| Mercury | REL= 0.05 mg/$m^3$ (Hg vapor)<br>REL=0.1 mg/$m^3$ (other)<br>PEL= 0.1 mg/$m^3$ | Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria |
| Benzene | REL = 0.1 ppm<br>PEL = 1 ppm<br>STEL = 5 ppm | Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude, dermatitis; bone marrow depression, potential occupational carcinogen. |
| Toluene | REL = 100 ppm<br>PEL = 200 ppm<br>STEL = 300 ppm | Irritation eyes, nose; lassitude, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage. |
| Ethylbenzene | REL = 100 ppm<br>PEL = 100 ppm | Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma. |
| Mixed-Xylenes | REL = 100 ppm<br>PEL = 100 ppm | Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, poor coordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis. |
| Tetrachloroethylene (PCE) | PEL = 100 ppm | Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]. |
| | | |
| Polyaromatic Hydrocarbons (PAHs) | REL= 0.1 mg/$m^3$<br>PEL= 5 mg/$m^3$ | Harmful effects on the skin, body fluids, and ability to fight disease after both short and long term exposure, birth defects, and potential occupational carcinogen. |
| Comments:<br>REL = NIOSH Recommended Exposure Limit<br>PEL = OSHA Permissible Exposure Limit<br>STEL = OSHA Short Term Exposure Limit | | |

## 2.2 Designated Personnel

AKRF will appoint one of its on-site personnel as the Site Safety Officer (SSO). This individual will be responsible for the implementation of the HASP. The SSO will work under the direction of a Qualified Environmental Professional (QEP) and will be experienced in the implementation of air monitoring and hazardous materials sampling programs. Health and safety training required for the SSO and all field personnel are outlined in Section 2.3 of this HASP.

## 2.3 Training

All personnel who perform sampling activities in the work area while intrusive activities are being performed will have completed a 40-hour training course that meets OSHA requirements of

29 CFR Part 1910, Occupational Safety and Health Standards. In addition, all personnel will have up-to-date 8-hour refresher training. The training will allow personnel to recognize and understand the potential hazards to health and safety. All field personnel must attend a training program, whose purpose is to:

- Make them aware of the potential hazards they may encounter;
- Provide the knowledge and skills necessary for them to perform the work with minimal risk to health and safety and make them aware of the purpose and limitations of safety equipment; and
- Ensure that they can safely avoid or escape from emergencies.

Each member of the field crew will be instructed in these objectives before he/she goes onto the Site. A site safety meeting will be conducted at the start of the project. Additional meetings shall be conducted, as necessary, for new personnel working at the Site.

## 2.4 Medical Surveillance Program

All AKRF and subcontractor personnel performing field work involving subsurface disturbance at the Site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120 (f). A physician's medical release for work will be confirmed by the SSO before an employee can begin Site activities. The medical release shall consider the type of work to be performed and the required PPE. The medical examination will, at a minimum, be provided annually and upon termination of hazardous waste Site work.

## 2.5 Site Work Zones

During any activities involving subsurface disturbance, the work area must be divided into various zones to prevent the spread of contamination, ensure that proper protective equipment is donned, and provide an area for decontamination.

The Exclusion Zone is defined as the area where exposure to impacted media could be encountered. The Contamination Reduction Zone (CRZ) is the area where decontamination procedures take place and is located next to the Exclusion Zone. The Support Zone is the area where support facilities such as vehicles, fire extinguisher, and first aid supplies are located. The emergency staging area (part of the Support Zone) is the area where all workers on-site would assemble in the event of an emergency. A summary of these areas is provided below. These zones may changed by SSO, depending on that day's activities. All field personnel will be informed of the location of these zones before work begins.

Appropriate barriers will be set up to secure the area and prevent any unauthorized personnel from approaching within 15 feet of the work area.

| **Site Work Zones** | | | |
|---|---|---|---|
| **Task** | **Exclusion Zone** | **CRZ** | **Support Zone** |
| Soil Excavation and Storage Tank Removal Areas | 15 feet from excavation border and excavation equipment or vehicles | 15 feet from excavation border and excavation equipment or vehicles | As Needed |

## 2.6 Air Monitoring

The purpose of the air monitoring program is to identify any exposure of the field personnel to potential environmental hazards in the soil and soil vapor. Results of the air monitoring will be used to determine the appropriate response action, if needed.

### 2.6.1 Work Zone Air Monitoring

Real time air monitoring will be performed with the photoionization detector (PID) and Dust Trak. Measurements will be taken prior to commencement of work and continuously during the work, as outlined in the following table. Measurements will be made as close to the workers as practicable and at the breathing height of the workers. The SSO shall set up the equipment and confirm that it is working properly. His/her designee may oversee the air measurements during the day. The initial measurement for the day will be performed before the start of work and will establish the background level for that day. The final measurement for the day will be performed after the end of work. The action levels and required responses are listed in the following table:

| Instrument | Action Level | Response Action |
|---|---|---|
| PID | Less than 10 ppm in breathing zone | Level D or D-Modified |
| | Between 10 ppm and 50 ppm | Level C |
| | More than 50 ppm | Stop work. Resume work when readings are less than 50 ppm. |
| Dust Trak | Less than 1.25 $mg/m^3$ above background in breathing zone | Level D or D-Modified |
| | More than 1.25 $mg/m^3$ above background in breathing zone | Stop work. Resume work when readings are less than 1.25 $mg/m^3$. |
| $mg/m^3$ = milligrams per cubic meter<br>ppm = parts per million | | |

### 2.6.2 Community Air Monitoring Plan

Community air monitoring will be conducted during all intrusive Site activities consistent with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP) and NYSDEC DER-10 procedures. Real-time air monitoring for volatile organic compounds and particulates at the perimeter of the exclusion zone will be performed as described below:

*VOC Monitoring*

Periodic monitoring for VOCs will be conducted during non-intrusive activities such as the collection of excavation soil endpoint samples using hand-held roving equipment. Periodic monitoring may include obtaining measurements upon arrival at a location and upon leaving the location.

Continuous monitoring for VOCs will be conducted during ground intrusive activities, including excavation and tank removal (if encountered). Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background concentrations. VOCs will be monitored continuously at the downwind perimeter of the exclusion zone. Monitoring will be conducted with a PID equipped with a 10.6 eV lamp capable of calculating 15-minute running average concentrations. The following actions will be taken based on organic vapor levels measured:

- If total organic vapor levels exceed 5 ppm above background for the 15-minute average at the exclusion zone perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the exclusion zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the hot 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 above background for the 15-minute average.
- If the total organic vapor level is above 25 ppm at the perimeter of the exclusion zone, activities will be shutdown.

More frequent intervals of monitoring will be conducted if required as determined by the SSO. All PID readings will be recorded and available for NYSDEC and NYSDOH personnel to review. Instantaneous readings, if any, will also be recorded.

*Dust Monitoring*

Continuous monitoring for particulates will be conducted during all ground intrusive activities, which will involve the measurement of respirable dust. Community air monitoring for dust particulates will be conducted using a MIE 1000 Personal DataRam or equivalent to measure the concentration of airborne respirable particulates less than 10 micrometers in size ($PM_{10}$). The dust monitor will be capable of calculating 15-minute running average concentrations and equipped with an audible alarm to indicate exceedance of action levels. An inspection of the monitoring stations will be conducted on at least an hourly basis. Background readings and any readings that trigger response actions will be recorded in the project logbook, which will be available on-site for NYSDOH and/or NYSDEC review. If the downwind particulate concentrations are greater than 100 micrograms per cubic meter ($\mu g/m^3$) above background (upwind concentrations), and no other obvious source is apparent, then it will be assumed that the elevated particulate concentrations are a result of Site activities. In such instances, dust suppression measures will be implemented and monitoring will be continued. Work will be allowed to continue with dust suppression if downwind particulate levels do not exceed 150 $\mu g/m^3$ above the background (upwind concentration) and provided that no visible dust is migrating from the work area. If particulate levels persist at 150 $\mu g/m^3$ above the background, work must be stopped until dust suppression measures bring particulate levels to below 150 $\mu g/m^3$ above background.

*Major Vapor Emission Response Plan*

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work site, or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted or vapor controls must be implemented.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the exclusion zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If either of the following criteria is exceeded in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall be automatically implemented.

- Sustained organic vapor levels approaching 1 ppm above background for a period of more than 30 minutes; or
- Organic vapor levels greater than 5 ppm above background for any time period.

Upon activation, the following activities shall be undertaken as part of the Major Vapor Emission Response Plan:

- The NYSDEC, NYSDOH, and local police authorities will be immediately contacted by the SSO and advised of the situation;
- Frequent air monitoring will be conducted at 30-minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Site Health and Safety Officer; and
- All Emergency contacts will go into effect as appropriate.

All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review.

### 2.6.3 Personal Protection Equipment

The personal protection equipment required for various kinds of site investigation tasks are based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, Appendix B, "General Description and Discussion of the Levels of Protection and Protective Gear."

AKRF field personnel and other site personnel shall wear, at a minimum, Level D personal protective equipment. The protection will be based on the air monitoring described in this section.

| **Personal Protection Equipment Requirements** | | |
|---|---|---|
| **LEVEL OF PROTECTION & PPE** | | **All Tasks** |
| **Level D**<br>(**X**) Steel Toe Shoes<br>(**X**) Hard Hat (within 25 ft of drill rig/excavator)<br>(**X**) Work Gloves | (**X**) Safety Glasses<br>( ) Face Shield<br>(**X**) Ear Plugs (within 25 ft of drill rig/excavator)<br>(**X**) Nitrile Gloves<br>(**X**) Tyvek for drill operator if NAPL present | Yes |
| **Level C** ***(in addition to Level D)***<br>(**X**) Half-Face Respirator OR<br>(**X**) Full Face Respirator<br>( ) Full-Face PAPR | ( ) Particulate Cartridge<br>( ) Organic Cartridge<br>(**X**) Dual Organic/ Particulate Cartridge | If PID > 10 ppm (breathing zone) |
| Comments:<br>Cartridges to be changed out at least once per shift unless warranted beforehand (e.g., more difficult to breath or any odors detected). | | |

## 2.7 General Work Practices

To protect their health and safety, all field personnel will adhere to the following listed guidelines during activities involving subsurface disturbance:

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited, except in designated areas on the Site. These areas will be designated by the SSO.
- Workers must wash their hands thoroughly on leaving the work area and before eating, drinking, or any other such activity.
- The workers should shower as soon as possible after leaving the Site. Contact with contaminated or suspected surfaces should be avoided.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat/cold stress.

# 3.0 EMERGENCY PROCEDURES AND EMERGENCY RESPONSE PLAN

The field crew will be equipped with emergency equipment, such as a first aid kit and disposable eye washes. In the case of a medical emergency, the SSO will determine the nature of the emergency and he/she will have someone call for an ambulance, if needed. If the nature of the injury is not serious, i.e., the person can be moved without expert emergency medical personnel, he/she should be driven to the Montefiore New Rochelle Hospital in New Rochelle by on-site personnel. Directions to the hospital are provided below, and a hospital route map is attached.

## 3.1 Hospital Directions

| | |
|---|---|
| **Hospital Name:** | Montefiore New Rochelle Hospital |
| **Phone Number:** | (914) 365-3770 |
| **Address/Location:** | 16 Guion Place, New Rochelle, NY 10801 |
| **Directions:** | Turn LEFT onto Church Street<br>Continue towards Memorial Highway<br>Turn LEFT onto Division Street<br>Turn RIGHT onto Union Avenue<br>Turn RIGHT onto Badeau Pl<br>Continue onto Glover Johnson Pl<br>Hospital will be on the RIGHT. |

## 3.2 Emergency Contacts

| Company | Individual Name | Title | Contact Number |
|---|---|---|---|
| AKRF, Inc. | Axel Schwendt | Project Director | 646-388-9529 (office) |
| | Ashutosh Sharma | Project Manager | 646-388-9865 (office) |
| | Thomas Giordano | SSO | 646-388-9758 (office)<br>914-602-6956 (cell) |
| 28 South Division Owner LLC | Rebecca Parelman | Owner Representative | 646-647-5967 |
| New York State Department of Environmental Conservation | TBD | Project Manager | TBD |
| New York State Department of Health | TBD | TBD | TBD |
| Ambulance, Fire Department & Police Department | - | - | 911 |
| NYSDEC Spill Hotline | - | - | 800-457-7362 |

# 4.0 APPROVAL & ACKNOWLEDGMENTS OF HASP

## APPROVAL

Signed: _____ Date: _____

AKRF Project Manager

Signed: _____ Date: _____

AKRF Health and Safety Officer

Below is an affidavit that must be signed by all workers who enter the site. A copy of the HASP must be on-site at all times and will be kept by the SSO.

## AFFIDAVIT

I, _____ (name), of_____ (company name), have read the Health and Safety Plan (HASP) for the 28 South Division Street Site. I agree to conduct all on-site work in accordance with the requirements set forth in this HASP and understand that failure to comply with this HASP could lead to my removal from the site.

Signed: _____ Company: _____ Date: _____
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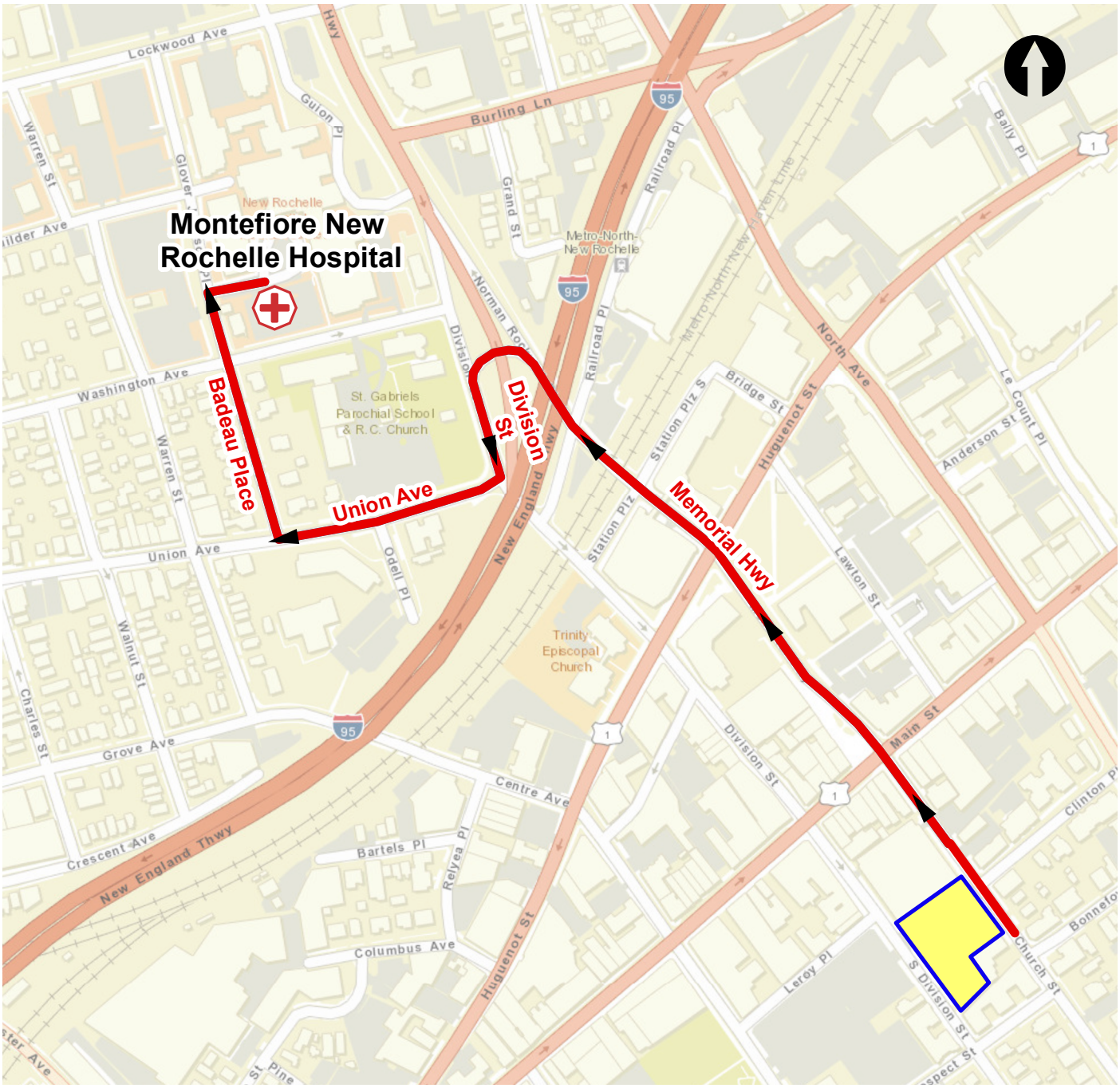
**FIGURE 1 – HOSPITAL ROUTE MAP**




*Service Layer Credits: ESRI World Street Map 2018*

**LEGEND**

- SITE BOUNDARY
- ROUTE TO HOSPITAL
- HOSPITAL LOCATION

Hospital address:
Montefiore New Rochelle Hospital
16 Guion Pl, New Rochelle, NY 10801
(914) 378-7000

0 400 800
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

**28 South Division Street**
New Rochelle, New York

**HOSPITAL ROUTE MAP**

DATE **7/24/2019**
PROJECT NO. **190188**
FIGURE **1**

# ATTACHMENT A

## POTENTIAL HEALTH EFFECTS FROM ON-SITE CONTAMINANTS

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

# LEAD

## CAS # 7439-92-1

**Division of Toxicology and Environmental Medicine ToxFAQs™** **August 2007**

**This fact sheet answers the most frequently asked health questions (FAQs) about lead. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: Exposure to lead can happen from breathing workplace air or dust, eating contaminated foods, or drinking contaminated water. Children can be exposed from eating lead-based paint chips or playing in contaminated soil. Lead can damage the nervous system, kidneys, and reproductive system. Lead has been found in at least 1,272 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).**

### What is lead?

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing.

Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Because of health concerns, lead from paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years. The use of lead as an additive to gasoline was banned in 1996 in the United States.

### What happens to lead when it enters the environment?

- ❏ Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.
- ❏ When lead is released to the air, it may travel long distances before settling to the ground.
- ❏ Once lead falls onto soil, it usually sticks to soil particles.
- ❏ Movement of lead from soil into groundwater will depend on the type of lead compound and the characteristics of the soil.

### How might I be exposed to lead?

- ❏ Eating food or drinking water that contains lead. Water pipes in some older homes may contain lead solder. Lead can leach out into the water.
- ❏ Spending time in areas where lead-based paints have been used and are deteriorating. Deteriorating lead paint can contribute to lead dust.
- ❏ Working in a job where lead is used or engaging in certain hobbies in which lead is used, such as making stained glass.
- ❏ Using health-care products or folk remedies that contain lead.

### How can lead affect my health?

The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in your body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

### How likely is lead to cause cancer?

We have no conclusive proof that lead causes cancer in humans. Kidney tumors have developed in rats and mice that had been given large doses of some kind of lead compounds. The Department of Health and Human Services

(DHHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens and the EPA has determined that lead is a probable human carcinogen. The International Agency for Research on Cancer (IARC) has determined that inorganic lead is probably carcinogenic to humans and that there is insufficient information to determine whether organic lead compounds will cause cancer in humans.

## How can lead affect children?

Small children can be exposed by eating lead-based paint chips, chewing on objects painted with lead-based paint, or swallowing house dust or soil that contains lead.

Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomachache, muscle weakness, and brain damage. If a child swallows smaller amounts of lead, much less severe effects on blood and brain function may occur. Even at much lower levels of exposure, lead can affect a child's mental and physical growth.

Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common if the mother or baby was exposed to high levels of lead. Some of these effects may persist beyond childhood.

## How can families reduce the risks of exposure to lead?

❑ Avoid exposure to sources of lead.

❑ Do not allow children to chew or mouth surfaces that may have been painted with lead-based paint.

❑ If you have a water lead problem, run or flush water that has been standing overnight before drinking or cooking with it.

❑ Some types of paints and pigments that are used as make-up or hair coloring contain lead. Keep these kinds of products away from children

❑ If your home contains lead-based paint or you live in an area contaminated with lead, wash children's hands and faces often to remove lead dusts and soil, and regularly clean the house of dust and tracked in soil.

## Is there a medical test to determine whether I've been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your recent exposure to lead. Blood tests are commonly used to screen children for lead poisoning. Lead in teeth or bones can be measured by X-ray techniques, but these methods are not widely available. Exposure to lead also can be evaluated by measuring erythrocyte protoporphyrin (EP) in blood samples. EP is a part of red blood cells known to increase when the amount of lead in the blood is high. However, the EP level is not sensitive enough to identify children with elevated blood lead levels below about 25 micrograms per deciliter (μg/dL). These tests usually require special analytical equipment that is not available in a doctor's office. However, your doctor can draw blood samples and send them to appropriate laboratories for analysis.

## Has the federal government made recommendations to protect human health?

The Centers for Disease Control and Prevention (CDC) recommends that states test children at ages 1 and 2 years. Children should be tested at ages 3–6 years if they have never been tested for lead, if they receive services from public assistance programs for the poor such as Medicaid or the Supplemental Food Program for Women, Infants, and Children, if they live in a building or frequently visit a house built before 1950; if they visit a home (house or apartment) built before 1978 that has been recently remodeled; and/or if they have a brother, sister, or playmate who has had lead poisoning. CDC considers a blood lead level of 10 μg/dL to be a level of concern for children.

EPA limits lead in drinking water to 15 μg per liter.

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for lead (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

# MERCURY
# CAS # 7439-97-6



**This fact sheet answers the most frequently asked health questions (FAQs) about mercury. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: Exposure to mercury occurs from breathing contaminated air, ingesting contaminated water and food, and having dental and medical treatments. Mercury, at high levels, may damage the brain, kidneys, and developing fetus. This chemical has been found in at least 714 of 1,467 National Priorities List sites identified by the Environmental Protection Agency.**

## What is mercury?

(Pronounced mŭr′kyə-rē)

Mercury is a naturally occurring metal which has several forms. The metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas.

Mercury combines with other elements, such as chlorine, sulfur, or oxygen, to form inorganic mercury compounds or "salts," which are usually white powders or crystals. Mercury also combines with carbon to make organic mercury compounds. The most common one, methylmercury, is produced mainly by microscopic organisms in the water and soil. More mercury in the environment can increase the amounts of methylmercury that these small organisms make.

Metallic mercury is used to produce chlorine gas and caustic soda, and is also used in thermometers, dental fillings, and batteries. Mercury salts are sometimes used in skin lightening creams and as antiseptic creams and ointments.

## What happens to mercury when it enters the environment?

- Inorganic mercury (metallic mercury and inorganic mercury compounds) enters the air from mining ore deposits, burning coal and waste, and from manufacturing plants.
- It enters the water or soil from natural deposits, disposal of wastes, and volcanic activity.
- Methylmercury may be formed in water and soil by small organisms called bacteria.
- Methylmercury builds up in the tissues of fish. Larger and older fish tend to have the highest levels of mercury.

## How might I be exposed to mercury?

- Eating fish or shellfish contaminated with methylmercury.
- Breathing vapors in air from spills, incinerators, and industries that burn mercury-containing fuels.
- Release of mercury from dental work and medical treatments.
- Breathing contaminated workplace air or skin contact during use in the workplace (dental, health services, chemical, and other industries that use mercury).
- Practicing rituals that include mercury.

## How can mercury affect my health?

The nervous system is very sensitive to all forms of mercury. Methylmercury and metallic mercury vapors are more harmful than other forms, because more mercury in these forms reaches the brain. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems.

Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea,

vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation.

## How likely is mercury to cause cancer?

There are inadequate human cancer data available for all forms of mercury. Mercuric chloride has caused increases in several types of tumors in rats and mice, and methylmercury has caused kidney tumors in male mice. The EPA has determined that mercuric chloride and methylmercury are possible human carcinogens.

## How can mercury affect children?

Very young children are more sensitive to mercury than adults. Mercury in the mother's body passes to the fetus and may accumulate there. It can also can pass to a nursing infant through breast milk. However, the benefits of breast feeding may be greater than the possible adverse effects of mercury in breast milk.

Mercury's harmful effects that may be passed from the mother to the fetus include brain damage, mental retardation, incoordination, blindness, seizures, and inability to speak. Children poisoned by mercury may develop problems of their nervous and digestive systems, and kidney damage.

## How can families reduce the risk of exposure to mercury?

Carefully handle and dispose of products that contain mercury, such as thermometers or fluorescent light bulbs. Do not vacuum up spilled mercury, because it will vaporize and increase exposure. If a large amount of mercury has been spilled, contact your health department. Teach children not to play with shiny, silver liquids.

Properly dispose of older medicines that contain mercury. Keep all mercury-containing medicines away from children.

Pregnant women and children should keep away from rooms where liquid mercury has been used.

Learn about wildlife and fish advisories in your area from your public health or natural resources department.

## Is there a medical test to show whether I've been exposed to mercury?

Tests are available to measure mercury levels in the body. Blood or urine samples are used to test for exposure to metallic mercury and to inorganic forms of mercury. Mercury in whole blood or in scalp hair is measured to determine exposure to methylmercury. Your doctor can take samples and send them to a testing laboratory.

## Has the federal government made recommendations to protect human health?

The EPA has set a limit of 2 parts of mercury per billion parts of drinking water (2 ppb).

The Food and Drug Administration (FDA) has set a maximum permissible level of 1 part of methylmercury in a million parts of seafood (1 ppm).

The Occupational Safety and Health Administration (OSHA) has set limits of 0.1 milligram of organic mercury per cubic meter of workplace air (0.1 $mg/m^3$) and 0.05 $mg/m^3$ of metallic mercury vapor for 8-hour shifts and 40-hour work weeks.

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for mercury. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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# BENZENE
## CAS # 71-43-2



**This fact sheet answers the most frequently asked health questions (FAQs) about benzene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 813 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

### What is benzene?

(Pronounced bĕn′zēn′)

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

### What happens to benzene when it enters the environment?

- Industrial processes are the main source of benzene in the environment.
- Benzene can pass into the air from water and soil.
- It reacts with other chemicals in the air and breaks down within a few days.
- Benzene in the air can attach to rain or snow and be carried back down to the ground.
- It breaks down more slowly in water and soil, and can pass through the soil into underground water.
- Benzene does not build up in plants or animals.

### How might I be exposed to benzene?

- Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
- Indoor air generally contains higher levels of benzene from products that contain it such as glues, paints, furniture wax, and detergents.
- Air around hazardous waste sites or gas stations will contain higher levels of benzene.
- Leakage from underground storage tanks or from hazardous waste sites containing benzene can result in benzene contamination of well water.
- People working in industries that make or use benzene may be exposed to the highest levels of it.
- A major source of benzene exposures is tobacco smoke.

### How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

**ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html**

The major effect of benzene from long-term (365 days or longer) exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.

Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries. It is not known whether benzene exposure affects the developing fetus in pregnant women or fertility in men.

Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

## How likely is benzene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that benzene is a known human carcinogen. Long-term exposure to high levels of benzene in the air can cause leukemia, cancer of the blood-forming organs.

## Is there a medical test to show whether I've been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood, however, since benzene disappears rapidly from the blood, measurements are accurate only for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. However, this test must be done shortly after exposure and is not a reliable indicator of how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

## Has the federal government made recommendations to protect human health?

The EPA has set the maximum permissible level of benzene in drinking water at 0.005 milligrams per liter (0.005 mgL). The EPA requires that spills or accidental releases into the environment of 10 pounds or more of benzene be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit of 1 part of benzene per million parts of air (1 ppm) in the workplace during an 8-hour workday, 40-hour workweek.

## Glossary

Anemia: A decreased ability of the blood to transport oxygen.

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Chromosomes: Parts of the cells responsible for the development of hereditary characteristics.

Metabolites: Breakdown products of chemicals.

Milligram (mg): One thousandth of a gram.

Pesticide: A substance that kills pests.

## References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Benzene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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# TOLUENE
## CAS # 108-88-3

**Division of Toxicology ToxFAQs™** **February 2001**

**This fact sheet answers the most frequently asked health questions (FAQs) about toluene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: Exposure to toluene occurs from breathing contaminated workplace air, in automobile exhaust, some consumer products paints, paint thinners, fingernail polish, lacquers, and adhesives. Toluene affects the nervous system. Toluene has been found at 959 of the 1,591 National Priority List sites identified by the Environmental Protection Agency**

### What is toluene?

Toluene is a clear, colorless liquid with a distinctive smell. Toluene occurs naturally in crude oil and in the tolu tree. It is also produced in the process of making gasoline and other fuels from crude oil and making coke from coal.

Toluene is used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes.

### What happens to toluene when it enters the environment?

❑ Toluene enters the environment when you use materials that contain it. It can also enter surface water and groundwater from spills of solvents and petrolieum products as well as from leasking underground storage tanks at gasoline stations and other facilities.

❑ When toluene-containing products are placed in landfills or waste disposal sites, the toluene can enter the soil or water near the waste site.

❑ Toluene does not usually stay in the environment long.

❑ Toluene does not concentrate or buildup to high levels in animals.

### How might I be exposed to toluene?

❑ Breathing contaminated workplace air or automobile exhaust.

❑ Working with gasoline, kerosene, heating oil, paints, and lacquers.

❑ Drinking contaminated well-water.

❑ Living near uncontrolled hazardous waste sites containing toluene products.

### How can toluene affect my health?

Toluene may affect the nervous system. Low to moderate levles can cause tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, loss of appetite, and

hearing and color vision loss. These symptoms usually disappear when exposure is stopped.

Inhaling High levels of toluene in a short time can make you feel light-headed, dizzy, or sleepy. It can also cause unconsciousness, and even death.

High levels of toluene may affect your kidneys.

## How likely is toluene to cause cancer?

Studies in humans and animals generally indicate that toluene does not cause cancer.

The EPA has determined that the carcinogenicity of toluene can not be classified.

## How can toluene affect children?

It is likely that health effects seen in children exposed to toluene will be similar to the effects seen in adults. Some studies in animals suggest that babies may be more sensitive than adults.

Breathing very high levels of toluene during pregnancy can result in children with birth defects and retard mental abilities, and growth. We do not know if toluene harms the unborn child if the mother is exposed to low levels of toluene during pregnancy.

## How can families reduce the risk of exposure to toluene?

❑ Use toluene-containing products in well-ventilated areas.

❑ When not in use, toluene-containing products should be tightly covered to prevent evaporation into the air.

## Is there a medical test to show whether I've been exposed to toluene?

There are tests to measure the level of toluene or its breakdown products in exhaled air, urine, and blood. To determine if you have been exposed to toluene, your urine or blood must be checked within 12 hours of exposure. Several other chemicals are also changed into the same breakdown products as toluene, so some of these tests are not specific for toluene.

## Has the federal government made recommendations to protect human health?

EPA has set a limit of 1 milligram per liter of drinking water (1 mg/L).

Discharges, releases, or spills of more than 1,000 pounds of toluene must be reported to the National Response Center.

The Occupational Safety and Health Administration has set a limit of 200 parts toluene per million of workplace air (200 ppm).

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological Profile for Toluene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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# ETHYLBENZENE
## CAS # 100-41-4

**Agency for Toxic Substances and Disease Registry ToxFAQs** **June 1999**

**This fact sheet answers the most frequently asked health questions (FAQs) about ethylbenzene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: Ethylbenzene is a colorless liquid found in a number of products including gasoline and paints. Breathing very high levels can cause dizziness and throat and eye irritation. Ethylbenzene has been found in at least 731 of the 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

### What is ethylbenzene?

(Pronounced ĕthʹ əl bĕnʹ zēnʹ)

Ethylbenzene is a colorless, flammable liquid that smells like gasoline. It is found in natural products such as coal tar and petroleum and is also found in manufactured products such as inks, insecticides, and paints.

Ethylbenzene is used primarily to make another chemical, styrene. Other uses include as a solvent, in fuels, and to make other chemicals.

### What happens to ethylbenzene when it enters the environment?

- Ethylbenzene moves easily into the air from water and soil.
- It takes about 3 days for ethylbenzene to be broken down in air into other chemicals.
- Ethylbenzene may be released to water from industrial discharges or leaking underground storage tanks.
- In surface water, ethylbenzene breaks down by reacting with other chemicals found naturally in water.
- In soil, it is broken down by soil bacteria.

### How might I be exposed to ethylbenzene?

- Breathing air containing ethylbenzene, particularly in areas near factories or highways.
- Drinking contaminated tap water.
- Working in an industry where ethylbenzene is used or made.
- Using products containing it, such as gasoline, carpet glues, varnishes, and paints.

### How can ethylbenzene affect my health?

Limited information is available on the effects of ethylbenzene on people's health. The available information shows dizziness, throat and eye irritation, tightening of the chest, and a burning sensation in the eyes of people exposed to high levels of ethylbenzene in air.

Animals studies have shown effects on the nervous system, liver, kidneys, and eyes from breathing ethylbenzene in air.

### How likely is ethylbenzene to cause cancer?

The EPA has determined that ethylbenzene is not classifiable as to human carcinogenicity.

**ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html**

No studies in people have shown that ethylbenzene exposure can result in cancer. Two available animal studies suggest that ethylbenzene may cause tumors.

## How can ethylbenzene affect children?

Children may be exposed to ethylbenzene through inhalation of consumer products, including gasoline, paints, inks, pesticides, and carpet glue. We do not know whether children are more sensitive to the effects of ethylbenzene than adults.

It is not known whether ethylbenzene can affect the development of the human fetus. Animal studies have shown that when pregnant animals were exposed to ethylbenzene in air, their babies had an increased number of birth defects.

## How can families reduce the risk of exposure to ethylbenzene?

Exposure to ethylbenzene vapors from household products and newly installed carpeting can be minimized by using adequate ventilation.

Household chemicals should be stored out of reach of children to prevent accidental poisoning. Always store household chemicals in their original containers; never store them in containers children would find attractive to eat or drink from, such as old soda bottles. Gasoline should be stored in a gasoline can with a locked cap.

Sometimes older children sniff household chemicals, including ethylbenzene, in an attempt to get high. Talk with your children about the dangers of sniffing chemicals.

## Is there a medical test to show whether I've been exposed to ethylbenzene?

Ethylbenzene is found in the blood, urine, breath, and some body tissues of exposed people. The most common way to test for ethylbenzene is in the urine. This test measures substances formed by the breakdown of ethylbenzene. This test needs to be done within a few hours after exposure occurs, because the substances leave the body very quickly.

These tests can show you were exposed to ethylbenzene, but cannot predict the kind of health effects that might occur.

## Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level of 0.7 milligrams of ethylbenzene per liter of drinking water (0.7 mg/L).

The EPA requires that spills or accidental releases into the environment of 1,000 pounds or more of ethylbenzene be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set an occupational exposure limit of 100 parts of ethylbenzene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for ethylbenzene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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# XYLENE
## CAS # 1330-20-7



**This fact sheet answers the most frequently asked health questions (FAQs) about xylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**SUMMARY: Exposure to xylene occurs in the workplace and when you use paint, gasoline, paint thinners and other products that contain it. People who breathe high levels may have dizziness, confusion, and a change in their sense of balance. This substance has been found in at least 658 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

### What is xylene?

(Pronounced zī′lēn)

Xylene is a colorless, sweet-smelling liquid that catches on fire easily. It occurs naturally in petroleum and coal tar and is formed during forest fires. You can smell xylene in air at 0.08–3.7 parts of xylene per million parts of air (ppm) and begin to taste it in water at 0.53–1.8 ppm.

Chemical industries produce xylene from petroleum. It's one of the top 30 chemicals produced in the United States in terms of volume.

Xylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes. It is found in small amounts in airplane fuel and gasoline.

### What happens to xylene when it enters the environment?

- Xylene has been found in waste sites and landfills when discarded as used solvent, or in varnish, paint, or paint thinners.
- It evaporates quickly from the soil and surface water into the air.
- In the air, it is broken down by sunlight into other less harmful chemicals.
- It is broken down by microorganisms in soil and water.
- Only a small amount of it builds up in fish, shellfish, plants, and animals living in xylene-contaminated water.

### How might I be exposed to xylene?

- Breathing xylene in workplace air or in automobile exhaust.
- Breathing contaminated air.
- Touching gasoline, paint, paint removers, varnish, shellac, and rust preventatives that contain it.
- Breathing cigarette smoke that has small amounts of xylene in it.
- Drinking contaminated water or breathing air near waste sites and landfills that contain xylene.
- The amount of xylene in food is likely to be low.

### How can xylene affect my health?

Xylene affects the brain. High levels from exposure for short periods (14 days or less) or long periods (more than 1 year) can cause headaches, lack of muscle coordination, dizziness, confusion, and changes in one's sense of balance. Exposure of

people to high levels of xylene for short periods can also cause irritation of the skin, eyes, nose, and throat; difficulty in breathing; problems with the lungs; delayed reaction time; memory difficulties; stomach discomfort; and possibly changes in the liver and kidneys. It can cause unconsciousness and even death at very high levels.

Studies of unborn animals indicate that high concentrations of xylene may cause increased numbers of deaths, and delayed growth and development. In many instances, these same concentrations also cause damage to the mothers. We do not know if xylene harms the unborn child if the mother is exposed to low levels of xylene during pregnancy.

## How likely is xylene to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that xylene is not classifiable as to its carcinogenicity in humans.

Human and animal studies have not shown xylene to be carcinogenic, but these studies are not conclusive and do not provide enough information to conclude that xylene does not cause cancer.

## Is there a medical test to show whether I've been exposed to xylene?

Laboratory tests can detect xylene or its breakdown products in exhaled air, blood, or urine. There is a high degree of agreement between the levels of exposure to xylene and the levels of xylene breakdown products in the urine. However, a urine sample must be provided very soon after exposure ends because xylene quickly leaves the body. These tests are not routinely available at your doctor's office.

## Has the federal government made recommendations to protect human health?

The EPA has set a limit of 10 ppm of xylene in drinking water.

The EPA requires that spills or accidental releases of xylenes into the environment of 1,000 pounds or more must be reported.

The Occupational Safety and Health Administration (OSHA) has set a maximum level of 100 ppm xylene in workplace air for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) also recommend exposure limits of 100 ppm in workplace air.

NIOSH has recommended that 900 ppm of xylene be considered immediately dangerous to life or health. This is the exposure level of a chemical that is likely to cause permanent health problems or death.

## Glossary

Evaporate: To change from a liquid into a vapor or a gas.

Carcinogenic: Having the ability to cause cancer.

CAS: Chemical Abstracts Service.

ppm: Parts per million.

Solvent: A liquid that can dissolve other substances.

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for xylenes (update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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# TETRACHLOROETHYLENE
## CAS # 127-18-4



**This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

### What is tetrachloroethylene?

(Pronounced tĕt′rə-klôr′ ō-ĕth′ə-lēn′)

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

### What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

### How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

### How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethyl-

ene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

## How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

## Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be performed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

## Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

## Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

## References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

# POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)

**Agency for Toxic Substances and Disease Registry ToxFAQs** **September 1996**

**This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**SUMMARY: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

## What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl′ĭ-sī′klĭk ăr′ə-măt′ĭk hī′drə-kar′bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

## What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

## How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.

- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

## How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

## How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

## Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

## Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 $mg/m^3$). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 $mg/m^3$ averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 $mg/m^3$ for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

## Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

**ATTACHMENT B**

**WEST NILE VIRUS/ST. LOUIS ENCEPHALITIS PREVENTION**

## WEST NILE VIRUS/ST. LOUIS ENCEPHALITIS PREVENTION

The following section is based upon information provided by the CDC Division of Vector-Borne Infectious Diseases. Symptoms of West Nile Virus include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands, with most infections being mild. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death. Most infections of St. Louis encephalitis are mild without apparent symptoms other than fever with headache. More severe infection is marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions (especially infants) and spastic (but rarely flaccid) paralysis. The only way to avoid infection of West Nile Virus and St. Louis encephalitis is to avoid mosquito bites. To reduce the chance of mosquito contact:

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing permethrin or DEET (N, N-diethyl-meta-toluamide), since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET. DEET in high concentrations (greater than 35%) provides no additional protection.
- Repellents may irritate the eyes and mouth.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's directions for use, as printed on the product.

**ATTACHMENT C**

**REPORT FORMS**

# WEEKLY SAFETY REPORT FORM

Week Ending: _____ Project Name/Number: _____

Report Date: _____ Project Manager Name: _____

Summary of any violations of procedures occurring that week:

_____

_____

_____

Summary of any job related injuries, illnesses, or near misses that week:

_____

_____

_____

_____

Summary of air monitoring data that week (include and sample analyses, action levels exceeded, and actions taken):

_____

_____

_____

Comments:

_____

_____

_____

Name: _____ Company: _____

Signature: _____ Title: _____

# INCIDENT REPORT FORM

Date of Report: _____

Injured: _____

Employer: _____

Site: _____ Site Location: _____

Report Prepared By: _____ _____
Signature Title

**ACCIDENT/INCIDENT CATEGORY** (check all that applies)

| | | |
|---|---|---|
| ___Injury | ___ Illness | ___ Near Miss |
| __ Property Damage | ___ Fire | ___ Chemical Exposure |
| __ On-site Equipment | ___ Motor Vehicle | ___ Electrical |
| __ Mechanical | ___ Spill | ___ Other |

**DATE AND TIME OF ACCIDENT/INCIDENT:** Narrative report of Accident/Incident: Identify: 1) actions leading to or contributing to the accident/incident; 2) the accident/incident occurrence; and 3) actions following the accident/incident.

_____

_____

_____

_____

_____

_____

_____

_____

_____

**WITNESS TO ACCIDENT/INCIDENT:**

| | | | |
|---|---|---|---|
| Name: | _____ | Company: | _____ |
| Address: | _____ | Address: | _____ |
| Phone No.: | _____ | Phone No.: | _____ |
| Name: | _____ | Company: | _____ |
| Address: | _____ | Address: | _____ |
| Phone No.: | _____ | Phone No.: | _____ |

**INJURED - ILL:**

Name: _____ SSN: _____

Address: _____ Age: _____

Length of Service: _____ Time on Present Job: _____

Time/Classification: _____

**SEVERITY OF INJURY OR ILLNESS**:

____ Disabling ___ Non-disabling ___ Fatality

____ Medical Treatment ___ First Aid Only

**ESTIMATED NUMBER OF DAYS AWAY FROM JOB:** _____

**NATURE OF INJURY OR ILLNESS:** _____

_____

_____

_____

**CLASSIFICATION OF INJURY:**

__ Abrasions _____ Dislocations ____ Punctures

__ Bites _____ Faint/Dizziness ____ Radiation Burns

__ Blisters _____ Fractures ____ Respiratory Allergy

__ Bruises _____ Frostbite ____ Sprains

__ Chemical Burns _____ Heat Burns ____ Toxic Resp. Exposure

__ Cold Exposure _____ Heat Exhaustion ____ Toxic Ingestion

__ Concussion _____ Heat Stroke ____ Dermal Allergy

__ Lacerations

Part of Body Affected: _____

Degree of Disability: _____

Date Medical Care was Received: _____

Where Medical Care was Received: _____

Address (if off-site): _____

(If two or more injuries, record on separate sheets)

**PROPERTY DAMAGE:**

Description of Damage: _____

_____

Cost of Damage: $ _____

**ACCIDENT/INCIDENT LOCATION:** _____

**ACCIDENT/INCIDENT ANALYSIS:** Causative agent most directly related to accident/incident (Object, substance, material, machinery, equipment, conditions)

_____

_____

_____

_____

Was weather a factor?:_____

_____

Unsafe mechanical/physical/environmental condition at time of accident/incident (Be specific):

_____

_____

_____

Personal factors (Attitude, knowledge or skill, reaction time, fatigue):

_____

_____

**ON-SITE ACCIDENTS/INCIDENTS:**

Level of personal protection equipment required in Site Safety Plan:

_____

_____

Modifications:

_____

Was injured using required equipment?:

_____

_____

If not, how did actual equipment use differ from plan?:

_____

_____

ACTION TAKEN TO PREVENT RECURRENCE: (Be specific. What has or will be done? When will it be done? Who is the responsible party to insure that the correction is made?

_____

_____

_____

_____

_____

**ACCIDENT/INCIDENT REPORT REVIEWED BY:**

_____ _____

SSO Name Printed SSO Signature

**OTHERS PARTICIPATING IN INVESTIGATION:**

_____ _____

Signature Title

_____ _____

Signature Title

_____ _____

Signature Title

**ACCIDENT/INCIDENT FOLLOW-UP**: Date: _____

Outcome of accident/incident: _____

_____

_____

_____

Physician's recommendations: _____

_____

_____

_____

Date injured returned to work: _____

Follow-up performed by:

_____ _____

Signature Title

**ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM**

# ATTACHMENT D
# EMERGENCY HAND SIGNALS

# EMERGENCY SIGNALS

In most cases, field personnel will carry portable radios for communication. If this is the case, a transmission that indicates an emergency will take priority over all other transmissions. All other site radios will yield the frequency to the emergency transmissions.

Where radio communications is not available, the following air-horn and/or hand signals will be used:

## EMERGENCY HAND SIGNALS

**OUT OF AIR, CAN'T BREATH!**

**Hand gripping throat**

**LEAVE AREA IMMEDIATELY, NO DEBATE!**

**( No Picture) Grip partner's wrist or place both hands around waist**

**NEED ASSISTANCE!**

**Hands on top of head**

**OKAY! – I'M ALL RIGHT!**

**- I UNDERSTAND!**

**Thumbs up**

**NO! - NEGATIVE!**

**Thumbs down**

# APPENDIX B

# QUALITY ASSURANCE PROJECT PLAN

# 28 SOUTH DIVISION STREET

**NEW ROCHELLE, NEW YORK**

## Quality Assurance Project Plan

**AKRF Project Number: 190188**

**NYSDEC BCP Number: C360198**

**Prepared for:**

28 South Division Owner LLC
℅ RXR Development Services
75 Rockefeller Plaza, Suite 1300
New York, New York 10019

**Prepared by:**

**AKRF, Inc**
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(212) 696-0670

**JANUARY 2020**

# TABLE OF CONTENTS



# IN-TEXT TABLES



# ATTACHMENTS

# 1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) describes the protocols and procedures that will be followed by 28 South Division Owner LLC (the "Volunteer") during implementation of the Interim Remedial Measure Work Plan (IRM) at the 28 South Division Street site located in New Rochelle, NY. The approximately 1.061-acre site is also identified as Block 414, Lots 4, 5, 6, and 8.01 (hereafter referred to as the "Site"). The objective of the QAPP is to provide for Quality Assurance (QA) and maintain Quality Control (QC) of environmental investigative, sampling, and remedial activities conducted during implementation of the IRM. Adherence to the QAPP will ensure that defensible data will be obtained while completing the IRM.

# 2.0 PROJECT TEAM

The project team will be drawn from AKRF professional and technical personnel and AKRF's subcontractors. All field personnel and subcontractors will have completed a 40-hour training course and updated 8-hour refresher course that meet the Occupational Safety and Health Administration (OSHA) requirements of 29 CFR Part 1910. The following sections describe the key project personnel and their responsibilities.

## 2.1 Project Director

The project director will be responsible for the general oversight of all aspects of the project, including scheduling, budgeting, data management, and decision-making regarding the field program. The project director will communicate regularly with all members of the AKRF project team and the New York State Department of Environmental Conservation (NYSDEC) to ensure a smooth flow of information between involved parties. Axel Schwendt will serve as the project director for the IRM. Mr. Schwendt's resume is included in Attachment A.

## 2.2 Project Manager

The project manager will be responsible for directing and coordinating all elements of the IRM. He will prepare reports and participate in meetings with the Site owner and/or the NYSDEC. Ashutosh Sharma will serve as the project manager for the IRM. Mr. Sharma's resume is included in Attachment A.

## 2.3 Field Team Leader

The field team leader will be responsible for supervising the daily sampling and health and safety activities in the field and will ensure adherence to the work plan and Health and Safety Plan (HASP). He will report to the Project Manager on a regular basis regarding daily progress and any deviations from the work plan. The field team leader will be a qualified, responsible person, able to act professionally and promptly during soil disturbing activities. Thomas Giordano will be the field team leader for the IRM. Mr. Giordano's resume is included in Attachment A.

## 2.4 Project Quality Assurance/Quality Control Officer

The Quality Assurance/Quality Control (QA/QC) Officer will be responsible for adherence to the QAPP. He will review the procedures with all personnel prior to commencing any fieldwork and will assess implementation of the required procedures. Marcus Simons will serve as the QA/QC officer for the IRM.

### 2.5 Laboratory Quality Assurance/Quality Control Officer

The laboratory QA/QC officer will be responsible for quality control procedures and checks in the laboratory and ensuring adherence to laboratory protocols. He/she will track the movement of samples from the time they are checked in at the laboratory to the time that analytical results are issued. He/she will conduct a final check on the analytical calculations and sign off on the laboratory reports. The laboratory QA/QC officer will be determined upon selection of a contract laboratory(s) for the IRM.

## 3.0 STANDARD OPERATING PROCEDURES

The following sections describe the standard operating procedures (SOPs) for the remedial activities included in the IRM. During these operations, safety monitoring will be performed as described in the project Health and Safety Plan (HASP) and all field personnel will wear appropriate personal protective equipment.

### 3.1 Remedial Measures

#### 3.1.1 Excavation of Soil

Previous investigations including subsurface soil, soil gas, and groundwater sampling indicated there is documented soil and soil gas contamination at the Site. The investigations identified elevated concentrations of lead and mercury in the soil samples. Additionally, the chlorinated solvent tetrachloroethylene was detected in the soil vapor samples at concentrations exceeding the New York State Department of Health (NYSDOH) 2006 Guidance for Evaluating Soil Vapor Intrusion indoor Air Guidance Values (AGVs).

AKRF prepared an IRM in August 2019 to address removal of soil from the Site. AKRF also prepared a Health and Safety Plan (HASP), designed to provide workplace safety while completing the IRM.

#### 3.1.2 Tank Removal

In the event that tanks are confirmed or encountered at the Site, the tank(s) and any appurtenances will be cleaned, removed and disposed of in accordance with accepted industry standards and applicable Federal, State, and local regulatory agency requirements. Tank and soil removal from the vicinity of discovered underground storage tanks will be conducted in consultation with the NYSDEC.

Typical tank removal procedures are summarized below:

1. Open fill cap or vent pipe and measure for product. Collect a sample of the product. Tank contents will be sampled in accordance with applicable federal, state and local requirements and tested in accordance with the requirements of the receiving facility. Proper disposal of tank contents at an approved facility will be dictated by sample results.
2. Excavate to expose the tank. Vacuum liquid tank contents and pumpable tank bottom residue.
3. Excavate around the tank with care to avoid release of tank and piping contents. Hand excavation around the tank may be necessary. The sides of all excavated areas

will be properly stabilized in accordance with OSHA regulations. Continuously monitor the excavated areas in the worker breathing zone for the presence of flammable, toxic or oxygen deficient atmosphere with a photoionization (PID), a combustible gas indicator (CGI), and an oxygen meter.

4. Inert the tank of flammable vapors using dry ice and verify using an oxygen meter (less than 7 percent). An access hole will be cut in the tank and the tank will be thoroughly cleaned of residual liquids and sludges.
5. Entry of the tank, if necessary, shall be conducted in conformance with OSHA confined space requirements.
6. Remaining fuels, loose slurry, sludge materials and wastewater will be collected in DOT-approved drums, sampled and analyzed for disposal characterization. After disposal characterization, waste material will be removed and disposed of in accordance with applicable regulations.
7. Remove the tank and all associated piping from the ground and clean the outside of the tank. The tank and piping will be rendered "not reusable," removed from the site and disposed of according to applicable regulations with proper documentation. Remove and dispose of all concrete tank support structures or vaults as encountered.
8. After tank removal, examine for evidence of petroleum releases in accordance with NYSDEC requirements.
9. Suspect materials will be field-screened with a photoionization detector (PID). If soil contamination is present, excavate and remove contaminated soil from the tank areas in accordance with the IRM. Material will be excavated until field screening with a PID yields concentrations of less than 20 parts per million (ppm) and until there are no remaining visible signs of contamination or odors. Endpoint sampling will be conducted as directed by the NYSDEC.
10. Photo-document all procedures and record all procedures in a bound field notebook.

## 3.2 Soil Sampling

### 3.2.1 Soil Screening

During soil excavation and potential tank removal activities, the excavated material will be inspected by AKRF field personnel for evidence of contamination (i.e., separate phase liquid, staining, sheening and/or odors) and field-screened using a PID calibrated at the start of each day in accordance with the manufacturer's instructions. In the event that contamination is discovered during excavation, the excavation will be expanded laterally and in depth until there is no evidence of contamination.

### 3.2.2 Soil Sampling

Depending upon conditions encountered during construction and monitoring of the Site, soil sampling may be required. Any soil sampling will be conducted according to the following procedures:

- Characterize the sample according to the modified Burmister soil classification system.
- Collect an aliquot of soil from each sampling location and place in labeled sealable plastic bags. The bag should be labeled with the soil boring number and the depth

the sample was collected. Place the plastic bags in a chilled cooler to await selection of samples for laboratory analysis.

- After selecting which samples will be analyzed in the laboratory, fill the required laboratory-supplied sample jars with the soil from the selected sampling location or labeled sealable plastic bags. Seal and label the sample jars as described in Section 4.4 of this QAPP and place in an ice-filled cooler.
- Decontaminate any soil sampling equipment between sample locations as described in Section 3.5 of this QAPP.
- Record boring number, sample depth and sample observations (evidence of contamination, PID readings, soil classification) in field log book and boring log data sheet, if applicable.

### 3.3 Excavation Backfill

Any imported soil will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(a). Approval will also be based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria. Soil will be considered appropriate for use as on-site imported backfill if contaminant concentrations are below the lesser of the 6 NYCRR Part 375 Restricted Residential and Groundwater Protection SCOs. Soil that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported to the Site without prior approval by NYSDEC. Solid waste will not be imported to the Site.

Native material from a virgin quarry source need not be sampled prior to use as backfill on the Site. All other imported material will be tested via collection of one composite sample per 1,000 cubic yards of material from each source. Samples will be analyzed for VOCs using EPA Method 8260, SVOCs using EPA Method 8270, TAL metals using EPA Method 6000/7000 series, polychlorinated biphenyls (PCBs) using EPA Method 8082, pesticides using EPA Method 8081, herbicides using EPA Method 8151, 1,4-dioxane by EPA Method 8270, and the standard list of 21 per- and polyfluoroalkyl substances (PFAS) compounds by modified EPA Method 537.

### 3.4 Materials Reuse On-Site

Organic matter (wood, roots, stumps, etc.) or other solid is prohibited for reuse on-site. Soil that does not exhibit evidence of contamination during field screening, and is free of demolition debris will be stockpiled and tested at a frequency of one sample per 1,000 cubic yards and characterized if reuse is contemplated. Each sample will be tested for TCL VOCs by EPA Method 8260, TCL SVOCs by EPA Method 8270, PCBs by EPA Method 8082, pesticides by EPA Method 8081, TAL metals by EPA Method 6000/7000 series, 1,4-dioxane by EPA Method 8270, and the standard list of 21 per- and polyfluoroalkyl substances (PFAS) compounds by modified EPA Method 537. Samples will be shipped to the laboratory with appropriate chain of custody documentation. The samples will be analyzed in a laboratory following New York State Department of Health (NYSDOH) Analytical Services Protocol (ASP) Category B deliverables.

### 3.5 Decontamination Of Sampling Equipment

All non-disposable sampling equipment (hand augers, sampling spoons, etc.) will be either dedicated or decontaminated between sampling locations. The decontamination procedure will be as follows:

1. Scrub using tap water/Simple Green® mixture and bristle brush.
2. Rinse with tap water.

3. Scrub again with tap water/ Simple Green® and bristle brush.
4. Rinse with tap water.
5. Rinse with distilled water.
6. Air-dry the equipment, if possible.

Decontamination will be conducted within five-gallon buckets to capture decontamination water.

### 3.6 Management Of Investigation Derived Waste

All excavated soil will be stockpiled and disposed of in accordance with the IRM. If field evidence of gross contamination is identified, decontamination wastewater will be drummed and staged near the point of generation, and will be properly disposed of off-site based on laboratory results. If free of visible contamination, disposable personal protective equipment (PPE) and sampling equipment (scoops, gloves, rope, etc.) will be placed in heavy-duty plastic bags and disposed of properly.

## 4.0 SAMPLING AND LABORATORY PROCEDURES

### 4.1 Soil Sampling

Endpoint soil sampling is not anticipated during the course of the IRM, as excavation is slated to continue into bedrock. However; in the event that endpoint soil sampling is necessary, it shall be conducted according to the following procedures:

- Field screening for evidence of contamination (e.g., odors, staining, elevated PID measurements). Using a hand auger or sampling spoon, remove a small amount of soil from the bottom or sidewall of the excavation. A grab sample can also be collected from the excavator bucket after targeted soil removal from the excavation. Place the soil in a zip-lock bag and insert the PID through the sealed bag to obtain an organic vapor concentration measurement.
- After selecting which samples will be analyzed in the laboratory, fill the required laboratory-supplied sample jars with the soil from the selected sampling location or labeled sealable plastic bags. Seal and label the sample jars as described in Section 4.4 of this QAPP and place in an ice-filled cooler.
- Decontaminate any soil sampling equipment between sample locations as described in Section 3.5 of this QAPP.
- Record boring number, sample depth and sample observations (evidence of contamination, PID readings, soil classification) in field log book and boring log data sheet, if applicable.

### 4.2 Laboratory Methods

Table 1 summarizes the laboratory methods that will be used to analyze field samples and the sample container type, preservation, and applicable holding times. An Environmental Laboratory Approval Program (ELAP)-certified laboratory will be used for all chemical analyses in accordance with DER-10 2.1(b) and 2.1(f), including Category B Deliverables.

**TABLE 1**
**LABORATORY ANALYTICAL METHODS FOR ANALYSIS GROUPS**

| Matrix | Analysis | EPA Method | Bottle Type | Preservative | Hold Time |
|---|---|---|---|---|---|
| Soil | TCL VOCs | 8260 | Encore sampler (3) or Terracore Sampler (1) | 4 °C<br>0 °C within 24 hrs | 48 hours to extract<br>14 days to analyze |
| | TCL SVOCs and 1,4-Dioxane | 8270 | Glass 8 oz. Jar | 4 °C | 14 days to extract<br>40 days to analyze |
| | TAL Metals | 6000/7000 | Glass 8 oz. Jar | 4 °C | 6 months<br>(28 days for Hg) |
| | Pesticides | 8081 | Glass 8 oz. Jar | 4 °C | 14 days to extract<br>40 days to analyze |
| | PCBs | 8082 | Glass 8 oz. Jar | 4 °C | 14 days to extract<br>40 days to analyze |
| | PFAS | Modified 537 | Plastic 8 oz. Jar | 4 °C | 14 days to extract<br>40 days to analyze |

## 4.3 Quality Control Sampling

In addition to the laboratory analysis of the characterization soil samples for reuse and off-site disposal, additional analysis will be included for quality control measures, as required by the Category B sampling techniques. These samples will include field blanks, trip blanks, matrix spike/matrix spike duplicates (MS/MSD), and blind duplicate samples at a frequency of one sample per 20 field samples collected. Table 2 provides a summary of the field samples and QA/QC samples to be analyzed by the laboratory.

**TABLE 2**
**FIELD SAMPLE AND QC SAMPLE QUANTITIES**

| Sample Type | Parameters | EPA Method | Field Samples | QC Samples | | | |
|---|---|---|---|---|---|---|---|
| | | | | Field Blank | Trip Blank | MS/ MSD | Blind Duplicate |
| Soil | VOCs | EPA 8260 | 20 | 1 | 1 | 1 | 1 |
| | SVOCs | EPA 8270 | 20 | -- | -- | 1 | 1 |
| | TAL Metals | EPA 6000/7000 | 20 | -- | -- | 1 | 1 |
| | Pesticides | EPA 8081 | 20 | -- | -- | 1 | 1 |
| | PCBs | EPA 8082 | 20 | -- | -- | 1 | 1 |

## 4.4 Sample Handling

### 4.4.1 Sample Identification

All samples will be consistently identified in all field documentation, chain-of-custody (COC) documents, and laboratory reports using an alpha-numeric code. Groundwater samples will be identified by the monitoring well number, and soil samples will be

identified with the sample depth interval (in parenthesis). Soil samples will be labeled with the depth interval and its location carefully measured and logged in the field book.

The blind duplicate samples will be labeled with a dummy sample location to ensure that they are submitted as blind samples to the laboratory. The dummy identification will consist of the sample type followed by a letter. Trip blanks and field blanks will be identified with "TB" and "FB", respectively, with the collection date in a YYYY/MM/DD format (e.g., TB20190730 for a trip blank collected on July 30, 2019).

Table 3 provides examples of the sampling identification scheme.

**TABLE 3**
**EXAMPLES OF SAMPLE NAMES**

| Sample Description | Sample Designation |
|---|---|
| Soil sample collected from 2-4 feet in an excavation | SS-1 (2-4) 201900730 |
| Matrix spike/matrix spike duplicate sample | SS-1(2-4)MS/MSD 20190730 |
| Blind duplicate sample | EP-X (2) 20190730 |

### 4.4.2 Sample Labeling and Shipping

All sample containers will be provided with labels containing the following information:

- Project identification
- Sample identification
- Date and time of collection
- Analysis(es) to be performed
- Sampler's initials

Once the samples are collected and labeled, they will be placed in chilled coolers and stored in a cool area away from direct sunlight to await shipment to the laboratory. All samples will be shipped to the laboratory at least twice per week. At the start and end of each workday, field personnel will add ice to the coolers as needed.

The samples will be prepared for shipment by placing each sample in a sealable plastic bag, then wrapping each container in bubble wrap to prevent breakage, adding freezer packs and/or fresh ice in sealable plastic bags and the chain-of-custody (COC) form. Samples will be shipped overnight (e.g., Federal Express) or transported by a laboratory courier. All coolers shipped to the laboratory will be sealed with mailing tape and a COC seal to ensure that the coolers remain sealed during delivery.

### 4.4.3 Sample Custody

Field personnel will be responsible for maintaining the sample coolers in a secured location until they are picked up and/or sent to the laboratory. The record of possession of samples from the time they are obtained in the field to the time they are delivered to the laboratory or shipped off-site will be documented on COC forms. The COC forms will contain the following information: project name; names of sampling personnel; sample number; date and time of collection and matrix; and signatures of individuals involved in sample transfer, and the dates and times of transfers. Laboratory personnel will note the condition of the custody seal and sample containers at sample check-in.

## 4.5 Field Instrumentation

Field personnel will be trained in the proper operation of all field instruments at the start of the field program. Instruction manuals for the equipment will be on file at the Site for referencing proper operation, maintenance and calibration procedures. The equipment will be calibrated according to manufacturer specifications at the start of each day of fieldwork, if applicable. If an instrument fails calibration, the project manager or QA/QC officer will be contacted immediately to obtain a replacement instrument. A calibration log will be maintained to record the date of each calibration, any failure to calibrate and corrective actions taken. The PID will be calibrated each day using 100 ppm isobutylene standard gas.

# ATTACHMENT A

## RESUMES OF PROJECT QA/QC OFFICER, PROJECT DIRECTOR, PROJECT MANAGER, AND FIELD TEAM LEADER

# AXEL E. SCHWENDT

**VICE PRESIDENT**

Mr. Schwendt is a Vice President for AKRF with over 20 years of experience in the environmental consulting field. Mr. Schwendt has extensive experience in Phase II studies involving subsurface soil and groundwater investigations, and has been involved in all aspects of soil and groundwater remediation, including those related to manufactured gas plants (MGP). He has designed, managed and implemented large-scale site investigations and remedial measures for various properties, including those under different regulatory programs such as the New York State Department of Environmental Conservation's (NYSDEC) Voluntary Cleanup Program and Brownfield Cleanup Program, New York State's Spill Response Program, the Mayor's Office of Environmental Remediation (OER) E-Designation Program, New Jersey's Industrial Site Recovery Act (ISRA), and Pennsylvania's Land Recycling program. Mr. Schwendt manages the hazardous materials tasks for the company's Environmental Impact Statements (EISs) and also conducts and manages Phase I Environmental Site Assessments (ESAs) for various individual clients and industries as well as for area-wide rezoning projects.

Mr. Schwendt has extensive experience in underground and aboveground storage tank (UST and AST) management, including tank removals, installations, and upgrades. He has designed and implemented remedial investigations surrounding UST and AST releases and overseen the installation and maintenance of pump-and-treat and other remedial systems. He has performed storage tank compliance audits and maintenance inspections all across the country and prepared Spill Prevention, Control, and Countermeasures Plans (SPCC Plans) for over 100 individual facilities, including designing and conducting the personnel training programs.

Mr. Schwendt worked with several other firms prior to joining AKRF, which provided him with a variety of skills. He has expertise with Chemical Bulk Storage Spill Prevention Reports, Environmental Emergency Response Plans, Integrated Contingency Plans, and multi-phase compliance audits, including some international projects. He has also performed various types of hydrogeologic testing, including pilot tests, slug tests, pump tests and groundwater modeling, and has been responsible for data review and management.

## BACKGROUND

### Education

B.A., Earth Science and Environmental Studies, Tulane University, 1991

M.S., Geology, University of Delaware, 2002

### Years of Experience

Year started in company: 2002

Year started in industry: 1995

## RELEVANT EXPERIENCE

**New York City Department of Design and Construction (NYCDDC) Feasibility and Pre-Scoping Services for East Side Coastal Resiliency, New York, NY**

Mr. Schwendt assisted with the subsurface exploration program for a multidisciplinary design team selected by the New York City agency partnership of NYCDDC, New York City Department of Parks and Recreation (NYCDPR), and Office of Recovery and Resiliency (ORR) for the Feasibility Study and Pre-Scoping Services for East Side Coastal Resiliency (ESCR) project. The AKRF Team provided technical analysis and pre-scoping

services, including complex conceptual design services, for 100+ year storm protection with anticipated sea level rise along the east side of Lower Manhattan. The ESCR subsurface exploration program involved a review of available utility plans and environmental reports involving manufactured gas plant (MGP) and petroleum-related contamination along a 2.5 mile study area from Montgomery Street to East 23rd Street to develop a Subsurface Investigation Work Plan for approval by the New York City Department of Environmental Protection (NYCDEP). The program included both public and private utility mark-out services across vast areas of the project containing critical infrastructure to enable the installation of 81 deep borings, 515 shallow borings, and 10 temporary groundwater wells.

**New York City Health and Hospitals Corporation (NYCHHC)'s Post-Sandy mitigation program at Bellevue, Coler-Goldwater, Coney Island, and Metropolitan Hospitals**

AKRF is assisting the NYCHHC in the recovery, reconstruction and hazard mitigation of Bellevue Hospital, Coler Hospital, and Coney Island Hospital and other NYCHHC facilities, which were damaged as a result of the Hurricane Sandy disaster. The majority of the funding for these projects will be reimbursed from the Federal Emergency Management Agency (FEMA). AKRF is collecting baseline information and develop study plan and approach, including assessing for critical path approvals, preparing FEMA NEPA Environmental Assessments (EAs), conducting additional studies required by Federal Regulations for FEMA, permitting, and providing design/bid support. Mr. Schwendt is responsible for the hazazrdous materials tasks associated with the program, including conducting Phase I ESAs and subsurface (Phase II) investigations, and preparing necessary work plans and Remedial Action Plans (RAPs)/Construction Health and Safety Plans (CHASPs) for federal, state and city agency review and approval.

**NYCDEP Task Order Contracts (TOCs) for Design and Construction Management Services Professional Engineering Design Services and Construction Management (PEDS)**

AKRF is currently serving as environmental review and permitting subcontractor under all four NYCDEP TOCs contracts and both PEDS contracts that were recently awarded. In addition to the preparation of environmental review/ULURP documentation and permit applications, AKRF's responsibilities include site selection support, site/civil design, and the preparation of various permit management plans and regulatory compliance tracking in accordance with DEP's Project Delivery Manual. Mr. Schwendt is providing Hazardous Materials consulting services for the TOCs and PEDS contracts, including:

- Prospect Expressway Pump Station Upgrade;
- Clearview Pump Station Reconstruction;
- Rockaway Wastewater Treatment Plant Level 1 Biological Nutrient Removal (BNR) Upgrade; and
- Oakwood Beach Wastewater Treatment Plant Headworks Improvements.

**Verdopolis JFK Airport Facility, Queens, NY**

On behalf of Verdopolis JFK, AKRF prepared documentation for a New York State Department of Environmental Conservation (NYSDEC) Part 360 Solid Waste Management Facility Permit application. The facility, which would be constructed at the abandoned Hangar 16 site of the John F. Kennedy International Airport (JFK Airport), would process 180,000 tons per year of source separated, pre-consumer organic waste generated largely by food preparation facilities at JFK Airport. Using an anaerobic digestion process, the proposed facility would convert the food waste, which would otherwise be discarded in a landfill or incinerated, into three usable products. Mr. Schwendt assisted in preparing the application package, including preparation of the Engineering Report, Operations and Maintenance Plan, Contingency Plan, Facility Closure Plan, Hiring and Training Plan,

Chemical Bulk Storage Spill Prevention Report, and the Spill Control Prevention and Countermeasure Plan (SPCC Plan). Mr. Schwendt also prepared a Phase I Environmental Site Assessment (ESA) of the property to ascertain potential environmental conditions that may be exposed during site development activities.

**2477 Third Avenue, Bronx, NY**

Mr. Schwendt prepared the application to enter the former 2477 Third Avenue gasoline station property into the New York State Department of Environmental Conservation's (NYSDEC) Brownfield Cleanup Program (BCP). Since its acceptance into the program, Mr. Schwendt has been managing and coordinating the remedial investigation of the site, including shallow and deep aquifer groundwater testing, delineation of known areas of soil contamination, soil vapor analyses, and investigation for potential non-aqueous phase liquid (DNAPL) from past industrial activities in the surrounding area. Mr. Schwendt was responsible for developing work plans for approval by the NYSDEC and New York State Department of Health (NYSDOH), and for preparing summary reports for public comment. As part of the project, Mr. Schwendt coordinated with the client, lawyers, and architects of the planned development, tenants of neighboring properties, NYSDEC, NYSDOH, and the New York City Department of Environmental Protection (NYCDEP). Mr. Schwendt is also conducting the work necessary to address a hazardous materials E-Designation assigned to the property.

**E-Designation Properties/Voluntary Cleanup Program, New York City, NY**

Mr. Schwendt has assisted various public and private clients with addressing E-Designations assigned by the New York City Department of Environmental Protection (NYCDEP) to properties throughout New York City. He has prepared the required Phase I Environmental Site Assessments (Phase I ESAs) and implemented Phase II testing to the satisfaction of the New York Office of Environmental Remediation (OER). Based on the results of the testing, he has prepared Remedial Action Plans (RAPs) and Construction Health and Safety Plans (CHASPs) for approval by the NYCOER, which included strategies for mitigating on-site environmental conditions and plans for incorporating environmental engineering controls into proposed construction projects. Mr. Schwendt's clients promptly receive the Notice of Satisfaction necessary to acquire building permits from the New York City Department of Buildings (DOB). Mr. Schwendt has also managed several projects enrolled in the New York City Voluntary Cleanup Program.

**St. George Ferry Terminal, Staten Island, NY**

Mr. Schwendt prepared a Spill Prevention, Control, and Countermeasures Plan (SPCC Plan) for the Department of Transportation's (DOT) St. George Ferry Terminal facility in Staten Island. The facility's bulk containers store over 600,000-gallons of petroleum used to fuel boilers and emergency generators, provide oil for maintenance and repair of equipment and vessels, and to fuel the ferry vessels. Mr. Schwendt also consulted the DOT on how to upgrade the facility's fueling systems to comply with the SPCC and New York State Department of Environmental Conservation (NYSDEC) regulations.

**Mount Sinai Medical Center, Manhattan, NY**

Mr. Schwendt managed the Hazardous Materials task for the environmental assessment of the Mount Sinai Medical Center, which is constructing a 700,000 sf, mixed-use residential and bio-medical research facility building. His work included managing the Phase I Environmental Site Assessment (ESA), Phase II investigation, and preparing the Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) approved by the New York City Department of Environmental Protection (NYCDEP).

**Lincoln Center Development Project, New York, NY**

On behalf of the Lincoln Center Development Project, Inc., Mr. Schwendt conducted a Subsurface (Phase II) Investigation in the area of an underground storage tank (UST) farm located beneath the lower garage level of the West 62nd Street parking garage at Lincoln Center. The Phase II study was prompted by a request from the New York State Department of Environmental Conservation (NYSDEC) to properly close out the tanks. The tank farm includes seventeen (17) 550-gallon gasoline USTs and one (1) 550-gallon waste oil UST. The purpose of this Phase

II investigation was to determine whether historic leaks from the tanks had affected the subsurface and to assist with future tank closure activities. The Phase II report was submitted to the NYSDEC for review and included a request to close the tanks in-place instead of removing them due to the structural constraints of the tank farm location. Mr. Schwendt also managed the closure of the 18 USTs to the satisfaction of the NYSDEC.

**512-522 Vanderbilt Avenue, Brooklyn, NY**

On behalf of the Empire State Development Corporation (ESDC), AKRF was retained to provide hazardous material consulting services in connection with the former gasoline station property located at 512-522 Vanderbilt Avenue. Mr. Schwendt performed a Phase I Environmental Site Assessment (ESA), a geophysical survey of the site, and a soil and groundwater subsurface investigation. Data from the investigation would be used to assess remedial strategies during development of the site.

**Whitney Museum of American Art, Gansevoort Facility, New York, NY**

AKRF has provided various consulting services in support of the Whitney Museum of American Art's long-term planning requirements. Tasks have included transportation surveys, traffic counts, attendance projections, visual impact and shadow studies, economic benefit studies, and two Environmental Assessment Statements (EASs) for proposed new facilities for the Museum. Mr. Schwendt was responsible for the hazardous materials elements of the assessment, including preparing a Phase I ESA and conducting several Subsurface (Phase II) Investigations for review by the New York City department of Environmental Protection (NYCDEP) and Mayor's Office of Environmental Remediation (OER). Mr. Schwendt prepared and managed the implementation of the OER-approved Remedial Action Plan (RAP) for the construction project and is responsible for satisfying all of the associated regulatory reporting requirements. Environmental work at the site also included mitigating a petroleum spill discovered during site excavation activities and coordinating all remedial efforts with the New York State Department of Environmental Conservation's (NYSDEC) Department of Environmental Remediation (DER).

**New York Botanical Garden, Bronx, NY**

The New York Botanical Garden (NYBG) proposed to construct an accessory parking garage of approximately 825 spaces at Bedford Park Boulevard and Webster Avenue in the Bronx to provide a parking garage for staff and visitors who cannot be accommodated within NYBG's on-site facilities. Mr. Schwendt was the Project Manager for the environmental assessment's hazardous materials work, which included a Phase I Environmental Site Assessment (ESA), Phase II Investigation and the preparation of a Remedial Action Plan (RAP) and a Construction Health and Safety Plan (CHASP) to the satisfaction of the New York City Department of Environmental Protection (NYCDEP). As construction proceeds, Mr. Schwendt will be responsible for managing the environmental monitoring during all subsurface work and preparing the post-construction Closure Report required by the NYCDEP in order to receive the Notice of Satisfaction necessary to obtain occupancy permits from the New York City Department of Buildings (DOB).

**Roberto Clemente State Park, Bronx, NY**

AKRF participated in the rehabilitation of an existing ballfield, redevelopment of the existing picnic areas, and shoreline restoration along the Harlem River at Roberto Clemente State Park. AKRF is charged with preparing the Joint Permit Application which is necessary to procure the federal, state and local permits and approvals for the shoreline redevelopment. Mr. Schwendt worked with the firm's engineering group to conduct testing to pre-characterize soil to assist with the management of soil during construction. The testing included pre-characterization of soil for on-site reuse in accordance with the New York State Department of Environmental Conservation (NYSDEC) tidal wetland permit requirements and testing for physical parameters required for landscape planning.

**Long Island Power Authority (LIPA), Long Island, NY**

Mr. Schwendt managed the preparation of Phase I Environmental Site Assessments and Phase II Investigations, along with the Hazardous Materials chapters for Environmental Impact Statements, for properties owned or to be acquired by LIPA to identify potential sources of environmental contaminants prior to power station and power line installation.

**Rose Plaza on the River, Brooklyn, NY**

Mr. Schwendt conducted a Subsurface (Phase II) Investigation at the 470 Kent Avenue property located in Brooklyn, New York. The objective of the subsurface investigation was to characterize the subsurface soil and groundwater conditions and determine whether past or present on-site and/or off-site potential sources of contamination have adversely affected the site. Results of the Phase II study were also used to evaluate any potential environmental risks and/or the need for remedial action at the site prior to future development. The proposed development of the site includes the construction of approximately 665 market rate dwelling units and approximately 33,750 square feet of commercial uses. The scope of the Phase II study was based on a Phase I Environmental Site Assessment (January 2004) performed by AKRF, which identified recognized environmental conditions for the site, including the potential for soil and groundwater contamination from a historical on-site manufactured gas plant, and potential underground storage tanks. Phase II activities were conducted in accordance with AKRF's Sampling Protocol and site-specific Health and Safety Plan (HASP), which was reviewed and approved by the New York City Department of Environmental Protection (NYCDEP).

**Albert Einstein College of Medicine Environmental Investigation, Bronx, NY**

Mr. Schwendt managed a Subsurface (Phase II) Investigation at an approximately eight-acre portion of the Jacobi Medical Center fronting on Eastchester Road in the Bronx, New York. The site, owned by New York City, contained an old boiler house, a storage warehouse, a laundry facility, and several paved parking areas. The objective of the subsurface investigation was to characterize the subsurface conditions on the property and determine whether past or present on-site and/or off-site potential sources of contamination have adversely affected the site.

**Storage Deluxe, Various Locations, NY**

Mr. Schwendt is currently the project manager for assisting Storage Deluxe with the ongoing expansion of their self-storage facilities primarily in the five boroughs of New York City and Westchester County. He conducts and manages environmental due diligence needs related to their property transactions, including Phase I Environmental Site Assessments (ESAs), Phase II investigations, and geophysical surveys, as well as consulting on petroleum bulk storage tank management. He assists Storage Deluxe in making decisions with respect to environmental risk issues.

**South Bronx Overall Economic Development Corporation (SoBRO) Port Morris Brownfield Opportunity Areas (BOA), Bronx, NY**

Mr. Schwendt is assisting SoBRO with the in-depth and thorough analysis of existing conditions, opportunities, and reuse potential for properties located in the proposed Port Morris Brownfield Opportunity Area with an emphasis on the identification and reuse potential of strategic brownfield sites that may be catalysts for revitalization. His work so far has included the preparation of Phase I Environmental Site Assessments (ESAs) and conducting Phase II investigations for the catalyst sites and advising on the suitability of enacting zoning changes to permit various property uses. Mr. Schwendt also assisted SoBRO with the BOA application process.

**Kings Plaza, LLC Total Energy Plant, Brooklyn, NY**

Mr. Schwendt has conducted regular environmental compliance reviews of the Kings Plaza Total Energy Plant (TEP) in Brooklyn, New York. The reviews were conducted to observe operations and to review environmental permits, agency correspondence, operating records, recordkeeping and monitoring procedures, and regulatory reporting requirements. As a result of the review, Mr. Schwendt provided the TEP with recommendations for the

management of various waste streams and petroleum/chemical bulk storage associated with facility operations and prepared a Spill Control Prevention and Countermeasure Plan (SPCC Plan) for the facility.

**270 Greenwich Street, New York NY**

Mr. Schwendt conducted a subsurface (Phase II) investigation that included the advancement of soil borings and the collection of soil and groundwater samples from the 270 Greenwich Street property in the Tribeca neighborhood of New York City. The site will be developed with approximately 402 dwelling units (172 rental units and 230 for sale condominiums), approximately 224,084 gross square feet of destination and local retail space, and below-grade public parking. The purpose of this Phase II subsurface investigation was to ascertain subsurface soil and groundwater quality beneath the site and determine whether past on- or off-site operations have affected the property. The subsurface investigation was also intended to determine whether there are any special handling or disposal requirements for pumped groundwater, should dewatering be necessary during site development. The Phase II study included soil and groundwater sampling as well as a geophysical investigation to determine whether unknown underground storage tanks were present at the site. Field activities were performed in accordance with Mr. Schwendt's Sampling Protocol and Health and Safety Plan (HASP), which were approved by the New York City Department of Environmental Protection (NYCDEP).

**Columbia University Manhattanville Rezoning and Academic Mixed-Use Development, New York, NY**

Mr. Schwendt managed the hazardous materials task on the Environmental Impact Statement (EIS) for approximately 4 million square feet of new academic, research and neighborhood uses to be constructed north of Columbia University's existing Morningside Heights campus. The work included more than 25 Phase I Environmental Site Assessments (ESAs) for the properties within the rezoning area and estimates for upcoming investigation and remediation. In addition, a Preliminary Environmental Site Assessment (PESA) was completed for the whole project area. Recognized environmental concerns in the area included: current and historical underground storage tanks; current and historical auto-related use such as repair shops and gasoline stations; two historical manufactured gas holders; and a Consolidated Edison cooling plant located on West 132nd Street. Mr. Schwendt conducted a subsurface investigation at the site to characterize the subsurface conditions on the property and determine whether past or present on-site and/or off-site potential sources of contamination have adversely affected the study site, and to use the analytical data to evaluate any potential environmental risks and/or the need for remedial action at the site prior to future development. Based on the results of the investigation, Mr. Schwendt prepared a Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) for the project, which was approved by the New York City Department of Environmental Protection (NYCDEP).

**Hudson River Park, New York, NY**

Mr. Schwendt serves as the on-call environmental consultant for the ongoing development of the Hudson River Park, the approximately 5 to 6 mile section of waterfront property from Battery Place to 59th Street along the western edge of Manhattan. He conducts subsurface investigations, coordinates tank removals, implements soil and groundwater remediations, provides guidance on construction and environmental health and safety issues, interfaces with regulatory agencies as necessary, and manages the mitigation of environmental conditions encountered during site development activities.

**Brooklyn Bridge Park, Brooklyn, NY**

AKRF is providing environmental planning and review services for the development of a new 70-acre park that will revitalize 1.5 miles of the East River waterfront between Jay Street and Atlantic Avenue. When completed, the park will provide open space, recreational facilities, a hotel, restaurants, and retail, historic, and educational venues. Mr. Schwendt was involved with the completion of the Environmental Impact Statement (EIS) and conducted a Phase I Environmental Site Assessment (ESA) and Phase II Subsurface Investigation for the proposed Brooklyn

Bridge Park area. He serves as the park's on-call consultant for addressing environmental conditions as development progresses and has conducted several tank removals and contaminated soil delineation and remediation projects for various sections of the park.

**Titan Property Management, Rego Park, NY**

Mr. Schwendt was involved with an extensive site investigation for a property involved in the New York State Voluntary Cleanup Program. The property was resting on a plume of PCE contamination. The goal of the investigation was to determine whether the property is the source of the contamination and to collect data to provide information for the design and implementation of a site remedial system. The investigation involved extensive soil, soil gas, and groundwater investigation, and included the investigation of surrounding properties.

**ABCO Refrigeration Company, Long Island, NY**

Mr. Schwendt managed a tank closure and dry well assessment and remediation project for the ABCO Refrigeration Company. Historic contamination was found seeping from the ground in the location of an old underground storage tank, which is believed to be a source of adverse impact. An adjacent drywell was impacted by the tank as well as from past dumping activities of a former typewriter ribbon ink manufacturing company. A site-wide investigation of the ten drywells was also implemented at the request of the Nassau County Department of Health. Mr. Schwendt undertook soil remedial activities that led to the property receiving closure with respect to the underground storage tank. Drywell remedial activities were successful and the site received approval from the United States Environmental Protection Agency (USEPA) to continue use of on-site drywells.

**Levin Management Corporation Property—Site Investigation, Pelham Manor, NY**

Mr. Schwendt was involved in the site investigation of a former manufactured gas plant (MGP) that handled petroleum off-loading and storage until the late 1950s. Soils have also been observed to have been affected by non-aqueous phase liquid (NAPL) consisting of oil- and tar-like material. Floating or light NAPL (LNAPL) has also been detected in on-site groundwater. The objectives of the site investigation were to collect additional data to further determine the extent of NAPL-affected soil both above and below the water table throughout the site and to further delineate groundwater contamination throughout the site. The site investigation also sought to confirm the on-site groundwater flow direction and that NAPL had not migrated to the downgradient perimeter of the site, including Eastchester Creek. Mr. Schwendt was brought on board for this project for his expertise in soil and groundwater MGP contaminant delineation.

**NYCDEP Bureau of Environmental Engineering 26th Ward Wastewater Treatment Plant—Site Investigation, Brooklyn, New York**

Mr. Schwendt managed and conducted environmental sampling and testing at the 26th Ward Wastewater Treatment Plant property located in Brooklyn, New York. This investigation was performed to determine the presence or absence of contamination in the soil and groundwater that would affect the proposed construction of a new raw sewage pump station. Mr. Schwendt provided the 26th Ward with the protocol necessary for the special handling and disposal of the excavated soil as well as for the groundwater that would be pumped during dewatering operations.

**Olnick Organization, New York, NY**

AKRF was retained by the Olnick Organization to prepare and implement an Spill Prevention, Control, and Countermeasures Plan (SPCC Plan) for their aboveground storage tank system for an office building in Manhattan. Mr. Schwendt performed the site inspections and provided the Olnick Organization with a list of recommendations for upgrades to their fuel transfer piping system that would bring the facility into compliance with SPCC regulations. He also provided Olnick with a plan for implementing the required SPCC training program for their facility personnel.

**Site investigations of former MGP Facilities/Properties for Consolidated Edison, New York City, NY & Westchester County, NY**

While with another firm, Mr. Schwendt worked on this project, which included a service station in New York City and an electrical substation in Westchester County, New York. Mr. Schwendt performed the site characterizations, including subsurface soil and groundwater impact delineation and aquifer testing. The findings from these characterizations are being used by Consolidated Edison to make appropriate changes to the design specifications and to plan for appropriate handling of impacted materials and health and safety protocols during future construction activities.

**UST Site Investigation and Remediation for Consolidated Edison Service Center, Queens, NY**

While with another firm, Mr. Schwendt worked on this project, which included due diligence site reviews, soil boring installation, monitoring well installation, hydrogeologic testing, and water quality sampling. Risk-based closures incorporating natural attenuation and groundwater monitoring activities have been proposed. Remedial work plans are under development for other facilities where more aggressive remedial actions are required. Mr. Schwendt also performed subsurface investigations and site characterizations for several other Consolidated Edison facilities including soil-gas surveys and a radiological scoping survey.

**Petroleum Bulk Storage Management Program for Bell Atlantic-New York (now Verizon), Manhattan, Brooklyn, Queens, Bronx, Staten Island, and Long Island, NY**

While with another firm, Mr. Schwendt personally designed and conducted subsurface investigations for underground storage tank (UST) remediations including characterization of releases, soil and ground water investigations, pilot tests, slug tests, pump tests, groundwater modeling, horizontal and vertical impact delineation, and preparation of compliance documentation for regulatory agencies. He performed oversight of the installation of 'pump and treat' remedial systems and performed maintenance activities. He also supervised UST installations, upgrades and closures; implemented tank tightness testing programs; addressed on-site health and safety issues and other regulatory requirements; prepared closure reports; and managed soil disposal.

**Hertz Rent-A-Car Corporate Headquarters, Park Ridge, NJ**

While with another firm, Mr. Schwendt served as an in-house consultant/project manager for the environmental department at Hertz's corporate office in Park Ridge, New Jersey. He managed Phase I and Phase II investigations for real estate purchases, leases and acquisitions throughout the United States and Canada. He coordinated Hertz's subcontractors and environmental consulting firms, reviewed reports, and made recommendations to the legal and real estate departments with respect to environmental risk issues.

**Temple University, Philadelphia, PA**

Mr. Schwendt was a lead auditor for a multi-phase compliance audit of the five campuses of Temple University. The audit included an assessment of all of the Temple University Hospitals, the School of Medicine, the College of Science and Technology, the Tyler School of Art, the College of Engineering, Ambler College (Community and Regional Planning, Horticulture, and Landscape Architecture), the Physical Plant Department, and all university facilities and maintenance departments. Regulatory programs targeted as part of the audit included, but were not limited to, federal and state air and water programs, hazardous waste management, hazardous chemicals and substances, Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) for pesticides, emergency response, Community Right-to-Know, Toxic Substance Control Act (TSCA), and petroleum bulk storage regulations. Following completion of the audit, Mr. Schwendt prepared and implemented an environmental management system that conformed to the needs and culture of the Temple University organization.

**University of Pennsylvania, Philadelphia, PA**

Mr. Schwendt was the lead auditor for an environmental compliance audit of the University of Pennsylvania's Department of Environmental Health and Radiation Safety. The audit included an assessment for the preparation and implementation of the university's Spill Prevention, Control, and Countermeasures Plans (SPCC Plans). Mr. Schwendt prepared and implemented the university's environmental management program and provided training for the facility personnel.

**Wistar Institute, Philadelphia, PA**

Mr. Schwendt was the lead auditor for an environmental compliance audit of the Wistar Institute, an independent non-profit biomedical research institute in West Philadelphia, Pennsylvania. The multi-phase audit comprised an assessment of the entire facility for compliance with federal, state and local environmental regulations and included the development of an environmental management system.

**Seton Hall University, South Orange, NJ**

Mr. Schwendt was a lead auditor for a multi-phase compliance audit of the Seton Hall University campus. The audit comprised an assessment of the entire facility for compliance with federal and state air and water programs, hazardous waste management programs, hazardous chemicals and substances programs, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) for pesticides, emergency response and Community Right-to-Know regulations, the Toxic Substance Control Act (TSCA), and petroleum bulk storage regulations. The audit included the development and implementation of an environmental management system for the Seton Hall University faculty and staff.

**New York City College of Technology (City Tech) Academic Building, Brooklyn, New York**

Mr. Schwendt is assisting the City University of New York (CUNY) and the Dormitory Authority of the State of New York (DASNY) in addressing the E-Designation assigned to the New York City College of Technology (City Tech) redevelopment project site in Brooklyn, New York. CUNY is proposing to construct an eight-story academic building with classrooms, laboratories, administrative space, and underground parking. Mr. Schwendt conducted the required Phase I Environmental Site Assessment (ESA) and Phase II testing to the satisfaction of the Mayor's Office of Environmental Remediation (OER) and will assist CUNY with entering the project site in the City's Voluntary Cleanup Program (VCP). The work will include preparing the required Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) and conducting the necessary environmental monitoring during construction. Mr. Schwendt will also prepare the closure documentation required for CUNY to receive the Notice of Satisfaction necessary to obtain occupancy permits from the New York City Department of Buildings (DOB).

**New York University Langone Medical Center, New York, NY**

Mr. Schwendt managed the hazardous materials task on the EAS for the NYU Langone Medical Center (NYULMC) development project in Manhattan, New York. NYULMC is in the process of developing the Kimmel Program, which consists of two new buildings on its main campus: the Kimmel Pavilion to house hospital functions and an Energy Building to house a combined heat and power (CHP) plant, primary electric service and emergency generators to support the campus, as well as space for patient care (specifically, radiation oncology). The work included conducting Phase I Environmental Site Assessments and Phase II subsurface investigations at each site to characterize the subsurface environmental conditions at the project site. Based on the results of the investigations, a Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) were prepared for each project phase for submission to the New York City Department of Environmental Protection (NYCDEP) and Mayor's Office of Environmental Remediation (OER). Mr. Schwendt will assist NYULMC by conducting the environmental monitoring required by the agency-approved RAPs/CHASPs as construction progresses, and will prepare the closure documentation required by the agencies to obtain Certificates of Occupancy from the New York City Department of Buildings (DOB).

**DASNY Term Environmental Consultant 2006-2012 and 2012-2016, Various Locations, NY**

Mr. Schwendt serves as a hazardous materials task leader under the firm's on-call contract with DASNY, through which AKRF is providing State Environmental Quality Review Act (SEQRA) and City Environmental Quality Review (CEQR) environmental review services for a wide range of educational, healthcare and other institutional projects, as well as specialized technical services in historic and archaeological resources, hazardous materials, traffic, air quality, noise, and natural resources. Mr. Schwendt has also assisted DASNY with addressing E-Designations and by conducting various types of environmental investigations, including Phase I and Phase II assessments.

**NYCDEP Permit Resource Division On-Call Contract, New York, NY**

Under subcontract to a national engineering firm, and as part of two successive Program Management contracts, AKRF is providing support in a wide range of technical areas related to environmental and engineering permits for NYCDEP capital projects. These services fall into two major categories: preparing detailed guidance documents that will be used by project designers and construction managers on future projects, in order to expedite permit approvals and prevent delays; and providing expert review and guidance regarding permits for current projects, in order to ensure completeness of permit applications and effective coordination with regulatory agencies. The technical areas covered by AKRF include: wetlands, groundwater, surface water, and other natural resources; hazardous materials; traffic and transportation; air quality; noise and vibration; historic and archaeological resources; stormwater management; open space and parkland; and a broad range of permits and approvals from the New York City Fire Department (FDNY), the New York City Police Department (NYPD), the New York City Department of Buildings (NYCDOB), and other municipal agencies. AKRF is also helping NYCDEP improve the overall process for tracking environmental and engineering permits and approvals, from the planning and design phases of a project to construction and long-term operation. Mr. Schwendt provides consulting services related to the hazardous materials issues.

# ASHUTOSH SHARMA

**SENIOR ENVIRONMENTAL SCIENTIST**

Ashutosh Sharma is an Environmental Scientist providing expertise in Phase I and Phase II (subsurface) site investigation, remediation and cleanup of contaminated sites, and construction oversight. He has experience with subsurface soil, groundwater and sub-slab air/vapor sampling procedures, coordinating and running Community Air Monitoring Plans (CAMP) and is familiar with relevant United States Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC), and New York City Department of Environmental Protection (NYCDEP) environmental laws and regulations.

## BACKGROUND

## EDUCATION

M.S., Environmental Science, New Jersey Institute of Technology, 2007
B.Tech, Dr. B.R. Ambedkar National Institute of Technology, India, 2005

**Years of Experience**

Year started in industry: 2007
Year started in company: 2007

## RELEVANT EXPERIENCE

**NYU Langone Medical Center (NYULMC) – Kimmel Pavilion, New York, NY**

New York University Langone Medical Center enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate the property located at 424 East 34th Street in Manhattan. The proposed development consisted of a new medical facility. Mr. Sharma provided construction oversight during site excavation, spill investigation and remediation, coordination and management of soil removal, oversight of the on-site air monitoring program, identification and proper management of contamination encountered during excavation work, and maintenance of critical paperwork.

**551 Tenth Avenue, New York, NY**

Extell 4110 LLC enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate the property located at 547-551 Tenth Avenue in Manhattan. The property was developed with a 52-story residential building with one sub-grade level. Mr. Sharma provided construction oversight during site excavation, spill remediation, coordination and management of soil removal and fill material imports, oversight of the on-site air monitoring program, identification and proper management of contamination encountered during excavation work, and maintenance of critical paperwork and preparation of the final closure report.

**New York City School Construction Authority, Various Locations, NY**

Under contract with the School Construction Authority (SCA) of New York City, AKRF is providing assistance with water disinfection projects for new schools and for plumbing upgrades for existing school buildings. Mr. Sharma has been providing assistance with contractor oversight work during the disinfection process as per the contract agreement.

**Yankee Stadium Demolition, Bronx, NY**

The New York City Economic Development Corporation (NYCEDC) project include demolition of the old Yankee Stadium and construction of a ball field known as Heritage Field. Mr. Sharma provided air monitoring and remedial action plan (RAP) oversight during the demolition and soil disturbance work.

**East River Science Park, New York, NY**

The New York City Economic Development Corporation (NYCEDC) proposed to construct two seventeen-story buildings to serve as a biomedical research center. The space between the two towers included an elevated atrium and an outdoor plaza on top of a parking garage. Mr. Sharma provided construction oversight during site excavation, coordination and management of soil removal and fill material imports, oversight of the on-site air monitoring program, identification and proper management of contamination encountered during excavation work, and maintenance of critical paperwork and preparation of the final closure report.

**Whitney Museum of American Art, NY**

Mr. Sharma provided assistance with subsurface soil and groundwater investigation, construction oversight and soil disposal management during the remediation phase of the project. The project included the construction of approximately 230,000-square foot museum building with one sub-grade level with exhibition galleries, administrative offices, accessory use (café and bookstore), storage space, and an approximately 4,000-square foot restaurant.

**W 61st Street Site, NY**

Mr. Sharma provided assistance with construction oversight during site excavation activities and helped prepare the final closure report for the site which, as part of the Brownfield Cleanup Program (BCP), was slated for redevelopment as two residential buildings with a courtyard and a tennis court.

**164 Kent Avenue, Brooklyn, NY**

The site was developed as mixed-use residential-commercial high rise towers with an esplanade and a pier on the East River. Mr. Sharma provided assistance with construction oversight during soil handling activities and running the Community Air Monitoring Plan (CAMP).

**285 Jay Street, Brooklyn, NY**

Under contract with the Dormitory Authority of the State New York (DASNY), AKRF completed a Phase II Subsurface investigation at the site of a proposed CUNY educational building to satisfy New York City E-designation requirements. As part of the work AKRF performed at the site, Mr. Sharma conducted sub-surface soil and groundwater investigation work and coordinated with the driller and the property owner for successful completion of the work.

**MTA Long Island Railroad, East Side Access Project, New York, NY**

The Metropolitan Transportation Authority (MTA) sponsored the East Side Access project to connect the Long Island Railroad to the Grand Central Terminal, thereby allowing Long Island commuters direct access to the East Side of Manhattan. Mr. Sharma provided assistance with the execution of the Community Air Monitoring Plan (CAMP) at various locations during the construction phase.

**2341–2357 Adam Clayton Powell Jr. Boulevard, New York, NY**

AKRF performed a Phase II study to meet the requirements of the New York City Department of Environmental Protection (NYCDEP) and to determine whether subsurface conditions had been affected by the on-site and/or off-site petroleum storage tanks and to ascertain whether current or

former on- or off-site activities had adversely affected the subject property. Mr. Sharma conducted sub-surface soil and groundwater investigation at the abandoned site slated for future development. He was responsible for coordinating with the driller and the property owner for successful completion of the work.

# MARCUS SIMONS

## SENIOR VICE PRESIDENT

Marcus Simons is a Senior Vice President of AKRF with more than 25 years of environmental consulting experience, specializing in the assessment and cleanup of contaminated sites, including federal and state superfund, RCRA, TSCA, brownfield, voluntary cleanup and spill sites. His expertise includes health risk assessment, development of sampling plans, economic evaluations of remedial alternatives, and regulatory analysis. He is also AKRF's Health and Safety Officer with extensive experience of Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) issues during sampling and remediation of contaminated sites.

Mr. Simons directs much of AKRF environmental due diligence work (recently managing environmental due diligence for the Peter Cooper/Stuyvesant Town acquisition, reportedly the largest real estate transaction in US history), including supervising preparation of numerous Phase I and Phase II Environmental Site Assessments, as well as more complex multi-site and litigation-related projects. Mr. Simons manages preparation of the contaminated-materials portions of AKRF's Environmental Impact Statements and Environmental Assessments and has experience with procedures for hazardous material requirements under NEPA and New York SEQRA/CEQR, E-designation, BCP and VCP programs. He also has extensive experience in statistics, selection of sites for controversial facilities, and federal and state wetland regulations and waterfront permitting. In addition to analytical work, Mr. Simons has considerable experience in presenting results to regulatory agencies and the general public.

Mr. Simons has managed some of the most complex cleanup sites in New York State including: the cleanup of a 12-acre PCB-contaminated former utility property in Flushing, Queens where a 3 million square foot retail/residential building was constructed (remediation was performed under the State Brownfield Cleanup Program, though the site was also subject to City jurisdiction under its E-Designation program); cleanup of the nation's largest former dental factory in Staten Island for reuse as single family housing; the investigation of several former manufactured gas plants; and the investigation and remediation associated with the reconstruction of the West Side Highway and Hudson River Park in Manhattan (from the Battery to 59th Street), Brooklyn Bridge Park, and Governors Island. Mr. Simons also has extensive experience with transportation projects (Second Avenue Subway, MTA/LIRR East Side Access, 7-Train Extension, Cross Harbor Freight Movement Study, Route 9A Reconstruction), large-scale rezoning projects (Long Island City, Greenpoint/Williamsburg, Downtown Brooklyn, Jamaica) and public and private redevelopment work (World Trade Center Reconstruction, The New York Wheel, Atlantic Yards, School Construction Authority, Queens West)

## BACKGROUND

### Education

M.S., Engineering and Public Policy, Carnegie-Mellon University, 1988

M.A. and B.A. (Honors), Mathematics/Engineering, Cambridge University, England, 1986

### Certifications

Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) – 40 Hour Site Worker and 8 Hour Site Supervisor

### Years of Experience

Year started in company: 1995

Year started in industry: 1988

## RELEVANT EXPERIENCE

**CE Flushing Site, Flushing, NY**

Mr. Simons directed the remediation of a former industrial site in Flushing, Queens, NY prior to its redevelopment as a 3 million square foot retail/residential complex. The property was cleaned up under the NYS Department of Environmental Conservation Brownfield Cleanup Program and the NYC Department of Environmental Protection's E-Designation requirements. The remedial measures included the removal of aboveground and underground storage tanks, excavation and off-site disposal of TSCA, RCRA and non-hazardous wastes, NAPL removal, and removal and investigation of on-site drainage structures. The remediation and subsequent construction involved obtaining (or obtaining waivers from) numerous permits including those for NYSDEC Tidal Wetlands, NYSDEC Long Island Wells, NYSDEC SPDES/Stormwater and NYCDEP Sewer Use.

**Peter Cooper Village/Stuyvesant Town, New York, NY**

Mr. Simons directed environmental due diligence efforts for the two most recent purchasers of this 80-acre property in Manhattan. Much of the 110-building complex is underlain by former manufactured gas plants and Con Edison entered the site into NYSDEC's Voluntary Cleanup Program. Going forward Mr. Simons manages oversight of activities that involve disturbance of MGP-contaminated soils, as well as future testing and potentially remediation.

**The New York Wheel, Staten Island, NY**

Mr. Simons directed the hazardous materials environmental review for the project which is being built on the site of an old railyard and is subject to both NYSDEC Brownfield Cleanup Program and NYCDEP remediation requirements. Remediation of the site is being performed during the ongoing construction.

**Governors Island, New York, NY**

Mr. Simons directed the hazardous materials environmental review for the project which involves converting one of the nation's oldest military bases to primarily park usage. In addition to managing the hazardous materials environmental review for the project's approvals, Mr. Simons developed testing requirements for the millions of yards of imported 9and reused0 soils/materials necessary to create the new park's topography and landscape.

**MTA New York City Transit Manhattan East Side Transit Alternative (MESA)/Second Avenue Subway, New York, NY**

Mr. Simons directed the contaminated material assessment for this multi-billion dollar transit initiative that would provide subway service to Manhattan's East Side. The assessment identified several hundred facilities along the alignment that could have impacted soil and/or groundwater and could require special materials handling and enhanced health and safety procedures. Additional evaluation of these sites is underway.

**Ferry Point Park, Bronx, NY**

Mr. Simons developed the material acceptance criteria (soil standards for capping materials) for the development of Ferry Point Park (including a golf course) in the Bronx. The New York City Department of Environmental Protection DEP and the New York State Departments of Health (DOH) and Environmental Conservation (DEC) agreed for the first time to relax their then strict (TAGM 4046) criteria for clean soil, based on statistical analyses of background conditions and risk-based modeling.

**Prince's Point, Staten Island, NY**

Mr. Simons managed the complex cleanup (including the relocation of a contaminated tidal creek) of the nation's largest former dental factory site on Staten Island's waterfront. The site was on the State Superfund list. The future use of the site as single-family residential property entailed extensive negotiations with NYSDEC and NYSDOH. The project required obtaining (or obtaining waivers from) numerous permits including those for NYSDEC Tidal

and Fresh Water Wetlands, USACOE (Nationwide) Permits, NYSDEC Coastal Erosion Hazard Area, NYSDEC SPDES and Stormwater, FEMA Modifications to Land in Floodplain, and USEPA Notification of PCB Waste Activity.

**Route 9A Reconstruction, New York, NY**

AKRF directed extensive studies for the reconstruction in Lower Manhattan proposed by the New York State Department of Transportation (NYSDOT) in cooperation with the Federal Highway Administration (FHWA). The project is arguably the most complex environmental analyses performed for a federally funded transportation project in New York City in the last 10 years. The firm was responsible for all environmental tasks as well as the preparation for the Draft, Supplementary, and Final Environmental Impact Statements (EISs) and Section 4(f) Evaluation for this 5-mile $250 million reconstruction of Route 9A as part of the recovery effort following the events of September 11th, 2001. Mr. Simons managed the extensive hazardous materials investigations and prepared the contract specifications for contaminated soil and tank removal, including Health and Safety oversight.

**Hudson River Park, New York, NY**

Mr. Simons is managing hazardous materials issues for the ongoing Hudson River Park construction, located adjacent to the Route 9A roadway. Construction is ongoing and Mr. Simons directs health and safety oversight and remediation during construction.

**Jamaica Rezoning, Queens, NY**

As part of the preparation of an Environmental Impact Statement, Mr. Simons managed the hazardous materials assessment of a multi-block area. In addition to conducting the assessment, Mr. Simons made recommendation as to the properties where "E-Designations" (city-recorded institutional controls on future development) should be placed.

**Outlet City, Long Island City, Queens, NY**

In Long Island City, Mr. Simons managed the investigation and interim remediation of an old factory complex where large volumes of creosote were spilled. The investigations and interim remedial measures (IRMs) took place under the New York State's Voluntary Cleanup Program (VCP).

**MTA/LIRR East Side Access Project, New York, NY**

Mr. Simons managed the hazardous materials investigations for multiple sites in the Bronx, Manhattan, and Queens associated with the Environmental Impact Statement (EIS) for the Long Island Rail Road connection to Grand Central Terminal. Mr. Simons continues to be involved in health and safety oversight related to the construction of the project.

**New York City Department of Transportation, Lead Paint Removal and Disposal on Bridges Project, New York, NY**

Mr. Simons conducted a regulatory analysis of related to the removal of lead paint from nearly 800 bridges. This analysis included an evaluation of the regulatory compliance of various proposed procedures with federal and state hazardous and solid waste management requirements.

**American Felt and Filter Company, New Windsor, NY**

Mr. Simons prepared a Remedial Investigation (including exposure assessment) and Feasibility Study for the country's oldest active felt manufacturing facility, located in Orange County. This solvent-contaminated site is on the State Superfund List.

# THOMAS GIORDANO

**ENVIRONMENTAL SCIENTIST**

Thomas Giordano is an Environmental Scientist in AKRF's Hazardous Materials Department. He has experience in air monitoring and construction oversight. Mr. Giordano is a graduate of the Class of 2015 at the State University of New York, College at Oneonta, where he majored in both Environmental Science and Geography.

## BACKGROUND

### Education

B.S., Environmental Science, State University of New York, College at Oneonta, Oneonta, NY

B.A., Geography, State University of New York, College at Oneonta, Oneonta, NY

### Certifications

40-Hour OSHA HAZWOPER Certified

10-Hour OSHA Construction Certified

### Years of Experience

Year started in company: 2015

Year started in industry: 2014

## RELEVANT EXPERIENCE

**Larkin Plaza, Yonkers, NY**

Mr. Giordano served as a field lead for this project, also a NYSDEC Brownfield Cleanup Program Site. His responsibilities included general construction oversight of excavation and foundation activities. Mr. Giordano also oversaw In-Situ Chemical Oxidation (ISCO) treatment of petroleum-contaminated groundwater and soils. He also conducted the implementation of Community Air Monitoring Program (CAMP) as well as oversight of non-hazardous soil disposal, installation of sections of the sub-slab depressurization system (SSDS) and the collection of confirmatory endpoint soil samples.

**145 West Street, Brooklyn, NY (June 2015-Present)**

Mr. Giordano received his 40-Hour OSHA HAZWOPER training in June 2015 and was placed as the field lead on this NYSDEC Brownfield Cleanup Program Site, an entire city block development in Greenpoint, Brooklyn. His responsibilities on-site included general construction oversight of excavation and foundation activities. He also conducted the oversight of the Community Air Monitoring Program (CAMP) as well as soil and vapor monitoring, signing of both hazardous and non-hazardous waste disposal manifests, oversight of the installation of the building's sub-slab depressurization system (SSDS) and the collection of field samples including soil and groundwater. Mr. Giordano has also conducted site turnover reporting after remedial completion at 145 West Street. Mr. Giordano is periodically involved with the project as it remains ongoing.

**Tres Puentes, L.P. Bronx, NY (April 2016-Present)**

Mr. Giordano served as the field lead for this project, a NYSDEC Brownfield Cleanup Program Site. His responsibilities included general construction oversight of excavation, foundation and deep foundation installation activities. He also conducted the oversight of the Community Air Monitoring Program (CAMP) as well as soil and

vapor monitoring, signing of non-hazardous waste disposal manifests, inspection of the installation of sub-slab vapor barrier products and the collection of field samples including soil, soil vapor and groundwater.

**School Construction Association (SCA) Lead Water Sampling**

Mr. Giordano conducted lead water sampling for the School Construction Association (SCA) at various sites throughout the spring of 2016.

**Metropolitan Transportation Authority (MTA) Paratransit Facility, Bronx, NY**

Mr. Giordano serves as the field lead on this project, under oversight of the NYSDEC. Mr. Giordano's responsibilities so far have included the firm's representative at contractor, client and on-site meetings, as well as conducting construction oversight during remedial work.

**Miscellaneous Projects**

Mr. Giordano has served as field coverage on various projects in 2017, most notably: Brookfield Manhattan West Southeast Tower, New York, NY; The Crossing at Jamaica, Jamaica, Queens and 810 Fulton Street, Brooklyn, NY.

**Rego Park, Queens**

Mr. Giordano conducted low-flow groundwater sampling in Rego Park, Queens.

**Langan Engineering & Environmental Services (Summer 2014, Winter 2015)**

As an Environmental Intern, Mr. Giordano was exposed to all phases of the environmental remediation process. Mr. Giordano assisted with Phase I property inspections, including the Long Island College Hospital, and residential sites. He also participated/assisted in Phase II waste characterizations on several projects. Mr. Giordano was on-site for Phase III, during construction, most notably: 501 West 17th Street (MGP site for the DEC), 50 West Street, and the Hudson Yards. Mr. Giordano participated in setting up the Community Air Monitoring Program at various sites, endpoint soil sampling, and groundwater sampling.