34 BERRY STREET

BROOKLYN, NEW YORK

Remedial Action Work Plan

AKRF Project Number: 11259
NYSDEC BCP Number: C224268

Prepared for:

34 Berry Street, LLC (LCOR)
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CERTIFICATION

I, Rebecca Kinal, certify that I am currently a NYS registered Professional Engineer as defined in 6 NYCRR Part 375 and that this Remedial Action 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) and that all activities were performed in full accordance with the DER-approved work plan.

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

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NYS Professional Engineer #	Date	Signature

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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LIST OF ACRONYMS

Acronym	Definition
1,2-DCA	1,2-dichloroethane
1,2-DCP	1,2-dichloropropane
AGV	Air Guideline Value
AS/SVE	Air Sparge/Soil Vapor Extraction
AWQSGVs	Ambient Water Quality Standards and Guidance Values
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BOD	Biological Oxygen Demand
BTEX	A group of VOCs comprising benzene, toluene, ethylbenzene, and xylenes
CAMP	Construction Air Monitoring Plan
CHASP	Construction Health and Safety Plan
CO	Certificate of Occupancy
COD	Chemical Oxygen Demand
CPP	Citizen Participation Plan
DD	Decision Document
DER	Discrete Emission Reduction; Division of Environmental Remediation
DUSR	Data Usability Summary Report
EC	Engineering Control
EDD	Electronic Data Deliverable
EE	Environmental Easement
ELAP	Environmental Laboratory Approval Program
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
ESI	Environmental Site Investigation
FER	Final Engineering Report
GAC	Granular Activated Carbon
GW	Groundwater
HASP	Health and Safety Plan
IA	Indoor Air
IC	Institutional Control
IECP	Institutional and Engineering Control Plan
IRM	Interim Remedial Measures

Acronym	Definition
ISDD	In-Situ Design Document
LNAPL	Light Non-Aqueous Phase Liquid
mg/kg	Milligrams per Kilogram
MGP	Manufactured Gas Plants
MPE	Multi-phase Extraction
MW	Monitoring Well
NAPL	Non-Aqueous Phase Liquid
NNO	Notice of No Objection
NOS	Notice of Satisfaction
NYCDEP	New York City Department of Environmental Protection
NYCDOB	New York City Department of Buildings
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation/ Department
NYSDOH	New York State Department of Health
OA	Outdoor Air
OER	New York City Office of Environmental Remediation
OM&M	Operation, Monitoring, and Maintenance
OSHA	United States Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts Per Million
PRR	Periodic Review Report
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
RAOs	Remedial Action Objectives
RAP	Remedial Action Plan
RAWP	Remedial Action Work Plan
RECs	Recognized Environmental Conditions

Acronym	Definition
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
ROI	Radius of Influence
RSCO	Recommended Soil Cleanup Objective; Residential Soil Cleanup Objective
SB	Soil Boring
SCG	Standards, Criteria, and Guidance
SCO	Soil Cleanup Objective
SG	Soil Gas
SIR	Site Investigation Report
SMP	Site Management Plan
SSDS	Sub-Slab Depressurization System
SSI	Supplemental Subsurface Investigation
SV	Soil Vapor
SVOC	Semivolatile Organic Compound
TAGM	Technical Administrative Guidance Memorandum
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TCE	Trichloroethylene
TCO	Temporary Certificate of Occupancy
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TOGS	Technical Operational and Guidance Series
TPH	Total Petroleum Hydrocarbons
UST	Underground Storage Tank
UUSCO	Unrestricted Use Soil Cleanup Objective
VOC	Volatile Organic Compounds
µg/L	Micrograms per Liter
$\mu g/m^3$	Micrograms per Cubic Meter

1.0 INTRODUCTION

34 Berry Street, LLC is a Volunteer in the New York State Brownfield Cleanup Program (BCP) and as such is responsible for the investigation, remediation, and redevelopment of the 34 Berry Street site at 34 Berry Street, Brooklyn, New York (the site). The Brownfield Cleanup Agreement (BCA) #C224268-01-18 was fully executed on March 20, 2018 and BCP Site No. C224268 was assigned to the site.

This Remedial Action Work Plan (RAWP) has been prepared by AKRF, Inc. (AKRF) on behalf of 34 Berry Street, LLC (the Volunteer) for the property located at 34 Berry Street in the Williamsburg neighborhood of Brooklyn, New York (Site). The legal definition of the Site is Brooklyn Borough Tax Block 2289, Lot 14. The Site is located on the western side of Berry Street, between North 11th and North 12th Streets, and is comprised of a seven-story residential building and courtyard area, with a basement level parking garage beneath the courtyard and building. Building construction for the current structures, and the building was completed in 2009. A Site Location Plan is provided as Figure 1 and a Site Plan is provided as Figure 2.

The BCP application included a review of existing environmental conditions identified by pre-development investigations, a post-development Closure Report documenting remediation actions completed during Site redevelopment to satisfy New York City "E" designation requirements, supplemental on-site and off-site investigations to delineate known remaining contamination, and operation, monitoring, and maintenance (OM&M) of a light non-aqueous phase liquid (LNAPL) recovery system. OM&M reports prepared for NYSDEC review and approval concluded that solvent and petroleum-contamination is present in groundwater, which appears to be related to historic fill material, previously existing underground storage tanks (USTs) and/or historical on-site/off-site industrial operations.

A Remedial Investigation Work Plan (RIWP) was submitted concurrent with the BCP application, and was approved by the NYSDEC in September 2018. A Site Plan showing the Remedial Investigation (RI) soil boring, monitoring well, and soil gas point/indoor air sample locations is provided as Figure 3. The RI was completed in August 2019 and, combined with the results from all preceding investigations, confirmed the following:

- Groundwater under static non-pumping conditions flows in the north-northeast direction beneath the Site, with a regional trend to the northwest beyond 12th street. The groundwater flow direction follows topography;
- Petroleum contamination in soil is related to two distinct LNAPL zones, with a smaller zone near MW-1 on the eastern side of the Site, and a larger zone surrounding MW-2, MW-3, MW-6, and MW-16 on the western side of the Site. Fingerprint analysis identified the LNAPL as fuel oil. The soil contamination in these zones was not observed as a distinct point source, but rather it was as a smear zone created by the LNAPL moving with groundwater fluctuations;
- Solvent contamination in soil (1,2-dichloroethane) was documented in one sample in boring SB-22D [7.9 part per million (ppm)] located along the southeastern border of the property at a depth of 14 to 15 feet below the basement level garage floor (approximately 5 feet below the water table);
- Petroleum contamination in groundwater included benzene and toluene detected above their NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGVs) in up to three monitoring wells. The remaining petroleum-related BTEX (ethylbenzene and xylenes) compounds detected in the groundwater samples were below their respective AWQSGVs. There were no other petroleum-related volatile organic compounds (VOCs) detected above their respective AWQSGVs in the groundwater samples collected during RI. The Remedial Investigation Report (RIR), combined with all preceding investigations, have documented that petroleum contamination in groundwater is related to the two distinct NAPL zones described above;

- Solvent contamination in groundwater was associated with the detection of 1,2-dichloroethane (1,2-DCA) in eight monitoring wells at concentrations that exceeded its AWQSGV (0.6 micrograms per liter or µg/L). Additional solvent-related VOCs, including tetrachloroethylene (PCE), trichloroethylene, (TCE), 1,2-dichloropropane (DCP), chlorobenzene, and chloroform were present at lower concentrations, with concentrations exceeding the NYSDEC AWQSGV in up to five monitoring wells.
- The concentration of 1,2-DCA in groundwater samples collected from in the off-site monitoring well MW-18 (660 µg/L) and the on-site deep monitoring well MW-22D (270 µg/L) were an order of magnitude higher compared to the other monitoring wells. This pattern was consistent with historical sampling results, which had identified the highest concentrations of 1,2-DCA in the area of MW-4, MW-18, and MW-22. The higher concentration in MW-22D (screened at 30-35 feet below the water table) compared to MW-22 (screened across the water table) is consistent with the downward groundwater flow gradient identified at the site, and the tendency for 1,2-DCA, which is denser than water, to sink in an aquifer. Isoconcentration contours prepared as part of the RI suggests that the 1,2-DCA source area extends from an upgradient source on the south-adjacent property (upgradient of MW-22D).
- The analytical results for soil gas/indoor air (SG/IA) sampling indicated there were no 1,2-DCA hot spots detected in any of the three soil gas samples for both the October 2018 and August 2019 sampling events. 1,2-DCA was not detected in any of the indoor air samples. TCE was detected in the soil gas sample SG-1 (near MW-4 in the southeastern portion of the basement) during the October 2018 sampling event at 12 micrograms per cubic meter (µg/m3). The corresponding indoor air sample, IA-01, had a detection of TCE at 0.21 $\mu g/m^3$. The New York State Department of Health (NYSDOH) matrices indicated for the October 2018 sampling event that additional monitoring for TCE was recommended to determine whether additional actions, such as mitigation, are warranted. An additional round of sampling was completed in August 2019 and TCE was not detected in any of the samples (soil gas or indoor air). The results of the second round of sampling, combined with the fact that mitigation measures including a vapor barrier, passive sub-slab venting system, and cellar garage air exchange system are already in place at the Site, additional monitoring is not necessary provided that the existing mitigation measures are properly maintained as an engineering control for the Site. BTEX compounds were observed below the sub-slab and expected due to the petroleum spill in the three soil gas samples for both sampling events, but were at low levels for all corresponding indoor air samples, especially since gasoline vehicles park in the basement garage.

Prior to entering the BCP, remediation was being completed at the Site to address NYSDEC Spill No. 07-12424. To address the Spill, and under NYSDEC oversight, the LNAPL recovery system consisting of three recovery wells was installed at the end of building construction in early 2009. Two more recovery well were added by April 2012. In September 2012, the Volunteer entered into a Stipulation Agreement with NYSDEC to identify the specific investigation, remediation, and monitoring measures to be implemented with respect to the petroleum contamination at the Site. Oversight of the investigation, remediation, and OM&M requirements were transferred from the Spill Program to the BCP upon execution of the BCA in March 2018. The OM&M program documented that the LNAPL system has been effective in reducing the amount of LNAPL beneath the building, but aging equipment, part failures, and biofouling of the LNAPL system equipment had limited recent system performance. In March 2019, the LNAPL system was overhauled and repaired in accordance with the procedures identified in an NYSDEC-approved Interim Remedial Measures (IRM) Work Plan.

This RAWP includes measures to address the Site contamination, and provides a review of the Site history, previous investigations, the specific remediation tasks, and a schedule to complete the proposed tasks. All proposed work will be performed in accordance with this RAWP, which includes the Health and Safety

Plan (HASP) and Community Air Monitoring Plan (CAMP) in Appendix A, and the Quality Assurance Project Plan (QAPP) in Appendix B.

2.0 SITE DESCRIPTION AND HISTORY

2.1 Site Description and Surrounding Land Use

The project Site consists of a 36,472 square foot, irregularly shaped lot. The lot is occupied by an L-shaped, seven-story residential building that fronts Berry and North 12th Streets, with an open courtyard area located behind the building, in the central portion of the Site. A cellar level parking garage is located under the building and courtyard, with an entrance ramp located on North 11th Street. A small, street-level valet parking lot is also located along North 11th Street, immediately east of the garage entrance ramp. The Site is bounded to the north by North 12th Street, to the east by Berry Street, to the south by North 11th Street and two low-rise residential buildings, and to the west by a warehouse building used by the Brooklyn Brewery. The surrounding neighborhood is primarily residential and commercial in nature, containing apartment buildings, businesses and storage warehouses. A Site Plan showing the BCP Site Boundary is provided as Figure 2. A table summarizing the surrounding property usage is included below:

Adjacent Property Owners		
Block	Lot	Owner Name
2289	7501	CCM Ventures 7 LLC
2289	1	75 Wythe Avenue LLC
2289	33	Brooklyn Bowl, LLC
2290	5	Elrob Realty, LLC
2290	7501	119 N. 11th Realty Corporation
2283	38, 41, 43	Mihata Corporation
2283	1	Wythe Berry Fee Owner LLC
2296	7501	North 11 Associates LLC
Sensitive Receptors within 0.5 mile		
2736	1	Learning Steps Day Care Center and Preschool
2648	35	ABC Child Center
2670	1	Automotive High School

2.2 Site Geology, Hydrogeology and Subsurface Characteristics

The surface topography in the surrounding area is generally flat, gradually sloping to the northeast in the vicinity of the Site, with an area-wide gradual slope to the northwest towards the East River, which is located approximately 1,100 feet to the northwest. Based on reports compiled by the U.S. Geological Survey (Brooklyn, NY Quadrangle), the property lies at an elevation of approximately 20 feet above the National Geodetic Vertical Datum of 1929 (an approximation of mean sea level).

Shallow subsurface soils encountered during previous on-site investigations completed before redevelopment included urban fill material containing brick, asphalt, and concrete fragments to approximately 6 to 10 feet below grade, underlain by apparent native silty sand and silt. Most of the fill was removed during development to construct the current structure. United States Geological Survey reports indicate that the depth to bedrock at the Site is expected to be approximately 100 feet below ground surface.

Based on local topography and previous environmental investigations, the dominant groundwater flow direction at the Site is to the north and northeast, with some variations to the northwest with a downward gradient. Historically, groundwater has been encountered at depths ranging from approximately 5 to 8 feet below the basement garage floor, which corresponds to approximate depths of approximately 11 to 14 feet below street level. Groundwater in Brooklyn is not used as a potable source. There are no surface water bodies or streams on or immediately adjacent to the Site.

2.3 Site History

Based on a Phase I Environmental Site Assessment (ESA) of the subject property conducted by Langan Engineering and Environmental Services (Langan) in June 2006, the Site was occupied by the New York Quinine and Chemical Works from circa 1887 to 1951. Review of historic Sanborn maps from this period indicate that this facility contained various buildings associated with the manufacturer and packaging of quinine, including morphine, caffeine, and ether rooms, an extracting house, steam dry rooms, dissolving and extracting rooms, and a bottling, labeling, and packaging plant. The facility expanded beyond the 34 Berry site and occupied the entire block between 11th Street and 12th Street, including the 44 Berry Street site. The 1905 Sanborn map also depicts two areas of the facility labeled as "coal oil refining". These locations are subsequently labeled as "storage of oil in tanks" in the 1916 and 1942 Sanborn maps. Sanborn maps from 1965 to 2006 (after decommissioning of the quinine factory) depict a large two-story freight loading facility and warehouse in the western portion of the Site, a two-story truck repair facility/warehouse and a four-story unspecified manufacturing facility in the southwestern portion of the Site, and a parking lot in the eastern portion of the Site containing two gasoline tanks of unspecified capacity. In 2006, at the time of Langan's Phase I ESA, the on-site buildings contained artist loft residences, a furniture manufacturer warehouse, a garage, a forklift sales and service facility, and an empty warehouse; and the eastern parking lot was used for vehicle parking and storage.

All on-site buildings were demolished starting in April 2008, and construction of the existing residential structure started in June 2008. Building construction was completed in early 2009, and the initial temporary certificate of occupancy (TCO) was issued by the New York City Department of Buildings on April 30, 2010, and included approval for occupancy of the cellar level through the 4th floor. A TCO for the cellar level, floors 1 to 7, and the building roof was issued on June 3, 2010 and renewed on September 8, 2010. A final Certificate of Occupancy (CO) was issued in December 2012.

During development, the Site was subject to New York City Office of Environmental Remediation (OER) "E"-designation requirements for hazardous materials as part of the Greenpoint-Williamsburg Rezoning, which included preparation and implementation of a Remedial Action Plan (RAP) to address Soil Management at the Site. A June 2006 Subsurface (Phase II) Investigation Report prepared by Langan concluded that contaminated soil and groundwater were present at the Site including chlorinated solvent- and petroleum-related volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and metals detected in soil and/or groundwater. Site contamination appeared to be related to historic operations at the Site, placement of urban fill material of unknown origin by prior owners, and the presence of on-Site fuel oil storage tanks. The detections revealed evidence of a "spill" requiring reporting to the NYSDEC [Spill No. 07-12424 (the "Spill")].

On March 3, 2010, a Closure Report was prepared by AKRF and submitted to OER as part of the "E" designation requirements for the Site. Redevelopment of the Site was completed in December 2009, and included the demolition of the existing buildings and the construction of a seven-story residential building, an open courtyard, and basement level garage. Excavation extended between

approximately 10 to 17 feet below grade throughout the building footprint. The report documented the disposal of 18,676 tons of soil excavated during Site redevelopment activities, removal of underground storage tanks, and installation of engineering controls including a vapor barrier, passive sub-slab depressurization system (SSDS), and a Site cap. OER issued a Notice of No Objection (NNO) for the Site on April 20, 2010, which indicated that the E-designation requirements had been satisfied. On September 13, 2012, and in accordance with the NNO, a Notice of Satisfaction (NOS) was issued to the Volunteer after it entered into a Stipulation Agreement with the NYSDEC regarding appropriate remediation of the open Spill. The Stipulation Agreement specified the required investigations, remediation, and monitoring measures to be implemented with respect to LNAPL that remained in the saturated zone beneath the building slab at the Site in order to achieve case closure with respect to the Spill.

To address the Spill, and under review of NYSDEC, an LNAPL recovery system consisting of three recovery wells was installed at the end of building construction in early 2009. Two additional recovery wells were added by April 2012. OM&M of the NAPL system and submission of monitoring reports were conducted in accordance with an agreed upon schedule with the NYSDEC spill case manager. From September 2009 through December 2014, monthly OM&M visits and quarterly groundwater sampling were completed to monitor Site conditions and the effectiveness of the system. From January 2014 until entry into the BCP, quarterly OM&M visits with semi-annual groundwater sampling were completed. The results of each visit were compiled and reported to NYSDEC for review and approval. The OM&M program documented that the LNAPL system had been effective in reducing the amount of LNAPL beneath the building.

During the OM&M program, AKRF conducted additional subsurface investigations under NYSDEC oversight to further characterize subsurface conditions. In November 2010, AKRF performed an off-site investigation in accordance with an NYSDEC-approved work plan to determine whether potential off-site sources were contributing to petroleum contamination observed at the property, including two manufactured gas plants (MGP) gas holders formerly located across North 12th Street. Field evidence of contamination, including slight petroleum-like odors and a visible sheen, was noted below the water table in three soil borings immediately north of the Site and one boring located across North 12th Street from the Site; with no contamination noted in two other borings across North 12th Street or in two borings across Berry Street. Laboratory analytical results for soil were consistent with these field observations, indicating generally higher levels of petroleum-related VOCs in soil samples from borings immediately north of the Site, with each detection below NYSDEC Soil Cleanup Objectives (SCOs) that were consistent with Site use. LNAPL was not observed in any of the off-site monitoring wells during groundwater sampling activities. Fingerprint analysis of LNAPL samples collected from on-site monitoring wells indicated a product profile consistent with weathered diesel fuel/No. 2 fuel oil, and not an MGP residual, which would be associated with the former off-site gas holders. These combined field observations and laboratory analytical results indicated that the petroleum-related contamination at the 34 Berry Street Site was not likely originating from an off-Site source.

In April 2013 and July 2016, the Volunteer performed additional subsurface investigations to further investigate and potentially identify the source area for 1,2-DCA, which had been detected on MW-4 during on-going groundwater monitoring, and to address investigation data gaps for the Site. Each phase of additional investigation was completed in accordance with a NYSDEC-approved work plan. The additional investigations did not identify a solvent contamination source area in soil. The groundwater sampling results confirmed that the concentration of petroleum compounds were consistent with previous sampling events, and exceeded the AWQSGVs in the northeastern portion of the property where the NAPL recovery wells are located. The groundwater results identified 1,2-DCA concentrations in (MW-18 and MW-22) at one to two orders of

magnitude greater than the on-site monitoring wells. These results, combined with the established groundwater flow direction, suggested that the 1,2-DCA source area may be located along the property boundary between 34 Berry and 44 Berry Street, or may originate from the upgradient adjacent 44 Berry Street property.

In March 2018, a BCA was executed between the Volunteer and the NYSDEC to complete remediation and investigation activities at the Site under purview of the NYSDEC BCP. In November 2018, the NYSDEC-approved RIWP was implemented, and the investigation data was compiled into the draft RIR dated February 2019. During the 2018 OM&M monitoring year, aging equipment and biofouling of the LNAPL system equipment started to limit system performance. The LNAPL system was shut down in February 2019 in order to perform the repairs needed to return the system operation to full capacity. In June 2019, the LNAPL recovery system was overhauled, repaired, and restarted in accordance with the procedures identified in an NYSDEC-approved IRM Work Plan. Quarterly OM&M Site visits were continued under the BCP.

Between October 2018 and August 2019, the Volunteer completed a subsurface investigation, which was conducted in accordance with an NYSDEC-approved RIWP, to satisfy the investigation phase requirements of the BCP. The investigation included additional soil, groundwater, and soil gas/indoor sampling to complete the delineation on-site contamination. A November 15, 2019 letter from NYSDEC indicated that the October 19, 2019 RIR prepared by AKRF met the requirements of DER-10 and the BCA, and was approved. The RIWP included investigation of the adjacent property located at 44 Berry Street to determine whether the source of the 1,2-DCA contamination in groundwater originated from and/or extended on to this property. Access was denied by the 44 Berry Street property owner, and the related off-site investigation described in the RIWP was not conducted.

3.0 PREVIOUS REPORTS

Several environmental investigations have been completed at the project Site and the surrounding area. A review of the previous sampling investigations is summarized below:

Phase I Environmental Site Assessment (ESA) – 34 Berry Street, Brooklyn, New York, Langan, June 15, 2006.

Langan performed a Phase I ESA of the subject property to identify Recognized Environmental Conditions (RECs) that could affect redevelopment of the Site. The ESA identified the following RECs:

- Historic use of the Site as a chemical (quinine factory) from at least 1887 to 1951;
- Historic uses of the adjacent and surrounding properties, including an iron foundry, various manufacturing operations, and an MGP;
- On-site equipment repair and maintenance associated with a fork-lift company, including an associated solvent tub, stockpiles of batteries, waste oil drums, and an acetylene tank for welding;
- A 2,000-gallon UST documented in the building located southwest-adjacent to the Site; and
- Two vent stacks observed on the sidewalk across North 12th Street from the Site.

Based on these findings, Langan recommended a Phase II Environmental Site Investigation to determine whether soil and groundwater at the Site were affected by the identified RECs, including historical operation of the on-site building as a chemical factory from 1887 to 1951, current use of the on-site building as hydraulic lift equipment storage, and historic and current use of adjacent and surrounding properties.

Subsurface (Phase II) Investigation – 34 Berry Street, Brooklyn, New York, Langan, June 27, 2006.

Langan performed a subsurface investigation to determine whether the RECs identified during their Phase I ESA affected subsurface conditions at the Site. The Phase II Environmental Site Investigation (ESI) included advancing six soil borings (five on the Site, and one in the basement of an adjacent building at 111 North 11th Street), and collection of soil and groundwater samples from each boring. In addition, a groundwater sample was collected from an observation well installed during a geotechnical survey conducted by Langan. Soil samples were analyzed for VOCs, semivolatile organic compounds (SVOCs), metals, and polychlorinated biphenyls (PCBs); groundwater samples were analyzed for VOCs, SVOCs, and metals. Historic fill material was observed in all soil borings to depths of approximately 6 to 10 feet below grade, and petroleum-like odors were observed in three borings advanced in the northern portion of the Site, along North 12th Street, at approximately 6 to 12 feet below grade. SVOCs were detected at concentrations exceeding NYSDEC Technical and Administrative Guidance Memorandum (TAGM) Recommended Soil Cleanup Objectives (RSCOs) in effect at that time in two of the soil samples collected for laboratory analysis [EB-1b (2-2.5) and EB-3 (1-2)], and metals were detected above TAGM RSCOs in all soil borings. No VOCs or PCBs were detected in any of the soil samples analyzed. VOCs and SVOCs were detected above NYSDEC Class GA AWQSGVs in groundwater samples collected from two of the soil borings (EB-1 and EB-2), and metals were detected above the AWQSGVs in groundwater samples from all of the soil borings. Based on the findings of the Phase II ESI, Langan concluded that soil and groundwater conditions in the northern portion of the Site (generally along North 12th Street) were indicative of petroleum contamination requiring spill reporting to NYSDEC. Langan indicated that the soil and groundwater results for the remainder of the Site were characteristic of a typical urban fill site in New York City.

Environmental Subsurface Investigation Report – 34 Berry Street, Brooklyn, New York, Landmark Consultants, Inc., April, 2007.

Landmark Consultants Inc. (Landmark) conducted a subsurface investigation of the Site to further delineate the petroleum contamination identified during Langan's June 2006 Phase II ESI. The investigation consisted of the advancement of 16 soil borings, including 10 borings in the loading dock and factory bay areas of the on-site warehouse building (LDA-1 through LDA-6 and FBA-1 through FBA-4); and six borings in the parking lot area (EB-1 through EB-6). One to two grab soil samples were collected from each boring and analyzed for VOCs, SVOCs, and metals; two grab soil samples (from FBA-3 and FBA-4) were analyzed for total petroleum hydrocarbons (TPH) and PCBs; and one composite and two grab soil samples were analyzed for leachable VOCs, SVOCs, metals, pesticides, and herbicides by the Toxicity Characteristic Leaching Procedure (TCLP). In addition, one groundwater sample (GW-1) was collected from the northwestern portion of the Site and analyzed for VOCs and SVOCs. The VOC 2-butanone was detected in one soil sample (EB-1) at a concentration exceeding the TAGM RSCO; however, the presence of this compound was attributed to laboratory contamination, not on-site conditions. All other VOC concentrations in the soil samples were below their respective TAGM RSCOs.

Individual SVOCs were detected at concentrations exceeding their respective TAGM RSCOs in eight of the soil borings. The highest total SVOC concentration (62.9 ppm) was detected at 6 feet below grade in soil boring FBA-3, located in the northwestern portion of the Site. Metals were detected at concentrations above their respective TAGM RSCOs in each of the six soil borings advanced within the open parking lot area, while all metals concentrations in soil samples from the loading dock and freight bay areas were below TAGM RSCOs. Gasoline range total petroleum hydrocarbons (TPH) were detected in the samples collected from borings FBA-3 and FBA-4, at concentrations of 1,460 to 3,080 ppm, respectively; no PCBs were detected in these samples. All contaminant concentrations in the samples analyzed by TCLP were below their respective hazardous waste thresholds. Several SVOCs, including 2-methylnaphthalene, benzo(a)pyrene, fluorene, and phenanthrene, were detected in the groundwater samples at concentrations

exceeding their respective AWQSGVs. VOCs detected in groundwater were below their respective AWQSGVs.

Based on visual observations, screening with a photoionization detector (PID), and laboratory analytical results, Landmark concluded that petroleum-contaminated soil was present in an approximately 11,350-square foot area in the northern portion of the Site, near North 12th Street, to depths of approximately 9 feet below grade. Landmark estimated that approximately 3,800 cubic yards of contaminated soil would need to be excavated from this area to remediate the Site. In addition, Landmark recommended that any historic fill material excavated during proposed Site redevelopment be properly disposed at a permitted disposal facility.

Supplemental Remedial Investigation Report – 34 Berry Street, Brooklyn, New York, Landmark, March 20, 2008.

After a Spill was reported to NYSDEC on February 26, 2008 due to the petroleum contamination observed during previous investigations, and based on a request in a March 14, 2008 letter from NYSDEC, Landmark conducted a supplemental site investigation to further characterize subsurface conditions at the Site. The investigation included advancing 11 Geoprobe soil borings (EB-1 through EB-11) with continuous macro-core sampling to groundwater and collecting one soil sample from the most contaminated interval in each boring to be analyzed for VOCs and SVOCs. Landmark indicated that field screening identified slightly stained soil in one boring located near the southern Site boundary along North 11th Street, and four borings located along the western perimeter of the Site adjacent to the Brooklyn Brewery building. The stained soil was observed in discontinuous seams at depths ranging from 2 to 12 feet below grade. Individual SVOCs were detected in six of the borings (EB-6 through EB-11) at concentrations exceeding their respective TAGM RSCOs. All VOC concentrations were below their respective TAGM RSCOs.

Based on these results, Landmark refined the extent of petroleum-contaminated soil to an approximately 16,000 square foot area located along the northern and western portions of the Site. Further, Landmark indicated that all soil excavated from within the proposed development footprint to accommodate the building foundation and basement parking garage, including the delineated petroleum-contaminated soil, would be removed in accordance with applicable regulations and that endpoint samples would be collected from the bottom of the excavation in accordance with NYSDEC guidance. In response to NYSDEC concerns regarding soil vapor intrusion, Landmark indicated that the basement parking garage would include a separate ventilation system and a sub-slab vapor barrier.

Remedial Action Plan and Construction Health and Safety Plan– 34 Berry Street, Brooklyn, New York, Landmark, February, 2008.

The RAP presented measures for: handling, stockpiling, transportation, and disposal of excavated soil and fill material during construction; proper groundwater pre-treatment if dewatering was performed; and the implementation of vapor control for the future building. Excavated soil, excluding segregated petroleum-contaminated soil or hazardous waste, would be removed from the Site or reused as fill on-site, as necessary for construction. Contaminated and hazardous waste soil would be disposed of off-site in accordance with applicable federal, state, and local regulations.

The design for the vapor barrier consisted of Grace Preprufe® 300 waterproofing membrane applied to the underside of the foundation. The design also included a 6-inch thick layer of gravel placed below the vapor barrier. Any penetrations through the foundation would be sealed with Grace Bituthene® liquid membrane. The vapor barrier would serve to mitigate the potential vapors from entering the building from the subsurface and would also serve as a structural waterproofing system to prevent moisture from infiltrating through the foundation. In addition, the basement level of the proposed building would be used for vehicle parking and would contain a separate active ventilation system to prevent build-up of vehicle emissions. Since the underground portion of the building would be actively ventilated, the potential for vapor intrusion would be further reduced.

An air monitoring program was specified during disturbance of historic fill and contaminated soil to avoid or minimize exposure of the field personnel and the public to potential environmental hazards during soil disturbance activities. Proposed dust control measures included a dedicated on-site water truck, tarp covers for haul trucks, stabilized construction entrances, wash stations, and minimizing the speed of on-site vehicles. Proposed vapor/odor control measures included: limiting the area of open excavation; shrouding open excavations with tarps; using foams to cover exposed soils; and/or using chemical odorants in spray or misting systems.

The RAP also included contingency plans in the event that unknown USTs and/or areas of contaminated soil were encountered during soil excavation activities. Any USTs or areas of contaminated soil uncovered during the Site development would be addressed in accordance with accepted industry standards and applicable federal, state, and local regulatory agency requirements.

The Construction Health and Safety Plan (CHASP) assigned responsibilities, established personnel protection standards, defined mandatory safety practices and procedures and air monitoring requirements, and outlined contingency measures for unknown conditions that could arise during the remediation work associated with excavation and foundation work at the Site. The CHASP was intended to minimize health and safety risks resulting from the known and potential presence of hazardous materials on the Site.

New York City Department of Environmental Protection (NYCDEP)[1] approved the RAP and CHASP and issued a Notice to Proceed on April 3, 2008.

Soil Corrective Action and Remedial Subsurface Investigation – 34 Berry Street, Brooklyn, New York, Impact Environmental Restoration, Inc. (Impact), September, 2008.

This report was prepared by Impact and submitted to NYSDEC and NYCDEP to document the excavation and off-site disposal of petroleum-contaminated soil from the Site. Soil removal operations, which were conducted between May 15 and August 1, 2008, included the excavation of approximately 18,977 tons of soil under the entire building footprint, with off-site disposal at four different disposal facilities. Waste characterization samples were collected prior to and during the soil excavation activities to gain acceptance of the material at the designated facilities. Following soil removal, the bottom of the excavation was field screened for evidence of contamination and 34 post-excavation grab samples were collected at depths of approximately 10 to 14 feet below grade. The samples were collected across a grid pattern on approximately 20-foot centers and analyzed for VOCs and SVOCs. Impact reported that soil at the bottom of the excavation generally consisted of coarse sand containing some cobbles, and did not exhibit evidence of contamination or elevated PID readings; however, a reddish brown petroleum product was noted on the surface of the groundwater in the northern portion of the Site, along North 12th Street. Analytical results for the endpoint samples indicated that four of the samples contained VOCs or SVOCs slightly exceeding the TAGM RSCOs. Based on these results, Impact recommended installing six 4-inch diameter monitoring wells screened across the water table to monitor and recover LNAPL observed on the water table in the northern portion of the Site.

NYSDEC issued a November 19, 2008 letter indicating that, based on the data in Impact's report, no additional soil would need to be removed from the Site; however, continued LNAPL monitoring and recovery would be required.

Remedial Action Plan Addendum – 34 Berry Street, Brooklyn, New York, Landmark, April, 2009.

An addendum to the RAP was prepared by Landmark to specify measures for addressing the LNAPL that was observed on the groundwater surface at the Site following soil removal operations. The presumed source of the LNAPL was 12 USTs that were uncovered and removed during soil excavation for the building foundation. The proposed remediation measures consisted of operation and maintenance of an

[1] E-designation sites were managed previously under the NYCDEP; in early 2009, these sites transitioned to the OER

LNAPL recovery system and periodic groundwater monitoring in observation wells installed around the system. The proposed system included pumping of LNAPL/groundwater from three recovery wells, with treatment of the extracted fluids using an oil/water separator, air stripper, particulate filter, and two granular activated carbon (GAC) units in series prior to being discharged to the NYCDEP sewer system. The RAP addendum specified an OM&M schedule and periodic reporting to NYSDEC. A May 5, 2009 letter from Landmark to NYSDEC provided supplementary pump test and LNAPL gauging data to support the LNAPL recovery system design.

Closure Report – 34 Berry Street, Brooklyn, New York, AKRF, March, 2010.

AKRF prepared a Closure Report to document disposal, monitoring, and other remedial activities undertaken during construction activities at the Site in accordance with the NYCDEP-approved RAP and CHASP. All of the excavated fill material was sampled and disposed of off-site in accordance with applicable regulatory requirements. Engineering controls consisted of a vapor barrier and a site cap. The vapor barrier consisted of a Grace Preprufe® 300R waterproofing membrane, which was applied to the underside of the foundation. Grace Bituthene® 4000 membrane was applied to all foundation sidewalls to just below finished grade. Penetrations through the foundation were sealed with Grace Bituthene® liquid membrane. In addition to the vapor barrier, a separate ventilation system was installed for the basement level garage as per the New York City Department of Buildings (NYCDOB) requirements for an enclosed parking lot. The footprint of the building was excavated to a depth of at least 10 feet below grade and completely covered with a concrete cap (the building slab). A passive SSDS was designed for and retrofitted into the lower level floor slab in March 2010. Based on the completion of the work specified in the RAP and CHASP, AKRF recommended that OER issue a NNO for the Site upon receipt of the addendum documenting SSDS installation.

Closure Report Addendum – 34 Berry Street, Brooklyn, New York, AKRF, April 9, 2010.

The Closure Report Addendum was prepared to document additional remedial activities conducted subsequent to the March 2010 Closure Report, including installation of a passive SSDS and paving of a small area in the western portion of the Site.

The passive SSDS was installed under the newly constructed building as an added safeguard against potential soil vapor intrusion. The system included four branches of 6-inch diameter perforated piping installed within an 18-inch layer of gravel, which was integrated with the 6-inch gravel layer previously installed under the entire slab during building construction. The 6-inch perforated piping transitioned to 4-inch diameter solid cast iron piping below the slab, which was connected to 4-inch diameter solid polyvinyl chloride (PVC) aboveground risers. The aboveground risers connected to a single 4-inch diameter discharge line mounted in the southeastern corner of the parking garage. The riser vents to the atmosphere through a 4-inch diameter cast iron stack with a wind-driven turbine terminating above the roof of the parking garage stairway enclosure, located on the western side of a street-level courtyard.

On March 26, 2010, Tectonic, Inc. of Staten Island, New York installed 6-inch thick concrete pavement in an approximately 20-foot by 50-foot area in the southeastern corner of the Site not underlain by the building slab. Following installation, the pavement was covered with a layer of mulch. This pavement was installed to complete the final site cap described in the March 2010 Closure Report.

Off-Site Investigation Report – 34 Berry Street, Brooklyn, New York, AKRF, November 24, 2010.

The Off-Site Investigation Report documented the results from an investigation of subsurface conditions north- and east-adjacent of the Site to determine if potential off-site sources were contributing to petroleum contamination observed at the property during Site redevelopment and subsequent remediation activities. Field evidence of contamination, including slight petroleum-like odors and a visible sheen, was noted below the water table in three soil borings immediately north of the Site and one boring located across North 12th

Street from the Site, with no contamination noted in two other borings across North 12th Street or in two borings across Berry Street.

Laboratory analytical results for soil were consistent with these field observations, indicating generally higher levels of petroleum-related VOCs in soil samples from borings immediately north of the Site. LNAPL was not observed in any of the off-site monitoring wells during groundwater sampling activities or the tidal survey. Petroleum-related VOCs and/or SVOCs exceeding their respective AWQSGVs were detected in groundwater from MW-9 and MW-10 located immediately north of the Site, and MW-12 and MW-13, located across North 12th Street, with naphthalene concentrations of 37 to 79 parts per billion (ppb) reported in MW-13. However, the concentrations were all below 100 ppb and were not indicative of the presence of LNAPL. Fingerprint analysis of LNAPL samples collected from on-site monitoring wells indicated a product profile consistent with weathered diesel fuel/No. 2 fuel oil, and not consistent with residual associated with the MGP gas holders formerly located on the north side of North 12th Street.

The combined field observations and laboratory analytical results indicated that the petroleum-related contamination at the Site was not likely to have originated from on off-site source. Based on the finding of the off-site investigation, AKRF recommended evaluating modifications to the on-site LNAPL recovery system to help enhance LNAPL recovery rates and incorporating off-site monitoring wells into the monthly fluid level gauging program to better evaluate groundwater flow direction and verify absence of LNAPL north and east of the Site.

Phase I Environmental Site Assessment (ESA) – 44 Berry Street, Brooklyn, New York, IVI Assessment Services, Inc., March 30, 2011.

IVI Assessment Services, Inc. (IVI) performed a Phase I ESA of the south-adjacent property at 44 Berry Street to identify RECs at the Site. In addition, the 44 Berry Street Phase I ESA summarized previous subsurface investigations performed at the 44 Berry Street site that were conducted to assess former UST areas, a former western dry well, and existing eastern dry well. The subsurface investigation included six borings drilled to 9 feet below basement slab. Soil samples from each boring were collected at the water table interface, which was approximately 3 feet below the basement slab. Groundwater samples were collected from temporary wells installed at each of the six boring locations. VOCs were not detected in any of the soil samples or groundwater samples. Hazardous lead waste identified in the soil sample collected from the eastern dry well. Remediation of the hazardous waste in the eastern dry well was completed and the drywell was closed. While 1,2-DCA was not detected in any samples, the sample depths at the 44 Berry Street were shallower than the observed contamination depth in SB-22D at the north-adjacent 34 Berry Street. Other than the summary included in the Phase I ESA report, the previous subsurface investigation reports were not provided to AKRF.

OM&M Status Report (May 1 to June 30, 2013) – 34 Berry Street, Brooklyn, New York, AKRF, July 25, 2013.

AKRF prepared the Quarterly Monitoring Report documenting OM&M of the LNAPL recovery system for three quarterly events over the period of May 1, 2013 through June 30, 2013. Additional activities during the reporting period included completion of an additional Off-Site Investigation in June 2013. The additional investigation was conducted to determine the source of 1,2-DCA contamination in groundwater, which was identified in MW-4 during ongoing monitoring of the petroleum spill. The investigation included the drilling of soil borings and installation of monitoring wells at three upgradient locations (MW-17 through MW-19) to determine whether upgradient properties were contributing to Site contamination identified in MW-4.

Groundwater was encountered in the soil borings at approximately 10 to 11 feet below grade. No field evidence of contamination (e.g., sheens, odors, or elevated PID readings) was noted in the soil borings. Subsurface soils identified in the samplers generally consisted of miscellaneous fill (sand and gravel, with some organic material) extending to the bottom of each boring.

The soil sampling results did not identify a soil contamination source area. 1,2- DCA was detected in sample MW-18 at a concentration of 0.013 milligrams per kilogram (mg/kg), which was below the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objective (UUSCO) of 0.02 mg/kg. No other VOCs were detected in the soil samples. SVOCs were not detected in the soil samples. Groundwater sampling from the remaining on-site wells and off-site wells showed that petroleum-related VOCs and/or SVOCs exceeding their respective AWQSGVs were detected in groundwater from on-site wells MW-3, MW-6, MW-7, and MW-16, and from off-site well MW-18. Off-site monitoring well MW-18, which is upgradient of on-site monitoring well MW-4 and located in the sidewalk bordering the 34 Berry Street and 44 Berry Street properties, contained 1,2-DCA, 1,2-DCP, and TCE at concentrations higher than in on-site monitoring well MW-4. The groundwater sampling results for MW-18 suggested a potential off-site source for the 1,2-DCA detections.

OM&M Monitoring Report (February 1 to October 31, 2016) – 34 Berry Street, Brooklyn, New York, AKRF, February 6, 2017.

AKRF prepared the Quarterly Monitoring Report documenting OM&M of the LNAPL recovery system for three quarterly events over the period of February 1, 2016 through October 26, 2016 (three consecutive quarters). Additional activities during the reporting period included completion of a Supplemental Subsurface Investigation (SSI) in April 2013. The SSI included drilling and sampling of six soil borings, installation of three additional interior on-site monitoring wells (MW-22, MW-23, and MW-24), and two additional off-site monitoring wells (MW-20 and MW-21). The new wells were incorporated into the groundwater sampling program. MW-20 through MW-23 and soil boring SB-25 were completed to identify the potential source area and provide additional groundwater data associated with the existing 1,2-DCA plume. MW-24 was added to the investigation to provide soil and water quality data at the northwestern property boundary, which was a data gap for the Site.

Visible staining, petroleum-like odors, and elevated PID readings were observed in soil borings for MW-23 at 7 to 10 feet below basement grade (bbg) and MW-24 at 5 to 9 feet bbg. PID readings peaked at 30.4 ppm at MW-23 (8 feet bbg) and 153 ppm at MW-24 (8 feet bbg). No field evidence of contamination (e.g., sheens, odors, or elevated PID readings) was noted in the remaining soil borings.

The soil sampling results compiled during the June 2016 SSI indicated that low level VOC detections for solvent compounds were well below their respective UUSCOs and did not indicate the presence of a source area for the chlorinated solvent plume. The petroleum VOCs detected in on-site soil samples were below their respective UUSCOs and were consistent with the known contamination in the Spill area. The groundwater sampling results confirmed that the concentration of petroleum compounds were consistent with previous sampling events, and exceeded the AWQSGVs in the northeastern portion of the property where the LNAPL recovery wells are located. The groundwater results identified 1,2-DCA concentrations in MW-18 and MW-22 at one to two orders of magnitude higher than in the other monitoring wells. These results, combined with the established groundwater flow direction, suggested that the 1,2-DCA source area may be located along the property boundary between 34 Berry and 44 Berry Street, or may originate from the upgradient adjacent 44 Berry Street property.

OM&M Monitoring Reports – 34 Berry Street, Brooklyn, New York, AKRF, Inc., October 2009 through January 2020

The OM&M status reports prepared to document the LNAPL system performance were completed on quarterly or semi-annual bases during the following periods:

1. Monthly OM&M Status Reports, AKRF, October 2009 through December 2014
2. Quarterly (gauging)/Semi-Annual (gauging and groundwater monitoring) OM&M Status Reports, AKRF, January 2015 through January 2020

Prior to system start up, LNAPL was measured in the recovery wells at thicknesses ranging from approximately 0.2 to 0.6 foot. After the system was turned on in March 2009, NAPL was measured at thicknesses ranging from 0.5 foot in MW-2 to 4.79 feet in MW-1. This increased NAPL thickness was believed to be due to the capture zone created by depressing the water table into a cone of depression surrounding each recovery well, allowing the NAPL to essentially migrate "downhill" and build-up within the water table depression. NAPL recovery was very effective after system start up, as over 1,000 gallons of NAPL were recovered by September 2010. Approximately 850 additional gallons of NAPL were recovered from October 2010 to October 2012, and approximately 150 additional gallons of NAPL were recovered from November 2012 to February 2018. Approximately 2,000 gallons of NAPL have been removed to date during the NAPL system operation. In November 2012, NYSDEC approved the permanent shutdown of MW-7, as NAPL was no longer detected at that location. During the February 2018 OM&M event, NAPL was detected in MW-1, MW-6 and MW-16 at thicknesses ranging from 0.10 and 0.35 foot. Neither NAPL nor a petroleum sheen were detected in MW-2 or MW-3 during the February 2018 gauging events.

The OM&M program documented that the presence and thickness of measured NAPL was reduced throughout the duration of system operation. Each recovery well included periods of time during full system operation where NAPL was not detected. The system was effective in reducing the amount of NAPL beneath the Site building. Part of the reduction in NAPL recovery was also attributed to the deterioration of system equipment as it approached 10 years of operation. Repairing worn out equipment and cleaning bio-fouled pumps and discharge lines had become a constant maintenance requirement. In addition, replacement well MW-3R was completed to take the place of MW-3, where shifting of the PVC casing prevented the pump in MW-3 from operating properly or being removed. It became apparent that a full system rehabilitation with new pump and discharge lines was necessary to bring the system back to full operational capacity to address the remaining pockets of NAPL beneath the Site.

After a complete system rehab, the LNAPL system was restarted in June 2019. Approximately 68 gallons of LNAPL was removed between June and December 2019, and after six months of operation the NAPL removal rate returned to a rate consistent with conditions prior to the system issues in 2018.

IRM Work Plan – 34 Berry Street, Brooklyn, New York, AKRF, March 2019

The OM&M program documented that the LNAPL recovery system has been effective in reducing the amount of LNAPL beneath the building, but aging equipment, part failures, and biofouling of the LNAPL system equipment has limited recent performance. The IRM Work Plan was prepared to identify the procedures to rehabilitate and repair the existing system to optimize LNAPL recovery and complete the LNAPL removal beneath the Site. NYSDEC approved the IRM Work Plan in March 2019, and the LNAPL system upgrades were completed in June 2019. The activities described in the IRM work plan were completed and documented in the OM&M Monitoring Report dated December 19, 2019 and submitted to NYSDEC.

Remedial Investigation Report – 34 Berry Street, Brooklyn, New York, AKRF, November 2019

The Remedial Investigation (RI) was submitted NYSDEC in October 2019 and, combined with the results from all preceding investigations, confirmed the following:

- Groundwater under static non-pumping conditions flows in the north-northeast direction beneath the Site, with a regional trend to the northwest beyond North 12th Street. The groundwater flow direction follows topography;
- Petroleum contamination in soil is related to two distinct LNAPL zones, with a small zone near MW-1 on the eastern side of the Site, and a larger zone surrounding MW-2, MW-3, MW-6, and MW-16 on the western side of the Site. Fingerprint analysis identified the LNAPL as fuel oil. The soil

contamination in these zones was not observed as a distinct point source, but rather it was as a smear zone created by the LNAPL moving with groundwater fluctuations;

- Solvent contamination in soil was documented in one sample from boring SB-22D located along the southeastern border of the property at a depth of 14 to 15 feet below the basement level garage floor (approximately 5 feet below the water table);
- Petroleum contamination in groundwater included benzene and toluene detected above their NYSDEC AWQSGVs in up to three monitoring wells. The remaining petroleum-related BTEX (ethylbenzene and xylenes) compounds detected in the groundwater samples were below their respective AWQSGVs. There were no other petroleum-related VOCs detected above their respective AWQSGVs in the groundwater samples collected during RI. The RIR, combined with all preceding investigations, have documented that petroleum contamination in groundwater is related to the two distinct NAPL zones described above;
- Solvent contamination in groundwater was associated with the detection of 1,2-DCA in eight monitoring wells at concentrations that exceeded its AWQSGV. Additional solvent-related VOCs, including PCE, TCE, 1,2- DCP, chlorobenzene, and chloroform were present at lower concentrations, with concentrations exceeding the NYSDEC AWQSGVs in up to five monitoring wells.
- The concentration of 1,2-DCA in groundwater samples collected from the off-site monitoring well MW-18 and the on-site deep monitoring well MW-22D were an order of magnitude higher compared to the other monitoring wells. This pattern was consistent with historical sampling results, which had identified the highest concentrations of 1,2-DCA in the area of MW-4, MW-18, and MW-22. The higher concentration in MW-22D (screened at 30-35 feet below the water table) compared to MW-22 (screened across the water table) is consistent with the downward groundwater flow gradient identified at the site, and the tendency for 1,2-DCA, which is denser than water, to sink in an aquifer. Isoconcentration contours prepared as part of the RI for suggests that the 1,2-DCA source area extends upgradient from MW-22D on the adjacent property.
- Groundwater samples were analyzed for emerging contaminants [1,4-dioxane, Perfluorooctanoic Acid, and Per- and Polyfluoroalkyl Substances (PFOA/PFAS) compounds] at the request of the NYSDEC. The groundwater samples were analyzed for the standard list of 21 PFOA and PFAS compounds by EPA Method 537 (modified) and 1,4-dioxane by EPA Method 8270D – SIM. Thirteen of the 21 PFOA and PFAS compounds were detected in one or more groundwater samples at concentrations ranging from an estimated 0.25J parts per trillion (ppt) (MW-5) to 1,160 ppt (MW-7). 1,4-Dioxane was detected in 10 of the 17 groundwater samples at concentrations ranging from an estimated concentration of 0.16 µg/L (MW-10) to 0.69 µg/L. (MW-22D).
- The RIWP included investigation of the adjacent property located at 44 Berry Street to determine whether the source of the 1,2-DCA contamination in groundwater originated from and/or extended on to this property. Access was denied by the 44 Berry Street property owner, and the related off-site investigation described in the RIWP was not conducted as part of the RI.
- The analytical results for soil gas indicated there were no 1,2-DCA hot spots detected in any of the three soil gas samples for both the October 2018 and August 2019 sampling events. 1,2-DCA was not detected in any of the indoor air samples. TCE was detected in the soil gas sample SG-1 (near MW-4 in the southeastern portion of the basement) during the October 2018 sampling event at 12 µg/m3. The corresponding indoor air sample, IA-01, had a detection of TCE at 0.21 mg/m3. The NYSDOH matrices indicated for the October 2018 sampling event that additional monitoring for TCE was recommended to determine whether additional actions, such as mitigation, are warranted. An additional round of sampling was completed in August 2019 and TCE was not detected in any of the samples (soil gas or indoor air). The results of the second round of sampling, combined with the fact that mitigation

measures including a vapor barrier, passive sub-slab venting system, and cellar air exchange system are already in place at the Site, additional monitoring is not necessary provided that the existing mitigation measures are properly maintained as an engineering control for the Site. BTEX compounds were expected to be present below the building slab due to the petroleum spill in the three soil gas samples for both sampling events, but were at low levels for all corresponding indoor air samples, especially since gasoline vehicles park in the basement garage.

Soil Vapor Investigation – 44 Berry Street, Brooklyn, New York, Roux Environmental Engineering and Geology, D.P.C., May 9, 2019.

On behalf of CLPF-44 Berry, LP (the "Owner" of 44 Berry Street), Roux Environmental Engineering and Geology, D.P.C. ("Roux") conducted soil vapor sampling at 44 Berry Street, Brooklyn, NY. On August 6, 2018, Roux submitted data previously collected at the Site to the NYSDEC in support of a request for the NYSDEC to reconsider AKRF's Remedial Investigation and remove all sampling proposed for the Site. While the NYSDEC agreed with Roux's request and modified AKRF's Remedial Investigation, they requested the Owner collect soil vapor and indoor air at the Site to understand if there is a potential impact to the Site from contamination previously identified on the 34 Berry Street property. However, the investigation did not include soil or groundwater sampling to determine whether the source of the 1,2-DCA contamination in groundwater originated from and/or extended on to the 44 Berry Street property.

On March 12, 2019, Roux installed two sub-slab soil vapor monitoring points in the basement of the building. One soil vapor monitoring point was located in the electric room (SV-10). A second soil vapor monitoring point was located in the emergency exit hallway leading from a commercial tenant that operates a bar (SV-102). Soil vapor monitoring points consisted of a stainless-steel Vapor Pin® and silicone sleeve installed in a 5/8-inch diameter hole drilled through the floor. 1,2-DCA was detected in the sub-slab soil vapor sample SV-101 at a concentration of 14 µg/m^3, which was an order of magnitude higher than any sub-slab 1,2-DCA soil vapor detections at the 34 Berry Street Site (highest detection was 1.3 µg/m^3). The corresponding indoor air sample did not detect 1,2-DCA (reported detection limit of 0.809 µg/m^3). In addition, 1,2-DCA was not detected in the second sampling pair (sub-slab sample SV-102 and indoor air sample AS-102) or the outdoor air sample (OA-103), all at the reported detection limit of 0.809 µg/m^3.

Additional Indoor Air Investigation – 44 Berry Street, Brooklyn, New York, Roux Environmental Engineering and Geology, D.P.C., August 13, 2019.

In March 2019, at the request of the NYSDEC, Roux collected indoor air samples at the 44 Berry Street site. These samples were collected to determine if 1,2-DCA, which had been identified in groundwater at the adjacent 34 Berry Street property, was impacting indoor air. As part of that investigation, two indoor air samples were collected from the basement of the site (IA-101 and IA-102) and one outdoor air sample was collected on the Berry Street sidewalk (OA-103). 1,2-DCA was not identified during the March 2019 investigation. Aside from assessing 1,2-DCA, the March 2019 sampling identified the compound TCE in both indoor and outdoor samples. The NYSDEC subsequently requested additional sampling to assess both the TCE and the indoor air of a commercial tenant space at the Site. As NYSDEC requested, on June 27, 2019, Roux collected a total of six indoor air samples. These included resampling the three original locations (IA-101, IA-102, and OA-103), two indoor air samples from Berry Cleaners located on the first floor of the building (IA-201 and IA-202), and a second outdoor air sample from the North 11th Street sidewalk (OA-104). All air samples were collected concurrently over an eight-hour period using laboratory supplied vacuum canisters and regulators. Samples were submitted to Alpha Analytical, a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory, for analysis of volatile organic compounds using United States Environmental Protection Agency (EPA) Method TO-15.

In the June 2019 sampling event, there were no detections of 1,2-DCA in indoor or outdoor air. TCE was detected in indoor air at concentrations ranging from of 3.24 µg/m^3 in IA-102 to 90.8 µg/m^3 in IA-202 and in outdoor air at concentrations ranging from non-detect in OA-104 to 1.6 µg/m^3 in OA-103. Based on the

investigations completed by Roux, NYSDEC indicated that 1,2-DCA contamination at 34 Berry Street was not affecting indoor air at the 44 Berry Street site. However, the investigation did not include soil or groundwater sampling to determine whether the source of the 1,2-DCA contamination in groundwater at the 34 Berry Street site originated from and/or extended on to the 44 Berry Street property.

Remedial Investigation Report Addendum – 34 Berry Street, Brooklyn, New York, AKRF, October 19, 2020

The RIR addendum letter was prepared when NYSDEC requested that the Volunteer conduct additional sampling to satisfy the RI requirements of the BCP for the Site. This request was made following NYSDEC's and NYSDOH's review of the initial RIR dated October 2019 and the draft RAWP dated May 2020. Specifically, NYSDEC requested that additional soil samples be collected and analyzed for herbicides, pesticides, PCBs, metals, and emerging contaminants. The additional sampling was conducted as a Pre-Design Investigation (PDI) in accordance with a scope outlined in email correspondence dated August 4, 2019, approved by NYSDEC on the same day via email. Three soil borings were advanced as part of the PDI. The RIR addendum, which was approved on January 11, 2021, confirmed the following:

- Strong petroleum-like odors, petroleum-like staining and visible NAPL, and organic vapors were detected, with a maximum PID reading of 58.5 ppm in the soil cores from 5 to 10 feet below grade at RW-2. The petroleum-like odors, visible staining, and PID readings observed in RW-1, RW-2, and RW-3 are most likely attributable to the previously-documented petroleum spill in the western portion of the Site.
- Two metals (hexavalent chromium and trivalent chromium) were detected above applicable UUSCOs and/or RRSCOs in soil sample RW-3_5-7_20200813 but below their respective Commercial Use Soil Cleanup Objectives (CUSCOs). One pesticide (4,4'-DDT) was detected in soil sample RW-3_5-7_20200813 at an estimated concentration above its UUSCO, but below its RRSCO. The exceedances appear to be attributable to historic fill.
- All remaining parameters were below their respective UUSCOs and the emerging contaminants were below the guidance values.
- The Site is covered with a concrete slabs, paving, and/or a minimum of 2 feet of clean soil in landscaped areas, which prevents direct contact with the subsurface soil. This draft RAWP includes formalizing the existing Site cover as an Engineering Control under the BCP to prevent direct contact with subsurface soil

Previous environmental reports are included as Appendix C.

4.0 REVIEW OF SITE CONTAMINATION

The data compiled during RI, RI addendum, and IRM were compared to the following standards, criteria, and guidance to determine the nature and extent of the contamination area associated with the Site:

- **Soil** –NYSDEC Protection of Public Health Restricted Residential SCOs, and NYSDEC Protection of Groundwater SCOs;
- **Groundwater** – Class GA (Drinking Water) AWQSGVs; and
- **Soil Vapor** – NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

Soil boring, groundwater monitoring wells, and soil gas sampling locations are provided on Figure 3.

4.1 Contamination Areas

4.1.1 Petroleum Contamination in Soil and Groundwater

Petroleum contamination exists in two distinct LNAPL zones, with a small zone near MW-1 on the eastern side of the Site, and a larger zone in the area of MW-2, MW-3, MW-6, MW-16, MW-24, and MW-26 on the western side of the Site. Fingerprint analysis identified the LNAPL as weathered fuel oil. The soil contamination in these zones was not observed as a distinct point source, but rather it was as a smear zone created by the LNAPL moving vertically with groundwater fluctuations. Petroleum contamination in groundwater included benzene and toluene detected above its NYSDEC AWQSGV in up to three monitoring wells located within the two distinct NAPL zones described above. Historic groundwater and LNAPL measurements are included on Table 1. A concentration map indicating the location and exceedances of applicable soil cleanup objectives is provided as Figure 4. A concentration map indicating the location and exceedances of AWQSGVs is provided as Figure 5. Tables 2 through 7 summarize soil, groundwater and soil vapor detections above applicable standards.

4.1.2 Solvent Contamination in Soil and Groundwater

Solvent contamination in soil was documented in one sample from soil boring SB-22D, located along the southeastern border of the property, at a depth of 14 to 15 feet below the basement level garage floor (approximately 5 feet below the water table). Solvent contamination in groundwater included the detection of 1,2- DCA in up to eight monitoring wells at concentrations above its AWQSGV. Additional solvent-related VOCs, including PCE, TCE, 1,2-DCP, chlorobenzene, and chloroform were present at a lesser extent, with concentrations exceeding the NYSDEC AWQSGV in up to five monitoring wells. The concentration of 1,2-DCA in groundwater samples collected from off-site monitoring well MW-18 and on-site deep monitoring well MW-22D, both located near on the upgradient (southeast) border of the Site, were an order of magnitude higher compared to the other monitoring wells. A concentration map showing the historical 1,2-DCA groundwater data is included as Figure 6. The 1,2-DCA isoconcentration contours suggest that the plume extends into the central portion of the Site with a potential source area extending upgradient from MW-22, MW-22D, and MW-18. An isoconcentration map of 1,2-DCA in groundwater is included as Figure 7.

4.1.3 Soil Vapor Contamination

There were no solvent contamination hot spots detected in soil vapor. Isolated areas of TCE and 1,2-DCA existed in soil vapor at low concentrations where, combined with the existing vapor barrier, passive sub-slab venting system, and cellar air exchange, additional monitoring is not necessary. BTEX compounds were present below the sub-slab due to the petroleum is spill. A map showing the locations of the samples collected and a summary of the soil vapor data is included as Figure 8.

Details of soil, groundwater, and soil gas contamination are included in this document in the Remedial Investigation Report summary of Section 3.0.

4.1.4 Emerging Contaminants Contamination

There were no emerging contaminants [1,4-dioxane and per- and polyfluoroalkyl substances (PFAS)/perfluorooctanoic acid (PFOA) compounds] hot spots detected in soil or groundwater. Isolated areas of emerging contaminants existed in soil and groundwater at low concentrations throughout the site. Concentrations of emerging contaminants that

were detected at the Site remained below NYSDEC's Sampling, Analysis, and Assessment of PFAS guidance (October 2020).

Details of emerging contaminants contamination are included in this document in the Remedial Investigation Report summary of Section 3.0

4.1.5 Significant Threat Determination

The RIR was submitted to the NYSDEC and NYSDOH on February 11, 2019 and approved on November 15, 2019. The NYSDEC and NYSDOH have made a determination that the site does not pose a significant threat to human health and the environment.

4.2 Conceptual Site Model

This section presents a conceptual site model that identifies each known or potential release area, discusses how a release can occur, the migration pathway of the released material, and what impacts contaminants have on human health and the environment. Figure 9 depicts a cross section of the conceptual site model illustrating the migration pathways for site contamination.

4.2.1 Petroleum Contamination

Petroleum contamination is mainly due to a release of #2 fuel oil associated with underground storage tanks that were discovered/removed during Site redevelopment. Fuel oil that escaped from a hole or perforation in a product transfer line or the underground tank would migrate vertically downward through the pore space of the unsaturated soil zone until it reached the water table. The oil, which is less dense than water (a.k.a., LNAPL), would pool up/disperse radially while migrating along the shallow portion of the water table. Horizontal migration is possible in the downgradient groundwater flow direction, but is typically limited in low yielding, fine grained sediments due to the viscous nature of fuel oil. Dissolved contamination does occur, but is also limited due to the relatively higher fraction of semi-volatile organic compounds in fuel oil, which are less water soluble than lighter petroleum compounds found in gasoline. This is consistent with Site conditions as the areas of LNAPL have remained in two distinct locations, and the limited SVOCs detected in groundwater are below the AWQSGVs. Since petroleum compounds can evaporate quickly when exposed to air, the contamination can volatilize from a soil source area or the groundwater table within the plume zone and migrate in a vapor phase through the pore spaces in unsaturated soil. The vapors can build up beneath structures such as pavement and building foundations. While petroleum compounds were detected in soil vapor, minimal levels of petroleum compounds were detected in and indoor air at the Site. The affected media for the petroleum contamination at the Site includes soil and groundwater, and to a lesser extent, soil vapor.

4.2.2 Solvent Contamination

The solvent (1,2-DCA) contamination area appears to be the result of a spill(s) or release(s) associated with the former industrial uses at the Site and potentially the adjacent 44 Berry Street property, which contained part of the quinine factory shown on historical Sanborn maps[2]. One potential release area was identified in the southeastern portion of the Site (in the middle portion of the boring for MW-22D) where 1,2-DCA was detected in soil at approximately 14 to 15 feet below the basement slab, or approximately 7 feet below the

[2] 1,2-DCA was used historically as a solvent for processing pharmaceutical products (see clu-in.org/contaminantfocus/default.focus/sec/dense_nonaqueous_phase_liquids_(dnapls)/cat/Environmental_Occurrence/p/2/n/11)

water table. Isoconcentration contours for 1,2-DCA in groundwater (see Figure 7) suggest that additional contamination source area(s) may be present upgradient (southeast) of MW-22D within or above the shallow zone of saturation, including potentially on the 44 Berry Street property. Once released, some of the released 1,2-DCA would have absorbed to the soil particles and some would have migrated vertically downward through the pore space of the soil until it reached the water table. Separate phase 1,2-DCA, which is denser than water, can continue to migrate vertically through the saturated zone while also dissolving into groundwater and dispersing laterally and vertically under natural groundwater flow conditions. Although 1,2-DCA was detected in the deeper monitoring well MW-22D, it is anticipated that the dense, low permeability sediments at the Site would have limited downward migration of separate phase solvent, as demonstrated by the higher plume concentrations documented in shallower monitoring wells screened across the water table [e.g., MW-4 and MW-8 historically had 1,2-DCA concentrations as high as 51,000 micrograms per liter (µg/L) and 8,800 ug/L, respectively]. Since solvent compounds evaporate quickly when exposed to air, the contamination can evaporate from a soil source area or the groundwater table within the plume zone and migrate in a vapor phase through the pore spaces in unsaturated soil. The vapors can build up beneath structures such as pavement and building foundations. However, minimal levels of 1,2-DCA were detected in soil vapor and indoor air at the Site. The affected media for the solvent contamination at the Site includes soil, groundwater, and soil vapor.

5.0 QUALITATIVE HUMAN HEALTH AND EXPOSURE ASSESSMENT

This Section includes an evaluation of who might be exposed to the Site contamination, and how the exposure would take place. Environmental and public health exposure can occur only if there is a complete pathway from a specific chemical of concern contained in one of the media to a receptor. The mere presence of known contamination is not in itself evidence that a complete exposure pathway will exist. Based on results from the previous investigations, the contaminated media associated with the Site included soil, groundwater, and soil vapor. The Section includes a review of the potential routes of exposure.

5.1 Route of Exposure and Potential Receptors

The five elements of an exposure pathway include: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population. An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway cannot be ruled out. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future.

Three potential primary exposure pathway routes exist by which chemicals can enter the body:

1. Ingestion of contaminated soil or groundwater;
2. Inhalation of contaminated vapors and soil particulates; and
3. Dermal contact with contaminated groundwater or soil.

Potential receptors include:

1. Occupants of the Site;
2. On-site environmental and construction workers, utility workers, and trespassers during maintenance and remedial activities;

3. Off-site residents, workers and nearby businesses, and trespassers during remedial activities; and,
4. Off-site maintenance and utility workers.

These routes of exposure are possible during and after the remedial action if proper precautions are not taken. The remedial plan outlined in this RAWP will ensure that routes of exposure are prevented during implementation of the remedy and future occupancy of the Site.

5.2 Exposure Assessment

5.2.1 Migration Pathway for Soil

The migration pathway for contacting and/or ingesting contaminated soil is limited as the contamination area is covered by buildings, concrete foundations, and asphalt pavement. As long as these features stay in place, exposure pathways to on-site receptors are not complete. A limited route of exposure to contaminated soil does exist for maintenance personnel, if excavation through the concrete foundation and into contaminated soil is needed for maintenance or utility work. A limited route of exposure to drill cuttings and excavated soil for trenching also exists for remediation contractors during implementation of the remedy.

5.2.2 Migration Pathway for Groundwater

The migration pathway for contacting and/or ingesting contaminated groundwater is limited as the contamination area is covered by buildings, asphalt pavement, or an average of 5 feet of soil cover above the water table, and groundwater below the Site is not a source of potable drinking water. A route of potential dermal exposure to groundwater does exist if excavation into saturated soils is needed during maintenance or utility work, during OM&M of the LNAPL system, or during implementation of the injection remedy to treat groundwater.

5.2.3 Migration Pathway for Soil Vapor

The migration pathway for soil vapor to enter the building is not complete as a vapor barrier and passive sub-slab depressurization system exists below the building foundation. A limited exposure pathway to soil vapor would exist for utility or maintenance workers that excavate below the building foundation, during OM&M of the LNAPL system, or for remediation contractors while drilling or trenching below the foundation.

5.2.4 Short Term Exposure

The work performed at the Site has included excavation and removal of contaminated soil and installation of a LNAPL recovery system, vapor barrier, and a passive SSDS. As described in Section 9.0, the proposed remedy will treatment to address the remaining petroleum and solvent contamination at the Site. This remediation work at the Site could expose the on-site workers to the contaminants in a variety of ways, including direct contact with the contaminated groundwater and soil, and inhalation of contaminant vapors or soil particles. These potential exposures would be limited to short durations and appropriate controls would be implemented while completing the intrusive work. The remediation work at the Site may expose the building occupants to the contaminants in a variety of ways, including direct contact with groundwater and inhalation of vapors or particulate, but this RAWP outlines measures that will be taken to prevent such potential exposure during the remediation activities, including the implementation of a HASP and

CAMP in Appendix A. Exposure to the off-site local population is considered to be minimal as all of the work will be completed within the cellar level parking garage.

5.2.5 Long Term Exposure

Upon the completion of remediation activities, potential exposure to any residual soil contamination will be prevented by the existing Site cover system. Future potential exposures related to the inhalation of contaminated vapors on-site would be prevented by the existing vapor barrier and passive SSDS system.

5.2.6 Overall Human Health Exposure Assessment

The greatest potential for exposure of on-site workers, on-site building occupants, and the off-site local population to Site-related contaminated groundwater, soil, and vapors/particulates is during the remedy phase. In order to mitigate possible exposure, a HASP will be implemented during construction and remedial work for the safety of the on-site workers, including requiring personal protective equipment, provisions for upgrading the level of personal protective equipment when needed, and requiring equipment decontamination prior to reuse or departure from the Site. The HASP and CAMP will monitor VOCs for on-site and off-site conditions, applying vapor suppression measures (if needed), and other controls as needed.

After the remedial action is complete, a Site Management Plan will be implemented to monitor the effectiveness of the remedy and have provisions to meet the Remedial Action Objectives (RAOs) for the Site.

6.0 REMEDIAL ACTION OBJECTIVES

The RAOs for the Site are summarized in this section and include a review of goals to be achieved during the implementation of the RAWP.

6.1 Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent migration of contaminants from soil that would result in groundwater or surface water contamination.

6.2 Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water and sediment.

- Remove the source of ground or surface water contamination.

6.3 Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a Site.

7.0 EVALUATION OF REMEDIAL ALTERNATIVES

This section includes a review of remediation alternatives that were considered for the remedy phase of the BCP. The purpose of completing the alternatives analysis is to identify, evaluate and select an effective remedy to address the contamination identified by the RIR. The RAOs for soil include source removal to prevent the potential for exposure and contaminant migration. The RAOs for groundwater include plume stabilization and groundwater quality restoration. The RAOs for soil vapor include preventing sub-slab vapors from entering the Site building. The anticipated BCP remediation plan would include a Track 4 cleanup based upon the use of multiple engineering controls to address the affected media. The Track 4 soil and groundwater cleanup objectives are shown in Table 8. The following performance measures were used to complete the evaluation of remedial alternatives:

- Protection of human health and the environment;
- Compliance with standards, criteria, and guidelines (SCGs);
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness
- Community acceptance; and
- Land use.

This section includes a review of the nature of the Site contamination, the applicable SCGs, the components of remediation, and an analysis of each component. Community acceptance, which is a performance measure required to be reviewed by NYSDEC DER-10, was not evaluated as a public review session for the RAWP will be completed as part of the BCP. A BCP Track 4 cleanup allows for institutional and engineering controls to be implemented for long-term management of the Site and to prevent future exposure to any residual contamination. For each scenario reviewed below, an Environmental Easement (EE) would be recorded for the Site to implement the controls. A Site Management Plan (SMP) would be prepared to specify operation and maintenance procedures, and any media monitoring requirements. The review of remediation scenarios includes the requirement of No Further Action to satisfy the evaluation requirements.

7.1 Contamination Summary

As summarized in Section 4.0, petroleum and solvent contamination areas are present at the Site. Petroleum contamination in soil is related to two distinct LNAPL zones, with a small zone near MW-1 on the eastern side of the Site, and a larger zone in the vicinity of MW-2, MW-3, MW-6, MW-16, MW-24 and MW-26 on the western side of the Site. Benzene and toluene are present in

groundwater within the LNAPL area at concentrations that exceed the AWQSGVs. Solvent (1,2-DCA) contamination includes an isolated soil source area at MW-22D at a depth of 14 to 15 feet below the basement level garage floor (approximately 7 feet below the water table). Solvent contamination in groundwater includes the detection of 1,2-DCA in eight monitoring wells at concentrations that exceeded its AWQSGV, including one well screened at approximately 27 to32 feet below the water table. An isoconcentration map of the solvent groundwater plume suggests that additional solvent source contamination may be present upgradient of MW-22D, beneath the adjacent 44 Berry Street property.

The Site presents a unique remedial challenge, as two source areas (LNAPL for petroleum contamination and an impacted soil zone for solvent contamination) and their resulting plumes are present in areas that overlap each other. Remedial environments that are conducive for toxicity reduction for petroleum and solvents are typically incompatible, and the remedial alternative will need to include a strategy that can address both contamination types concurrently, or each contamination area will need to be addressed separately.

7.2 Applicable Standards, Criteria, and Guidelines

The following remedial SCGs apply to the project, and are the performance criteria used to determine if the RAOs for remediation have been met.

NYSDEC Subpart 375-6 Remedial Program Soil Cleanup Objectives

- Soil at the project Site must meet the lower of the Site-Specific Protection of Public Health Restricted Residential and Protection of Groundwater SCOs.

NYSDEC Ambient Water Quality Standards and Guidance Values – Technical and Operational Guidance Series (TOGS) 1.1.1

- Groundwater data collected at the project Site exceeds the AWQSGVs, and the approved remedial action will address the groundwater exceedances.

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

- Identifies the scope of activities needed to satisfy the minimum requirements of the remediation program under the BCP.

NYSDEC Draft Brownfield Cleanup Program Guide – May 2004

- Utilized to conform to the required procedures and achieve the resulting benefits of navigating through the NYSDEC BCP.

NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York – Soil Vapor Intrusion Mitigation – October 2006

- Occupied buildings overlying the groundwater plume have the potential for vapor intrusion.

NYSDOH Generic CAMP

- Applicable and utilized during the development of the CAMP associated with the RAWP.

7.3 Source Removal – LNAPL Remedial Alternative Components

A groundwater pump and treat system (the LNAPL recovery system) has been in operation at the Site since 2009. The No Further Action alternative would not address remaining petroleum contamination, and would not or include engineering or institutional controls to protect human health or environmental exposure pathways. Therefore, the No Further Action alternative is not

being considered as a viable remedial alternative. Alternatives for addressing LNAPL areas include the following components:

1. L1 – Continue operation or upgrade of the existing LNAPL recovery system
2. L2 – In-situ treatment
3. L3 – In-situ treatment with groundwater recirculation

7.3.1 LNAPL Alternative Evaluation

LNAPL Removal 1 (L1): Continue operation or upgrade of the existing LNAPL pump and treat system

Although the LNAPL recovery system has removed over 2,000 gallons of fuel oil and has been effective at LNAPL containment, the dense sediments combined with low permeability/low groundwater flow rates has resulted in a long and ongoing remediation timeframe (over 10 years) to complete the LNAPL removal. The extended operation period for the system also requires routine maintenance to address biofouling and failing equipment. For low yielding aquifers, there is an option for upgrading to a multi-phase extraction (MPE) system, which is constructed by connecting the recovery wells to a liquid ring blower capable of applying high negative pressure/sustained vacuum to remove multiple phases of liquids (LNAPL and groundwater) and soil vapor.

1. Protection of human health and the environment – partially satisfied. Although the system has been shown to provide for consistent LNAPL removal, the extended remediation timeframe with no clear end date allows for potential exposure and an ongoing source of groundwater contamination during the extensive remedial period. Even with an upgrade to MPE to maximize fluid removal, fluid migration is limited by the aquifer characteristics (low permeability/low flow).
2. Compliance with SCGs – partially satisfied as LNAPL removal would likely be achieved, but over a long term period of system operation.
3. Short-term effectiveness and impacts – DER-10 identifies short-term effectiveness and impacts as exposures during the construction and implementation of the remedy (i.e., construction traffic, dust control, odors, run-off, and noise). This component is satisfied as successful measures have been implemented to protect workers and residents during similar activities (i.e., site investigation and LNAPL system operation) and could be achieved during upgrades to the existing system.
4. Long-term effectiveness and permanence – partially satisfied as LNAPL removal, once completed, would be permanent, but the effectiveness comes into question when considering the timeframe to achieve LNAPL removal.
5. Reduction of toxicity, mobility, or volume of contaminated material – satisfied as the eventual LNAPL removal would be permanent.
6. Implementability – very feasible for the existing system to continue operating, as no additional personnel or regulatory approvals would be needed. An upgrade to MPE is also feasible, but would require additional engineering and construction.
7. Cost effectiveness – partially satisfied. This approach would require additional capital investment to augment the existing LNAPL recovery system, but the long operation period has shown to be cost prohibitive due to the need for frequent inspections, high maintenance, cleaning due to fouling, and high energy requirements. MPE includes an additional cost to engineer and rebuild the system, and extended monitoring periods

to test and balance the application of vacuum to each recovery well and complete NAPL removal.

8. Land use – satisfied as implementation would not be incompatible with the current and anticipated future use of Restricted Residential.

LNAPL Removal 2 (L2): In-situ Treatment

Alternative 2 involves conducting a program to inject materials over one or more events into the ground to react with and aerobically breakdown the LNAPL. Injection materials like surfactants can also act as scrubbing agents to desorb the LNAPL from soil surfaces, thereby making it more available to in-situ treatment.

1. Protection of human health and the environment – satisfied as the in-situ treatment would help to breakdown the LNAPL to prevent future exposure or the potential for contaminant migration.
2. Compliance with standards, criteria, and guidelines – satisfied as the requirement to remove the LNAPL would be achieved.
3. Short-term effectiveness and impacts – satisfied as mitigation measures included in the RAWP, including the HASP and CAMP, would be implemented to minimize exposure to workers and the community during implementation. Similar measures were successfully implemented during the LNAPL system installation, OM&M activities, and BCP site investigation where a drilling rig was used in the parking garage.
4. Long-term effectiveness and permanence – satisfied as in-situ treatment of the LNAPL would permanently remove a continuing source of groundwater contamination, and limit exposure of future occupants to contaminated vapors.
5. Reduction of toxicity, mobility, or volume of contaminated material – satisfied as the LNAPL removal, and the associated ongoing source of contamination, would be directly addressed, but the low yielding aquifer may present a challenge with a condensed injection grid and/or multiple injection events needed to achieve the RAOs.
6. Implementability – partially satisfied. Due to the low permeability sediments at the Site, a large injection grid with closely-spaced centers (potentially as close as 5 feet apart) can be implemented, but the additional injection points and larger work zones would be a challenge due to limited access in the cellar of an active residential building. In addition, the low yielding aquifer may require multiple injection events to achieve the RAOs.
7. Cost effectiveness – partially satisfied. An injection program has shown to be effective in similar settings, but the access constrains and the dense underlying sediments and low yielding aquifer may require multiple injection events, which would increase the cost of implementation.
8. Land use – satisfied as implementation would be compatible with the current and anticipated future use of Restricted Residential.

LNAPL Removal 3 (L3): In-situ Treatment with Groundwater Recirculation

Alternative 3 generally involves a combination of the Alternative 1 and 2. The in-situ treatment provides for a more aggressive approach to LNAPL removal, and the existing LNAPL extraction system allows the injection program to include groundwater capture and recirculation to enhance the treatment. The existing recovery well network at the Site would be used to recirculate groundwater to induce pressure head changes and increase

water flow through low permeability sediments and maximize the contact area of the injected compounds with the contaminants. Injection points would be strategically placed to allow for materials (surfactants and/or other treatment compounds/amendments) to be introduced into the zone of contamination, and then recaptured at recovery wells. The existing above ground treatment system consisting of an oil/water separator with a granular activated carbon (GAC) filter can be modified and utilized to remove the LNAPL from the water prior to re-dosing with surfactants or other treatment compounds/amendments, and reinjecting a portion of the water extracted from the subsurface. The existing network of recovery and monitoring wells can be used for the injection and circulation program, with the installation of additional wells, where needed, to optimize performance.

1. Protection of human health and the environment – satisfied as the injection process would react directly with the LNAPL area to reduce contamination, speed up the removal process compared to the existing LNAPL system, and help to prevent future exposure or the potential for contaminant migration.
2. Compliance with standards, criteria, and guidelines – satisfied as the requirement to remove the LNAPL would be achieved.
3. Short-term effectiveness and impacts – satisfied as mitigation measures included in the RAWP, including the HASP and CAMP, would be implemented to minimize exposure to workers and the community during implementation.
4. Long-term effectiveness and permanence – satisfied as extraction/in-situ treatment of the LNAPL would permanently remove a continuing source of groundwater contamination, and limit exposure of future occupants to contaminated vapors.
5. Reduction of toxicity, mobility, or volume of contaminated material – satisfied as the LNAPL removal, and the associated ongoing source of groundwater contamination, would be directly addressed.
6. Implementability – satisfied. Since the existing LNAPL system, which consists of recovery wells piped to an oil water separator and GAC unit, is already permitted and in operation, the structural and space needs are in place, and less effort will be required for conversion to an injection and groundwater circulation system. The use of the groundwater circulation would likely decrease the number of injection points required and length of treatment compared to LNAPL Removal Alternative #2.
7. Cost effectiveness – satisfied as the cost to complete an injection and groundwater circulation program is designed to specifically reduce the LNAPL removal timeframe to a shorter period of time compared to Alternatives L1 and L2. The up-front costs for system modification are mitigated by not having to pay for long term operation of the LNAPL recovery system.
8. Land use – satisfied as implementation would be compatible with the current and anticipated future use of Restricted Residential.

7.4 Source Removal - Soil Remedial Alternative Components

Solvent contamination in soil was documented to be isolated to a zone between 14 and 15 feet below the basement slab in the vicinity of MW-22D. Soil remediation would take place concurrently with or prior to groundwater remediation to remove the ongoing sources of pollution. Action alternatives for addressing on-site soil contamination include the following components:

1. S1 – No further action

2. S2 – Source excavation and removal
3. S3 – In-situ treatment

7.4.1 Soil Alternative Evaluation

This Section includes a review of each evaluation criterion included in DER-10 for the identified soil remediation alternatives.

Soil Alternative 1 (S1): No Further Action

Alternative 1 involves conducting no further remedial activities with respect to the solvent contamination source area, and satisfies the "No Further Action" remedial component alternatives requirement for soil remediation.

1. Protection of human health and the environment – partially satisfied as the potential for exposure to soil contamination would be limited due to the site cap (concrete foundation slab) and the depth of the soil contamination area (9 feet below the water table, 14 feet below the basement slab). No further action is not protective of the environmental as a source of potential groundwater contamination remains.
2. Compliance with SCGs – not satisfied as contaminants would remain in soil at concentrations that exceed NYSDEC Part 375 SCOs.
3. Short-term effectiveness and impacts – This component is satisfied as no further action would not disturb the site cap, and workers and residents would not be directly exposed.
4. Long-term effectiveness and permanence – not satisfied as it would remain as a continuing source of groundwater contamination. However, due to deep nature of the contamination, it is unlikely that it would be a source of potential exposure during future excavations (i.e., utility work, future construction).
5. Reduction of toxicity, mobility, or volume of contaminated material – not satisfied because the concentration and volume of contaminants would remain, and have the potential to mobilize.
6. Implementability – very feasible as no personnel or regulatory approvals would be needed, and natural attenuation would be the only remedial plan utilized.
7. Cost effectiveness – very cost effective to proceed with no further action, but this criterion is not satisfied as it requires a comparison of cost to long/short term effectiveness and toxicity reduction, which would not be achieved.
8. Land use – satisfied as implementation would not be incompatible with the current and anticipated future use of Restricted Residential with a site cap under a Track 4 Cleanup.

Soil Alternative 2 (S2): Source Excavation and Removal

Alternative 2 involves excavation and off-site disposal of solvent-contaminated soil exceeding the SCOs.

1. Protection of human health and the environment – satisfied as contaminated soil exceeding the SCOs would be excavated and removed from the Site.
2. Compliance with standards, criteria, and guidelines – satisfied as soil that has concentrations of solvent compounds that exceeds the SCOs would be removed.

3. Short-term effectiveness and impacts – partially satisfied as mitigation measures included in the RAWP, including the HASP and CAMP, can be applied to limit exposure, but large or deep excavation areas and dewatering would be needed inside the parking garage. Limiting exposure of workers and the surrounding community to contaminated soil, dust, and/or soil vapors during soil removal would be a challenge.
4. Long-term effectiveness and permanence – satisfied as soil removal would limit exposure of future occupants to contaminated soil and/or associated vapors.
5. Reduction of toxicity, mobility, or volume of contaminated material – satisfied, as the soil contamination area, and the associated potential for contaminants to mobilize, would be excavated and removed.
6. Implementability – not satisfied, as the cost, time, and structural engineering requirements to complete an excavation to a depth of 14 feet below the parking garage is not feasible. The limited space and overhead clearance would present wide-ranging difficulties for access, use of machinery, fluids management, dewatering, and methods for supporting the excavation. In addition, there would be significant disruption of existing residential tenants who park in the building.
7. Cost effectiveness – Not satisfied as the equipment, preparation, and timeframe needed to complete soil excavation would be extensive considering the access limitations, structural engineering/dewatering requirements, and health and safety challenges. In addition, the source area was documented in a narrow zone, and expenditures would be massive for a small removal area.
8. Land use – satisfied as implementation would not be incompatible with the current and anticipated future use of Restricted Residential

Soil Alternative 3 (S3): In-situ Treatment with Groundwater Recirculation

Alternative 3 involves an injection program with groundwater recirculation to treat the solvent contamination in soil. Since the soil contamination is approximately 7 feet below the water table and within the shallow zone of saturation, the remedial system described in the LNAPL Removal 3 – In-situ Treatment alternative can be designed and installed to also address the soil contamination area. This alternative would also have the advantage of addressing potential additional on-site shallow source areas located within the zone of influence of the treatment system. In this scenario, existing equipment can be used as part of the remediation system, below slab disturbance is kept to a minimum compared to excavation, and recirculation combined with injections would increase the treatment area. In-situ treatment without groundwater recirculation (as described in Alternative L2) is not being repeated in this section due to the challenges presented in Alternative L2.

1. Protection of human health and the environment – satisfied as the injection process would work to degrade the source area to reduce contamination, preventing future exposure to and removing an ongoing source of pollution.
2. Compliance with standards, criteria, and guidelines – satisfied as soil that has concentrations of solvent compounds above the SCGs would be addressed.
3. Short-term effectiveness and impacts – satisfied as mitigation measures included in the RAWP, including the HASP and CAMP, would be implemented to minimize exposure to workers and the community during implementation, and increased exposure associated with large-scale excavation contemplated under Alternative #2 would be

avoided. Similar measures were successfully implemented during the Site investigation where a drilling rig was used in the parking garage.

4. Long-term effectiveness and permanence – satisfied as treatment of the soil contamination would permanently remove a continuing source of groundwater contamination, and limit exposure of future occupants to contaminated vapors.
5. Reduction of toxicity, mobility, or volume of contaminated material – satisfied as the soil contamination area, and the associated potential to mobilize, would be directly addressed.
6. Implementability – satisfied. Considering the access constraints and residential community interaction, using a drilling rig to install an injection point or using above grade equipment to inject into or pump water out of an existing well is an activity that has been successfully undertaken at the Site. In addition, this remedial process can be utilized for other on-site media (e.g., LNAPL, groundwater).
7. Cost effectiveness – Satisfied as the cost to complete an injection and groundwater circulation program would be far less intrusive, require significantly less equipment, labor, and engineering costs, and can be implemented and operated in a shorter timeframe when compared to soil excavation.
8. Land use –satisfied as implementation would not be incompatible with the current and anticipated future use of Restricted Residential

7.5 Groundwater Remediation Alternative Components

Available technologies and approaches were evaluated to determine the possible remedial options for the groundwater plume at the project Site. Remedial alternatives for addressing site-related groundwater contamination included:

1. GW1 - Natural attenuation
2. GW2 – Containment/Active Treatment (i.e., pump and treat, soil vapor extraction/air sparge, reactive barrier)
3. GW3 – In-situ treatment with groundwater recirculation

7.5.1 Groundwater Alternative Evaluation

This Section includes a review of each evaluation criterion included in DER-10 for the identified remediation alternatives. It should be noted that the groundwater alternatives evaluation assumes that the remedial action would be initiated after LNAPL removal.

Groundwater Alternative 1 (GW1): Natural Attenuation

Alternative 1 involves the remedial process of natural attenuation, or allowing the solvent and petroleum concentrations in the groundwater plume to gradually decline as a result of natural process such as dilution, dispersion, and natural degradation. Natural attenuation is an effective remedy for groundwater plumes where the contamination source has been addressed, there are limited impacts to sensitive receptors, and there is an established declining trend in groundwater concentrations. Natural attenuation is often utilized when contaminant concentrations in groundwater are above the AWQSGVs, but below the level where more aggressive remedial technologies are known to be effective.

1. Protection of human health and the environment – Not satisfied. Although receptors have not been directly affected by groundwater contamination, groundwater sampling has shown that contaminant concentrations have remained above the NYSDEC

AWQSGVs across the plume and beyond the upgradient source area. While a reduction in contaminant concentrations has been observed in on-site monitoring well MW-4 and off-site monitoring well MW-18, a similar trend has not been observed for other on-site monitoring wells. The limiting factor for natural attenuation as a remedy would be the long attenuation period to achieve the RAOs and minimize the potential for human and/or environmental exposures.

2. Compliance with SCGs – partially satisfied. Although contaminant reduction may be more attainable after source removal, it is not anticipated that natural attenuation could address higher dissolved solvent concentrations within/near the source area, but could be effective to address deeper groundwater contamination at lower concentrations.
3. Short-term effectiveness and impacts – partially satisfied. Since natural attenuation requires no drilling, excavation, or use of construction of equipment, short-term impacts would be minimal. The effectiveness to address shallow solvent contamination would be limited, but could be effective to address deeper groundwater contamination at lower concentrations.
4. Long-term effectiveness and permanence – partially satisfied. Even though toxicity reduction after attenuation would be permanent, the current Site conditions and previous OM&M sampling data suggest the amount of time to achieve toxicity reduction in shallow groundwater would result in long-term potential for exposure. Notwithstanding, this alternative could be effective to address deeper groundwater contamination with lower concentrations.
5. Reduction of toxicity, mobility, or volume of contaminated material – partially satisfied. The predicted slow decline of solvent concentrations due to natural attenuation may not be effective reducing toxicity and limiting off-site migration of the shallow groundwater plume, but could be effective to address deeper groundwater contamination at lower concentrations.
6. Implementability – very feasible as permitting would not be needed, construction would not take place, and groundwater monitoring would be the only on-site actions implemented.
7. Cost effectiveness – Although natural attenuation is the least expensive (up front) remedial alternative included in this review, as post remediation monitoring would be the only action item completed, the cost benefit may be reduced due to the length of time required to meet the RAOs for the shallow solvent plume.
8. Land use – Partially satisfied. Although investigation data suggests the current and surrounding land use has not been disrupted, vapor mitigation is still a concern for structures overlying the groundwater plume. The goal of groundwater remediation is to prevent migration and reduce the plume contaminants to a level where vapor intrusion is no longer a concern, and natural attenuation of the shallow solvent plume is expected to include a lengthy attenuation period to achieve the remedial goal for land use. Soil vapor mitigation and monitoring alternatives are discussed in Section 7.7.

Groundwater Alternative 2 (GW2): Containment/Active Treatment

Alternative 2 involves installation of an engineered system to contain and treat the groundwater plume. The existing LNAPL system operates as a groundwater recovery and treatment system. Options to improve the current system include upgrading the existing LNAPL system to a MPE system, the installation and operation of an air sparge/soil vapor extraction (AS/SVE) system to operate with the current LNAPL system, or the installation

of a permeable reactive barrier. As discussed earlier, upgrading the existing LNAPL system to MPE will enhance groundwater removal and reduce operating timeframes. The installation of an air sparge/soil vapor extraction comprised of sparging wells throughout the plume that inject air into the zone of contamination to "strip" out the contaminants, combined with vapor extraction wells that remove the stripped contaminants from the unsaturated zone with a vacuum pump. A permeable reactive barrier, which is installed by excavating a trench or densely arranged line of borings to the full vertical extent of the plume along its downgradient boundary, and backfilling the trench or borings with a material that will react with the contaminants, functions by removing contaminants as groundwater naturally flows through the trench.

The design goal of the containment and/or treatment methods is to install a sufficient network of wells or a big enough barrier to capture the plume, limit migration, and treat the groundwater before it flows off-site. Groundwater recovery and treatment has shown to be very effective in addressing plumes where the source area has been addressed, but is less effective for plumes with inconsistent, inaccessible and/or unknown source areas. These limitations are increased for low-permeability aquifers with variable groundwater flow.

1. Protection of human health and the environment – partially satisfied. Groundwater containment systems have shown to be more effective in limiting exposure when compared to natural attenuation, and can achieve plume containment to prevent migration to off-site receptors. AS/SVE would not be effective in low permeable soils/aquifers as it would be challenging to control the injected air below the water table and to recover the vapors in the vadose zone.
2. Compliance with standards, criteria, and guidelines – partially satisfied. The containment methods would prevent groundwater with solvent concentrations that exceed the AWQSGVs from migrating off-site, but would not necessarily reduce on-site concentrations below the standards, especially considering the challenges with the dense, low permeability sediments beneath the site building. Treatment methods such as MPE and AS/SVE become less effective at lower plume concentrations and often reach "asymptotic" conditions, preventing achievement of remedial goals.
3. Short-term effectiveness and impacts – Satisfied for operation of a pump and treat system as the LNAPL system has been successfully operated at the Site. Not satisfied when considering the installation of a reactive barrier as construction capabilities are limited in the basement, and a significant exposure potential exists for workers installing a sub grade barrier into the contamination zone.
4. Long-term effectiveness and permanence – partially satisfied. Containment systems are documented as being an effective long term remedy as concentration rebounds are not usually observed, but the limited gains associated with a low yielding aquifer could have adverse effect on permanence with respect to toxicity reduction. As mentioned earlier, AS/SVE systems are generally not effective in low permeable soils/aquifers.
5. Reduction of toxicity, mobility, or volume of contaminated material – partially satisfied. Containment systems are effective in limiting plume mobility, but the low-permeability aquifer may prevent complete treatment/removal of contaminants from groundwater.
6. Implementability – Satisfied for recovery technology as a groundwater containment system essentially exists in the form of an LNAPL recovery system. Not satisfied

when considering the installation of a reactive barrier as construction capabilities are limited in the cellar.

7. Cost effectiveness – Not satisfied. The extended timeframe need to meet the RAOs, as indicated by the 10 year operational period for the LNAPL recovery system, indicates the OM&M of a containment system would not be cost effective.
8. Land use –satisfied as implementation would not be incompatible with the current and anticipated future use of Restricted Residential.

Groundwater Alternative 3 (GW3): In-Situ Treatment with Groundwater Recirculation

Alternative 3 involves treatment of the groundwater plume by injecting or otherwise introducing chemicals or compounds directly into the zone of contamination throughout the plume to degrade the contamination in place. Contact of the injected compounds with the contamination zone is enhanced by recirculation with fluid injection at one point, and targeted fluid removal at another point. The recirculation increases flow velocity through the treatment zone by increasing the hydraulic gradient. This technology is consistent with the injection and recirculation alternative listed above for LNAPL removal (L2), and can be used concurrently with addressing the soil source area (S3). The pre-existing network of recovery and monitoring wells would be used for recirculation and groundwater removal, with the installation of additional injection points to enhance remediation efficiency. A pre-injection treatability study would be completed to determine which injection solution(s) (i.e., bioremediation compounds, chemical oxidation compounds, surfactants, etc.) would be most effective in reducing solvent concentrations in the groundwater plume and the layout/plan for injection and recirculation points. After treating the source area and dissolved plume zone, the residual contaminants in the deeper parts of the saturated zone can degrade by natural processes where conditions are more reflective of an anaerobic environment.

1. Protection of human health and the environment – satisfied. An in-situ program focused on the source area and plume zone with high 1,2-DCA concentrations would provide for the most effective contaminant reduction below the Site building, which is where the highest potential for exposure has been identified.
2. Compliance with standards, criteria, and guidelines – satisfied. Although there are Site-specific remedial challenges (e.g., low-permeability aquifer, access constraints, the potential for upgradient off-site source of groundwater contamination) for achieving the remedial goals, a source area injection with groundwater recirculation is estimated to provide for the shortest timeline to achieve compliance with the SCGs. Targeted injection could significantly enhance the natural downward trend of concentrations observed in and around the source area for the 1,2-DCA plume.
3. Short-term effectiveness and impacts – satisfied. Potential exposures during implementation of in-situ treatment include work zone hazards associated with drilling, exposure to the chemical injection fluids, exposure to Site contamination during decontamination of the drilling equipment, and interference with Site traffic during the drilling process. The Site-specific HASP, which was implemented during similar activities during the remedial investigation and OM&M of the existing LNAPL system, includes measures to address each of these potential hazards and minimize the potential for exposure.
4. Long-term effectiveness and permanence – satisfied. In-situ treatment has shown to be an effective long term strategy after implementation, particularly for multiple phase

plumes, as contaminants are permanently degraded through direct contact/interaction and groundwater removal. The effectiveness of the degradation is contingent on the Site geology and geochemistry, the volume of solution injected, and the residence time in contact with the contaminant. Focusing the injection network for recirculation on the solvent and petroleum source areas and will maximize the treatment potential and provide coverage over the extent of the Site.

5. Reduction of toxicity, mobility, or volume of contaminated material – satisfied. The enhanced degradation rates with chemical injection or bioremediation are typically one to two orders of magnitudes faster than naturally attenuation rates, and treatment zones can expand beyond the injection and recovery points due to natural advection and dispersion. The flow of amendments through the treatment zones would be enhanced by the groundwater recirculation process.
6. Implementability – satisfied. In-situ treatment is generally an efficient process that requires access for a drilling rig and personnel with tools during installation, and collection of groundwater samples to monitor the effectiveness of the remedy. In addition, since a remediation system already exists, modifications to the system to include components for injection/dosing of chemicals/amendments can be completed within the confines of the existing remediation room. Similar activities have been completed during the remedial investigation previous system upgrades, and there are no apparent limitations associated with these activities at the project Site.
7. Cost effectiveness – satisfied. Although the up-front cost to complete the treatability study, modify the current LNAPL recovery system, and install the injection points is more expensive up front, an anticipated shorter remediation timeframe would result lower long-term operation and maintenance/monitoring costs than the natural attenuation or containment alternatives.
8. Land use –satisfied as implementation would not be incompatible with the current and anticipated future use of Restricted Residential

7.6 Soil Vapor Remediation Alternative Components

Remedial alternatives for addressing on-site soil vapor contamination (and potential migration into indoor air) include No Further Action or installing an SSDS:

1. SV1 – No Further Action
2. SV2 – Vapor Mitigation (Passive SSDS, Vapor Barrier, and Air Exchange)

7.6.1 Vapor Mitigation Evaluation

This Section includes a review of each evaluation criterion included in DER-10 for the identified remediation alternatives. It should be noted that the building currently includes a vapor barrier, passive SSDS, and a ventilation system associated with parking garage portion of the cellar. This alternatives analysis includes a review of options to satisfy the requirements of DER-10, and confirm that the existing measures meet the requirements of a preferred option.

Alternative 1 (SV1): No Further Action

Alternative 1 involves conducting no further remedial activities at the Site with respect to soil vapor, and satisfies the "No Further Action" remedial component alternative for soil vapor mitigation.

1. Protection of human health and the environment – not satisfied. The potential for exposure to soil vapor contaminated with solvent compounds would still exist.
2. Compliance with SCGs – not satisfied. Contaminants would remain in soil vapor and indoor air VOC concentrations could potentially exceed NYSDOH guidelines. Through interaction with NYSDEC and NYSDOH during the remedial investigation, existing conditions required supplemental investigation to confirm site conditions and what mitigation measures would be needed.
3. Short-term effectiveness and impacts – not applicable. DER-10 identifies short-term effectiveness and impacts as exposures during the construction and implementation of the remedy (i.e., construction traffic, dust control, odors, run-off, noise). No further action does not include implementation of a remedy.
4. Long-term effectiveness and permanence – not satisfied. The potential for vapor intrusion would remain.
5. Reduction of toxicity, mobility, or volume of contaminated material – not satisfied. The concentration and volume of contaminants would remain, and have the potential to affect the occupants of the Site building.
6. Implementability – very feasible as no personnel or regulatory approvals would be needed, and the residential complex would operate without interruption.
7. Cost effectiveness – very cost effective to proceed with no further action, but this criterion is not satisfied as it requires a comparison of cost to long/short term effectiveness and toxicity reduction, which would not be achieved.
8. Land use – not satisfied. Any contamination left in place could interfere with the future use of the property and create an exposure potential of occupants of the Site building.

Alternative 2 (SV2): Vapor Mitigation

Alternative 2 involves incorporating the existing vapor barrier below the entire extent of the foundation slab, passive SSDS system below the parking garage area, and parking area ventilation systems as engineering controls for cellar level of the building.

1. Protection of human health and the environment – satisfied. The vapor barrier, passive SSDS, and parking area ventilation system would be maintained to prevent exposure to soil vapor by future occupants. Periodic inspection and maintenance of the systems would be conducted to ensure the effectiveness of the vapor mitigation measures.
2. Compliance with standards, criteria, and guidelines – satisfied. Inspection and maintenance of the vapor mitigation measures would ensure that indoor air quality is in compliance with the SCGs with respect to vapor intrusion.
3. Short-term effectiveness and impacts – satisfied. No invasive work would be required to implement this alternative.
4. Long-term effectiveness and permanence – satisfied. The institutional and engineering controls, along with the inspection and maintenance measures described in the SMP, would verify that the restrictions and requirements included in the easement remain in-place and are effective.
5. Reduction of toxicity, mobility, or volume of contaminated material – satisfied. The vapor mitigation measures would assist with removal of soil vapors from beneath the concrete floor slab, prevent vapor intrusion, and provide fresh air to the cellar level.

6. Implementability – satisfied. Installation of the vapor mitigation measures has already been completed.
7. Cost effectiveness – satisfied as the vapor mitigation measures were incorporated into the building design and completed during redevelopment.
8. Land use – satisfied. Preventing vapor intrusion will allow for use of the property that is consistent with the current use and minimize or remove future exposure to occupants of the Site building.

7.7 Preferred Alternative

The preferred alternative includes:

1. LNAPL Removal: L2 – In-situ treatment with groundwater recirculation
2. Soil Source Area Treatment: S3 – In-situ treatment with groundwater recirculation
3. Groundwater Remediation: GW3 – In-situ treatment with groundwater recirculation (for shallow solvent plume) and GW1 – Natural attenuation (for deep solvent plume)
4. Vapor Intrusion: SV2 – Vapor mitigation

Considering the performance criteria including exposure, compliance, effectiveness, and reduction of toxicity, alternative SV2 (vapor mitigation) was the best option to address vapor mitigation. This alternative, including the performance sampling, has already been completed at the Site. The specifications for the vapor mitigation system were included in the Closure Report Addendum (2010), and were also included in the RIR. These documents are available for review at the document repository.

The remaining contaminated media present a remedial challenge due to multiple plume types (solvent and petroleum), multiple phases (LNAPL, a solvent soil source, and separate dissolved phase plume), dense/low permeability sediments, and tight/confined working conditions. As discussed in the alternatives evaluation, LNAPL removal rates with the current pump and treat system are limited by the low permeability/low groundwater flow rates resulting in an extended remediation timeframe (over 10 years with LNAPL still remaining). In addition, the solvent soil source, although within the shallow groundwater plume, is isolated at a depth and location where the cost and short term construction impacts make excavation and removal not feasible. Leading research has documented that 1,2-DCA can break down aerobically, allowing both the LNAPL and the 1,2-DCA source area to be treated using the same injection technology. Since injections with groundwater recirculation can treat both the LNAPL and solvent source area, and the current LNAPL system, which can be modified to enhance the effective treatment area, is already in place (easing the implementation process), in-situ treatment with groundwater recirculation is considered the most effective remedial alternative for these media. In addition, with the solvent source area being below the water table and within the shallow 1,2-DCA plume, the injection and recirculation points could be strategically located to also achieve treatment of the soil area.

After source treatment and active shallow groundwater remediation, the remaining residual contaminant concentrations in the deeper portions of the groundwater plume, where anaerobic conditions have been shown to exist, can be addressed with natural attenuation under site management.

8.0 SUMMARY OF SELECTED REMEDIAL ACTIONS

As discussed in Section 7.6, Alternative SV-2 was previously implemented as part of Site redevelopment. The additional remedial action alternative selected for the Site consists of the following components:

- The implementation of a two phase in-situ remediation program including groundwater and NAPL recovery, injections with groundwater recirculation, followed by natural attenuation to address contaminated soil and groundwater. Phase 1 will include groundwater r recovery and treatment with surfactant injection and recirculation to enhance NAPL recovery, and Phase 2 will include aerobic bioremediation and groundwater recirculation to address the dissolved contamination. Further details of the in-situ remediation program will be included in an In-Situ Design Document (ISDD);
- Soil removal/treatment as necessary to achieve a Track 4 Restricted Residential Use cleanup remedy;
- A CAMP will be implemented during all intrusive Site activities;
- Screening for indications of contamination (by visual means, odor, and monitoring with PID) of soil during any intrusive Site work;
- Maintain the existing vapor barrier below the entire extent of the foundation slab, passive SSDS system below the parking garage area, and parking area ventilation systems as engineering controls for cellar level of the building;
- Remedial activities will be performed at the Site in accordance with this RAWP and the Department-issued Decision Document (DD). All deviations from this RAWP and/or the DD will be promptly reported to NYSDEC for approval and will be fully explained in the Final Engineering Report (FER);
- Remedy performance monitoring to confirm that the soil, groundwater, and soil vapor remedies are effective in achieving the RAOs;
- The imposition of an Institutional Control (IC) in the form of an EE for the Site that will: require the remedial party/Site owner to complete and submit a periodic certification of ICs and Engineering Controls (ECs) to the Department in accordance with Part 375-1.8 (h)(3); allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws; restrict the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by NYSDOH; and require compliance with the Department-approved SMP;
- The EE will also include a listing of engineering controls and institutional controls and notice that these controls must be maintained in accordance with an SMP to prevent future exposure to residual contamination until future sampling demonstrates such controls are no longer necessary; and
- Preparation of a SMP for long term management of residual contamination as required by the EE, including plans for: 1) ICs and Engineering Controls (ECs), 2) monitoring, 3) operation and maintenance, and 4) reporting.

A complete description of the selected remedial action activities is provided in Sections 9.0 through 14.0.

9.0 REMEDIAL ACTION

The remedial action includes the completed SSDS/vapor barrier/parking area installation, as well as the proposed implementation of a groundwater/NAPL extraction, injection, and groundwater recirculation program. The injection and groundwater recirculation program will be conducted in two treatment areas (LNAPL areas and 1,2-DCA area). Figures 9 and 10 depict the conceptual site model for the contaminant

plumes and the proposed treatment areas. The proposed actions in this RAWP are consistent with guidance for BCP sites in NYSDEC DER-10.

9.1 In-Situ Groundwater Treatment with Groundwater Recirculation

In-situ treatment by injection using a surfactant and bioremediation with groundwater recirculation will be implemented in and around the LNAPL areas and the 1,2-DCA contamination source/dissolved plume areas. A detailed design document will be prepared for NYSDEC review prior to implementation of the in-situ treatment program. The design document will include the injection and recovery well layout, and the results of any groundwater and/or bench testing completed to select the injection compounds. This section includes a summary of the treatment program.

9.1.1 Treatment Areas

LNAPL Areas

The eastern LNAPL treatment area (around MW-1), and western LNAPL treatment area (the area of MW-2, MW-6, MW-16, MW-24, and MW-26) comprise approximately 13,000 square feet. Figure 10 identifies the LNAPL treatment areas in relationship to the building and on-site monitor wells. The vertical extent of treatment within the identified areas is at the groundwater interface and within the "smear zone" at depths of approximately 4 to 9 feet below grade, resulting in a 65,000 cubic feet treatment area.

1,2-DCA Area

The 1,2-DCA treatment area will focus on the southeastern portion of the Site near MW-22/MW-22D, but expands into the garage covering an area of approximately 23,150 square feet. The expanded area will allow for treatment of the dissolved 1,2-DCA and petroleum plumes.

9.1.2 Technology Overview

The remediation program will be conducted using a two-phase approach to treat both the LNAPL and solvent contamination areas. The first phase of remediation will address the LNAPL areas by modifying the existing recovery and treatment system to include surfactant injection and groundwater recirculation, and the second phase will address the solvent contamination as well as the residual petroleum contamination by reconfiguring and expanding the system to enhance in-situ bioremediation. Figure 11 shows a conceptual cross section of proposed injection and extraction wells associated with the proposed remedy. The actual quantity and location of the wells required will be determined based on modeling and injection testing described in Section 9.1.3.

Figure 12 shows the proposed process flow diagram for the remediation program, which will be conducted in two phases. This diagram illustrates the conceptual treatment train schematic for the proposed remediation program, which incorporates the pre-existing LNAPL recovery and treatment system equipment. The upgraded treatment system will be finalized as part of remedial design and included in the In-Situ Design Document (ISDD), as outlined in Section 9.1.4.

LNAPL Areas

The existing LNAPL recovery system will be upgraded to include surfactant injection and groundwater recirculation to enhance and expedite the LNAPL recovery. An estimated two new extraction wells will be installed and used along with the existing recovery wells to pump LNAPL and groundwater to an upgraded aboveground treatment system

consisting of a pre-existing oil/water separator with the possible addition of an organoclay or Bonfiber™ filter to remove emulsified LNAPL from the water, a pre-existing bag filter to separate suspended solids within the groundwater, and two granular activated carbon (GAC) filters in series to further treat the water. A portion of treated water will then be pumped into a dosing tank, dosed with surfactants, and reinjected into the shallow groundwater using new injection wells. The injection wells will be specifically located, based on groundwater modeling, to optimize groundwater recirculation and hydraulic control within the treatment area. The balance of the treated water (that is not re-injected) will be discharged to the sewer in accordance with the NYCDEP permit. AKRF estimates that the extraction flow rate will be approximately four to five times higher than the re-injection flow rate (i.e., approximately 20 to 25 percent of the extracted water would be reinjected with the balance discharged to the sewer). The surfactants, which act like a soap, will help desorb residual LNAPL from soil surfaces, so that it can be more easily extracted from the existing recovery wells. The injected water will also aid in mobilization of the LNAPL, increase water flow, and maximize treatment efficiency. Upon completion of the LNAPL recovery, the groundwater recirculation system will be reconfigured to treat the dissolved petroleum and 1,2-DCA contamination, as discussed below.

1,2-DCA Area

The 1,2-DCA impacts will be addressed with aerobic bioremediation, using the reconfigured groundwater recirculation system. Since 1,2-DCA is documented to break down aerobically, the benefit of aerobic bioremediation is it will also address volatile and semi-volatile petroleum compounds that may remain after NAPL removal. At the start of this phase, additional injection and extraction wells installed within the targeted treatment area will be incorporated into the groundwater recirculation system to address the dissolved 1,2-DCA plume. Some of the wells will be located in the vicinity of MW-22D such that they will also address the soil source area identified in the shallow portion of the saturated zone. The above ground treatment system used for the LNAPL recovery will be modified to replace surfactant injection with oxygen injection and other amendments, as necessary, to optimize biodegradation.

The groundwater recirculation system will promote aerobic biodegradation by sweeping water with dissolved oxygen through the subsurface. Indigenous microbes will degrade the 1,2-DCA and dissolved petroleum compounds while using the oxygen as an electron acceptor. The groundwater recirculation system will seek to temporarily transition the treatment area to aerobic conditions and maintain the aerobic state long enough for 1,2-DCA and the dissolved petroleum impacts to degrade. Nutrients may be added to the injected water to support the microbial growth and accelerate the remediation if indicated based on treatability testing. After treatment of the source area and dissolved shallow plume, residual dissolved contamination within the deeper saturated zone can be addressed with natural attenuation, where conditions have shown to be conducive for natural degradation of 1,2-DCA.

9.1.3 Treatability Test

A research of available literature has shown that 1,2-DCA, which like most solvent compounds breaks down anaerobically, is also amenable to aerobic biodegradation; however, a treatability study will be conducted to confirm that there are no competing compounds in the soil and groundwater or other site-specific factors that may inhibit biodegradation at the site. A Bio-Trap sampling program is proposed to evaluate the presence of microbial populations in groundwater and saturated soils, and to determine

whether the addition of oxygen or other oxidant, additional microorganisms, and/or nutrients would be effective to address the groundwater contamination through an in-situ bioremediation technology approach. The Bio-Traps allow for the quantitative evaluation of several bioremediation approaches in a single field study by simultaneously deploying multiple units containing various oxidant/amendment combinations in a single well.

The units would be deployed in select monitoring wells located within the 1,2-DCA plume and will remain submerged in the wells for an incubation period of approximately 2 months before they are removed. The collection equipment and containers would then be shipped to a specialized laboratory for microbial growth and contaminant degradation analysis, and results would be evaluated to determine the preferred approach. The study will include deployment of at least one Bio-Trap sampler with no amendments to evaluate the relative effectiveness of natural attenuation.

In addition, injection tests will be conducted evaluate the aquifer's capacity for reinjection of amended groundwater. The tests would be conducted by injecting potable water at variable flow rates into select wells and measuring the resulting water level increases using dataloggers to determine the ideal injection rates. It is anticipated that actual injection capacity would decrease over time due to fouling of the well screens; therefore, a factor of safety would be applied to injection rates determined during testing. Injection testing will provide data on hydraulic conductivity of the shallow aquifer, which will be used to develop a groundwater flow model. The groundwater flow model will be used to estimate the ratio between injection and extraction flow rates, as well as the location and number of wells needed, required to achieve hydraulic control over the treatment area and prevent the migration of impacted groundwater and/or LNAPL beyond the treatment zone. The results of the injection tests and hydraulic model will be included in the ISDD.

9.1.4 In-Situ Design Document

After completion of the treatability study, AKRF will prepare and submit an ISDD to NYSDEC prior to implementing the treatment program. The ISDD will present the results of the treatability test, and will describe the scope of work and methodologies for completing the in-situ program, including: locations for injection and extraction points and associated trenched piping, upgrades to the aboveground system components, treatment chemicals/amendments and dosing, injection rates, and baseline/post-treatment monitoring. The ISDD will also include a review the sizing of the mixing tank and methodology to dose oxygen into the water that will be reinjected during the second of the remediation program. The mixing tank system will be designed with a goal to increase dissolved oxygen levels without increasing VOC concentrations in the subsurface.

The ISDD will also include a plan to monitor soil vapor during the remediation program. The soil vapor monitoring will include permanent vapor monitoring points installed within the treatment areas. The monitoring will include measuring sub-slab vacuum/pressure and sampling of sub-slab vapors prior to system start-up (baseline) and at designated intervals throughout the two phases of remediation, with results will be compared to the baseline conditions established in the RI and prior to system start-up. The results will be used to determine whether additional mitigation controls, beyond the current passive SSDS system, will be required as part of post-remediation site management.

9.1.5 Baseline Monitoring

Baseline monitoring will be conducted prior to activation of the in-situ bioremediation program to provide data points for comparison to subsequent post-injection analyses

discussed in Section 9.1.7. The baseline monitoring will be completed as part of the ongoing groundwater monitoring program, and will include collection of groundwater samples using low-flow sampling methods and analysis for Target Compound List (TCL) VOCs by EPA Method 8260, SVOCs by EPA Method 8270 and total and dissolved iron and manganese (EPA Method 6010). General chemistry parameters will include biological oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), Alkalinity, total dissolved solids (TDS), sulfate, sulfide, nitrate/nitrite, ammonia. The baseline monitoring program may be modified based on results of the treatability study.

Three permanent sub-slab soil vapor points will be installed during the injection and recovery well installation at the start of the remedy phase of the remedial action in the same three locations (SG-1 to SG-3) that were used during the RI, as shown on Figure 8. Installation and sampling procedures will be consistent with NYSDOH Guidelines and the procedures approved in the NYSDEC-approved Remedial Investigation Work Plan (RIWP). Baseline monitoring of the vapor monitoring points will include measuring sub-slab vacuum/pressure, collection of PID readings, and sampling of sub-slab vapors prior to system start-up for analysis of VOCs by EPA Method TO-15. Any modifications would be described in the ISDD.

9.1.6 Treatment Program

It is anticipated that the field activities for the full-scale treatment program will include six-month system operation of the LNAPL recovery system (Phase I), followed by six-month operation of the in-situ treatment system to address the source area and shallow dissolved phase plume (Phase II). However, the actual treatment times will be based on results of the treatability study, LNAPL gauging information, and groundwater monitoring results. Permanent groundwater well injection points will be installed using injection tooling specifically designed to be implemented by a direct push drilling rig with auger capabilities. The injection target interval is anticipated to be approximately 6 feet to 15 feet below grade. If needed, additional extraction and/or injection wells may be installed to enhance groundwater circulation during the in-situ treatment phase and will be screened at the groundwater interface.

The treatment areas are described in Section 9.1.1 and shown on Figure 10. The treatment radius of influence (ROI) and injection point/recovery well spacing will be determined prior to implementation as discussed with remediation contractors and provided to NYSDEC in the ISDD. General assumptions used and the design of the treatment program are as follows:

- The treatment program will be performed over two primary cycles of six months each (one for LNAPL removal; one for in-situ treatment).
- Existing monitor wells within the treatment area will be monitored periodically during, between and after injection periods. Performance and process parameters can include VOCs, SVOCs, BOD, COD, TOC, Alkalinity, TDS, sulfate, sulfide, and nitrate/nitrite, ammonia. The specific parameters will be identified in the ISDD. The results of all performance and process monitoring will be submitted to NYSDEC for review.
- The proposed sub-slab soil vapor monitoring points will be monitored and sampled during and after treatment phases to confirm operation of the existing engineering controls in conjunction with the treatment program. Sub-slab soil vapor sampling will occur during the treatment phases approximately three months after the start up Phases I and II of the remedial action, equivalent to the approximate halfway point for each

treatment phase. The results of sub-slab soil vapor monitoring will be submitted to NYSDEC and NYSDOH for review.

- The sub-slab soil vapor points will be also monitored using a calibrated PID during each of the sampling events and at least monthly during implementation of the remedy.
- If the soil vapor sampling and/or PID monitoring indicates that remediation activities are creating a change in background/baseline conditions, additional sampling events may be conducted and/or the monitoring may be expanded to include indoor air sampling concurrent with the soil vapor sampling as directed by or in consultation with the NYSDEC and NYSDOH. The sampling/monitoring data will also be used to inform the NYSDOH and NYSDEC's determination as to whether upgrades to the passive SSDS are warranted, including expanding the coverage area and/or conversion to an active system.

The rate at which the reagent flow can be injected into the subsurface is initially determined by the soil/aquifer characteristics, or possibly well construction limitations. Field decisions regarding injection volumes will be based on the observed reagent injection rate, any radial effects noted during injection, and the distance of the injection point from the nearest monitoring point. The goal being to maximize the injection volume and groundwater removal rate while maintaining conservative hydraulic control beneath the Site. Groundwater modeling and calibration using monitoring data will also be conducted to ensure that any reinjected water is captured by the NAPL/groundwater recovery wells.

9.1.7 Post-Treatment Monitoring

A groundwater sampling program (to be identified in the ISDD) will be continued throughout the remediation program to allow for performance monitoring of the remedial action. Post-treatment monitoring will include an event no sooner than 30 days after completion of the injection program to allow confirmatory groundwater samples to be collected to evaluate the effectiveness of the in-situ treatment. The existing on-site monitoring wells within the parking garage (MW-2, MW-3R, MW-4, MW-5, MW-6, MW-7, MW-16, MW-22, MW-22D, MW-23, MW-24, and MW-26) and exterior wells (MW-8, MW-9, MW-10, MW-17, MW-18, and MW-20) will be targeted for sample collection. Performance monitoring will include the target contaminants for the Site (VOCs and SVOCs). Post-treatment monitoring of the sub-slab vapor monitoring points will include measuring sub-slab vacuum/pressure and sampling of sub-slab vapors for analysis of VOCs by EPA Method TO-15. The post-treatment sub-slab monitoring and sampling parameters will be performed following completion of remediation at a frequency to be determined in the Site Management Plan (date to be determined).

9.1.8 Data Usability Summary Reports

A Data Usability Summary Report (DUSR) will be prepared for all laboratory analytical results, which will be prepared by a third party validator.

9.1.9 Decontamination

Any sampling or drilling equipment (split spoons, pressure injection points, 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 of all equipment will be conducted on plastic sheeting (or equivalent) that is bermed to prevent discharge to the ground.

9.1.10 Fluids Management

Extracted fluids will be treated using the modified treatment system. A portion of treated groundwater will then be reinjected (after adding amendments); and the balance of treated water will be discharged to the combined sewer in accordance with the NYCDEP discharge permit. NAPL and other wastes will be containerized and properly disposed of off-site.

9.2 Contingency Plan

Upon discovery of an unknown source of contamination, or a concern that may require remediation, the procedures in this section will be implemented.

1. Spill reporting to the NYSDEC Spill Hotline (800-457-7362) will be conducted, as necessary.
2. Contact the NYSDEC project manager to confirm the necessary course of action.
3. Prepare a work plan, if applicable, to identify measures to address the source of the contamination, the remedial approach, materials handling, site safety, and documentation of any material imported to/exported from the site.

9.3 Air Monitoring

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

10.0 REMEDIAL ACTION DOCUMENTS

10.1 Governing Documents

10.1.1 Health & Safety Plan and Community Air Monitoring Plan

A Site-specific HASP and CAMP have been prepared for the project Site and is included as Appendix A. All remedial work performed under this plan will be in compliance with governmental requirements, including Site and worker safety requirements mandated by United States Occupational Safety and Health Administration (OSHA). Community air monitoring will be conducted during all intrusive activities in compliance with the NYSDOH Generic CAMP.

Work zone monitoring will be performed for the health and safety of workers during injection point installation and associated trenching activities in accordance with action levels and guidance outlined in the HASP. Community air monitoring will be performed at the perimeter of the work zone during system installation activities. Community air monitoring will be performed periodically (at a minimum once per hour) on a roving basis based upon wind direction and the location of the intrusive work.

The HASP, CAMP, and requirements defined in this Remedial Action Work Plan pertain to all remediation work performed at the Site until the issuance of a Certificate of Completion.

10.1.2 Quality Assurance Project Plan

Any sampling associated with this project will be conducted in accordance with the QAPP included in Appendix B, which details field screening and sampling methodologies, and sample submittal and reporting requirements. The QAPP includes the project team responsible for implementing the remediation requirements and provisions set forth in this RAWP.

10.1.3 Citizen Participation Plan

A Project Fact Sheet describing the approved plan for remedial action will be forwarded to persons on the Project contact list in accordance with the NYSDEC and NYSDOH-approved Citizen Participation Plan (CPP), dated May 2018, the updated mailing list from September 8, 2020, and any subsequent updated mailing list, if applicable, confirmed after the date of this report. The CPP is included as Appendix D.

A certification of mailing will be sent by AKRF to the NYSDEC project manager following the distribution of all Fact Sheets and notices that includes: (1) certification that the Fact Sheets were mailed, (2) the date they were mailed; (3) a copy of the Fact Sheet, (4) a list of recipients (contact list); and (5) a statement that the repository was inspected on (specific date) and that it contained all of applicable project documents.

No changes will be made to the approved Fact Sheets authorized for release by NYSDEC without written consent of the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing.

Document repositories have been established at the following three locations and contain all applicable project documents:

Brooklyn Public Library – Leonard Branch
81 Devoe Street
Brooklyn, NY 11211
Attn: Ms. Alexa Orr, Managing Librarian
Phone: (718) 486-6006
Hours: Monday, Wednesday, Friday, 10AM-6PM
Tuesday, 1PM-8PM, Thursday, 10AM-8PM, Saturday, 10AM-5PM
Sunday-closed

NYSDEC Region 2
1 Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101
Attn: Shaun Bollers
Phone: (718) 482-4096
Hours: Monday-Friday, 9AM-5PM (call for appointment)

Brooklyn Community Board District 1
435 Graham Avenue
Brooklyn, New York 11211
Attn: Mr. Gerald A. Esposito, District Manager

Phone: (718) 389-0009
Hours:
Monday-Friday, 10AM-4PM

11.0 GENERAL REMEDIAL INFORMATION

This Section includes the general information associated with implementing the RAWP, including the work schedule, work hours, site security and traffic control, worker training, pre-construction meetings, emergency contact information, and remediation costs.

11.1 Remedial Action Construction Schedule

The following estimated schedule BCP has been prepared for the project:

- RAWP Approval & Decision Document Issued by NYSDEC – November 2020
- Submit In-Situ Design Document to NYSDEC – November 2020
- Implement Remedial Action – January 2021
- System Upgrades and Start Up/Begin Remediation Phase I – January 2021
- System Conversion/Begin Remediation Phase II – July 2021
- Submit EE – June 2021
- Submit Draft Site Management Plan – August 2021
- Submit Draft Final Engineering Report – October 2021
- Submit Final Engineering Report – December 2021
- Receive Certificate of Completion – December 2021

The actual schedule may differ depending on such factors as contractor availability, Site constraints, complexity of data collected, remediation performance, and access coordination. The NYSDEC Project Manager will be notified of significant changes to the schedule. A detailed remedial action construction schedule will be provided in the ISDD.

11.2 Work Hours

The 34 Berry Street building includes an active residential community, and the hours for operation during remediation will be consistent with all previous investigation and monitoring work. Standard working hours will be between 8:00 am and 5:00 pm, and conform to all applicable code requirements, including the New York City Department of Buildings and any variances that they may issue. The NYSDEC will be notified by 34 Berry Street, LLC of any variances issued. NYSDEC reserves the right to deny alternate remedial construction hours.

11.3 Site Security And Traffic Control

The project Site is located within a residential building and will be available to public access during the remedial activities. The anticipated work zone would consist of a direct push drilling rig and adjacent work area, similar to the activities completed during the remedial investigation. Access to the work zone will be limited to authorized personnel, which would include cones, construction barriers, and temporary fencing, if necessary. The proposed in-situ remediation area includes injection points along the northern and eastern borders of the sub-grade the parking garage, and additional extraction points within the central parking garage area. The work zones would be secluded to only the area where a specific injection or extraction point was being installed, and

would return to normal operation once the piping was completed. Accessible travel lane(s) will be identified with traffic cones, or equivalent, to provide separation from work zones in the garage. Any traffic flow restrictions, if needed, will be applied in accordance with all applicable local, county, and state department of transportation requirements. AKRF will coordinate with 34 Berry Street, LLC to isolate targeted work areas prior to the start of work, and to allow for foot traffic to enter the garage and access vehicles.

11.4 Worker Training and Monitoring

All those who enter the work area while intrusive activities are being performed must recognize and understand the potential hazards to health and safety. All contracting personnel upon entering the Site must attend a brief training meeting, its purpose being to:

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

Contracting personnel will be responsible for identifying potential hazards in the work zone. The project manager will be responsible for insuring that the training is conducted. Others who enter the Site must be accompanied by a suitably-trained Site worker.

11.5 Pre-Remediation Meeting with NYSDEC

A pre-remediation meeting with the NYSDEC, if necessary, will be scheduled prior to the start of major construction activities.

11.6 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in the Site-Specific HASP provided in Appendix A. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

11.7 Remedial Action Costs

An itemized and detailed summary of costs for all remedial activity will be submitted as an Appendix to the FER.

11.8 Site Preparation

Prior to conducting any intrusive activities for Site remediation activities, the work zone(s), designated entry points, decontamination zones, and traffic routes will be established, as applicable. The Site plan will be updated as necessary to reflect any changes in operations during the course of the intrusive work. Additional details of project Site preparation activities are provided in the following sections.

11.9 Mobilization

Site mobilization involving equipment mobilization, utility mark outs and marking and staking excavation areas will be performed prior to undertaking any project Site remediation activities.

11.10 Utility Marker and Easements Layout

34 Berry Street, LLC and its contractors are solely responsible for the identification of utilities that might be affected by work under the RAWP and implementation of all required, appropriate, or necessary health and safety measures during performance of work under this RAWP. 34 Berry Street, LLC and its contractors are solely responsible for safe execution of all invasive and other work performed under this RAWP. 34 Berry Street, LLC and its contractors must obtain any local, State or Federal permits or approvals pertinent to such work that may be required to perform work under this RAWP. Approval of this RAWP by NYSDEC does not constitute satisfaction of these requirements.

11.11 Equipment and Material Staging

Staging and storage of equipment and materials will be contained within the project Site. By the nature of the work involved in this project, equipment and materials will be moved to different areas within the secured Site as work progresses.

11.12 Decontamination Area

A decontamination area will be established adjacent to the work areas. The floor of the decontamination area will be covered with 6-mil plastic sheeting as necessary and bermed to prevent spreading of decontamination fluids or potential discharge to the ground surface.

All equipment in direct contact with known or potentially contaminated material will be either dedicated or decontaminated prior to handling less contaminated material or removal from the Site. All liquids used in the decontamination procedure will be collected, stored and disposed of in accordance with federal, state and local regulations. Personnel performing this task will wear the proper personal protective equipment (PPE) as prescribed in the HASP.

11.13 Excavated Materials Management

Any excess excavate material and drilling spoils will be properly containerized and characterized for off-site disposal.

11.14 Demobilization

Restoration of the excavation work will include proper abandonment of each temporary injection well in accordance with NYSDEC protocols. Upon completion of the remedial work, any waste materials (i.e., plastic sheet, absorbent pads) and the decontamination pad will be removed from the Site and properly disposed of.

11.15 Project Log Book

A project logbook will be maintained during all remediation activities, and will be available for NYSDEC and NYSDOH inspection. The following information will be recorded in the project logbook:

- Date, weather, and Site conditions;
- Names and companies of all on-site personnel;
- Makes, models, and calibration records for all monitoring equipment;
- Makes and models of remediation equipment;
- Sample numbers and descriptions; and
- Site sketches showing injection areas, sampling locations, etc.

Copies of all waste manifests and bills of lading will be maintained with the project logbook.

11.16 Monthly and Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers within 2 days following the end of the work day and will include:

- A description of Site activities during the previous work day and of those anticipated for the next work day including a quantitative presentation of work performed (i.e., number of injection points, etc.).

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers within 10 days following the end of the month of the reporting period and will include:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e., number of injection points, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and
- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.

A copy of the project log book and the monthly reports will be included in the FER.

11.17 Complaint Management Plan

Complaints from the public regarding Site remedial activities will be evaluated by AKRF and communicated to NYSDEC Project Manager immediately. The response action to the complaint will be coordinated in conjunction with NYSDEC and NYSDOH input, as appropriate.

11.18 Deviations from the Remedial Action Work Plan

All material deviations from the RAWP will be promptly reported to NYSDEC for approval and fully explained in the FER. At a minimum, the following issues will be addressed:

- Reasons for deviating from the approved RAWP;
- Approval process to be followed for changes/additions to the RAWP;
- Effect of the deviations on overall remedy; and
- NYSDEC approval will be sought prior to proceeding with work deviating materially from the RAWP. In the event of an emergency change to the work plan, the NYSDEC Project Manager will be consulted immediately.

12.0 ENGINEERING CONTROLS

Since there is a potential for residual contaminated soil, groundwater, and soil vapor to exist beneath the site after the remedy is complete, Engineering and Institutional Controls (ECs and ICs) are required to protect human health and the environment. Long-term management of EC/ICs and of residual contamination will be executed under a Site-specific SMP that will be developed and included with the FER.

ECs will be implemented to protect public health and the environment by appropriately managing potential residual contamination. The Controlled Property (the Site) will have two primary EC systems. These are: (1) passive SSDS, and (2) a Site cover system.

12.1 Groundwater Treatment System

Baseline and performance groundwater monitoring will be conducted during implementation of the enhanced NAPL recovery phase and transition to the in-situ treatment phase of the remedy. As petroleum and solvent contaminant levels show a stable and decreasing trend, operation of the in-situ treatment system will be transitioned to a post-remediation EC. Post-remediation operation, maintenance, monitoring (OMM) and reporting of the system would continue until approval is granted by NYSDEC to discontinue operation. The OM&M and reporting requirements would be specified in the SMP.

12.2 Sub-Slab Depressurization System (SSDS)

The passive SSDS was installed in 2010 by retrofitting the newly constructed building as an added safeguard against possible soil vapor intrusion. The system included four branches of 6-inch diameter perforated piping installed within an 18-inch layer of gravel, which was integrated with the 6-inch gravel layer previously installed under the entire slab during building construction. The 6-inch perforated piping transitioned to 4-inch diameter solid cast iron piping below the slab, which was connected to 4-inch diameter solid PVC aboveground risers. The aboveground risers connected to a single 4-inch diameter discharge line mounted in the southeastern corner of the parking garage. The riser vents to the atmosphere through a 4-inch diameter cast iron stack with a wind-driven turbine terminating above the roof of the parking garage stairway enclosure, located on the western side of a street-level courtyard. A vapor barrier consisting of a Grace Preprufe® waterproofing membrane was installed beneath the full extent of the cellar level slab as a component of the SSDS. In addition, a separate ventilation system was installed for the basement level garage as per NYCDOB requirements for an enclosed parking lot.

12.2.1 System Operations and Maintenance

Operation, inspection, and maintenance of the passive SSDS will be described in the SMP, and will outline any required inspections and the procedures to be followed in the event that the passive SSDS system is damaged.

12.2.2 Vapor Intrusion Assessment

As outlined in Section 9.1, the proposed sub-slab soil vapor monitoring points will be monitored periodically for vacuum/pressure and sampled prior to, during, and following each phase of the remediation to confirm that the existing vapor mitigation system is adequate to address potential vapor intrusion in conjunction with the treatment program. The results of monitoring will be submitted to NYSDEC and NYSDOH for review.

12.2.3 Criteria for Termination of SSDS

The SSDS will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the passive SSDS may be submitted by 34 Berry Street, LLC based on confirmatory data that justifies such a request. The SSDS will remain in place until permission to discontinue use is granted in writing by NYSDEC and NYSDOH. The separate ventilation system installed for the basement level garage as per NYCDOB requirements for an enclosed parking lot would to continue to operate.

12.3 Site Cover System

A Site cover exists to allow for restricted residential use of the Site. The cover consists of either the site building, parking garage, or asphalt paving. All Site redevelopment was completed in 2009, but any fill material brought to the Site for remediation purposes will meet the requirements for the identified Site use as set forth in 6 New York Codes, Rules and Regulations (NYCRR) Part 375-6.7(d). The Site cover system is a permanent control, which reduces exposure to residual contaminated soils and groundwater and serves as a protective barrier for the vapor mitigation system. Procedures for inspection and maintenance of the Site cover system will be included in the SMP that is included with the FER.

13.0 INSTITUTIONAL CONTROLS

After the remedy is complete, the Site will have the potential for residual contamination remaining in place. Institutional Controls (ICs) for the residual contamination have been incorporated into the remedy to render the overall Site remedy protective of public health and the environment. An IC in the form of an EE will be required for the Site that:

- requires the remedial party or Site owner to complete and submit to the NYSDEC a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for restricted residential uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- prohibits the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County Department of Health; and
- requires compliance with the NYSDEC-approved Site Management Plan.

The Site-specific EE will be recorded with the Kings County Clerk to provide an enforceable means of ensuring the continual and proper management of potential residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the EE and the grantor's successors and assigns adhere to all Engineering and Institutional Controls (ECs/ICs) placed on this Site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. Once the FER has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the EE and grantor's successors and assigns.

14.0 SITE MANAGEMENT PLAN

The SMP will describe appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the EE. The required SMP will be an Institutional and Engineering Control Plan (IECP), and a Monitoring Plan.

14.1 Institutional and Engineering Control Plan

The IECP identifies all use restrictions and engineering controls for the Site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective. This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- descriptions of the provisions of the EE including any land use and groundwater restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any new buildings developed on the Site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provision for additional groundwater treatment if groundwater monitoring indicates that treatment implemented during remedy did not effectively attain remedial objectives;
- provisions for the management and inspection of the identified engineering controls including the vapor mitigation system and cover system;
- maintaining Site access controls and NYSDEC notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

14.2 Operations and Maintenance (O&M) Monitoring Plan

An Operations, Maintenance, and Monitoring Plan will outline measures to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of the Site cap to assess the performance and effectiveness of the remedy;
- inspection of the passive SSDS to ensure proper operation;
- groundwater monitoring to evaluate the effectiveness of the remedy; and,
- a schedule of monitoring and frequency of submittals to the NYSDEC.

14.3 Periodic Review Report (PRR)

A Periodic Review Report (PRR) will be submitted to the Department beginning 18 months after the Certificate of Completion is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the Department or at another frequency as may be required by the Department. The PRR will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site.
- Results of the required annual site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific RAWP and Decision Document;
    - The operation and the effectiveness of the engineering controls, including identification of any needed repairs or modifications;
    - Any new conclusions or observations regarding site contamination based on inspections or data generated;

- Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and
- The overall performance and effectiveness of the remedy.

The PRR will also include a signed certification page.

15.0 FINAL ENGINEERING REPORT

An FER will be submitted to NYSDEC following implementation of the remedial action defined in this RAWP, and will include written and photographic documentation of all remedial work performed under this remedy. The FER provides the documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The FER will provide a comprehensive account of the locations and characteristics of all material removed from the Site. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. It will provide an accounting of the origin and chemical quality of any material imported onto the Site. The FER will include as-built drawings for all constructed elements, certifications, manifests, bills of lading as well as the complete SMP. The FER will provide a description of any changes in the Remedial Action from the elements provided in the RAWP and associated design documents. The FER will provide a tabular summary of all performance evaluation sampling results and all material characterization results and other sampling and chemical analysis performed as part of the Remedial Action. The FER will provide test results and/or documentation demonstrating that all remediation and mitigation systems are functioning properly. The FER will be prepared in conformance with DER-10.

15.1 Digital Data Submittal

Laboratory analytical data generated as part of remedial activities outlined in this RAWP will be submitted to NYSDEC in electronic format using the EQuIS electronic data deliverable (EDD) format. EQuIS submittal will be completed prior to submittal of the final FER.

15.2 Certifications

The following certification will appear in front of the Executive Summary of the Final Engineering Report. The certification will be signed by the Remedial Engineer, Rebecca Kinal, who is a Professional Engineer registered in New York State. This certification will be appropriately signed and stamped. The certification will include the following statements:

- I, Rebecca Kinal, am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the Remedial Action Work Plan was implemented and that all construction activities were completed in substantial conformance with the Department-approved Remedial Action Work Plan.
- I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the Remedial Action Work Plan and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.
- I certify that all use restrictions, Institutional Controls, Engineering Controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant ECL 71-3605 and that all affected local

governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

- I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the Department.
- I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.
- I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as Owner's Designated Site Representative for the site.

NYS Professional Engineer #	Date	Signature

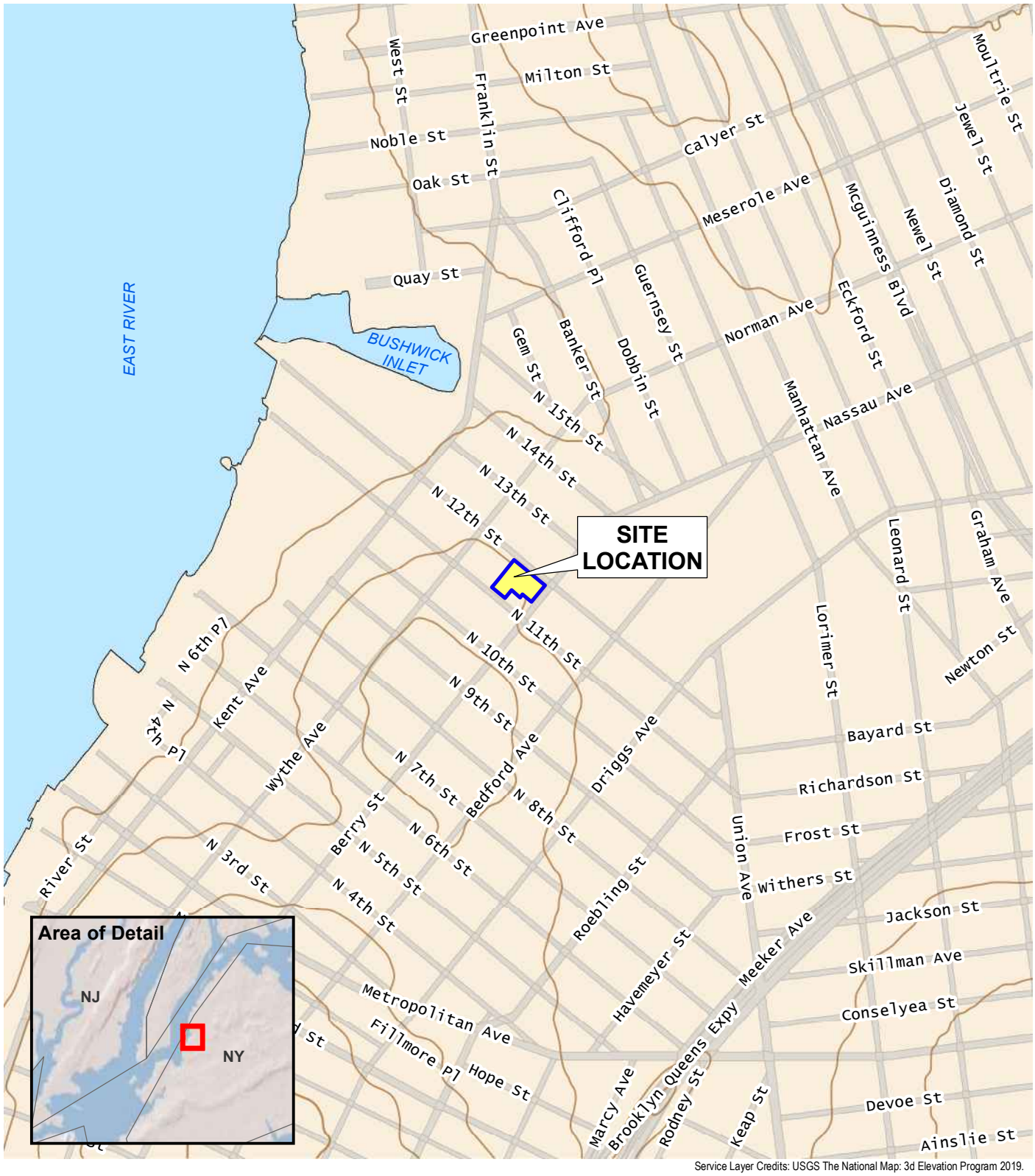
(Note: include PE stamp)

16.0 REFERENCES

1. Phase I Environmental Site Assessment (ESA), 34 Berry Street, Brooklyn, New York; prepared by Langan Engineering and Environmental Services (Langan); prepared for Atherton-Newport; dated June 15, 2006.
2. Phase II Environmental Site Investigation (ESI), 34 Berry Street, Brooklyn, New York; prepared by Langan; prepared for Atherton-Newport; dated June 27, 2006.
3. Environmental Subsurface Investigation Report, 34 Berry Street, Brooklyn, New York; prepared by Landmark Consultants, Inc. (Landmark); prepared for Atherton-Newport; dated April 2007.
4. Supplemental Remedial Investigation Report, 34 Berry Street, Brooklyn, New York; prepared by Landmark; prepared for New York State Department of Environmental Conservation (NYSDEC); dated March 20, 2008.
5. Remedial Action Plan and Construction Health and Safety Plan, 34 Berry Street, Brooklyn, New York; prepared by Landmark, February 2008.
6. Soil Corrective Action and Remedial Subsurface Investigation, 34 Berry Street, Brooklyn, New York; prepared by Impact Environmental Restoration, Inc. (Impact), September 2008.
7. Soil Remedial Action Plan Addendum, 34 Berry Street, Brooklyn, New York; prepared by Landmark, April 2009.
8. Closure Report, 34 Berry Street, Brooklyn, New York; AKRF Engineering, P.C.; dated April 9, 2010.
9. Closure Report Addendum, 34 Berry Street, Brooklyn, New York; AKRF Engineering, P.C.; dated March 2010.
10. Off-Site Investigation Report, 34 Berry Street, Brooklyn, New York; AKRF, Inc.; dated November 2010.
11. Phase I Environmental Site Assessment (ESA) – 44 Berry Street, Brooklyn, New York, IVI Assessment Services, Inc., March 30, 2011.
12. OM&M Status Report, 34 Berry Street, Brooklyn, New York; AKRF, Inc., May to June 2013.
13. OM&M Monitoring Report, 34 Berry Street, Brooklyn, New York; AKRF, Inc., February to October 2016.
14. Remedial Investigation Work Plan, 34 Berry Street, Brooklyn, New York; AKRF, Inc., July 2018.
15. U.S. Geological Survey, *Brooklyn, NY Quadrangle*, 7.5 minute Series (Topographic), Scale 1:2,500, 1995.
16. 6 NYCRR Section 375-6: Remedial Program Soil Cleanup Objectives (SCOs), December 14, 2006.
17. NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, March 1998.
18. NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York Air Guideline Values (AGVs) and Table 3.3 Matrix 1 and Matrix 2 tables of the Final Guidance in the State of New York, dated October 2006 ("NYSDOH Vapor Intrusion Guidance Document"), updated May 2017.
19. *Data Usability Summary Report (DUSR)* – Data Validation Summary for Soil Gas, Indoor/Ambient Air Samples Collected on October 23, 2018 through October 24, 2018, 34 Berry Street, Brooklyn, New York, L.A.B. Validation Corp., January 10, 2019.

20. *Data Usability Summary Report (DUSR)* – Data Validation Summary for Soil and Groundwater Samples Collected October 23, 2018 through November 8, 2018, 34 Berry Street, Brooklyn, New York, L.A.B. Validation Corp., January 10, 2019.
21. *Sample Elevation Survey* – 34 Berry Street, Brooklyn, New York, DPK Land Surveying, LLC, November 8, 2018.
22. *Soil Vapor Sampling Results Letter Report* - 44 Berry Street, Brooklyn, New York, Roux Environmental Engineering and Geology, D.P.C., May 2, 2019.
23. *Air Sampling Results Letter Report* - 44 Berry Street, Brooklyn, New York, Roux Environmental Engineering and Geology, D.P.C., August 13, 2019.
24. *Remedial Investigation Report* - 34 Berry Street, Brooklyn, New York, AKRF, Inc., November 2019.
25. *Draft Remedial Investigation Report Addendum* – 34 Berry Street, Brooklyn, New York, AKRF, October 19, 2020.
26. NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC's Part 375 Remedial Programs, October 2020.

FIGURES



Service Layer Credits: USGS The National Map: 3d Elevation Program 2019.

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SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

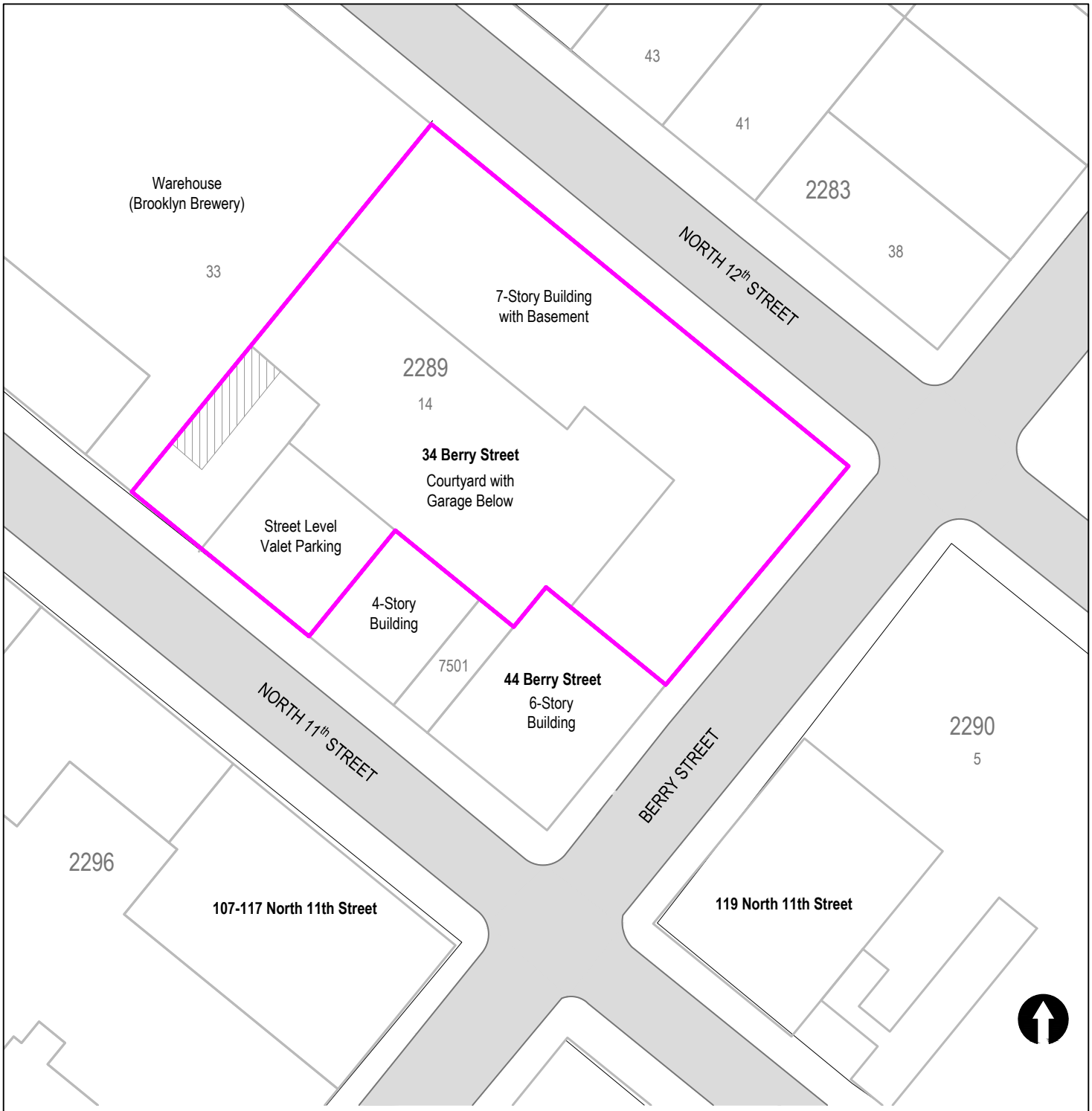
34 Berry Street
Brooklyn, New York

SITE LOCATION

DATE
3/3/2020

PROJECT NO.
11259

FIGURE
1



LEGEND

- BCP SITE BOUNDARY
- 2289 — LOT BOUNDARY AND TAX LOT NUMBER
- 14 — BLOCK NUMBER

0 30 60 120

SCALE IN FEET

AKRF

440 Park Avenue South, New York, NY 10016

34 Berry Street

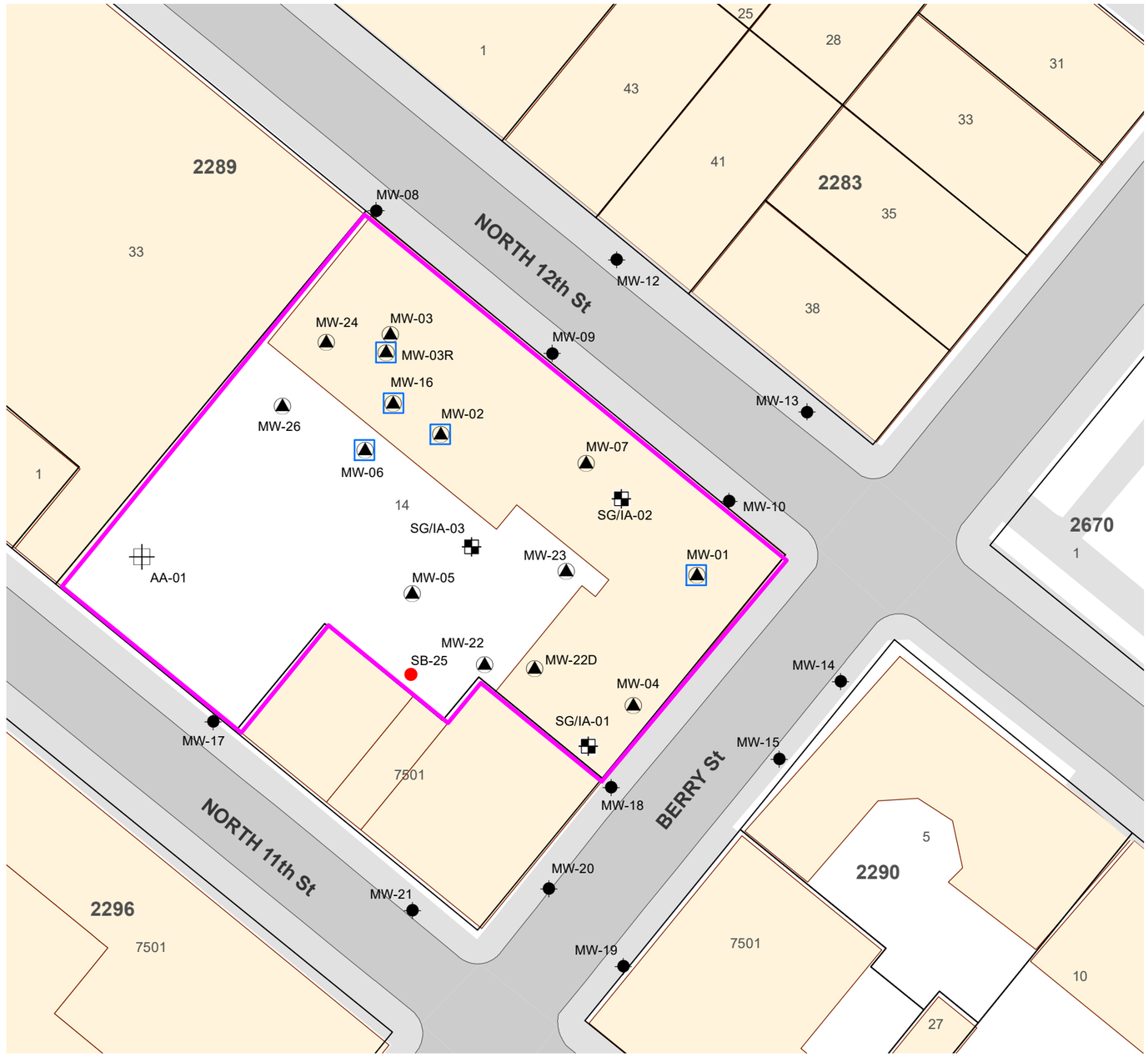
Brooklyn, New York

SITE PLAN SHOWING BCP SITE BOUNDARY

DATE
11/17/2020

PROJECT NO.
11259

FIGURE
2



Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database.

LEGEND

- PROJECT SITE BOUNDARY
- 14 — LOT BOUNDARY / TAX LOT NUMBER
- 2289 — BLOCK NUMBER
- BUILDING
- OFF-SITE MONITORING WELL LOCATION
- ON-SITE MONITORING WELL LOCATION
- SUB-SLAB SOIL GAS/INDOOR AIR SAMPLE LOCATION
- AMBIENT AIR SAMPLE LOCATION
- SOIL BORING LOCATION (JUNE 2016)
- RECOVERY WELL

0 25 50 100
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

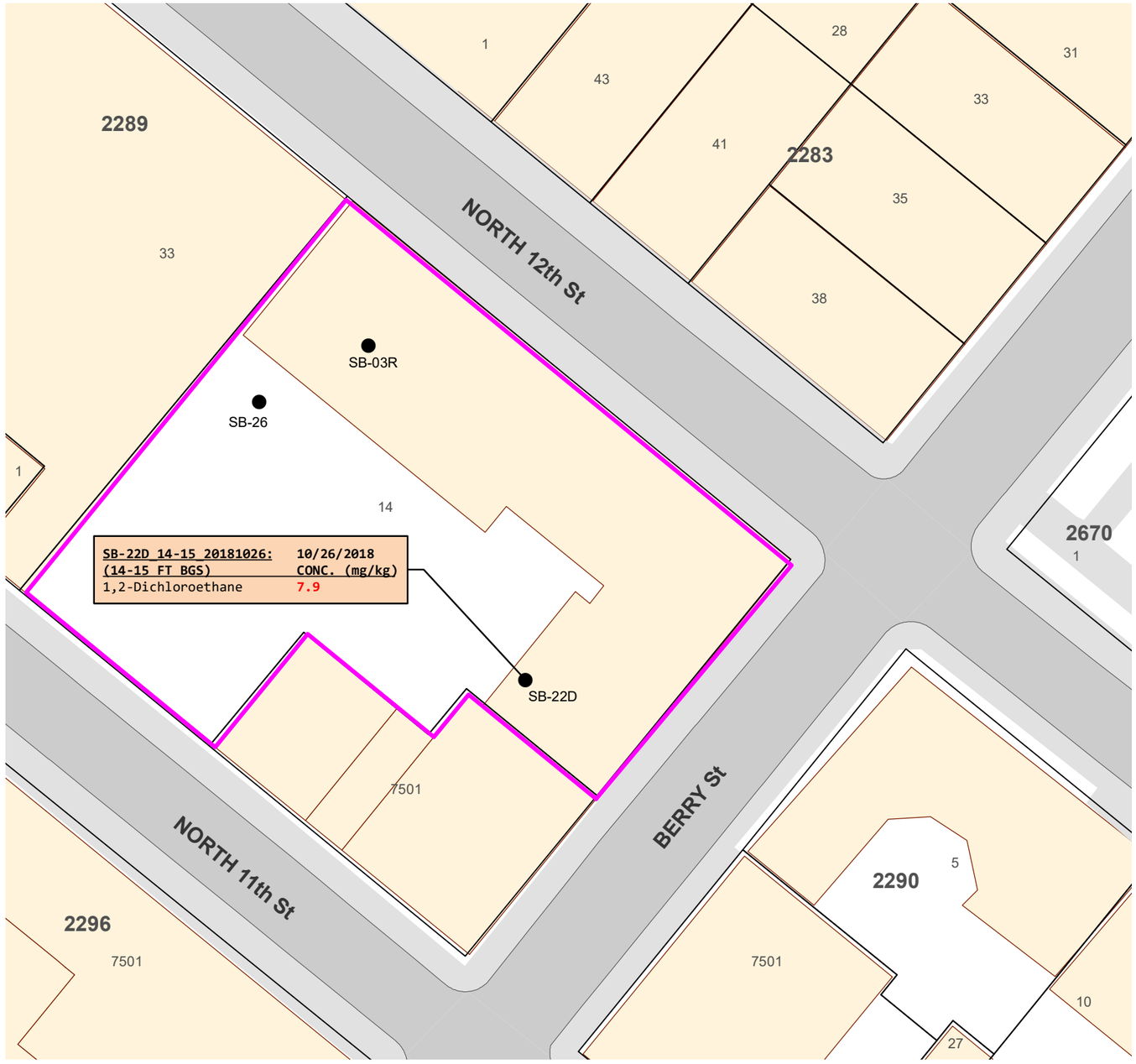
34 Berry Street
Brooklyn, New York

SOIL BORING, MONITORING WELL, AND SOIL GAS POINT LOCATIONS

DATE
5/12/2020

PROJECT NO.
11259

FIGURE
3



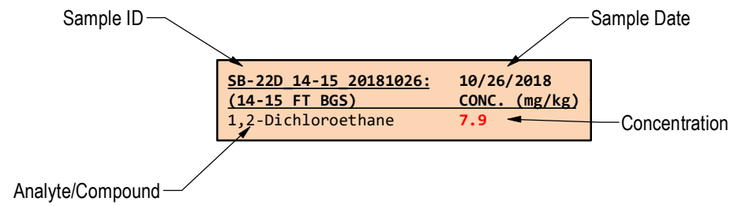
	Part 375 Restricted Residential mg/kg	Part 375 Unrestricted mg/kg
Volatile Organic Compounds		
1,2-Dichloroethane	3.1	0.02

Part 375 Soil Cleanup Objectives:
Soil Cleanup Objectives listed in NYSDEC
(New York State Department of Environmental Conservation)
"Part 375" Regulations (6 NYCRR Part 375).

mg/kg : milligrams per kilogram = parts per million (ppm)

Exceedances of Part 375 Unrestricted Use SCOs (UUSCOs) are highlighted in bold font.

Exceedances of Part 375 Restricted Residential SCOs (RRSCOs) are highlighted in bold and red font.



LEGEND

- PROJECT SITE BOUNDARY
- 14 — LOT BOUNDARY AND TAX LOT NUMBER
- 2289 — BLOCK NUMBER
- BUILDING
- 2018 RI SOIL BORING LOCATION

0 25 50 100
SCALE IN FEET

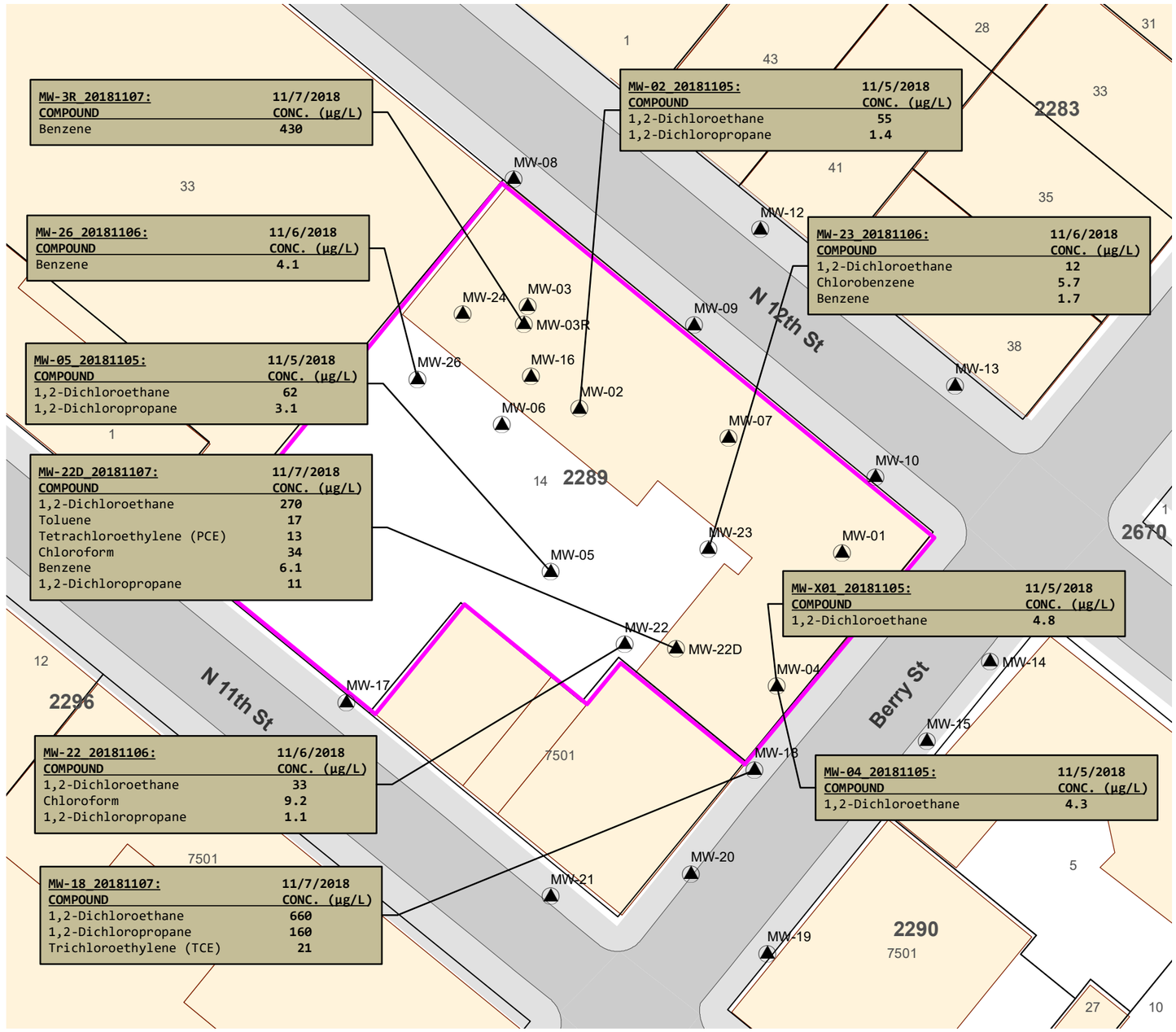
Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

AKRF
440 Park Avenue South, New York, NY 10016

34 Berry Street
Brooklyn, New York

SOIL ANALYTICAL RESULTS

DATE
3/5/2020
PROJECT NO.
11259
FIGURE
4



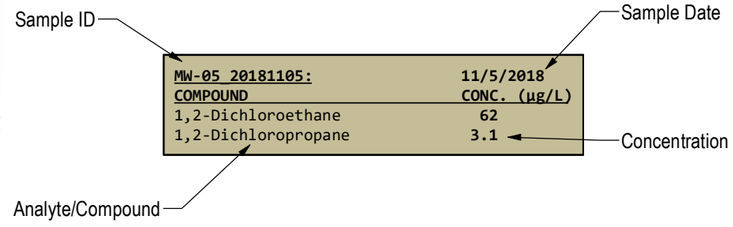
	NYSDEC TOGS Class GA AWQS ug/l
Volatile Organic Compounds	
1,2-Dichloroethane	0.6
1,2-Dichloropropane	1
Benzene	1
Chlorobenzene	5
Chloroform	7
Tetrachloroethylene (PCE)	5
Toluene	5
Trichloroethylene (TCE)	5

NYSDEC TOGS Class GA Ambient Water Quality Standard (AWQS):
New York State Department of Environmental Conservation (NYSDEC)
Technical and Operational Guidance Series (TOGS) (1.1.1):
Class GA Ambient Water Quality Standards and Guidance Values (AWQS)

MW-X01_20181105 is a blind duplicate of sample MW-04_20181105

ug/L : micrograms per Liter = parts per billion (ppb)

Exceedances of NYSDEC NYSDEC TOGS are shown in bold font.



LEGEND

- PROJECT SITE BOUNDARY
- BUILDING
- 14 LOT BOUNDARY AND TAX LOT NUMBER
- MONITORING WELL LOCATION

0 25 50 100
SCALE IN FEET

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

AKRF
440 Park Avenue South, New York, NY 10016

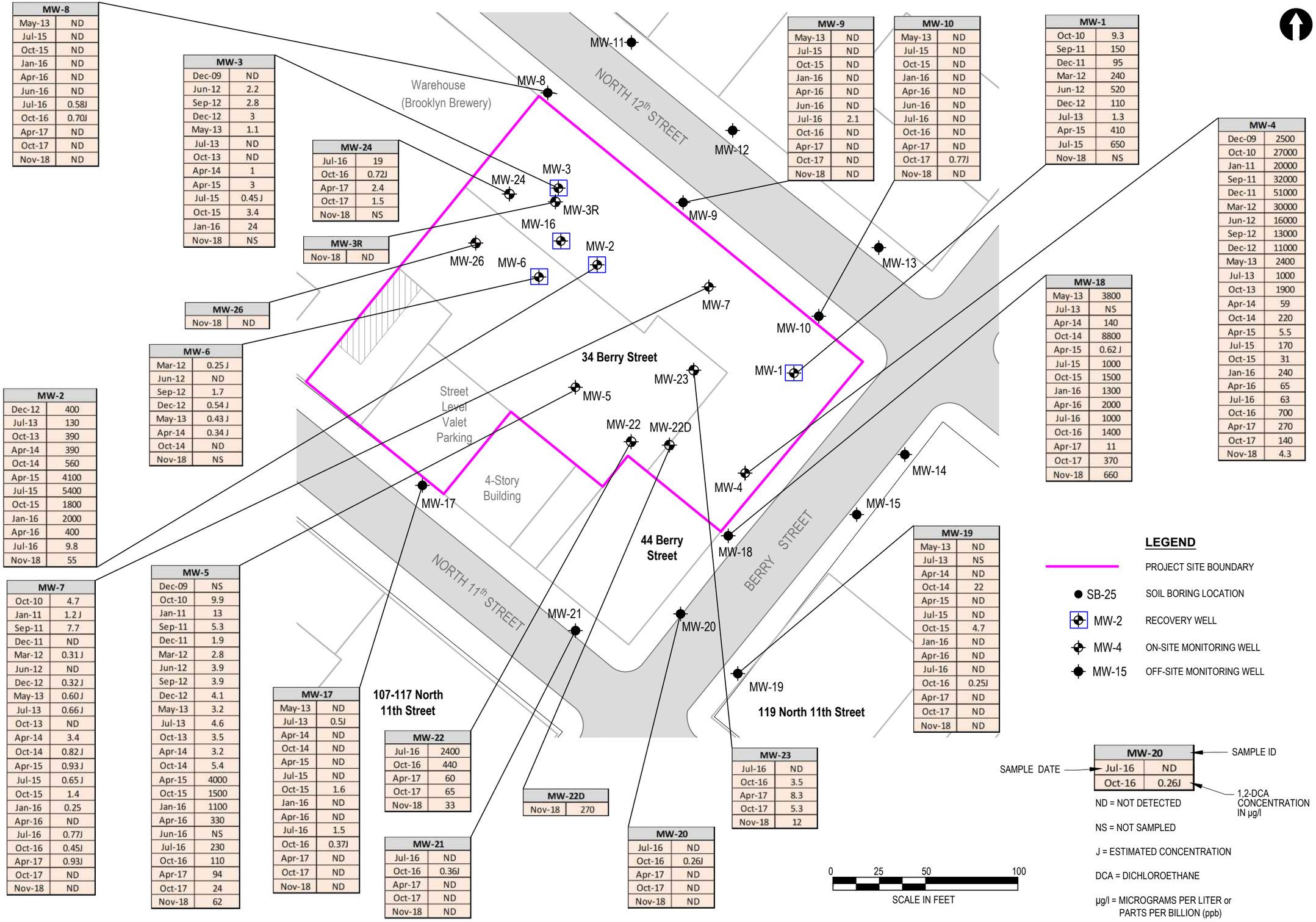
34 Berry Street
Brooklyn, New York

GROUNDWATER ANALYTICAL RESULTS

DATE
3/5/2020

PROJECT NO.
11259

FIGURE
5



MW-8	
May-13	ND
Jul-15	ND
Oct-15	ND
Jan-16	ND
Apr-16	ND
Jun-16	ND
Jul-16	0.58J
Oct-16	0.70J
Apr-17	ND
Oct-17	ND
Nov-18	ND

MW-3	
Dec-09	ND
Jun-12	2.2
Sep-12	2.8
Dec-12	3
May-13	1.1
Jul-13	ND
Oct-13	ND
Apr-14	1
Apr-15	3
Jul-15	0.45 J
Oct-15	3.4
Jan-16	24
Nov-18	NS

MW-24	
Jul-16	19
Oct-16	0.72J
Apr-17	2.4
Oct-17	1.5
Nov-18	NS

MW-3R	
Nov-18	ND

MW-26	
Nov-18	ND

MW-6	
Mar-12	0.25 J
Jun-12	ND
Sep-12	1.7
Dec-12	0.54 J
May-13	0.43 J
Apr-14	0.34 J
Oct-14	ND
Nov-18	NS

MW-2	
Dec-12	400
Jul-13	130
Oct-13	390
Apr-14	390
Oct-14	560
Apr-15	4100
Jul-15	5400
Oct-15	1800
Jan-16	2000
Apr-16	400
Jul-16	9.8
Nov-18	55

MW-7	
Oct-10	4.7
Jan-11	1.2 J
Sep-11	7.7
Dec-11	ND
Mar-12	0.31 J
Jun-12	ND
Dec-12	0.32 J
May-13	0.60 J
Jul-13	0.66 J
Oct-13	ND
Apr-14	3.4
Oct-14	0.82 J
Apr-15	0.93 J
Jul-15	0.65 J
Oct-15	1.4
Jan-16	0.25
Apr-16	ND
Jul-16	0.77J
Oct-16	0.45J
Apr-17	0.93J
Oct-17	ND
Nov-18	ND

MW-5	
Dec-09	NS
Oct-10	9.9
Jan-11	13
Sep-11	5.3
Dec-11	1.9
Mar-12	2.8
Jun-12	3.9
Sep-12	3.9
Dec-12	4.1
May-13	3.2
Jul-13	4.6
Oct-13	3.5
Apr-14	3.2
Oct-14	5.4
Apr-15	4000
Oct-15	1500
Jan-16	1100
Apr-16	330
Jun-16	NS
Jul-16	230
Oct-16	110
Apr-17	94
Oct-17	24
Nov-18	62

MW-17	
May-13	ND
Jul-13	0.5J
Apr-14	ND
Oct-14	ND
Apr-15	ND
Jul-15	ND
Oct-15	1.6
Jan-16	ND
Apr-16	ND
Jul-16	1.5
Oct-16	0.37J
Apr-17	ND
Oct-17	ND
Nov-18	ND

MW-22	
Jul-16	2400
Oct-16	440
Apr-17	60
Oct-17	65
Nov-18	33

MW-22D	
Nov-18	270

MW-21	
Jul-16	ND
Oct-16	0.36J
Apr-17	ND
Oct-17	ND
Nov-18	ND

MW-20	
Jul-16	ND
Oct-16	0.26J
Apr-17	ND
Oct-17	ND
Nov-18	ND

MW-23	
Jul-16	ND
Oct-16	3.5
Apr-17	8.3
Oct-17	5.3
Nov-18	12

MW-9	
May-13	ND
Jul-15	ND
Oct-15	ND
Jan-16	ND
Apr-16	ND
Jun-16	ND
Jul-16	2.1
Oct-16	ND
Apr-17	ND
Oct-17	ND
Nov-18	ND

MW-10	
May-13	ND
Jul-15	ND
Oct-15	ND
Jan-16	ND
Apr-16	ND
Jun-16	ND
Jul-16	ND
Oct-16	ND
Apr-17	ND
Oct-17	0.77J
Nov-18	ND

MW-1	
Oct-10	9.3
Sep-11	150
Dec-11	95
Mar-12	240
Jun-12	520
Dec-12	110
Jul-13	1.3
Apr-15	410
Jul-15	650
Nov-18	NS

MW-18	
May-13	3800
Jul-13	NS
Apr-14	140
Oct-14	8800
Apr-15	0.62 J
Jul-15	1000
Oct-15	1500
Jan-16	1300
Apr-16	2000
Jul-16	1000
Oct-16	1400
Apr-17	11
Oct-17	370
Nov-18	660

MW-4	
Dec-09	2500
Oct-10	27000
Jan-11	20000
Sep-11	32000
Dec-11	51000
Mar-12	30000
Jun-12	16000
Sep-12	13000
Dec-12	11000
May-13	2400
Jul-13	1000
Oct-13	1900
Apr-14	59
Oct-14	220
Apr-15	5.5
Jul-15	170
Oct-15	31
Jan-16	240
Apr-16	65
Jul-16	63
Oct-16	700
Apr-17	270
Oct-17	140
Nov-18	4.3

MW-19	
May-13	ND
Jul-13	NS
Apr-14	ND
Oct-14	22
Apr-15	ND
Jul-15	ND
Oct-15	4.7
Jan-16	ND
Apr-16	ND
Jul-16	ND
Oct-16	0.25J
Apr-17	ND
Oct-17	ND
Nov-18	ND

LEGEND

- PROJECT SITE BOUNDARY
- SB-25 — SOIL BORING LOCATION
- MW-2 — RECOVERY WELL
- MW-4 — ON-SITE MONITORING WELL
- MW-15 — OFF-SITE MONITORING WELL

MW-20	
Jul-16	ND
Oct-16	0.26J

SAMPLE DATE — SAMPLE ID

1,2-DCA CONCENTRATION IN µg/l

ND = NOT DETECTED

NS = NOT SAMPLED

J = ESTIMATED CONCENTRATION

DCA = DICHLOROETHANE

µg/l = MICROGRAMS PER LITER or PARTS PER BILLION (ppb)

AKRF
440 Park Avenue South, New York, NY 10016

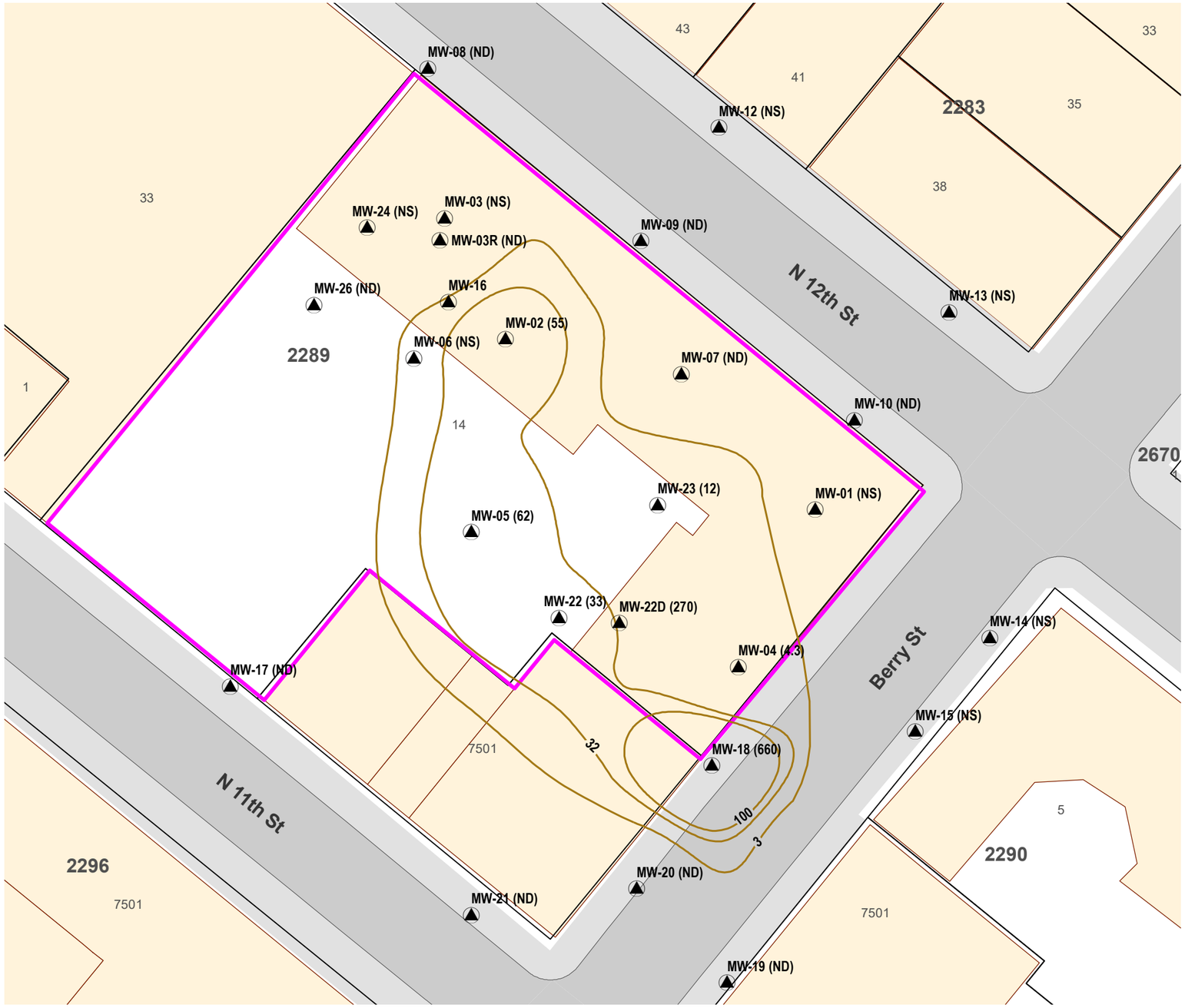
34 Berry Street
Brooklyn, New York

1,2-DCA HISTORY

DATE
3/13/2020

PROJECT NO.
11259

FIGURE
6



Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database.

LEGEND

- PROJECT SITE BOUNDARY
- NOVEMBER 2018 1,2-DCA ISOCONTOUR (µg/L)
- MONITORING WELL LOCATION WITH CONCENTRATION
- 14 LOT BOUNDARY AND TAX LOT NUMBER
- 2289 BLOCK NUMBER
- BUILDING

ND = NOT DETECTED
NS = NOT SAMPLED

NOTE: DEEP MONITORING WELL MW-22D 1,2-DCA DATA NOT INCLUDED IN ISOCONTOUR BECAUSE IT WAS A DEEP WELL SCREENED AT A DIFFERENT INTERVAL THAN SHALLOW WELLS.

0 20 40 80
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

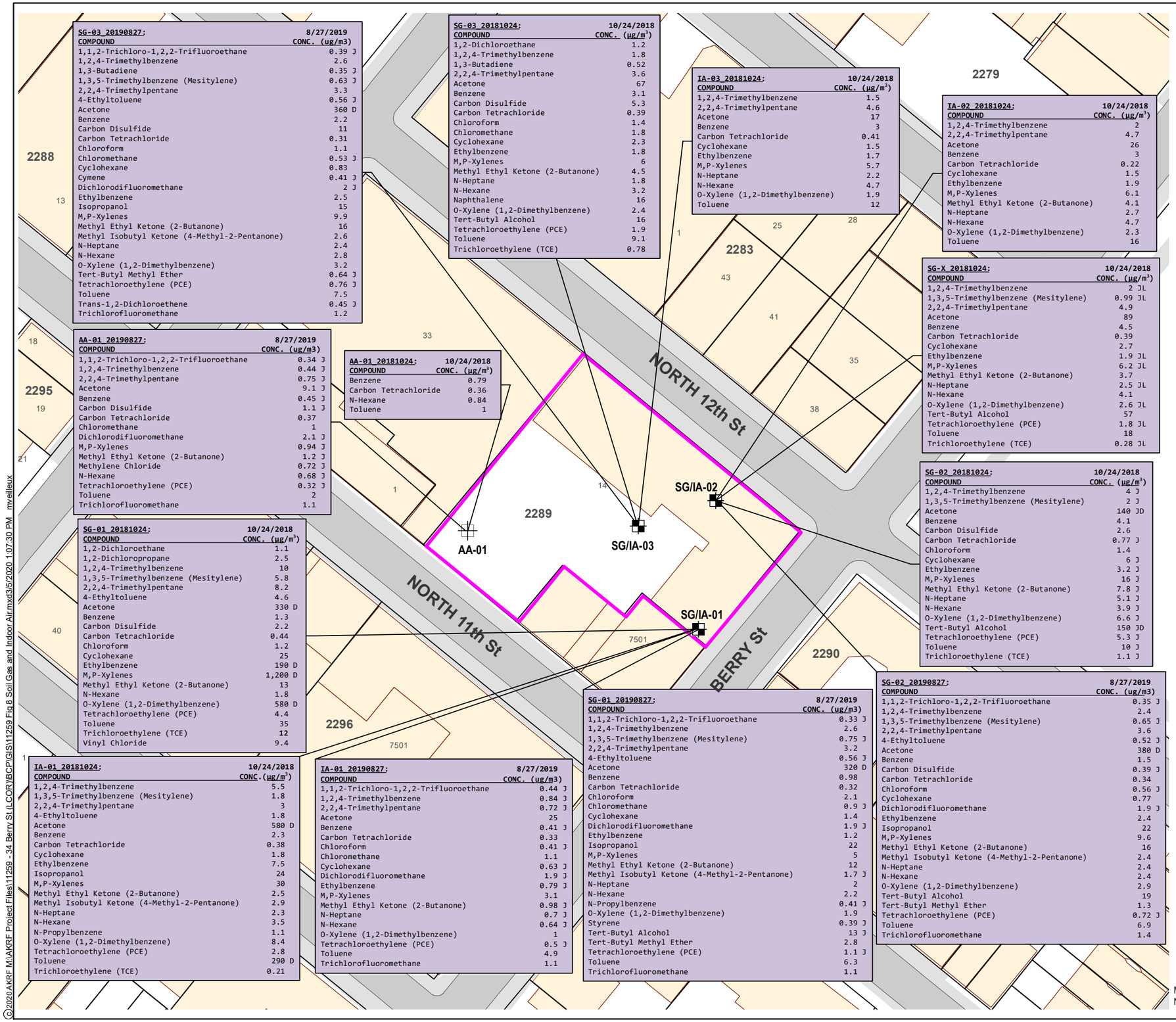
34 Berry Street
Brooklyn, New York

1,2-DCA ISOCONCENTRATION MAP

DATE
5/15/2020

PROJECT NO.
11259

FIGURE
7



SG-03_20190827: 8/27/2019

COMPOUND	CONC. (ug/m3)
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.39 J
1,2,4-Trimethylbenzene	2.6
1,3-Butadiene	0.35 J
1,3,5-Trimethylbenzene (Mesitylene)	0.63 J
2,2,4-Trimethylpentane	3.3
4-Ethyltoluene	0.56 J
Acetone	360 D
Benzene	2.2
Carbon Disulfide	11
Carbon Tetrachloride	0.31
Chloroform	1.1
Chloromethane	0.53 J
Cyclohexane	0.83
Cymene	0.41 J
Dichlorodifluoromethane	2 J
Ethylbenzene	2.5
Isopropanol	15
M,P-Xylenes	9.9
Methyl Ethyl Ketone (2-Butanone)	16
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.6
N-Heptane	2.4
N-Hexane	2.8
O-Xylene (1,2-Dimethylbenzene)	3.2
Tert-Butyl Methyl Ether	0.64 J
Tetrachloroethylene (PCE)	0.76 J
Toluene	7.5
Trans-1,2-Dichloroethene	0.45 J
Trichlorofluoromethane	1.2

SG-03_20181024: 10/24/2018

COMPOUND	CONC. (ug/m3)
1,2-Dichloroethane	1.2
1,2,4-Trimethylbenzene	1.8
1,3-Butadiene	0.52
2,2,4-Trimethylpentane	3.6
Acetone	67
Benzene	3.1
Carbon Disulfide	5.3
Carbon Tetrachloride	0.39
Chloroform	1.4
Chloromethane	1.8
Cyclohexane	2.3
Ethylbenzene	1.8
M,P-Xylenes	6
Methyl Ethyl Ketone (2-Butanone)	4.5
N-Heptane	1.8
N-Hexane	3.2
Naphthalene	16
O-Xylene (1,2-Dimethylbenzene)	2.4
Tert-Butyl Alcohol	16
Tetrachloroethylene (PCE)	1.9
Toluene	9.1
Trichloroethylene (TCE)	0.78

IA-03_20181024: 10/24/2018

COMPOUND	CONC. (ug/m3)
1,2,4-Trimethylbenzene	1.5
2,2,4-Trimethylpentane	4.6
Acetone	17
Benzene	3
Carbon Tetrachloride	0.41
Cyclohexane	1.5
Ethylbenzene	1.7
M,P-Xylenes	5.7
N-Heptane	2.2
N-Hexane	4.7
O-Xylene (1,2-Dimethylbenzene)	1.9
Toluene	12

IA-02_20181024: 10/24/2018

COMPOUND	CONC. (ug/m3)
1,2,4-Trimethylbenzene	2
2,2,4-Trimethylpentane	4.7
Acetone	26
Benzene	3
Carbon Tetrachloride	0.22
Cyclohexane	1.5
Ethylbenzene	1.9
M,P-Xylenes	6.1
Methyl Ethyl Ketone (2-Butanone)	4.1
N-Heptane	2.7
N-Hexane	4.7
O-Xylene (1,2-Dimethylbenzene)	2.3
Toluene	16

SG-X_20181024: 10/24/2018

COMPOUND	CONC. (ug/m3)
1,2,4-Trimethylbenzene	2 JL
1,3,5-Trimethylbenzene (Mesitylene)	0.99 JL
2,2,4-Trimethylpentane	4.9
Acetone	89
Benzene	4.5
Carbon Tetrachloride	0.39
Cyclohexane	2.7
Ethylbenzene	1.9 JL
M,P-Xylenes	6.2 JL
Methyl Ethyl Ketone (2-Butanone)	3.7
N-Heptane	2.5 JL
N-Hexane	4.1
O-Xylene (1,2-Dimethylbenzene)	2.6 JL
Tert-Butyl Alcohol	57
Tetrachloroethylene (PCE)	1.8 JL
Toluene	18
Trichloroethylene (TCE)	0.28 JL

AA-01_20190827: 8/27/2019

COMPOUND	CONC. (ug/m3)
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.34 J
1,2,4-Trimethylbenzene	0.44 J
2,2,4-Trimethylpentane	0.75 J
Acetone	9.1 J
Benzene	0.45 J
Carbon Disulfide	1.1 J
Carbon Tetrachloride	0.37
Chloromethane	1
Dichlorodifluoromethane	2.1 J
M,P-Xylenes	0.94 J
Methyl Ethyl Ketone (2-Butanone)	1.2 J
Methylene Chloride	0.72 J
N-Hexane	0.68 J
Tetrachloroethylene (PCE)	0.32 J
Toluene	2
Trichlorofluoromethane	1.1

AA-01_20181024: 10/24/2018

COMPOUND	CONC. (ug/m3)
Benzene	0.79
Carbon Tetrachloride	0.36
N-Hexane	0.84
Toluene	1

SG-02_20181024: 10/24/2018

COMPOUND	CONC. (ug/m3)
1,2,4-Trimethylbenzene	4 J
1,3,5-Trimethylbenzene (Mesitylene)	2 J
Acetone	140 JD
Benzene	4.1
Carbon Disulfide	2.6
Carbon Tetrachloride	0.77 J
Chloroform	1.4
Cyclohexane	6 J
Ethylbenzene	3.2 J
M,P-Xylenes	16 J
Methyl Ethyl Ketone (2-Butanone)	7.8 J
N-Heptane	5.1 J
N-Hexane	3.9 J
O-Xylene (1,2-Dimethylbenzene)	6.6 J
Tert-Butyl Alcohol	150 JD
Tetrachloroethylene (PCE)	5.3 J
Toluene	10 J
Trichloroethylene (TCE)	1.1 J

SG-01_20181024: 10/24/2018

COMPOUND	CONC. (ug/m3)
1,2-Dichloroethane	1.1
1,2-Dichloropropane	2.5
1,2,4-Trimethylbenzene	10
1,3,5-Trimethylbenzene (Mesitylene)	5.8
2,2,4-Trimethylpentane	8.2
4-Ethyltoluene	4.6
Acetone	330 D
Benzene	1.3
Carbon Disulfide	2.2
Carbon Tetrachloride	0.44
Chloroform	1.2
Cyclohexane	25
Ethylbenzene	190 D
M,P-Xylenes	1,200 D
Methyl Ethyl Ketone (2-Butanone)	13
N-Hexane	1.8
O-Xylene (1,2-Dimethylbenzene)	580 D
Tetrachloroethylene (PCE)	4.4
Toluene	35
Trichloroethylene (TCE)	**12**
Vinyl Chloride	9.4

IA-01_20181024: 10/24/2018

COMPOUND	CONC.(ug/m3)
1,2,4-Trimethylbenzene	5.5
1,3,5-Trimethylbenzene (Mesitylene)	1.8
2,2,4-Trimethylpentane	3
4-Ethyltoluene	1.8
Acetone	580 D
Benzene	2.3
Carbon Tetrachloride	0.38
Cyclohexane	1.8
Ethylbenzene	7.5
Isopropanol	24
M,P-Xylenes	30
Methyl Ethyl Ketone (2-Butanone)	2.5
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.9
N-Heptane	2.3
N-Hexane	3.5
N-Propylbenzene	1.1
O-Xylene (1,2-Dimethylbenzene)	8.4
Tetrachloroethylene (PCE)	2.8
Toluene	290 D
Trichloroethylene (TCE)	0.21

IA-01_20190827: 8/27/2019

COMPOUND	CONC. (ug/m3)
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.44 J
1,2,4-Trimethylbenzene	0.84 J
2,2,4-Trimethylpentane	0.72 J
Acetone	25
Benzene	0.41 J
Carbon Tetrachloride	0.33
Chloroform	0.41 J
Chloromethane	1.1
Cyclohexane	0.63 J
Dichlorodifluoromethane	1.9 J
Ethylbenzene	0.79 J
M,P-Xylenes	3.1
Methyl Ethyl Ketone (2-Butanone)	0.98 J
N-Heptane	0.7 J
N-Hexane	0.64 J
O-Xylene (1,2-Dimethylbenzene)	1
Tetrachloroethylene (PCE)	0.5 J
Toluene	4.9
Trichlorofluoromethane	1.1

SG-01_20190827: 8/27/2019

COMPOUND	CONC. (ug/m3)
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.33 J
1,2,4-Trimethylbenzene	2.6
1,3,5-Trimethylbenzene (Mesitylene)	0.75 J
2,2,4-Trimethylpentane	3.2
4-Ethyltoluene	0.56 J
Acetone	320 D
Benzene	0.98
Carbon Tetrachloride	0.32
Chloroform	2.1
Chloromethane	0.9 J
Cyclohexane	1.4
Dichlorodifluoromethane	1.9 J
Ethylbenzene	1.2
Isopropanol	22
M,P-Xylenes	5
Methyl Ethyl Ketone (2-Butanone)	12
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	1.7 J
N-Heptane	2
N-Hexane	2.2
N-Propylbenzene	0.41 J
O-Xylene (1,2-Dimethylbenzene)	1.9
Styrene	0.39 J
Tert-Butyl Alcohol	13 J
Tert-Butyl Methyl Ether	2.8
Tetrachloroethylene (PCE)	1.1 J
Toluene	6.3
Trichlorofluoromethane	1.1

SG-02_20190827: 8/27/2019

COMPOUND	CONC. (ug/m3)
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.35 J
1,2,4-Trimethylbenzene	2.4
1,3,5-Trimethylbenzene (Mesitylene)	0.65 J
2,2,4-Trimethylpentane	3.6
4-Ethyltoluene	0.52 J
Acetone	380 D
Benzene	1.5
Carbon Disulfide	0.39 J
Carbon Tetrachloride	0.34
Chloroform	0.56 J
Cyclohexane	0.77
Dichlorodifluoromethane	1.9 J
Ethylbenzene	2.4
Isopropanol	22
M,P-Xylenes	9.6
Methyl Ethyl Ketone (2-Butanone)	16
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.4
N-Heptane	2.4
N-Hexane	2.4
O-Xylene (1,2-Dimethylbenzene)	2.9
Tert-Butyl Alcohol	19
Tert-Butyl Methyl Ether	1.3
Tetrachloroethylene (PCE)	0.72 J
Toluene	6.9
Trichlorofluoromethane	1.4

NYSDOH 2006 SV INTRUSION AIR GUIDELINE µg/m³

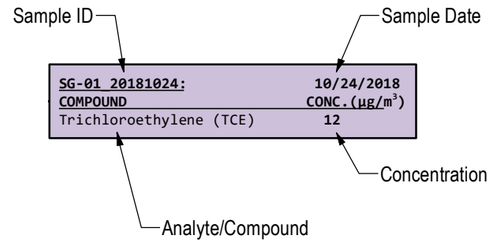
Volatile Organic Compounds	
Trichloroethylene (TCE)	2

SOIL VAPOR

NYSDOH Soil Vapor Intrusion Value:
NYSDOH Soil Vapor Intrusion Matrix Values presented in the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006, updated May 2017.

Exceedances of NYSDOH Soil Vapor Intrusion Air Guidance Values are shown in bold font.

µg/m³- micrograms per cubic meter



LEGEND

- AMBIENT AIR SAMPLE
- SUB-SLAB SOIL GAS/INDOOR AIR SAMPLE LOCATION
- PROJECT SITE BOUNDARY
- 14 — LOT BOUNDARY AND TAX LOT
- 2289 — BLOCK NUMBER
- BUILDING

0 40 80 160
SCALE IN FEET

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

AKRF
440 Park Avenue South, New York, NY 10016

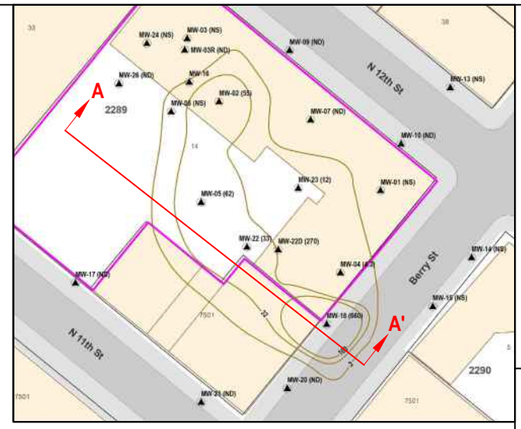
34 Berry Street
Brooklyn, New York

SUB-SLAB SOIL GAS AND INDOOR AIR ANALYTICAL RESULTS

DATE
3/5/2020

PROJECT NO.
11259

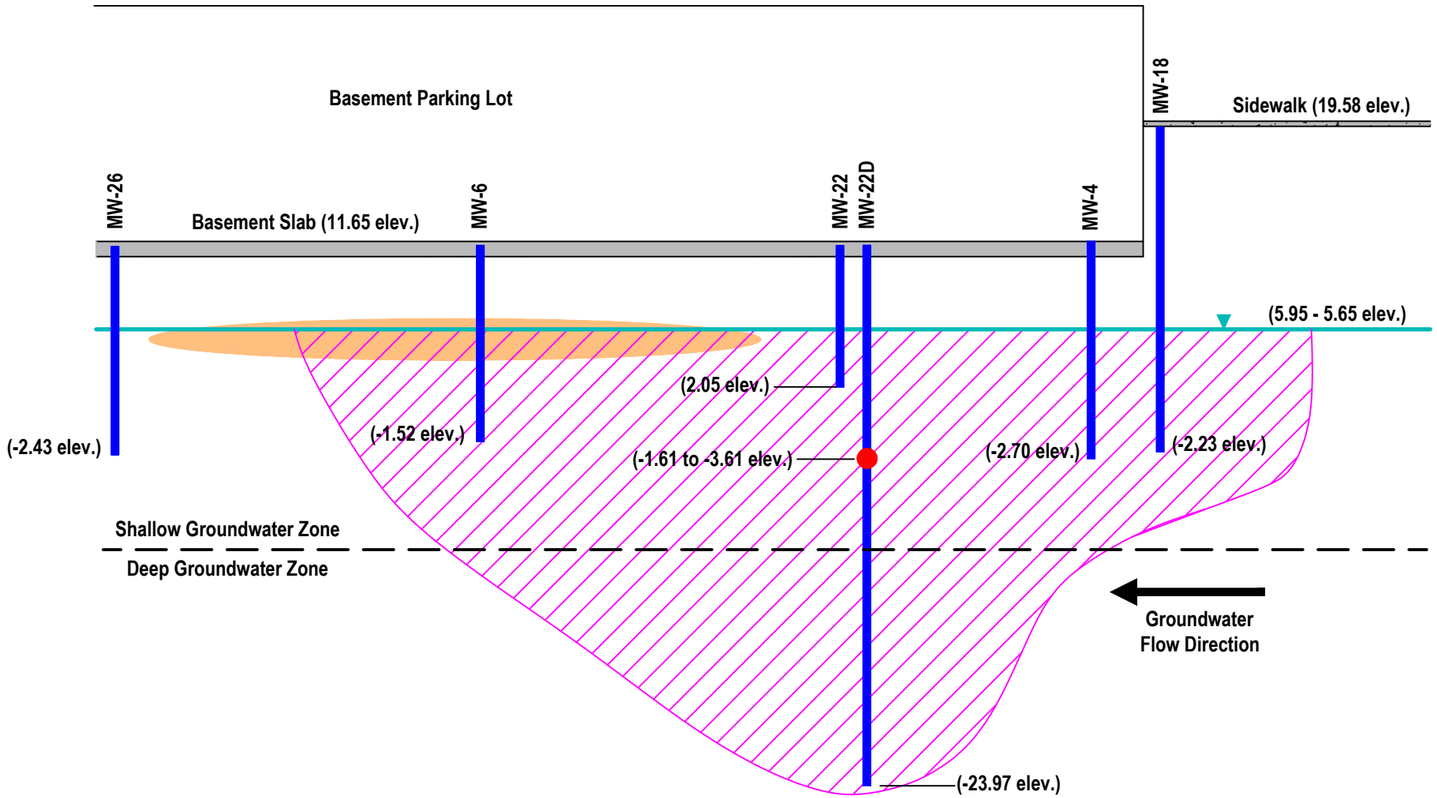
FIGURE
8



KEY MAP
SCALE: 1" = 100'

A

A'



LEGEND

- WATER TABLE
- SOIL SOURCE AREA
- LNAPL AREA
- 1,2-DCA PLUME

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM.

NOT TO SCALE

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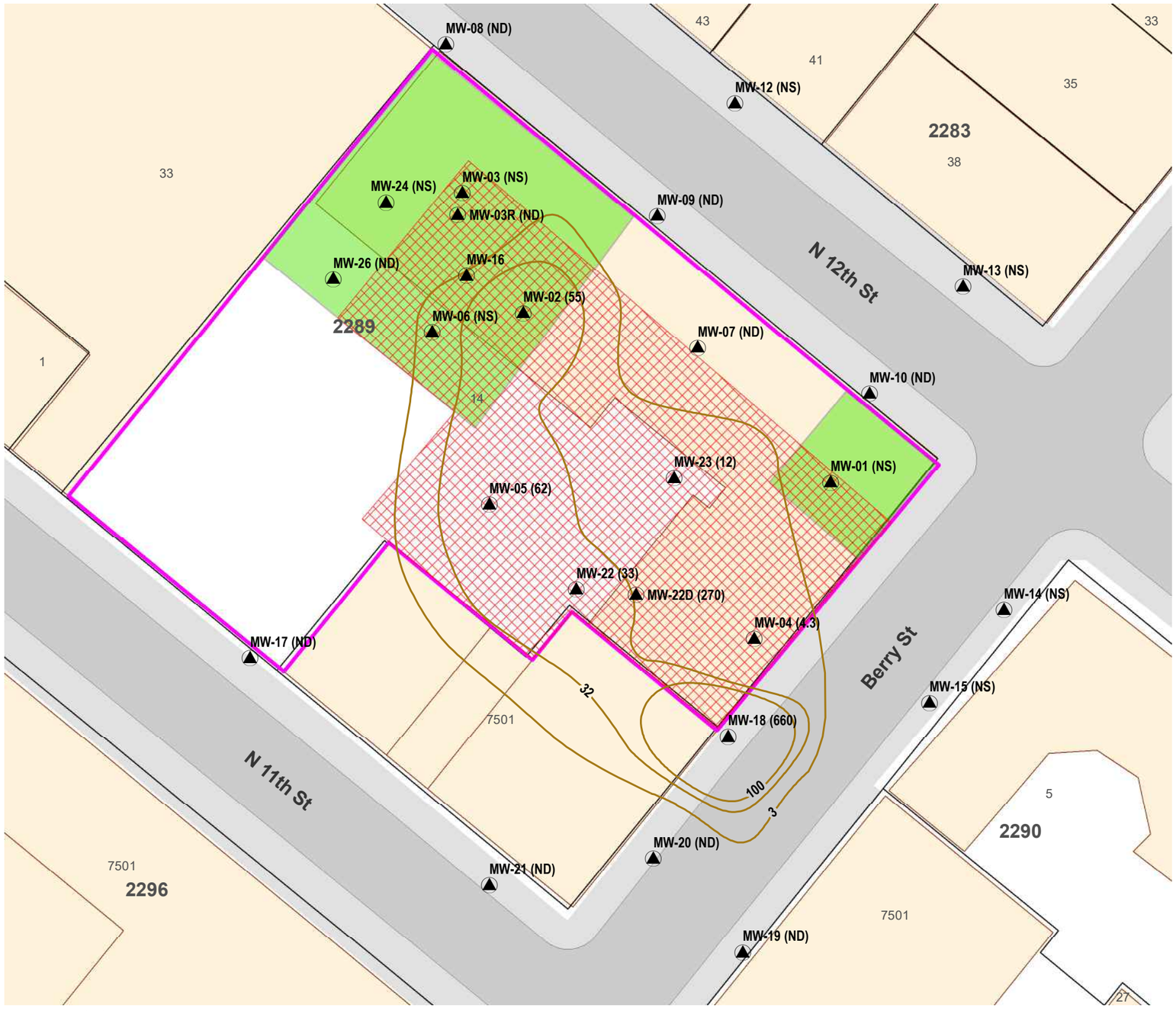
34 Berry Street
Brooklyn, New York

CROSS SECTION OF CONCEPTUAL SITE MODEL

DATE
6/26/2020

PROJECT NO.
11259

FIGURE
9



LEGEND

- PROJECT SITE BOUNDARY
- NOVEMBER 2018 1,2-DCA ISOCONTOUR
- MONITORING WELL LOCATION WITH CONCENTRATION (µg/L)
- 14 LOT BOUNDARY AND TAX LOT NUMBER
- 2289 BLOCK NUMBER
- BUILDING
- AREA OF 1,2-DCA REMEDIATION
- AREA OF PETROLUEM REMEDIATION

ND = NOT DETECTED
NS = NOT SAMPLED

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database.

0 20 40 80
SCALE IN FEET

AKRF
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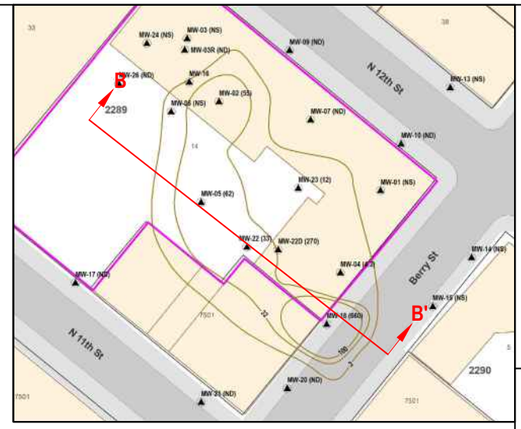
34 Berry Street
Brooklyn, New York

REMEDIATION AREAS

DATE
5/15/2020

PROJECT NO.
11259

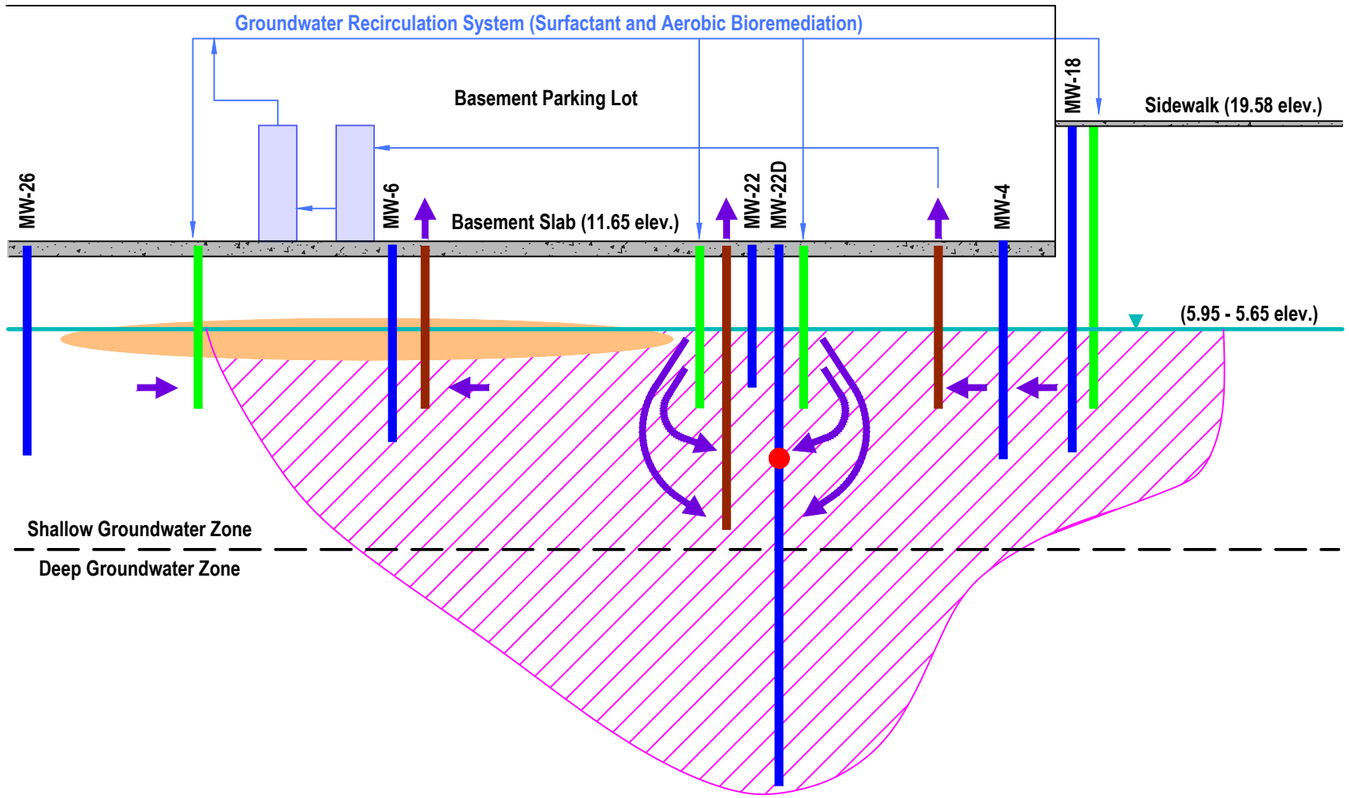
FIGURE
10



KEY MAP
SCALE: 1" = 100'

B

B'



LEGEND

- WATER TABLE
- SOIL SOURCE AREA
- LNAPL AREA
- 1,2-DCA PLUME
- MONITORING WELL
- EXTRACTION WELL
- INJECTION WELL
- ANTICIPATED GROUNDWATER FLOW DIRECTION
- ABOVEGROUND PIPING AND FLOW

NOTES:
1. ELEVATIONS BASED ON NAVD 88 DATUM.
2. INJECTION AND EXTRACTION WELL LOCATIONS PROJECTED ONTO CROSS SECTION.

NOT TO SCALE

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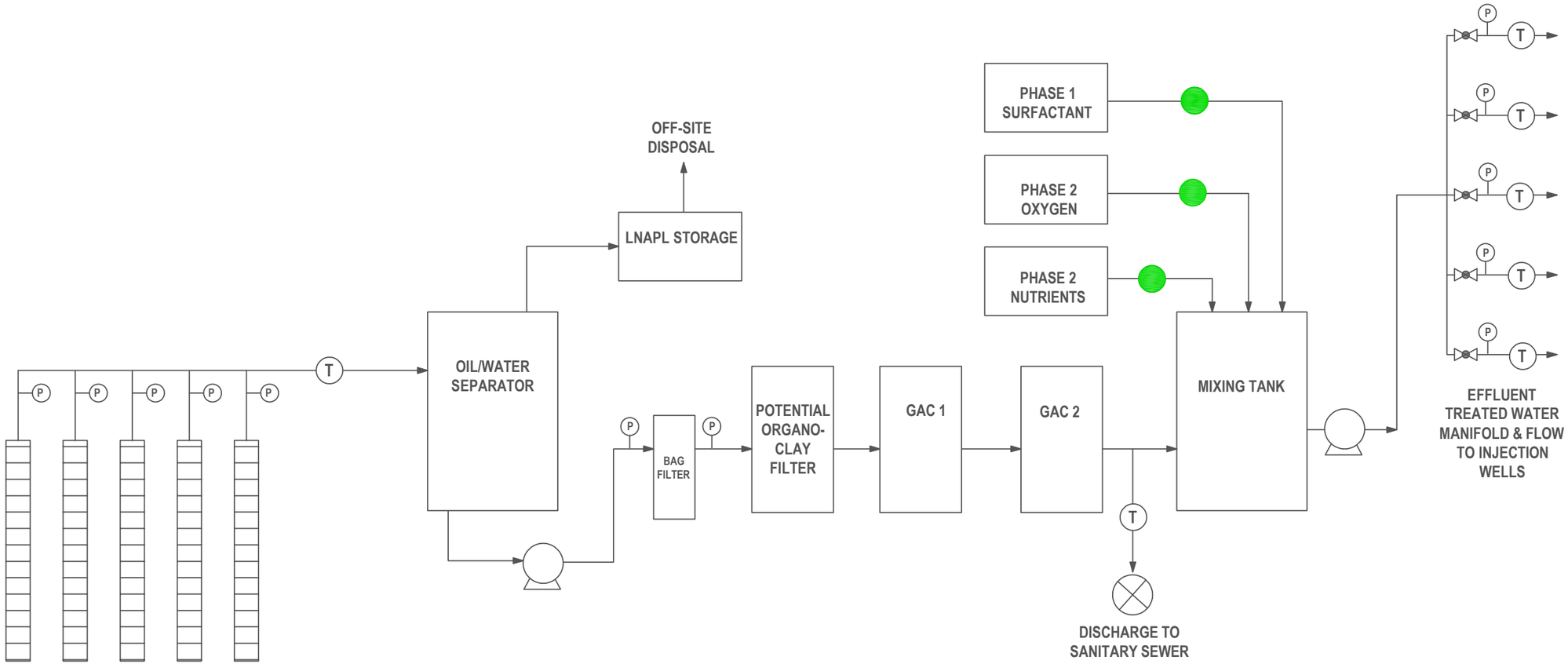
34 Berry Street
Brooklyn, New York

SOURCE TREATMENT CROSS SECTION MODEL

DATE
6/26/2020

PROJECT NO.
11259

FIGURE
11



EXTRACTION WELLS:
MW-1, MW-2, MW-3, MW-6, MW-16
ADDITIONAL WELLS TO BE ADDED BASED ON HYDRAULIC MODELING

NOTES:

1. EXTRACTION FLOW RATE IS ESTIMATED TO BE 4 TO 5 TIMES THE RE-INJECTION FLOW RATE
2. THE QUANTITY AND LOCATION OF INJECTION & EXTRACTION WELLS WILL BE DETERMINED USING HYDRAULIC MODELING, AND WILL BE INCLUDED IN THE IN-SITU DESIGN DOCUMENT.
3. AN ORGANOCLAY FILTER MAY BE ADDED TO TREATMENT TRAIN FOLLOWING THE OIL./WATER SEPARATOR TO FURTHER TREAT EMULSIFIED OIL.

LEGEND

- DOSING PUMP
- PRESSURE GAUGE
- TOTALIZER
- TRANSFER PUMP
- CONTROL VALVE

NOT TO SCALE

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440 Park Avenue South, New York, NY 10016

34 Berry Street
Brooklyn, New York

REMEDIATION PROCESS FLOW DAIGRAM

DATE
6/29/2020

PROJECT NO.
11259

FIGURE
12

TABLES

Table 1
34 Berry Street
Brooklyn, New York
Remedial Investigation Report
Fluid Level Summary

Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-1	102.39	3/27/2009	NM	13.08	89.31	8.29	4.79	92.90
	102.39	8/25/2009	NM	12.92	89.47	NA	NA	89.47
	102.39	10/2/2009	NM	8.67	93.72	8.64	0.03	93.74
	102.39	3/27/2010*	NM	NM	NM	NM	NM	NM
	102.39	4/27/2010	NM	8.65	93.74	8.34	0.31	93.97
	102.39	5/17/2010	NM	8.54	93.85	8.29	0.25	94.04
	102.39	6/28/2010	NM	8.60	93.79	8.26	0.34	94.05
	102.39	7/29/2010	NM	8.57	93.82	NA	NA	93.82
	102.39	9/7/2010	NM	8.53	93.86	NA	NA	93.86
	96.81	10/6/2010	NM	7.42	89.39	NA	NA	89.39
	96.81	11/24/2010	NM	12.98	83.83	NA	NA	83.83
	96.81	1/3/2011	NM	8.68	88.13	8.55	0.13	88.23
	96.81	2/11/2011	NM	8.52	88.29	8.43	0.09	88.36
	96.81	3/9/2011	NM	8.08	88.73	NA	NA	88.73
	96.81	4/11/2011	NM	8.12	88.69	NA	NA	88.69
	96.81	5/10/2011	NM	8.10	88.71	NA	NA	88.71
	96.81	6/15/2011	NM	8.07	88.74	NA	NA	88.74
	96.81	7/13/2011	NM	8.04	88.77	NA	NA	88.77
	96.81	8/9/2011	NM	7.92	88.89	NA	NA	88.89
	96.81	9/8/2011	NM	7.25	89.56	7.24	0.01	89.57
	96.81	9/22/2011	NM	12.63	84.18	NA	NA	84.18
	96.81	9/29/2011	NM	7.23	89.58	NA	NA	89.58
	96.81	12/14/2011	NM	13.01	83.80	NA	NA	83.80
	96.81	12/15/2011	NM	7.30	89.51	NA	NA	89.51
	96.81	1/26/2012	NM	13.07	83.74	NA	NA	83.74
	96.81	1/27/2012	NM	7.87	88.94	NA	NA	88.94
	96.81	2/28/2012	NM	13.00	83.81	NA	NA	83.81
	96.81	2/29/2012	NM	8.53	88.28	NA	NA	88.28
	96.81	3/26/2012	NM	12.94	83.87	NA	NA	83.87
	96.81	3/27/2012	NM	9.07	87.74	NA	NA	87.74
	96.81	4/19/2012	NM	8.90	87.91	NA	NA	87.91
	96.81	4/20/2012	NM	8.89	87.92	NA	NA	87.92
	96.81	5/24/2012	NM	8.81	88.00	8.78	0.03	88.02
	96.81	5/25/2012	NM	8.69	88.12	8.68	0.01	88.13
	96.81	6/7/2012	NM	13.08	83.73	NA	NA	83.73
	96.81	6/8/2012	NM	9.76	87.05	NA	NA	87.05
	96.81	7/18/2012	NM	12.97	83.84	NA	NA	83.84
	96.81	7/19/2012	NM	8.85	87.96	NA	NA	87.96
	96.81	8/15/2012	NM	12.97	83.84	NA	NA	83.84
	96.81	8/16/2012	NM	9.84	86.97	NA	NA	86.97
	96.81	9/13/2012	12.81	12.78	84.03	NA	NA	84.03
	96.81	9/14/2012	12.63	12.51	84.30	NA	NA	84.30
	96.81	10/25/2012	NM	8.94	87.87	NA	NA	87.87
	96.81	10/26/2012	NM	8.86	87.95	NA	NA	87.95
	96.81	11/28/2012	10.77	10.26	86.55	NA	NA	86.55
	96.81	11/29/2012	NM	9.03	87.78	NA	NA	87.78
	96.81	12/19/2012	10.51	10.51	86.30	NA	NA	86.30
	96.81	12/20/2012	NM	9.00	87.81	NA	NA	87.81
	96.81	1/28/2013	10.95	8.86	87.95	NA	NA	87.95
	96.81	1/29/2013	NM	8.91	87.90	NA	NA	87.90
	96.81	2/25/2013	11.90	8.45	88.36	NA	NA	88.36
	96.81	2/26/2013	NM	8.72	88.09	NA	NA	88.09
	96.81	3/20/2013	12.22	8.40	88.41	NA	NA	88.41
	96.81	3/21/2013	NM	8.27	88.54	NA	NA	88.54
	96.81	4/29/2013	11.87	8.51	88.30	NA	NA	88.30
	96.81	4/30/2013	NM	8.52	88.29	8.49	0.03	88.31

Table 1
34 Berry Street
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Remedial Investigation Report
Fluid Level Summary

Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-1 (con't)	96.81	5/14/2013	11.84	8.23	88.58	8.21	0.02	88.60
	96.81	5/15/2013	NM	8.25	88.56	8.23	0.02	88.58
	96.81	6/17/2013	11.85	8.05	88.76	8.01	0.04	88.79
	96.81	6/18/2013	NM	8.05	88.76	8.03	0.02	88.78
	96.81	7/17/2013	12.78	8.46	88.35	8.39	0.07	88.40
	96.81	7/18/2013	NM	8.41	88.40	NA	NA	88.40
	96.81	8/27/2013	11.85	8.61	88.20	8.55	0.06	88.25
	96.81	8/28/2013	NM	8.63	88.18	NA	NA	88.18
	96.81	9/23/2013	11.88	8.96	87.85	8.79	0.17	87.98
	96.81	9/24/2013	NM	8.72	88.09	8.65	0.07	88.14
	96.81	10/24/2013	11.83	9.20	87.61	9.16	0.04	87.64
	96.81	10/25/2013	NM	9.17	87.64	9.05	0.12	87.73
	96.81	1/7/2014	11.84	9.11	87.70	9.00	0.11	87.78
	96.81	1/8/2014	NM	9.16	87.65	9.05	0.11	87.73
	96.81	4/22/2014	12.61	9.47	87.34	9.59	0.12	87.43
	96.81	4/23/2014	NM	8.95	87.86	8.76	0.19	88.00
	96.81	7/24/2014	13.12	9.43	87.38	9.23	0.20	87.53
	96.81	7/25/2014	NM	9.30	87.51	NA	NA	87.51
	96.81	10/13/2014	12.45	10.12	86.69	9.8	0.32	86.93
	96.81	10/14/2014	NM	10.04	86.77	9.74	0.30	87.00
	96.81	1/22/2015	12.11	9.29	87.52	9.28	0.01	87.53
	96.81	1/26/2015	12.11	9.15	87.66	9.13	0.02	87.68
	96.81	4/28/2015	17.55	12.25	84.56	12.24	0.01	84.57
	96.81	4/29/2015	17.55	8.77	88.04	NA	NA	88.04
	96.81	7/29/2015	NM	9.40	87.41	NA	NA	87.41
	96.81	7/30/2015	NM	8.90	87.91	NA	NA	87.91
	96.81	10/14/2015	17.33	8.98	87.83	8.97	0.01	87.84
	96.81	10/15/2015	NM	10.32	86.49	NA	NA	86.49
	96.81	1/20/2016	12.34	9.12	87.69	NA	NA	87.89
	96.81	1/21/2016	NM	8.92	87.89	8.91	0.01	87.90
	96.81	4/19/2016	12.34	8.78	88.03	8.77	0.01	88.04
	96.81	4/20/2016	NM	8.85	87.96	8.81	0.04	87.99
	13.97	7/13/2016	12.30	8.67	5.30	8.66	0.01	5.31
	13.97	7/14/2016	NM	8.69	5.28	8.67	0.02	5.30
	13.97	10/25/2016	12.30	9.30	4.67	9.03	0.27	4.87
	13.97	10/26/2016	NM	9.25	4.72	9.02	0.23	4.89
	13.97	1/31/2017	12.84	9.26	4.71	9.00	0.26	4.91
	13.97	2/1/2017	NM	9.01	4.96	9.01	Sheen	4.96
	13.97	4/25/2017	12.62	8.41	5.56	9.00	Sheen	5.56
	13.97	4/26/2017	NM	8.37	5.60	9.01	Sheen	5.60
	13.97	7/24/2017	16.32	8.03	5.94	8.03	Sheen	5.94
	13.97	7/25/2017	NM	7.97	6.00	7.97	Sheen	6.00
	13.97	10/9/2017	16.30	8.73	5.24	8.73	Sheen	5.24
	13.97	10/10/2017	NM	8.81	5.16	8.81	Sheen	5.16
	13.97	2/1/2018	10.40	9.05	4.92	8.95	0.10	5.00
	13.97	2/2/2018	10.43	9.15	4.82	8.99	0.16	4.94
	13.97	4/25/2018	10.15	8.37	5.60	NA	Sheen	5.60
	13.97	4/26/2018	10.15	8.52	5.45	8.51	0.01	5.46
	13.97	7/26/2018	11.49	8.66	5.31	8.63	0.03	5.33
	13.97	7/27/2018	11.49	8.61	5.36	8.61	Sheen	5.36
	13.97	11/5/2018	11.45	8.88	5.09	8.71	0.17	5.22
	13.97	11/6/2018	10.67	8.78	5.19	8.65	0.13	5.29
	13.97	6/27/2019	17.31	12.41	1.56	NA	NA	1.56
	13.97	6/28/2019	17.31	12.44	1.53	NA	NA	1.53
	13.97	9/26/2019	15.03	12.90	1.07	NA	NA	1.07
	13.97	9/27/2019	15.03	12.90	1.07	NA	NA	1.07
	13.97	12/30/2019	9.89	8.19	5.78	8.15	0.04	5.81
	13.97	12/31/2019	9.90	8.25	5.72	8.22	0.03	5.74

Table 1
34 Berry Street
Brooklyn, New York
Remedial Investigation Report
Fluid Level Summary

Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-2	101.5	3/27/2009	NM	11.04	90.46	9.32	1.72	91.75
	98.29	8/25/2009	NM	10.97	87.32	NA	NA	87.32
	98.29	10/2/2009	NM	6.77	91.52	7.55	0.78	92.11
	98.29	3/27/2010	NM	5.92	92.37	5.59	0.33	92.62
	98.29	4/27/2010	NM	5.67	92.62	5.48	0.19	92.76
	98.29	5/17/2010	NM	6.12	92.17	5.47	0.65	92.66
	98.29	6/28/2010	NM	6.23	92.06	5.52	0.71	92.59
	98.29	7/29/2010	NM	6.08	92.21	5.66	0.42	92.53
	98.29	9/7/2010	NM	6.12	92.17	5.71	0.41	92.48
	94.04	10/6/2010	NM	6.35	87.69	5.66	0.69	88.21
	94.04	11/24/2010	NM	12.77	81.27	NA	NA	81.27
	94.04	1/3/2011	NM	6.90	87.14	5.93	0.97	87.87
	94.04	2/11/2011	NM	6.48	87.56	5.71	0.77	88.14
	94.04	3/9/2011	NM	5.93	88.11	5.4	0.53	88.51
	94.04	4/11/2011	NM	5.82	88.22	5.11	0.71	88.75
	94.04	5/10/2011	NM	6.05	87.99	5.39	0.66	88.49
	94.04	6/15/2011	NM	5.73	88.31	4.9	0.83	88.93
	94.04	7/13/2011	NM	5.77	88.27	4.9	0.87	88.92
	94.04	8/9/2011	NM	5.92	88.12	5.1	0.82	88.74
	94.04	9/8/2011	NM	4.50	89.54	4.5	0.00	89.54
	94.04	9/22/2011	NM	8.49	85.55	8.48	0.01	85.56
	94.04	9/29/2011	NM	4.39	89.65	4.29	0.10	89.73
	94.04	12/14/2011	NM	4.76	89.28	4.62	0.14	89.39
	94.04	12/15/2011	NM	4.42	89.62	4.30	0.12	89.71
	94.04	1/26/2012	NM	6.47	87.57	5.86	0.61	88.03
	94.04	1/27/2012	NM	5.50	88.54	5.07	0.43	88.86
	94.04	2/28/2012	NM	7.70	86.34	6.98	0.72	86.88
	94.04	2/29/2012	NM	6.06	87.98	5.50	0.56	88.40
	94.04	3/26/2012	NM	7.44	86.60	6.16	1.28	87.56
	94.04	3/27/2012	NM	6.76	87.28	5.90	0.86	87.93
	94.04	4/19/2012	NM	10.35	83.69	NA	NA	83.69
	94.04	4/20/2012	NM	6.12	87.92	6.10	0.02	87.94
	94.04	5/24/2012	NM	9.42	84.62	NA	NA	84.62
	94.04	5/25/2012	NM	6.11	87.93	NA	NA	87.93
	94.04	6/7/2012	8.42	NA	NA	NA	NA	NA
	94.04	6/8/2012	NM	6.13	87.91	6.12	0.01	87.92
	94.04	7/18/2012	8.47	NA	NA	NA	NA	NA
	94.04	7/19/2012	NM	6.00	88.04	NA	NA	NA
	94.04	8/15/2012	8.47	NA	NA	NA	NA	NA
	94.04	8/16/2012	NM	6.89	87.15	NA	NA	87.15
	94.04	9/13/2012	8.36	NA	NA	NA	NA	NA
	94.04	9/14/2012	8.40	NA	NA	NA	NA	NA
	94.04	10/25/2012	NM	9.06	84.98	NA	NA	84.98
	94.04	10/26/2012	NM	6.21	87.83	NA	NA	87.83
	94.04	11/28/2012	9.64	6.95	87.09	NA	NA	87.09
	94.04	11/29/2012	NM	6.19	87.85	NA	NA	87.85
	94.04	12/19/2012	9.41	8.35	85.69	NA	NA	85.69
	94.04	12/20/2012	NM	6.31	87.73	NA	NA	87.73
	94.04	1/28/2013	9.60	NA	NA	NA	NA	NA
	94.04	1/29/2013	NM	7.53	86.51	NA	NA	86.51
	94.04	2/25/2013	9.82	6.21	87.83	NA	NA	87.83
	94.04	2/26/2013	NM	8.46	85.58	NA	NA	85.58
	94.04	3/20/2013	9.90	5.68	88.36	NA	NA	88.36
	94.04	3/21/2013	NM	5.71	88.33	NA	NA	88.33

Table 1
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Brooklyn, New York
Remedial Investigation Report
Fluid Level Summary

Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-2 (con't)	94.04	4/29/2013	9.99	5.69	88.35	5.67	0.02	88.37
	94.04	4/30/2013	NM	5.72	88.32	5.69	0.03	88.34
	94.04	5/14/2013	9.97	5.62	88.42	5.56	0.06	88.47
	94.04	5/15/2013	NM	5.66	88.38	5.55	0.05	88.42
	94.04	6/17/2013	9.93	5.43	88.61	NA	NA	88.61
	94.04	6/18/2013	NM	8.43	85.61	NA	NA	85.61
	94.04	7/17/2013	9.98	8.89	85.15	NA	NA	85.15
	94.04	7/18/2013	NM	5.65	88.39	NA	NA	88.39
	94.04	8/27/2013	9.95	5.70	88.34	NA	NA	88.34
	94.04	8/28/2013	NM	9.88	84.16	NA	NA	84.16
	94.04	9/23/2013	9.96	9.87	84.17	NA	NA	84.17
	94.04	9/24/2013	NM	9.81	84.23	NA	NA	84.23
	94.04	10/24/2013	9.94	>9.94	NA	NA	NA	NA
	94.04	10/25/2013	NM	6.27	87.77	NA	NA	87.77
	94.04	1/7/2014	9.95	9.91	84.13	NA	NA	84.13
	94.04	1/8/2014	NM	8.32	85.72	8.30	0.02	85.74
	94.04	4/22/2014	9.63	8.73	85.31	NA	NA	85.31
	94.04	4/23/2014	NM	6.05	87.99	NA	NA	87.99
	94.04	7/24/2014	10.55	10.32	83.72	NA	NA	83.72
	94.04	7/25/2014	NM	10.40	83.64	NA	NA	83.64
	94.04	10/13/2014	10.65	10.36	83.68	NA	NA	83.68
	94.04	10/14/2014	NM	10.33	83.71	NA	NA	83.71
	94.04	1/22/2015	10.40	10.28	83.76	NA	NA	83.76
	94.04	1/26/2015	10.40	10.25	83.79	NA	NA	83.79
	94.04	4/28/2015	11.25	6.29	87.75	NA	NA	87.75
	94.04	4/29/2015	11.25	6.31	87.73	NA	NA	87.73
	94.04	7/29/2015	NM	10.26	83.78	NA	NA	83.78
	94.04	7/30/2015	NM	10.20	83.84	NA	NA	83.84
	94.04	10/14/2015	14.10	10.26	83.78	NA	NA	83.78
	94.04	10/15/2015	NM	9.41	84.63	NA	NA	84.63
	94.04	1/20/2016	10.10	9.34	84.70	NA	NA	84.70
	94.04	1/21/2016	NM	6.66	87.38	NA	NA	87.38
	94.04	4/19/2016	10.11	5.83	88.21	NA	NA	88.21
	94.04	4/20/2016	NM	5.93	88.11	NA	NA	88.11
	11.34	7/13/2016	10.25	6.04	5.30	NA	NA	5.30
	11.34	7/14/2016	NM	5.97	5.37	NA	NA	5.37
	11.34	10/25/2016	10.48	10.30	1.04	10.30	Sheen	1.04
	11.34	10/26/2016	NM	10.20	1.14	10.20	Sheen	1.14
	11.34	1/31/2017	10.40	10.19	1.15	10.19	Sheen	1.15
	11.34	2/1/2017	NM	10.21	1.13	10.21	Sheen	1.13
	11.34	4/25/2017	10.23	10.21	1.13	10.21	Sheen	1.13
	11.34	4/26/2017	NM	10.21	1.13	10.21	Sheen	1.13
	11.34	7/24/2017	10.10	5.63	5.71	5.63	Sheen	5.71
	11.34	7/25/2017	NM	5.26	6.08	5.26	Sheen	6.08
	11.34	10/9/2017	10.24	10.15	1.19	10.15	Sheen	1.19
	11.34	10/10/2017	NM	9.74	1.60	9.74	Sheen	1.60
	11.34	2/1/2018	8.81	6.41	4.93	NA	NA	4.93
	11.34	2/2/2018	8.73	6.13	5.21	NA	NA	5.21
	11.34	4/25/2018	10.12	6.03	5.31	NA	Sheen	5.31
	11.34	4/26/2018	10.12	5.92	5.42	6.32	0.40	5.42
	11.34	7/26/2018	10.00	9.80	1.54	9.80	Sheen	1.54
	11.34	7/27/2018	10.00	6.13	5.21	6.13	Sheen	5.21
	11.34	11/5/2018	8.21	6.30	5.04	NA	NA	5.04
	11.34	11/6/2018	8.49	6.15	5.19	NA	NA	5.19
	11.34	6/27/2019	14.35	5.13	6.21	NA	NA	6.21
	11.34	6/28/2019	14.35	7.71	3.63	NA	NA	3.63
	11.34	9/26/2019	14.31	5.56	5.78	5.51	0.05	5.82
	11.34	9/27/2019	14.31	5.81	5.53	NA	NA	5.53
	11.34	12/30/2019	14.06	5.64	5.70	5.57	0.07	5.75
	11.34	12/31/2019	14.05	5.68	5.66	5.62	0.06	5.71

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-3	102.42	3/27/2009	NM	9.06	93.36	9.02	0.04	93.39
	97.97	8/25/2009*	NM	NM	NM	NM	NM	NM
	97.97	10/2/2009	NM	6.21	91.76	NA	NA	91.76
	97.97	3/27/2010	NM	5.63	92.34	5.52	0.11	92.42
	97.97	4/27/2010	NM	5.49	92.48	5.34	0.15	92.59
	97.97	5/17/2010	NM	5.43	92.54	5.14	0.29	92.76
	97.97	6/28/2010	NM	5.59	92.38	5.24	0.35	92.64
	97.97	7/29/2010	NM	5.68	92.29	5.35	0.33	92.54
	97.97	9/7/2010	NM	5.67	92.30	5.42	0.25	92.49
	94.11	10/6/2010	NM	5.72	88.39	5.32	0.40	88.69
	94.11	11/24/2010	NM	5.97	88.14	5.74	0.23	88.31
	94.11	1/3/2011	NM	5.96	88.15	5.79	0.17	88.28
	94.11	2/11/2011	NM	5.82	88.29	5.57	0.25	88.48
	94.11	3/9/2011	NM	5.55	88.56	5.01	0.54	88.97
	94.11	4/11/2011	NM	5.52	88.59	4.6	0.92	89.28
	94.11	5/10/2011	NM	5.74	88.37	4.9	0.84	89.00
	94.11	6/15/2011	NM	5.75	88.36	4.88	0.87	89.01
	94.11	7/13/2011	NM	5.75	88.36	4.88	0.87	89.01
	94.11	8/9/2011	NM	5.83	88.28	5.08	0.75	88.84
	94.11	9/8/2011	NM	5.50	88.61	4.48	1.02	89.38
	94.11	9/22/2011	NM	5.55	88.56	4.28	1.27	89.51
	94.11	9/29/2011	NM	5.62	88.49	4.05	1.57	89.67
	94.11	12/14/2011	NM	5.43	88.68	4.67	0.76	89.25
	94.11	12/15/2011	NM	5.15	88.96	4.19	0.96	89.68
	94.11	1/26/2012	NM	5.42	88.69	5.35	0.07	88.74
	94.11	1/27/2012	NM	4.90	89.21	4.77	0.13	89.31
	94.11	2/28/2012	NM	5.97	88.14	5.86	0.11	88.22
	94.11	2/29/2012	NM	5.76	88.35	5.7	0.06	88.40
	94.11	3/26/2012	NM	4.98	89.13	4.91	0.07	89.18
	94.11	3/27/2012	NM	6.13	87.98	6.06	0.07	88.03
	94.11	4/19/2012	NM	7.40	86.71	NA	NA	86.71
	94.11	4/20/2012	NM	7.15	86.96	NA	NA	86.96
	94.11	5/24/2012	8.69	6.17	87.94	NA	NA	87.94
	94.11	5/25/2012	NM	6.13	87.98	NA	NA	87.98
	94.11	6/7/2012	9.82	6.04	88.07	NA	NA	88.07
	94.11	6/8/2012	NM	6.06	88.05	NA	NA	88.05
	94.11	7/18/2012	9.84	6.18	87.93	NA	NA	87.93
	94.11	7/19/2012	NM	6.18	87.93	NA	NA	87.93
	94.11	8/15/2012	8.30	6.02	88.09	NA	NA	88.09
	94.11	8/16/2012	NM	5.93	88.18	NA	NA	88.18
	94.11	9/13/2012	13.62	6.19	87.92	NA	NA	87.92
	94.11	9/14/2012	13.59	6.16	87.95	NA	NA	87.95
	94.11	10/25/2012	NM	6.32	87.79	NA	NA	87.79
	94.11	10/26/2012	NM	6.28	87.83	NA	NA	87.83
	94.11	11/28/2012	8.76	6.28	87.83	NA	NA	87.83
	94.11	11/29/2012	NM	6.24	87.87	NA	NA	87.87
	94.11	12/19/2012	8.73	6.27	87.84	NA	NA	87.84
	94.11	12/20/2012	NM	6.27	87.84	NA	NA	87.84
	94.11	1/28/2013	8.78	6.13	87.98	NA	NA	87.98
	94.11	1/29/2013	NM	6.15	87.96	NA	NA	87.96
	94.11	2/25/2013	8.73	6.77	87.34	NA	NA	87.34
	94.11	2/26/2013	NM	6.66	87.45	NA	NA	87.45
	94.11	3/20/2013	9.76	5.97	88.14	NA	NA	88.14
	94.11	3/21/2013	NM	5.95	88.16	NA	NA	88.16
	94.11	4/29/2013	9.89	5.80	88.31	NA	NA	88.31

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MW-3 (con't)	94.11	4/30/2013	NM	5.86	88.25	NA	NA	88.25
	94.11	5/14/2013	9.90	5.38	88.73	NA	NA	88.73
	94.11	5/15/2013	NM	5.38	88.73	NA	NA	88.73
	94.11	6/17/2013	9.86	5.84	88.27	NA	NA	88.27
	94.11	6/18/2013	NM	6.39	87.72	NA	NA	87.72
	94.11	7/17/2013	13.19	7.55	86.56	NA	NA	86.56
	94.11	7/18/2013	NM	6.30	87.81	NA	NA	87.81
	94.11	8/27/2013	13.17	6.36	87.75	NA	NA	87.75
	94.11	2/28/2013	NM	6.57	87.54	NA	NA	87.54
	94.11	9/23/2013	9.85	6.15	87.96	NA	NA	87.96
	94.11	9/24/2013	NM	6.05	88.06	NA	NA	88.06
	94.11	10/24/2013	9.84	6.15	87.96	NA	NA	87.96
	94.11	10/25/2013	NM	6.19	87.92	NA	NA	87.92
	94.11	1/7/2014	9.89	6.48	87.63	NA	NA	87.63
	94.11	1/8/2014	NM	6.56	87.55	NA	NA	87.55
	94.11	4/22/2014	13.20	5.81	88.30	NA	NA	88.30
	94.11	4/23/2014	NM	5.93	88.18	NA	NA	88.18
	94.11	7/24/2014	13.79	6.54	87.57	NA	NA	87.57
	94.11	7/25/2014	NM	6.61	87.50	NA	NA	87.50
	94.11	10/13/2014	8.86	7.15	86.96	NA	NA	86.96
	94.11	10/14/2014	NM	7.10	87.01	7.05	0.05	87.05
	94.11	1/22/2015	13.84	7.28	86.83	7.25	0.03	86.85
	94.11	1/26/2015	13.84	7.22	86.89	7.20	0.02	86.91
	94.11	4/28/2015	10.70	6.29	87.82	NA	NA	87.82
	94.11	4/29/2015	10.70	6.37	87.74	NA	NA	87.74
	94.11	7/29/2015	NM	6.25	87.86	NA	NA	87.86
	94.11	7/30/2015	NM	6.20	87.91	NA	NA	87.91
	94.11	10/14/2015	13.70	6.08	88.03	NA	NA	88.03
	94.11	10/15/2015	NM	6.14	87.97	NA	NA	87.97
	94.11	1/20/2016	13.67	6.16	87.95	NA	NA	87.95
	94.11	1/21/2016	NM	6.20	87.91	NA	NA	87.91
	94.11	4/19/2016	13.68	5.53	88.58	5.05	0.48	88.94
	94.11	4/20/2016	NM	5.70	88.41	5.27	0.43	88.73
	11.41	7/13/2016	8.53	5.59	5.82	5.60	0.01	5.83
	11.41	7/14/2016	NM	5.68	5.73	5.45	0.23	5.90
	11.41	10/25/2016	8.55	6.01	5.40	5.81	0.20	5.55
	11.41	10/26/2016	NM	6.04	5.37	5.75	0.29	5.59
	11.41	1/31/2017	8.61	6.03	5.38	6.01	0.02	5.40
	11.41	2/1/2017	NM	6.07	5.34	6.05	0.02	5.36
	11.41	4/25/2017	13.81	5.37	6.04	5.37	Sheen	6.04
	11.41	4/26/2017	NM	5.27	6.14	5.27	Sheen	6.14
	11.41	7/24/2017	13.77	5.02	6.39	5.02	Sheen	6.39
	11.41	7/25/2017	NM	5.21	6.20	5.21	Sheen	6.20
	11.41	10/9/2017	13.80	5.80	5.61	5.80	Sheen	5.61
	11.41	10/10/2017	NM	5.95	5.46	5.95	Sheen	5.46
	11.41	2/1/2018	13.79	6.25	5.16	NA	NA	5.16
	11.41	2/2/2018	NM	6.18	5.23	NA	NA	5.23
	11.41	4/25/2018	13.90	5.57	5.84	NA	NA	5.84
	11.41	4/26/2018	13.90	5.68	5.73	NA	NA	5.73
	11.41	7/26/2018	13.84	5.88	5.53	NA	NA	5.53
	11.41	7/27/2018	13.84	5.93	5.48	5.93	Sheen	5.48
	11.41	11/5/2018	9.94	6.08	5.33	6.08	Sheen	5.33
	11.41	11/6/2018	9.99	5.84	5.57	5.80	0.04	5.57
	11.41	6/27/2019	13.74	5.55	5.86	5.14	0.41	6.17
	11.41	6/28/2019	13.74	6.53	4.88	6.13	0.40	5.18
	11.41	9/26/2019	13.74	5.47	5.94	5.46	0.01	5.95
	11.41	9/27/2019	13.74	5.68	5.73	NA	NA	5.73
	11.41	12/30/2019	13.79	5.32	6.09	5.28	0.04	6.12
	11.41	12/31/2019	13.80	5.41	6.00	5.34	0.07	6.05

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MW-3R	11.44	11/5/2018	12.70	6.01	5.43	NA	NA	5.43
	11.44	11/6/2018	13.67	8.90	2.54	NA	NA	2.54
	11.44	6/27/2019	12.61	5.15	6.29	NA	NA	6.29
	11.44	6/28/2019	12.61	6.56	4.88	NA	NA	4.88
	11.44	9/26/2019	12.62	5.44	6.00	5.43	0.01	6.01
	11.44	9/27/2019	12.62	5.64	5.80	NA	NA	5.80
	11.44	12/30/2019	12.62	5.27	6.17	NA	NA	6.17
	11.44	12/31/2019	12.90	5.32	6.12	NA	NA	6.12
MW-4	101.4	3/27/2009	NM	9.47	91.93	NA	NA	91.93
	101.4	8/25/2009	NM	8.41	92.99	NA	NA	92.99
	101.4	10/2/2009	NM	8.30	93.10	NA	NA	93.10
	101.4	3/27/2010	16.45	7.70	93.70	NA	NA	93.70
	101.4	4/27/2010	NM	7.62	93.78	NA	NA	93.78
	101.4	5/17/2010	NM	7.64	93.76	NA	NA	93.76
	101.4	6/28/2010	NM	7.78	93.62	NA	NA	93.62
	101.4	7/29/2010	NM	7.85	93.55	NA	NA	93.55
	101.4	9/7/2010	NM	7.92	93.48	NA	NA	93.48
	96.37	10/6/2010	NM	5.87	90.50	NA	NA	90.50
	96.37	11/24/2010	NM	8.31	88.06	NA	NA	88.06
	96.37	1/3/2011	NM	8.30	88.07	NA	NA	88.07
	96.37	2/11/2011	NM	7.99	88.38	NA	NA	88.38
	96.37	3/9/2011	NM	7.54	88.83	NA	NA	88.83
	96.37	4/11/2011	NM	7.39	88.98	NA	NA	88.98
	96.37	5/10/2011	NM	7.46	88.91	NA	NA	88.91
	96.37	6/15/2011	NM	7.40	88.97	NA	NA	88.97
	96.37	7/13/2011	NM	7.40	88.97	NA	NA	88.97
	96.37	8/9/2011	NM	7.39	88.98	NA	NA	88.98
	96.37	9/8/2011	NM	6.59	89.78	NA	NA	89.78
	96.37	9/22/2011	NM	6.84	89.53	NA	NA	89.53
	96.37	9/29/2011	NM	6.71	89.66	NA	NA	89.66
	96.37	12/14/2011	NM	6.93	89.44	NA	NA	89.44
	96.37	12/15/2011	NM	6.70	89.67	NA	NA	89.67
	96.37	1/26/2012	NM	7.57	88.80	NA	NA	88.80
	96.37	1/27/2012	NM	7.25	89.12	NA	NA	89.12
	96.37	2/28/2012	NM	8.04	88.33	NA	NA	88.33
	96.37	2/29/2012	NM	7.80	88.57	NA	NA	88.57
	96.37	3/26/2012	NM	8.75	87.62	NA	NA	87.62
	96.37	3/27/2012	NM	8.24	88.13	NA	NA	88.13
	96.37	4/19/2012	NM	8.35	88.02	NA	NA	88.02
	96.37	4/20/2012	NM	8.35	88.02	NA	NA	88.02
	96.37	5/24/2012	NM	8.22	88.15	NA	NA	88.15
	96.37	5/25/2012	NM	8.11	88.26	NA	NA	88.26
	96.37	6/7/2012	NM	8.17	88.20	NA	NA	88.20
	96.37	6/8/2012	NM	8.13	88.24	NA	NA	88.24
	96.37	7/18/2012	NM	8.30	88.07	NA	NA	88.07
	96.37	7/19/2012	NM	8.06	88.31	NA	NA	88.31
	96.37	8/15/2012	NM	8.15	88.22	NA	NA	88.22
	96.37	8/16/2012	NM	8.09	88.28	NA	NA	88.28
	96.37	9/13/2012	NM	8.30	88.07	NA	NA	88.07
	96.37	9/14/2012	NM	8.31	88.06	NA	NA	88.06
	96.37	10/25/2012	NM	8.38	87.99	NA	NA	87.99
	96.37	10/26/2012	NM	8.31	88.06	NA	NA	88.06
	96.37	11/28/2012	NM	8.43	87.94	NA	NA	87.94
	96.37	11/29/2012	NM	8.42	87.95	NA	NA	87.95
	96.37	12/19/2012	NM	8.44	87.93	NA	NA	87.93
	96.37	12/20/2012	NM	8.45	87.92	NA	NA	87.92
	96.37	1/28/2013	NM	8.29	88.08	NA	NA	88.08
	96.37	1/29/2013	NM	8.41	87.96	NA	NA	87.96
	96.37	2/25/2013	NM	8.25	88.12	NA	NA	88.12
	96.37	2/26/2013	NM	8.22	88.15	NA	NA	88.15
	96.37	3/20/2013	NM	7.84	88.53	NA	NA	88.53

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MW-4 (con't)	96.37	3/21/2013	NM	7.78	88.59	NA	NA	88.59
	96.37	4/29/2013	NM	7.91	88.46	NA	NA	88.46
	96.37	4/30/2013	NM	7.95	88.42	NA	NA	88.42
	96.37	5/14/2013	NM	7.63	88.74	NA	NA	88.74
	96.37	5/15/2013	NM	7.66	88.71	NA	NA	88.71
	96.37	6/17/2013	NM	7.51	88.86	NA	NA	88.86
	96.37	6/18/2013	NM	7.53	88.84	NA	NA	88.84
	96.37	7/17/2013	NM	7.83	88.54	NA	NA	88.54
	96.37	7/18/2013	NM	7.76	88.61	NA	NA	88.61
	96.37	8/27/2013	NM	8.01	88.36	NA	NA	88.36
	96.37	8/28/2013	NM	8.05	88.32	NA	NA	88.32
	96.37	9/23/2013	NM	8.15	88.22	NA	NA	88.22
	96.37	9/24/2013	NM	8.05	88.32	NA	NA	88.32
	96.37	10/24/2013	NM	8.46	87.91	NA	NA	87.91
	96.37	10/25/2013	NM	8.49	87.88	NA	NA	87.88
	96.37	1/7/2014	NM	8.45	87.92	NA	NA	87.92
	96.37	1/8/2014	NM	8.52	87.85	NA	NA	87.85
	96.37	4/22/2014	NM	7.99	88.38	NA	NA	88.38
	96.37	4/23/2014	NM	8.15	88.22	NA	NA	88.22
	96.37	7/24/2014	NM	8.69	87.68	NA	NA	87.68
	96.37	7/25/2014	NM	8.78	87.59	NA	NA	87.59
	96.37	10/13/2014	NM	9.48	86.89	NA	NA	86.89
	96.37	10/14/2014	NM	9.45	86.92	NA	NA	86.92
	96.37	1/22/2015	NM	8.92	87.45	NA	NA	87.45
	96.37	1/26/2015	NM	8.89	87.48	NA	NA	87.48
	96.37	4/28/2015	16.38	8.19	88.18	NA	NA	88.18
	96.37	4/29/2015	16.38	8.07	88.30	NA	NA	88.30
	96.37	7/29/2015	NM	8.41	87.96	NA	NA	87.96
	96.37	7/30/2015	NM	8.32	88.05	NA	NA	88.05
	96.37	10/14/2015	16.40	8.33	88.04	NA	NA	88.04
	96.37	10/15/2015	NM	8.44	87.93	NA	NA	87.93
	96.37	1/20/2016	16.40	8.38	87.99	NA	NA	87.99
	96.37	1/21/2016	NM	8.30	88.07	NA	NA	88.07
	96.37	4/19/2016	16.90	8.24	88.13	NA	NA	88.13
	96.37	4/20/2016	NM	8.26	88.11	NA	NA	88.11
	13.59	7/13/2016	16.35	8.19	5.40	NA	NA	5.40
	13.59	7/14/2016	NM	8.13	5.46	NA	NA	5.46
	13.59	10/25/2016	15.96	8.48	5.11	NA	NA	5.11
	13.59	10/26/2016	NM	8.50	5.09	NA	NA	5.09
	NA[3]	1/31/2017	13.95	6.43	NA	NA	NA	NA
	NA[3]	2/1/2017	NM	6.46	NA	NA	NA	NA
	NA[3]	4/25/2017	14.35	5.87	NA	NA	NA	NA
	NA[3]	4/26/2017	NM	5.83	NA	NA	NA	NA
	NA[3]	7/24/2017	14.36	5.34	NA	NA	NA	NA
	NA[3]	7/25/2017	NM	5.38	NA	NA	NA	NA
	NA[3]	10/9/2017	14.35	6.12	NA	NA	NA	NA
	NA[3]	10/10/2017	NM	6.20	NA	NA	NA	NA
	NA[3]	2/1/2018	13.95	6.41	NA	NA	NA	NA
	NA[3]	2/2/2018	13.92	6.60	NA	NA	NA	NA
	NA[3]	4/25/2018	14.00	5.83	NA	NA	NA	NA
	NA[3]	4/26/2018	14.00	5.94	NA	NA	NA	NA
	11.65	7/26/2018	14.00	6.12	5.53	NA	NA	5.53
	11.65	7/27/2018	14.00	6.18	5.47	NA	NA	5.47
	11.65	11/5/2018	14.42	6.13	5.52	NA	NA	5.52
	11.65	11/6/2018	14.41	6.03	5.62	NA	NA	5.62
	11.65	6/27/2019	14.31	4.29	7.36	NA	NA	7.36
	11.65	6/28/2019	14.31	4.40	7.25	NA	NA	7.25
	11.65	9/26/2019	14.37	5.58	6.07	NA	NA	6.07
	11.65	9/27/2019	14.37	5.88	5.77	NA	NA	5.77
	11.65	12/30/2019	14.35	5.71	5.94	NA	NA	5.94
	11.65	12/31/2019	14.33	5.71	5.94	NA	NA	5.94

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-5	100.72	3/27/2009	NM	8.68	92.04	NA	NA	92.04
	100.72	8/25/2009	NM	7.53	93.19	NA	NA	93.19
	100.72	10/2/2009	NM	7.32	93.40	NA	NA	93.40
	100.72	3/27/2010	13.05	5.67	95.05	NA	NA	95.05
	100.72	4/27/2010	NM	5.54	95.18	NA	NA	95.18
	100.72	5/17/2010	NM	5.52	95.20	NA	NA	95.20
	100.72	6/28/2010	NM	5.63	95.09	NA	NA	95.09
	100.72	7/29/2010	NM	5.63	95.09	NA	NA	95.09
	100.72	9/7/2010	NM	5.69	95.03	NA	NA	95.03
	94.11	10/6/2010	NM	5.87	88.24	NA	NA	88.24
	94.11	11/24/2010	NM	6.03	88.08	NA	NA	88.08
	94.11	1/3/2011	NM	6.11	88.00	NA	NA	88.00
	94.11	2/11/2011	NM	6.11	88.00	NA	NA	88.00
	94.11	3/9/2011	NM	5.50	88.61	NA	NA	88.61
	94.11	4/11/2011	NM	5.19	88.92	NA	NA	88.92
	94.11	5/10/2011	NM	5.34	88.77	NA	NA	88.77
	94.11	6/15/2011	NM	5.20	88.91	NA	NA	88.91
	94.11	7/13/2011	NM	5.20	88.91	NA	NA	88.91
	94.11	8/9/2011	NM	5.24	88.87	NA	NA	88.87
	94.11	9/8/2011	NM	4.44	89.67	NA	NA	89.67
	94.11	9/22/2011	NM	4.56	89.55	NA	NA	89.55
	94.11	9/29/2011	NM	5.24	88.87	NA	NA	88.87
	94.11	12/14/2011	12.95	4.59	89.52	NA	NA	89.52
	94.11	12/15/2011	12.95	4.39	89.72	NA	NA	89.72
	94.11	1/26/2012	NM	5.27	88.84	NA	NA	88.84
	94.11	1/27/2012	NM	5.46	88.65	NA	NA	88.65
	94.11	2/28/2012	NM	5.72	88.39	NA	NA	88.39
	94.11	2/29/2012	NM	5.55	88.56	NA	NA	88.56
	94.11	3/26/2012	NM	6.00	88.11	NA	NA	88.11
	94.11	3/27/2012	NM	5.95	88.16	NA	NA	88.16
	94.11	4/19/2012	NM	6.09	88.02	NA	NA	88.02
	94.11	4/20/2012	NM	6.07	88.04	NA	NA	88.04
	94.11	5/24/2012	12.98	6.12	87.99	NA	NA	87.99
	94.11	5/25/2012	NM	6.07	88.04	NA	NA	88.04
	94.11	6/7/2012	12.99	6.14	87.97	NA	NA	87.97
	94.11	6/8/2012	NM	6.03	88.08	NA	NA	88.08
	94.11	7/18/2012	12.97	6.07	88.04	NA	NA	88.04
	94.11	7/19/2012	NM	6.01	88.10	NA	NA	88.10
	94.11	8/15/2012	13.02	5.96	88.15	NA	NA	88.15
	94.11	8/16/2012	NM	8.50	85.61	NA	NA	85.61
	94.11	9/13/2012	12.98	6.09	88.02	NA	NA	88.02
	94.11	9/14/2012	13.05	6.11	88.00	NA	NA	88.00
	94.11	10/25/2012	12.99	6.24	87.87	NA	NA	87.87
	94.11	10/26/2012	NM	6.17	87.94	NA	NA	87.94
	94.11	11/28/2012	12.98	6.30	87.81	NA	NA	87.81
	94.11	11/29/2012	NM	6.22	87.89	NA	NA	87.89
	94.11	12/19/2012	13.00	6.32	87.79	NA	NA	87.79
	94.11	12/20/2012	NM	6.31	87.80	NA	NA	87.80
	94.11	1/28/2013	13.04	6.16	87.95	NA	NA	87.95
	94.11	1/29/2013	NM	6.26	87.85	NA	NA	87.85
	94.11	2/25/2013	10.96	6.19	87.92	NA	NA	87.92
	94.11	2/26/2013	NM	6.14	87.97	NA	NA	87.97
	94.11	3/20/2013	13.03	5.69	88.42	NA	NA	88.42
	94.11	3/21/2013	NM	5.69	88.42	NA	NA	88.42

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MW-5 (con't)	94.11	4/29/2013	13.00	5.63	88.48	NA	NA	88.48
	94.11	4/30/2013	NM	5.63	88.48	NA	NA	88.48
	94.11	5/14/2013	13.00	5.62	88.49	NA	NA	88.49
	94.11	5/15/2013	NM	5.63	88.48	NA	NA	88.48
	94.11	6/17/2013	12.99	5.44	88.67	NA	NA	88.67
	94.11	6/18/2013	NM	5.49	88.62	NA	NA	88.62
	94.11	7/17/2013	13.01	5.66	88.45	NA	NA	88.45
	94.11	7/18/2013	NM	5.56	88.55	NA	NA	88.55
	94.11	8/27/2013	12.91	5.82	88.29	NA	NA	88.29
	94.11	8/28/2013	NM	5.86	88.25	NA	NA	88.25
	94.11	9/23/2013	12.99	6.02	88.09	NA	NA	88.09
	94.11	9/24/2013	NM	5.98	88.13	NA	NA	88.13
	94.11	10/24/2013	13.00	6.21	87.90	NA	NA	87.90
	94.11	10/25/2013	NM	6.30	87.81	NA	NA	87.81
	94.11	1/7/2014	12.97	6.36	87.75	NA	NA	87.75
	94.11	1/8/2014	NM	6.42	87.69	NA	NA	87.69
	94.11	4/22/2014	13.05	6.00	88.11	NA	NA	88.11
	94.11	4/23/2014	NM	6.09	88.02	NA	NA	88.02
	94.11	7/24/2014	13.05	6.66	87.45	NA	NA	87.45
	94.11	7/25/2014	NM	6.68	87.43	NA	NA	87.43
	94.11	10/13/2014	13.03	7.42	86.69	NA	NA	86.69
	94.11	10/14/2014	NM	8.38	85.73	NA	NA	85.73
	94.11	1/22/2015	12.66	6.99	87.12	NA	NA	87.12
	94.11	1/26/2015	12.66	6.99	87.12	NA	NA	87.12
	94.11	4/28/2015	12.99	6.30	87.81	NA	NA	87.81
	94.11	4/29/2015	12.99	6.23	87.88	NA	NA	87.88
	94.11	7/29/2015	NM	6.23	87.88	6.22	0.01	87.89
	94.11	7/30/2015	NM	6.22	87.89	6.23	0.01	87.90
	94.11	10/14/2015	13.04	6.29	87.82	NA	NA	87.82
	94.11	10/15/2015	NM	6.28	87.83	NA	NA	87.83
	94.11	1/20/2016	13.00	6.29	87.82	NA	NA	87.82
	94.11	1/21/2016	NM	6.30	87.81	NA	NA	87.81
	94.11	4/19/2016	12.94	5.97	88.14	NA	NA	88.14
	94.11	4/20/2016	NM	6.05	88.06	NA	NA	88.06
	11.39	7/13/2016	13.08	6.00	5.39	NA	NA	5.39
	11.39	7/14/2016	NM	5.99	5.40	NA	NA	5.40
	11.39	10/25/2016	13.10	6.26	5.13	NA	NA	5.13
	11.39	10/26/2016	NM	6.30	5.09	NA	NA	5.09
	11.39	1/31/2017	12.85	6.29	5.10	NA	NA	5.10
	11.39	2/1/2017	NM	6.30	5.09	NA	NA	5.09
	11.39	4/25/2017	12.97	5.66	5.73	NA	NA	5.73
	11.39	4/26/2017	NM	5.67	5.72	NA	NA	5.72
	11.39	7/24/2017	13.10	5.23	6.16	NA	NA	6.16
	11.39	7/25/2017	NM	5.26	6.13	NA	NA	6.13
	11.39	10/9/2017	12.70	5.91	5.48	NA	NA	5.48
	11.39	10/10/2017	NM	5.95	5.44	NA	NA	5.44
	11.39	2/1/2018	12.79	6.49	4.90	NA	NA	4.90
	11.39	2/2/2018	12.71	6.43	4.96	NA	NA	4.96
	11.39	4/25/2018	12.72	5.81	5.58	NA	NA	5.58
	11.39	4/26/2018	12.72	5.89	5.50	NA	NA	5.50
	11.39	7/26/2018	12.72	6.13	5.26	NA	NA	5.26
	11.39	7/27/2018	12.72	6.12	5.27	NA	NA	5.27
	11.39	11/5/2018	13.08	6.10	5.29	NA	NA	5.29
	11.39	11/6/2018	13.07	5.98	5.41	NA	NA	5.41
	11.39	6/27/2019	13.04	5.19	6.20	NA	NA	6.20
	11.39	6/28/2019	13.04	5.24	6.15	NA	NA	6.15
	11.39	9/26/2019	13.03	5.49	5.90	NA	NA	5.90
	11.39	9/27/2019	13.03	5.62	5.77	NA	NA	5.77
	11.39	12/30/2019	13.51	5.57	5.82	NA	NA	5.82
	11.39	12/31/2019	13.54	5.61	5.78	NA	NA	5.78

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-6	100.16	3/27/2009	NM	8.74	91.42	8.05	0.69	91.94
	100.16	8/25/2009	NM	6.83	93.33	NA	NA	93.33
	100.16	10/2/2009	NM	6.56	93.60	6.97	-0.41	93.29
	100.16	3/27/2010	NM	7.13	93.03	5.5	1.63	94.25
	100.16	4/27/2010	NM	7.06	93.10	5.54	1.52	94.24
	100.16	5/17/2010	NM	6.68	93.48	5.32	1.36	94.50
	100.16	6/28/2010	NM	6.99	93.17	5.47	1.52	94.31
	100.16	7/29/2010	NM	6.94	93.22	5.59	1.35	94.23
	100.16	9/7/2010	NM	6.92	93.24	5.68	1.24	94.17
	94.06	10/6/2010	NM	7.01	87.05	5.69	1.32	88.04
	94.06	11/24/2010	NM	7.02	87.04	5.52	1.50	88.17
	94.06	1/3/2011	NM	6.94	87.12	5.93	1.01	87.88
	94.06	2/11/2011	NM	6.72	87.34	5.71	1.01	88.10
	94.06	3/9/2011	NM	6.56	87.50	5.38	1.18	88.39
	94.06	4/11/2011	NM	5.72	88.34	5.11	0.61	88.80
	94.06	5/10/2011	NM	5.82	88.24	5.3	0.52	88.63
	94.06	6/15/2011	NM	5.45	88.61	5	0.45	88.95
	94.06	7/13/2011	NM	5.44	88.62	5.02	0.42	88.94
	94.06	8/9/2011	NM	5.76	88.30	5.17	0.59	88.74
	94.06	9/8/2011	NM	4.57	89.49	NA	NA	89.49
	94.06	9/22/2011	NM	4.74	89.32	4.39	0.35	89.58
	94.06	9/29/2011	NM	4.35	89.71	NA	NA	89.71
	94.06	12/14/2011	12.59	7.60	86.46	7.00	0.60	86.46
	94.06	12/15/2011	12.59	4.38	89.68	4.21	0.17	89.68
	94.06	1/26/2012	NM	5.63	88.43	5.36	0.27	88.43
	94.06	1/27/2012	NM	5.41	88.65	5.12	0.29	88.65
	94.06	2/28/2012	NM	8.35	85.71	NA	NA	85.71
	94.06	2/29/2012	NM	5.59	88.47	NA	NA	88.47
	94.06	3/26/2012	NM	8.43	85.63	NA	NA	85.63
	94.06	3/27/2012	NM	6.03	88.03	NA	NA	88.03
	94.06	4/19/2012	NM	6.20	87.86	NA	NA	87.86
	94.06	4/20/2012	NM	6.15	87.91	NA	NA	87.91
	94.06	5/24/2012	NM	NM	NA	NM	NA	NA
	94.06	5/25/2012	NM	6.00	88.06	5.98	0.02	88.06
	94.06	6/7/2012	11.42	8.38	85.68	NA	NA	85.68
	94.06	6/8/2012	NM	6.05	88.01	NA	NA	88.01
	94.06	7/18/2012	12.73	8.43	85.63	NA	NA	85.63
	94.06	7/19/2012	NM	6.08	87.98	NA	NA	87.98
	94.06	8/15/2012	11.46	6.04	88.02	NA	NA	88.02
	94.06	8/16/2012	NM	8.79	85.27	NA	NA	85.27
	94.06	9/13/2012	11.44	6.12	87.94	NA	NA	87.94
	94.06	9/14/2012	11.41	6.15	87.91	NA	NA	87.91
	94.06	10/25/2012	NM	8.19	85.87	NA	NA	85.87
	94.06	10/26/2012	NM	6.21	87.85	NA	NA	87.85
	94.06	11/28/2012	11.47	8.28	85.78	NA	NA	85.78
	94.06	11/29/2012	NM	6.26	87.80	NA	NA	87.80
	94.06	12/19/2012	12.13	6.51	87.55	NA	NA	87.55
	94.06	12/20/2012	NM	6.28	87.78	NA	NA	87.78
	94.06	1/28/2013	12.91	6.20	87.86	NA	NA	87.86
	94.06	1/29/2013	NM	6.39	87.67	NA	NA	87.67
	94.06	2/25/2013	11.48	6.12	87.94	NA	NA	87.94
	94.06	2/26/2013	NM	6.19	87.87	NA	NA	87.87
	94.06	3/20/2013	11.50	5.66	88.40	NA	NA	88.40
	94.06	3/21/2013	NM	5.62	88.44	NA	NA	88.44

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MW-6 (Con't)	94.06	4/29/2013	11.44	5.70	88.36	5.62	0.08	88.36
	94.06	4/30/2013	NM	5.74	88.32	5.62	0.12	88.32
	94.06	5/14/2013	11.41	5.53	88.53	NA	NA	88.53
	94.06	5/15/2013	NM	5.55	88.51	NA	NA	88.51
	94.06	6/17/2013	11.45	5.53	88.53	5.41	0.12	88.62
	94.06	6/18/2013	NM	5.68	88.38	5.47	0.21	88.54
	94.06	7/17/2013	11.47	5.82	88.24	5.70	0.12	88.33
	94.06	7/18/2013	NM	5.70	88.36	5.51	0.19	88.50
	94.06	8/27/2013	11.46	5.82	88.24	5.75	0.07	88.29
	94.06	8/28/2013	NM	7.03	87.03	6.91	0.12	87.12
	94.06	9/23/2013	11.45	6.29	87.77	6.04	0.25	87.96
	94.06	9/24/2013	NM	6.23	87.83	5.96	0.27	88.03
	94.06	10/24/2013	11.47	6.49	87.57	6.38	0.11	87.65
	94.06	10/25/2013	NM	6.40	87.66	6.17	0.23	87.83
	94.06	1/7/2014	11.48	6.35	87.71	NA	NA	87.71
	94.06	1/8/2014	NM	6.42	87.64	6.61	0.19	87.78
	94.06	4/22/2014	11.38	5.99	88.07	NA	NA	88.07
	94.06	4/23/2014	NM	6.10	87.96	NA	NA	87.96
	94.06	7/24/2014	12.80	6.62	87.44	6.61	0.01	87.45
	94.06	7/25/2014	NM	6.78	87.28	6.75	0.03	87.30
	94.06	10/13/2014	12.90	8.26	85.80	8.25	0.01	85.81
	94.06	10/14/2014	NM	8.40	85.66	NA	NA	85.66
	94.06	1/22/2015	9.14	8.40	85.66	NA	NA	85.66
	94.06	1/26/2015	9.14	8.35	85.71	NA	NA	85.71
	94.06	4/28/2015	6.60	6.30	87.76	6.25	0.05	87.80
	94.06	4/29/2015	6.60	6.28	87.78	6.22	0.06	87.83
	94.06	7/29/2015	NM	6.15	87.91	6.10	0.05	87.95
	94.06	7/30/2015	NM	6.18	87.88	6.13	0.05	87.92
	94.06	10/14/2015	NM	6.27	87.79	6.20	0.07	87.84
	94.06	10/15/2015	NM	6.33	87.73	6.25	0.08	87.79
	94.06	1/20/2016	7.14	6.35	87.71	NA	NA	87.71
	94.06	1/21/2016	NM	6.41	87.65	6.31	0.10	87.73
	94.06	4/19/2016	7.13	5.81	88.25	NA	NA	88.25
	94.06	4/20/2016	NM	6.51	87.55	5.87	0.64	88.03
	11.38	7/13/2016	8.60	5.98	5.40	5.94	0.04	5.40
	11.38	7/14/2016	NM	5.87	5.51	5.88	0.01	5.52
	11.38	10/25/2016	8.59	6.13	5.25	6.12	0.01	5.26
	11.38	10/26/2016	NM	6.53	4.85	6.13	0.40	5.15
	11.38	1/31/2017	8.61	6.57	4.81	6.27	0.30	5.04
	11.38	2/1/2017	NM	6.27	5.11	6.27	Sheen	5.11
	11.38	4/25/2017	8.40	5.65	5.73	6.27	Sheen	5.73
	11.38	4/26/2017	NM	5.66	5.72	6.27	Sheen	5.72
	11.38	7/24/2017	8.41	5.16	6.22	5.16	Sheen	6.22
	11.38	7/25/2017	NM	5.21	6.17	5.21	Sheen	6.17
	11.38	10/9/2017	8.40	5.91	5.47	5.91	Sheen	5.47
	11.38	10/10/2017	NM	5.96	5.42	5.96	Sheen	5.42
	11.38	2/1/2018	NM	6.50	4.88	6.40	0.10	4.96
	11.38	2/2/2018	8.04	6.49	4.89	6.38	0.11	4.97
	11.38	4/25/2018	12.14	5.82	5.56	NA	NA	5.56
	11.38	4/26/2018	12.14	6.02	5.36	5.83	0.19	5.50
	11.38	7/26/2018	12.12	6.33	5.05	6.30	0.03	5.07
	11.38	7/27/2018	12.12	6.18	5.20	6.13	0.05	5.24
	11.38	11/5/2018	7.40	6.00	5.38	ND	NA	5.38
	11.38	11/6/2018	7.30	6.01	5.37	6.01	Sheen	5.37
	11.38	6/27/2019	12.77	5.54	5.84	5.12	0.42	6.16
	11.38	6/28/2019	12.77	7.44	3.94	7.40	0.04	3.97
	11.38	9/26/2019	12.78	5.72	5.66	5.53	0.19	5.80
	11.38	9/27/2019	12.78	6.04	5.34	5.79	0.25	5.53
	11.38	12/30/2019	12.90	5.65	5.73	5.62	0.03	5.75
	11.38	12/31/2019	12.92	5.68	5.70	5.63	0.05	5.74

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MW-7	11.38	8/25/2009	NM	10.92	0.46	NA	NA	0.46
	98.08	10/2/2009	NM	7.13	90.95	7.09	0.04	90.98
	98.08	3/27/2010	NM	5.73	92.35	NA	NA	92.35
	98.08	4/27/2010	NM	5.60	92.48	NA	NA	92.48
	98.08	5/17/2010	NM	5.38	92.70	NA	NA	92.70
	98.08	6/28/2010	NM	5.60	92.48	NA	NA	92.48
	98.08	7/29/2010	NM	5.72	92.36	NA	NA	92.36
	98.08	9/7/2010	NM	5.73	92.35	NA	NA	92.35
	93.95	10/6/2010	NM	6.71	87.24	NA	NA	87.24
	93.95	11/24/2010	NM	12.96	80.99	NA	NA	80.99
	93.95	1/3/2011	NM	7.63	86.32	NA	NA	86.32
	93.95	2/11/2011	NM	5.62	88.33	NA	NA	88.33
	93.95	3/9/2011	NM	5.50	88.45	NA	NA	88.45
	93.95	4/11/2011	NM	5.24	88.71	NA	NA	88.71
	93.95	5/10/2011	NM	5.37	88.58	NA	NA	88.58
	93.95	6/15/2011	NM	5.19	88.76	NA	NA	88.76
	93.95	7/13/2011	NM	5.21	88.74	NA	NA	88.74
	93.95	8/9/2011	NM	5.19	88.76	NA	NA	88.76
	93.95	9/8/2011	NM	4.61	89.34	NA	NA	89.34
	93.95	9/22/2011	NM	9.94	84.01	NA	NA	84.01
	93.95	9/29/2011	NM	7.23	86.72	NA	NA	86.72
	93.95	12/14/2011	NM	5.65	88.30	NA	NA	88.30
	93.35	12/15/2011	NM	4.49	88.86	NA	NA	88.86
	93.35	1/26/2012	NM	9.98	83.37	NA	NA	83.37
	93.35	1/27/2012	NM	8.62	84.73	NA	NA	84.73
	93.35	2/28/2012	NM	6.72	86.63	NA	NA	86.63
	93.35	2/29/2012	NM	5.61	87.74	NA	NA	87.74
	93.35	3/26/2012	NM	9.95	83.4	NA	NA	83.4
	93.35	3/27/2012	NM	6.07	87.28	NA	NA	87.28
	93.35	4/19/2012	NM	6.08	87.27	NA	NA	87.27
	93.35	4/20/2012	NM	6.07	87.28	NA	NA	87.28
	93.35	5/24/2012	10.78	6.19	87.16	NA	NA	87.16
	93.35	5/25/2012	NM	6.01	87.34	NA	NA	87.34
	93.35	6/7/2012	10.82	6.11	87.24	NA	NA	87.24
	93.35	6/8/2012	NM	6.08	87.27	NA	NA	87.27
	93.35	7/18/2012	NM	6.05	87.3	NA	NA	87.3
	93.35	7/19/2012	NM	5.98	87.37	NA	NA	87.37
	93.35	8/15/2012	8.86	5.92	87.43	NA	NA	87.43
	93.35	8/16/2012	NM	5.81	87.54	NA	NA	87.54
	93.35	9/13/2012	11.92	6.14	87.21	NA	NA	87.21
	93.35	9/14/2012	11.9	6.11	87.24	6.10	0.01	87.24
	93.35	10/25/2012	NM	6.26	87.09	NA	NA	87.09
	93.35	10/26/2012	NM	6.17	87.18	NA	NA	87.18
	93.35	11/28/2012	8.92	6.18	87.17	NA	NA	87.17
	93.35	11/29/2012	NM	6.12	87.23	NA	NA	87.23
	93.35	12/19/2012	8.74	NA	NA	NA	NA	NA
	93.35	12/20/2012	NM	6.26	87.09	NA	NA	87.09
	93.35	1/28/2013	8.94	NA	NA	NA	NA	NA
	93.35	1/29/2013	NM	NA	NA	NA	NA	NA
	93.35	2/25/2013	8.73	6.18	87.17	NA	NA	87.17
	93.35	2/26/2013	NM	6.09	87.26	NA	NA	87.26
	93.35	3/20/2013	8.66	5.72	87.63	NA	NA	87.63
	93.35	3/21/2013	NM	5.69	87.66	NA	NA	87.66
	93.35	4/29/2013	8.73	5.64	87.71	NA	NA	87.71
	93.35	4/30/2013	NM	5.63	87.72	NA	NA	87.72

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MW-7 (Con't)	93.35	5/14/2013	8.74	5.67	87.68	NA	NA	87.68
	93.35	5/15/2013	NM	5.67	87.68	NA	NA	87.68
	93.35	6/17/2013	8.69	5.40	87.95	NA	NA	87.95
	93.35	6/18/2013	NM	5.52	87.83	NA	NA	87.83
	93.35	7/17/2013	8.76	5.63	87.72	NA	NA	87.72
	93.35	7/18/2013	NM	5.57	87.78	NA	NA	87.78
	93.35	8/27/2013	8.76	5.84	87.51	NA	NA	87.51
	93.35	8/28/2013	NM	5.96	87.39	NA	NA	87.39
	93.35	9/23/2013	8.73	6.03	87.32	NA	NA	87.32
	93.35	9/24/2013	NM	5.95	87.4	NA	NA	87.4
	93.35	10/24/2013	8.75	6.21	87.14	NA	NA	87.14
	93.35	10/25/2013	NM	6.26	87.09	NA	NA	87.09
	93.35	1/7/2014	8.81	6.47	86.88	NA	NA	86.88
	93.35	1/8/2014	NM	6.58	86.77	NA	NA	86.77
	93.35	4/22/2014	8.8	5.95	87.4	NA	NA	87.4
	93.35	4/23/2014	NM	6.04	87.31	NA	NA	87.31
	93.35	7/24/2014	14.13	6.56	86.79	NA	NA	86.79
	93.35	7/25/2014	NM	6.85	86.5	NA	NA	86.5
	93.35	10/13/2014	8.74	7.43	85.92	NA	NA	85.92
	93.35	10/14/2014	NM	7.42	85.93	NA	NA	85.93
	93.35	1/22/2015	10.66	6.83	86.52	NA	NA	86.52
	93.35	1/26/2015	10.66	6.75	86.6	NA	NA	86.6
	93.35	4/28/2015	14.11	6.25	87.1	NA	NA	87.1
	93.35	4/29/2015	14.11	6.2	87.15	NA	NA	87.15
	93.35	7/29/2015	NM	6.25	87.1	NA	NA	87.1
	93.35	7/30/2015	NM	6.14	87.21	NA	NA	87.21
	93.35	10/14/2015	13.97	6.25	87.1	NA	NA	87.1
	93.35	10/15/2015	NM	6.31	87.04	NA	NA	87.04
	93.35	1/20/2016	11.9	6.2	87.15	NA	NA	87.15
	93.35	1/21/2016	NM	6.17	87.18	NA	NA	87.18
	93.35	4/19/2016	14.01	5.93	87.42	NA	NA	87.42
	93.35	4/20/2016	NM	5.98	87.37	NA	NA	87.37
	11.24	7/13/2016	14.11	5.98	5.26	NA	NA	5.26
	11.24	7/14/2016	NM	5.9	5.34	NA	NA	5.34
	11.24	10/25/2016	14.18	6.3	4.94	NA	NA	4.94
	11.24	10/26/2016	NM	6.28	4.96	NA	NA	4.96
	11.24	1/31/2017	14.17	6.34	4.9	NA	NA	4.9
	11.24	2/1/2017	NM	6.4	4.84	NA	NA	4.84
	11.24	4/25/2017	14.06	5.71	5.53	NA	NA	5.53
	11.24	4/26/2017	NM	5.67	5.57	NA	NA	5.57
	11.24	7/24/2017	14.2	5.32	5.92	NA	NA	5.92
	11.24	7/25/2017	NM	5.4	5.84	NA	NA	5.84
	11.24	10/9/2017	14.1	5.98	5.26	NA	NA	5.26
	11.24	10/10/2017	NM	6.11	5.13	NA	NA	5.13
	11.24	2/1/2018	14.07	6.31	4.93	NA	NA	4.93
	11.24	2/2/2018	14.2	6.43	4.81	NA	NA	4.81
	11.24	4/24/2018	14.2	5.67	5.57	NA	NA	5.57
	11.24	4/25/2018	14.2	5.88	5.36	NA	NA	5.36
	11.24	7/26/2018	14.21	6.06	5.18	NA	NA	5.18
	11.24	7/27/2018	14.21	6.12	5.12	NA	NA	5.12
	11.24	11/5/2018	14.2	6.05	5.19	NA	NA	5.19
	11.24	11/6/2018	14.15	5.9	5.34	NA	NA	5.34
	11.24	6/27/2019	14.00	5.13	6.11	NA	NA	6.11
	11.24	6/28/2019	14.00	5.24	6.00	5.22	0.02	6.02
	11.24	9/26/2019	14.07	5.46	5.78	5.44	0.02	5.80
	11.24	9/27/2019	14.07	5.77	5.47	5.71	0.06	5.52
	11.24	12/30/2019	14.11	5.47	5.77	5.46	0.01	5.78
	11.24	12/31/2019	14.13	5.54	5.70	5.53	0.01	5.71

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MW-8	101.27	2/11/2011	22.35	7.48	93.79	NA	NA	93.79
	101.27	3/9/2011	22.35	7.56	93.71	NA	NA	93.71
	101.27	4/11/2011	22.35	7.60	93.67	NA	NA	93.67
	101.27	5/10/2011	NM	7.52	93.75	NA	NA	93.75
	101.27	6/15/2011	NM	7.58	93.69	NA	NA	93.69
	101.27	7/13/2011	NM	7.60	93.67	NA	NA	93.67
	101.27	8/9/2011	NM	7.90	93.37	NA	NA	93.37
	101.27	9/29/2011	NM	8.52	92.75	NA	NA	92.75
	101.27	12/14/2011	22.68	9.73	91.54	NA	NA	91.54
	101.27	12/15/2011	22.68	9.63	91.64	NA	NA	91.64
	101.27	1/26/2012	22.75	10.31	90.96	NA	NA	90.96
	101.27	1/27/2012	NM	7.15	94.12	NA	NA	94.12
	101.27	2/28/2012	22.71	10.86	90.41	NA	NA	90.41
	101.27	2/29/2012	NM	10.80	90.47	NA	NA	90.47
	101.27	3/26/2012	22.74	11.01	90.26	NA	NA	90.26
	101.27	3/27/2012	NM	11.10	90.17	NA	NA	90.17
	101.27	4/19/2012	23.76	11.24	90.03	NA	NA	90.03
	101.27	4/20/2012	NM	11.24	90.03	NA	NA	90.03
	101.27	5/24/2012	23.45	10.91	90.36	NA	NA	90.36
	101.27	5/25/2012	NM	10.90	90.37	NA	NA	90.37
	101.27	6/7/2012	22.81	9.79	91.48	NA	NA	91.48
	101.27	6/8/2012	NM	10.73	90.54	NA	NA	90.54
	101.27	7/18/2012	22.81	10.87	90.40	NA	NA	90.40
	101.27	7/19/2012	NM	10.93	90.34	NA	NA	90.34
	101.27	8/15/2012	22.77	11.04	90.23	NA	NA	90.23
	101.27	8/16/2012	NM	11.10	90.17	NA	NA	90.17
	101.27	9/13/2012	22.53	11.38	89.89	NA	NA	89.89
	101.27	9/14/2012	22.80	11.36	89.91	NA	NA	89.91
	101.27	10/25/2012	22.79	11.74	89.53	NA	NA	89.53
	101.27	10/26/2012	NM	11.65	89.62	NA	NA	89.62
	101.27	11/28/2012	22.76	10.95	90.32	NA	NA	90.32
	101.27	11/29/2012	NM	11.00	90.27	NA	NA	90.27
	101.27	12/19/2012	22.76	11.34	89.93	NA	NA	89.93
	101.27	12/20/2012	NM	11.42	89.85	NA	NA	89.85
	101.27	1/28/2013	22.80	11.31	89.96	NA	NA	89.96
	101.27	1/29/2013	NM	11.31	89.96	NA	NA	89.96
	101.27	2/25/2013	22.75	10.67	90.60	NA	NA	90.60
	101.27	2/26/2013	NM	10.68	90.59	NA	NA	90.59
	101.27	3/20/2013	22.80	10.46	90.81	NA	NA	90.81
	101.27	3/21/2013	NM	10.43	90.84	NA	NA	90.84
	101.27	4/29/2013	22.71	11.02	90.25	NA	NA	90.25
	101.27	4/30/2013	NM	11.06	90.21	NA	NA	90.21
	101.27	5/14/2013	22.78	11.04	90.23	NA	NA	90.23
	101.27	5/15/2013	NM	11.01	90.26	NA	NA	90.26
	101.27	6/17/2013	22.75	9.70	91.57	NA	NA	91.57
	101.27	6/18/2013	NM	9.71	91.56	NA	NA	91.56
	101.27	7/17/2013	22.80	10.34	90.93	NA	NA	90.93
	101.27	7/18/2013	NM	10.26	91.01	NA	NA	91.01
	101.27	8/27/2013	22.71	10.61	90.66	NA	NA	90.66
	101.27	8/28/2013	NM	10.63	90.64	NA	NA	90.64
	101.27	9/23/2013	22.75	11.14	90.13	NA	NA	90.13
	101.27	9/24/2013	NM	11.15	90.12	NA	NA	90.12
	101.27	10/24/2013	22.77	12.65	88.62	NA	NA	88.62
	101.27	10/25/2013	NM	12.62	88.65	NA	NA	88.65
	101.27	1/7/2014	22.75	11.70	89.57	NA	NA	89.57

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MW-8 (Con't)	101.27	1/8/2014	NM	11.77	89.50	NA	NA	89.50
	101.27	4/22/2014	22.76	10.48	90.79	NA	NA	90.79
	101.27	4/23/2014	NM	10.51	90.76	NA	NA	90.76
	101.27	7/24/2014	23.80	10.98	90.29	NA	NA	90.29
	101.27	7/25/2014	NM	10.40	90.87	NA	NA	90.87
	101.27	10/13/2014	22.75	11.63	89.64	NA	NA	89.64
	101.27	10/14/2014	NM	11.62	89.65	NA	NA	89.65
	101.27	1/22/2015	22.70	11.04	90.23	NA	NA	90.23
	101.27	1/26/2015	22.70	11.08	90.19	NA	NA	90.19
	101.27	4/28/2015	22.46	10.75	90.52	NA	NA	90.52
	101.27	4/29/2015	22.46	10.73	90.54	NA	NA	90.54
	101.27	7/29/2015	NM	9.72	91.55	NA	NA	91.55
	101.27	7/30/2015	NM	9.76	91.51	NA	NA	91.51
	101.27	10/14/2015	22.75	8.52	92.75	NA	NA	92.75
	101.27	10/15/2015	NM	8.83	92.44	NA	NA	92.44
	101.27	1/20/2016	22.73	10.65	90.62	NA	NA	90.62
	101.27	1/21/2016	NM	10.64	90.63	NA	NA	90.63
	101.27	4/19/2016	22.79	6.29	94.98	NA	NA	94.98
	101.27	4/20/2016	NM	6.29	94.98	NA	NA	94.98
	18.67	7/13/2016	22.73	7.38	11.29	NA	NA	11.29
	18.67	7/14/2016	NM	7.39	11.28	NA	NA	11.28
	18.67	10/25/2016	22.77	5.83	12.84	NA	NA	12.84
	18.67	10/26/2016	NM	5.84	12.83	NA	NA	12.83
	18.67	1/31/2017	NM	7.07	11.60	NA	NA	11.60
	18.67	2/1/2017	22.82	7.15	11.52	NA	NA	11.52
	18.67	4/25/2017	22.73	6.75	11.92	NA	NA	11.92
	18.67	4/26/2017	NM	6.53	12.14	NA	NA	12.14
	18.67	7/24/2017	22.73	7.28	11.39	NA	NA	11.39
	18.67	7/25/2017	NM	7.32	11.35	NA	NA	11.35
	18.67	10/9/2017	23.73	7.67	11.00	NA	NA	11.00
	18.67	10/10/2017	NM	7.62	11.05	NA	NA	11.05
	18.67	2/1/2018	22.71	7.31	11.36	NA	NA	11.36
	18.67	2/2/2018	22.74	7.41	11.26	NA	NA	11.26
	18.67	4/25/2018	22.86	7.13	11.54	NA	NA	11.54
	18.67	4/26/2018	22.86	7.14	11.53	NA	NA	11.53
	18.67	7/26/2018	22.78	7.64	11.03	NA	NA	11.03
	18.67	7/27/2018	22.78	7.67	11.00	NA	NA	11.00
	18.67	11/5/2018	22.83	8.00	10.67	NA	NA	10.67
	18.67	11/6/2018	22.75	7.92	10.75	NA	NA	10.75
	18.67	6/27/2019	22.72	7.92	10.75	NA	NA	10.75
	18.67	6/28/2019	22.72	7.95	10.72	NA	NA	10.72
	18.67	9/26/2019	22.76	8.25	10.42	NA	NA	10.42
	18.67	9/27/2019	22.76	8.26	10.41	NA	NA	10.41
	18.67	12/30/2019	22.83	7.50	11.17	NA	NA	11.17
	18.67	12/31/2019	22.81	7.51	11.16	NA	NA	11.16

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-9	100.67	2/11/2011	22.98	12.54	88.13	NA	NA	88.13
	100.67	3/9/2011	22.98	12.22	88.45	NA	NA	88.45
	100.67	4/11/2011	22.98	11.96	88.71	NA	NA	88.71
	100.67	5/10/2011	NM	12.09	88.58	NA	NA	88.58
	100.67	6/15/2011	NM	12.12	88.55	NA	NA	88.55
	100.67	7/13/2011	NM	12.12	88.55	NA	NA	88.55
	100.67	8/9/2011	NM	11.93	88.74	NA	NA	88.74
	100.67	9/29/2011	NM	11.57	89.10	NA	NA	89.10
	100.67	12/14/2011	23.50	11.36	89.31	NA	NA	89.31
	100.67	12/15/2011	23.50	11.06	89.61	NA	NA	89.61
	100.67	1/26/2012	23.65	12.16	88.51	NA	NA	88.51
	100.67	1/27/2012	NM	11.91	88.76	NA	NA	88.76
	100.67	2/28/2012	23.64	12.57	88.10	NA	NA	88.10
	100.67	2/29/2012	NM	12.36	88.31	NA	NA	88.31
	100.67	3/26/2012	23.65	12.81	87.86	NA	NA	87.86
	100.67	3/27/2012	NM	12.70	87.97	NA	NA	87.97
	100.67	4/19/2012	23.71	12.90	87.77	NA	NA	87.77
	100.67	4/20/2012	NM	12.86	87.81	NA	NA	87.81
	100.67	5/24/2012	23.69	12.95	87.72	NA	NA	87.72
	100.67	5/25/2012	NM	12.87	87.80	NA	NA	87.80
	100.67	6/7/2012	23.71	12.94	87.73	NA	NA	87.73
	100.67	6/8/2012	NM	12.77	87.90	NA	NA	87.90
	100.67	7/18/2012	23.66	12.89	87.78	NA	NA	87.78
	100.67	7/19/2012	NM	12.79	87.88	NA	NA	87.88
	100.67	8/15/2012	23.70	12.74	87.93	NA	NA	87.93
	100.67	8/16/2012	NM	12.64	88.03	NA	NA	88.03
	100.67	9/13/2012	23.46	12.84	87.83	NA	NA	87.83
	100.67	9/14/2012	23.80	11.36	89.31	NA	NA	89.31
	100.67	10/25/2012	23.71	13.05	87.62	NA	NA	87.62
	100.67	10/26/2012	NM	12.94	87.73	NA	NA	87.73
	100.67	11/28/2012	23.64	13.91	86.76	NA	NA	86.76
	100.67	11/29/2012	NM	13.01	87.66	NA	NA	87.66
	100.67	12/19/2012	23.87	13.10	87.57	NA	NA	87.57
	100.67	12/20/2012	NM	13.17	87.50	NA	NA	87.50
	100.67	1/28/2013	23.72	13.03	87.64	NA	NA	87.64
	100.67	1/29/2013	NM	12.97	87.70	NA	NA	87.70
	100.67	2/25/2013	23.62	12.85	87.82	NA	NA	87.82
	100.67	2/26/2013	NM	12.90	87.77	NA	NA	87.77
	100.67	3/20/2013	23.71	12.46	88.21	NA	NA	88.21
	100.67	3/21/2013	NM	12.42	88.25	NA	NA	88.25
	100.67	4/29/2013	23.65	12.41	88.26	NA	NA	88.26
	100.67	4/30/2013	NM	12.43	88.24	NA	NA	88.24
	100.67	5/14/2013	23.68	12.43	88.24	NA	NA	88.24
	100.67	5/15/2013	NM	12.44	88.23	NA	NA	88.23
	100.67	6/17/2013	23.66	12.12	88.55	NA	NA	88.55
	100.67	6/18/2013	NM	12.21	88.46	NA	NA	88.46
	100.67	7/17/2013	23.70	12.46	88.21	NA	NA	88.21
	100.67	7/18/2013	NM	12.34	88.33	NA	NA	88.33
	100.67	8/27/2013	23.65	12.57	88.10	NA	NA	88.10
	100.67	8/28/2013	NM	12.66	88.01	NA	NA	88.01
	100.67	9/23/2013	23.68	12.81	87.86	NA	NA	87.86
	100.67	9/24/2013	NM	12.83	87.84	NA	NA	87.84
	100.67	10/24/2013	23.69	13.00	87.67	NA	NA	87.67
	100.67	10/25/2013	NM	12.97	87.70	NA	NA	87.70
	100.67	1/7/2014	23.70	13.26	87.41	NA	NA	87.41

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-9 (Con't)	100.67	1/8/2014	NM	13.20	87.47	NA	NA	87.47
	100.67	4/22/2014	23.65	12.75	87.92	NA	NA	87.92
	100.67	4/23/2014	NM	12.80	87.87	NA	NA	87.87
	100.67	7/24/2014	23.70	13.48	87.19	NA	NA	87.19
	100.67	7/25/2014	NM	13.52	87.15	NA	NA	87.15
	100.67	10/13/2014	23.65	14.14	86.53	NA	NA	86.53
	100.67	10/14/2014	NM	14.15	86.52	NA	NA	86.52
	100.67	1/22/2015	23.65	13.69	86.98	NA	NA	86.98
	100.67	1/26/2015	23.65	13.71	86.96	NA	NA	86.96
	100.67	4/28/2015	26.64	13.07	87.60	NA	NA	87.60
	100.67	4/29/2015	26.64	13.01	87.66	NA	NA	87.66
	100.67	7/29/2015	NM	13.00	87.67	NA	NA	87.67
	100.67	7/30/2015	NM	12.97	87.70	NA	NA	87.70
	100.67	10/14/2015	23.66	12.98	87.69	NA	NA	87.69
	100.67	10/15/2015	NM	13.04	87.63	NA	NA	87.63
	100.67	1/20/2016	23.69	13.00	87.67	NA	NA	87.67
	100.67	1/21/2016	NM	13.02	87.65	NA	NA	87.65
	100.67	4/19/2016	23.68	12.5	88.17	NA	NA	88.17
	100.67	4/20/2016	NM	12.51	88.16	NA	NA	88.16
	18.06	7/13/2016	23.63	12.74	5.32	NA	NA	5.32
	18.06	7/14/2016	NM	12.69	5.37	NA	NA	5.37
	18.06	10/25/2016	25.78	12.98	5.08	NA	NA	5.08
	18.06	10/26/2016	NM	13	5.06	NA	NA	5.06
	18.06	1/31/2017	NM	13.08	4.98	NA	NA	4.98
	18.06	2/1/2017	23.70	13.15	4.91	NA	NA	4.91
	18.06	4/25/2017	23.64	12.47	5.59	NA	NA	5.59
	18.06	4/26/2017	NM	12.49	5.57	NA	NA	5.57
	18.06	7/24/2017	23.06	12.11	5.95	NA	NA	5.95
	18.06	7/25/2017	NM	12.15	5.91	NA	NA	5.91
	18.06	10/9/2014	24.97	12.79	5.27	NA	NA	5.27
	18.06	10/10/2017	NM	12.86	5.20	NA	NA	5.20
	18.06	2/1/2018	23.67	13.11	4.95	NA	NA	4.95
	18.06	2/2/2018	23.70	13.22	4.84	NA	NA	4.84
	18.06	4/25/2018	23.85	12.47	5.59	NA	NA	5.59
	18.06	4/26/2018	23.85	12.55	5.51	NA	NA	5.51
	18.06	7/26/2018	23.69	12.83	5.23	NA	NA	5.23
	18.06	7/27/2018	23.69	12.84	5.22	NA	NA	5.22
	18.06	11/5/2018	23.90	12.77	5.29	NA	NA	5.29
	18.06	11/6/2018	23.69	12.74	5.32	NA	NA	5.32
	18.06	6/27/2019	23.65	11.9	6.16	NA	NA	6.16
	18.06	6/28/2019	23.65	12.01	6.05	NA	NA	6.05
	18.06	9/26/2019	23.67	12.3	5.76	NA	NA	5.76
	18.06	9/27/2019	23.67	12.45	5.61	NA	NA	5.61
	18.06	12/30/2019	23.92	12.24	5.82	NA	NA	5.82
	18.06	12/31/2019	23.95	12.15	5.91	NA	NA	5.91
MW-10	99.9	2/11/2011	24.58	11.58	88.32	NA	NA	88.32
	99.9	3/9/2011	24.58	11.48	88.42	NA	NA	88.42
	99.9	4/11/2011	24.58	11.19	88.71	NA	NA	88.71
	99.9	5/10/2011	NM	NM	NM	NA	NA	NM
	99.9	6/15/2011	NM	11.21	88.69	NA	NA	88.69
	99.9	7/13/2011	NM	11.21	88.69	NA	NA	88.69
	99.9	8/9/2011	NM	10.83	89.07	NA	NA	89.07
	99.9	9/29/2011	NM	10.21	89.69	NA	NA	89.69
	99.9	12/14/2011	24.94	10.40	89.50	NA	NA	89.50
	99.9	12/15/2011	24.94	10.25	89.65	NA	NA	89.65
	99.9	1/26/2012	25.03	11.15	88.75	NA	NA	88.75
	99.9	1/27/2012	NM	11.04	88.86	NA	NA	88.86
	99.9	2/28/2012	24.96	11.78	88.12	NA	NA	88.12
	99.9	2/29/2012	NM	11.63	88.27	NA	NA	88.27
	99.9	3/26/2012	24.96	11.91	87.99	NA	NA	87.99
	99.9	3/27/2012	NM	11.97	87.93	NA	NA	87.93

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MW-10 (Con't)	99.9	4/19/2012	25.02	12.03	87.87	NA	NA	87.87
	99.9	4/20/2012	NM	12.11	87.79	NA	NA	87.79
	99.9	5/24/2012	24.70	11.80	88.10	NA	NA	88.10
	99.9	5/25/2012	NM	11.66	88.24	NA	NA	88.24
	99.9	6/7/2012	25.04	11.66	88.24	NA	NA	88.24
	99.9	6/8/2012	NM	11.70	88.20	NA	NA	88.20
	99.9	7/18/2012	25.04	11.79	88.11	NA	NA	88.11
	99.9	7/19/2012	NM	11.76	88.14	NA	NA	88.14
	99.9	8/15/2012	25.02	11.76	88.14	NA	NA	88.14
	99.9	8/16/2012	NM	11.23	88.67	NA	NA	88.67
	99.9	9/13/2012	24.78	11.92	87.98	NA	NA	87.98
	99.9	9/14/2012	25.06	12.01	87.89	NA	NA	87.89
	99.9	10/25/2012	25.05	12.14	87.76	NA	NA	87.76
	99.9	10/26/2012	NM	12.06	87.84	NA	NA	87.84
	99.9	11/28/2012	24.94	12.05	87.85	NA	NA	87.85
	99.9	11/29/2012	NM	12.05	87.85	NA	NA	87.85
	99.9	12/19/2012	25.01	12.00	87.90	NA	NA	87.90
	99.9	12/20/2012	NM	11.94	87.96	NA	NA	87.96
	99.9	1/28/2013	25.06	11.78	88.12	NA	NA	88.12
	99.9	1/29/2013	NM	11.89	88.01	NA	NA	88.01
	99.9	2/25/2013	24.96	11.63	88.27	NA	NA	88.27
	99.9	2/26/2013	NM	11.59	88.31	NA	NA	88.31
	99.9	3/20/2013	24.95	11.03	88.87	NA	NA	88.87
	99.9	3/21/2013	NM	10.99	88.91	NA	NA	88.91
	99.9	4/29/2013	24.99	11.47	88.43	NA	NA	88.43
	99.9	4/30/2013	NM	11.50	88.40	NA	NA	88.40
	99.9	5/14/2013	25.02	11.19	88.71	NA	NA	88.71
	99.9	5/15/2013	NM	11.16	88.74	NA	NA	88.74
	99.9	6/17/2013	24.96	11.45	88.45	NA	NA	88.45
	99.9	6/18/2013	NM	11.50	88.40	NA	NA	88.40
	99.9	7/17/2013	25.01	11.28	88.62	NA	NA	88.62
	99.9	7/18/2013	NM	11.21	88.69	NA	NA	88.69
	99.9	8/27/2013	25.00	11.60	88.30	NA	NA	88.30
	99.9	8/28/2013	NM	11.64	88.26	NA	NA	88.26
	99.9	9/23/2013	24.99	11.91	87.99	NA	NA	87.99
	99.9	9/24/2013	NM	11.84	88.06	NA	NA	88.06
	99.9	10/24/2013	25.00	12.12	87.78	NA	NA	87.78
	99.9	10/25/2013	NM	12.13	87.77	NA	NA	87.77
	99.9	1/7/2014	25.00	11.85	88.05	NA	NA	88.05
	99.9	1/8/2014	NM	11.93	87.97	NA	NA	87.97
	99.9	4/22/2014	25.00	11.31	88.59	NA	NA	88.59
	99.9	4/23/2014	NM	11.50	88.40	NA	NA	88.40
	99.9	7/24/2014	25.00	11.54	88.36	NA	NA	88.36
	99.9	7/25/2014	NM	11.66	88.24	NA	NA	88.24
	99.9	10/13/2014	25.00	13.04	86.86	NA	NA	86.86
	99.9	10/14/2014	NM	13.00	86.90	NA	NA	86.90
	99.9	1/22/2015	25.00	12.40	87.50	NA	NA	87.50
	99.9	1/26/2015	25.00	12.43	87.47	NA	NA	87.47
	99.9	4/28/2015	24.92	11.95	87.95	NA	NA	87.95
	99.9	4/29/2015	24.92	11.84	88.06	NA	NA	88.06
	99.9	7/29/2015	NM	12.00	87.90	NA	NA	87.90
	99.9	7/30/2015	NM	11.99	87.91	NA	NA	87.91
	99.9	10/14/2015	24.96	12.03	87.87	NA	NA	87.87
	99.9	10/15/2015	NM	12.16	87.74	NA	NA	87.74
	99.9	1/20/2016	25	12.10	87.80	NA	NA	87.80
	99.9	1/21/2016	NM	12.10	87.80	NA	NA	87.80
	99.9	4/19/2016	25	11.50	88.40	NA	NA	88.40
	99.9	4/20/2016	NM	11.50	88.40	NA	NA	88.40
	17.28	7/13/2016	24.98	11.89	5.39	NA	NA	5.39
	17.28	7/14/2016	NM	11.86	5.42	NA	NA	5.42
	17.28	10/25/2016	25	12.13	5.15	NA	NA	5.15

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MW-10 (Con't)	17.28	10/26/2016	NM	12.16	5.12	NA	NA	5.12
	17.28	1/31/2017	25	11.77	5.51	NA	NA	5.51
	17.28	2/1/2017	NM	11.83	5.45	NA	NA	5.45
	17.28	4/25/2017	24.96	11.24	6.04	NA	NA	6.04
	17.28	4/26/2017	NM	11.27	6.01	NA	NA	6.01
	17.28	7/24/2017	24.97	11.17	6.11	NA	NA	6.11
	17.28	7/25/2017	NM	11.26	6.02	NA	NA	6.02
	17.28	10/9/2017	24.97	11.95	5.33	NA	NA	5.33
	17.28	10/10/2017	NM	12.05	5.23	NA	NA	5.23
	17.28	2/1/2018	24.96	12.06	5.22	NA	NA	5.22
	17.28	2/2/2018	24.96	12.24	5.04	NA	NA	5.04
	17.28	4/25/2018	25.1	10.90	6.38	NA	NA	6.38
	17.28	4/26/2018	25.1	11.10	6.18	NA	NA	6.18
	17.28	7/26/2018	25.4	11.84	5.44	NA	NA	5.44
	17.28	7/27/2018	25.4	11.91	5.37	NA	NA	5.37
	17.28	11/5/2018	25.28	11.91	5.37	NA	NA	5.37
	17.28	11/6/2018	25.05	11.80	5.48	NA	NA	5.48
	17.28	6/27/2019	24.94	10.93	6.35	NA	NA	6.35
	17.28	6/28/2019	24.94	10.97	6.31	NA	NA	6.31
	17.28	9/26/2019	24.98	11.59	5.69	NA	NA	5.69
	17.28	9/27/2019	24.98	11.77	5.51	NA	NA	5.51
	17.28	12/30/2019	25.21	11.50	5.78	10.75	0.75	6.34
	17.28	12/31/2019	25.2	11.45	5.83	10.78	0.67	6.33
	17.28	1/15/2020	25.21	11.92	5.36	11.21	0.71	5.89
	17.28	1/22/2020	25.1	11.70	5.58	NA	NA	5.58
	17.28	1/28/2020	25.08	11.61	5.67	11.61	0.00	5.67
	17.28	2/4/2020	25.04	11.72	5.56	11.71	0.01	5.57
MW-11	100.77	2/11/2011	19.80	11.96	88.81	NA	NA	88.81
	100.77	3/9/2011	19.80	11.68	89.09	NA	NA	89.09
	100.77	4/11/2011	19.80	10.55	90.22	NA	NA	90.22
	100.77	5/10/2011	NM	NM	NM	NA	NA	NM
	100.77	6/15/2011	NM	10.68	90.09	NA	NA	90.09
	100.77	7/13/2011	NM	10.58	90.19	NA	NA	90.19
	100.77	8/9/2011	NM	NM	NM	NA	NA	NM
	100.77	9/29/2011	NM	11.78	88.99	NA	NA	88.99
	100.77	12/14/2011	19.71	11.27	89.50	NA	NA	89.50
	100.77	12/15/2011	19.71	11.17	89.60	NA	NA	89.60
	100.77	1/26/2012	19.79	11.93	88.84	NA	NA	88.84
	100.77	1/27/2012	NM	11.79	88.98	NA	NA	88.98
	100.77	2/28/2012	19.76	12.27	88.50	NA	NA	88.50
	100.77	2/29/2012	NM	12.23	88.54	NA	NA	88.54
	100.77	3/26/2012	19.74	12.45	88.32	NA	NA	88.32
	100.77	3/27/2012	NM	12.47	88.30	NA	NA	88.30
	100.77	4/19/2012	19.86	13.64	87.13	NA	NA	87.13
	100.77	4/20/2012	NM	12.65	88.12	NA	NA	88.12
	100.77	5/24/2012	19.82	12.90	87.87	NA	NA	87.87
	100.77	5/25/2012	NM	12.55	88.22	NA	NA	88.22
	100.77	6/7/2012	19.81	12.41	88.36	NA	NA	88.36
	100.77	6/8/2012	NM	12.38	88.39	NA	NA	88.39
	100.77	7/18/2012	19.85	12.38	88.39	NA	NA	88.39
	100.77	7/19/2012	NM	12.39	88.38	NA	NA	88.38
	100.77	8/15/2012	19.79	12.41	88.36	NA	NA	88.36
	100.77	8/16/2012	NM	12.54	88.23	NA	NA	88.23
	100.77	9/13/2012	20.79	12.74	88.03	NA	NA	88.03

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MW-11 (Con't)	100.77	9/14/2012	20.79	12.77	88.00	NA	NA	88.00
	100.77	10/25/2012	19.86	12.79	87.98	NA	NA	87.98
	100.77	10/26/2012	NM	12.71	88.06	NA	NA	88.06
	100.77	11/28/2012	19.75	12.73	88.04	NA	NA	88.04
	100.77	11/29/2012	NM	12.67	88.10	NA	NA	88.10
	100.77	12/19/2012	19.82	12.76	88.01	NA	NA	88.01
	100.77	12/20/2012	NM	12.71	88.06	NA	NA	88.06
	100.77	1/28/2013	19.87	12.70	88.07	NA	NA	88.07
	100.77	1/29/2013	NM	12.66	88.11	NA	NA	88.11
	100.77	2/25/2013	19.75	12.51	88.26	NA	NA	88.26
	100.77	2/26/2013	NM	12.51	88.26	NA	NA	88.26
	100.77	3/20/2013	19.89	12.32	88.45	NA	NA	88.45
	100.77	3/21/2013	NM	12.29	88.48	NA	NA	88.48
	100.77	4/29/2013	19.77	12.31	88.46	NA	NA	88.46
	100.77	4/30/2013	NM	12.32	88.45	NA	NA	88.45
	100.77	5/14/2013	19.79	12.29	88.48	NA	NA	88.48
	100.77	5/15/2013	NM	12.26	88.51	NA	NA	88.51
	100.77	6/17/2013	19.77	11.77	89.00	NA	NA	89.00
	100.77	6/18/2013	NM	11.78	88.99	NA	NA	88.99
	100.77	7/17/2013	19.83	12.10	88.67	NA	NA	88.67
	100.77	7/18/2013	NM	12.08	88.69	NA	NA	88.69
	100.77	8/27/2013	19.78	12.29	88.48	NA	NA	88.48
	100.77	8/28/2013	NM	12.33	88.44	NA	NA	88.44
	100.77	9/23/2013	19.79	12.52	88.25	NA	NA	88.25
	100.77	9/24/2013	NM	12.47	88.30	NA	NA	88.30
	100.77	10/24/2013	19.78	12.76	88.01	NA	NA	88.01
	100.77	10/25/2013	NM	12.76	88.01	NA	NA	88.01
	100.77	1/7/2014	19.81	12.23	88.54	NA	NA	88.54
	100.77	1/8/2014	NM	12.20	88.57	NA	NA	88.57
	100.77	4/22/2014	19.80	12.13	88.64	NA	NA	88.64
	100.77	4/23/2014	NM	12.16	88.61	NA	NA	88.61
	100.77	7/24/2014	NM	NM	NM	NM	NM	NM
	100.77	7/24/2014	NM	NM	NM	NM	NM	NM
	100.77	10/13/2014	NM	NM	NM	NM	NM	NM
	100.77	10/14/2014	NM	NM	NM	NM	NM	NM
	100.77	1/22/2015	NM	NM	NM	NM	NM	NM
	100.77	1/26/2015	NM	NM	NM	NM	NM	NM
	100.77	4/28/2015	NM	NM	NM	NM	NM	NM
	100.77	4/29/2015	NM	NM	NM	NM	NM	NM
	100.77	7/29/2015	NM	NM	NM	NM	NM	NM
	100.77	7/30/2015	NM	NM	NM	NM	NM	NM
	100.77	10/14/2015	NM	NM	NM	NM	NM	NM
	100.77	10/15/2015	NM	NM	NM	NM	NM	NM
	100.77	1/20/2016	NM	NM	NM	NM	NM	NM
	100.77	1/21/2016	NM	NM	NM	NM	NM	NM
	100.77	4/19/2016	NM	NM	NM	NM	NM	NM
	100.77	4/20/2016	NM	NM	NM	NM	NM	NM
	100.77	7/13/2016	NM	NM	NM	NM	NM	NM
	100.77	7/14/2016	NM	NM	NM	NM	NM	NM
	100.77	10/25/2016	NM	NM	NM	NM	NM	NM
	100.77	10/26/2016	NM	NM	NM	NM	NM	NM
	100.77	1/31/2017	NM	NM	NM	NM	NM	NM
	100.77	2/1/2017	NM	NM	NM	NM	NM	NM
	100.77	4/25/2017	NM	NM	NM	NM	NM	NM
	100.77	4/26/2017	NM	NM	NM	NM	NM	NM
	100.77	7/24/2017	NM	NM	NM	NM	NM	NM
	100.77	7/25/2017	NM	NM	NM	NM	NM	NM
	100.77	10/9/2017	NM	NM	NM	NM	NM	NM
	100.77	10/10/2017	NM	NM	NM	NM	NM	NM
	100.77	2/1/2018	NM	NM	NM	NM	NM	NM
	100.77	2/2/2018	NM	NM	NM	NM	NM	NM

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-11 (Con't)	100.77	4/25/2018	NM	NM	NM	NM	NM	NM
	100.77	4/26/2018	NM	NM	NM	NM	NM	NM
	100.77	7/26/2018	NM	NM	NM	NM	NM	NM
	100.77	7/27/2018	NM	NM	NM	NM	NM	NM
	100.77	11/5/2018	NM	NM	NM	NM	NM	NM
	100.77	11/6/218	NM	NM	NM	NM	NM	NM
	100.77	6/27/2019	NM	NM	NM	NA	NM	NM
	100.77	6/28/2019	NM	NM	NM	NA	NM	NM
	100.77	9/26/2019	NM	NM	NM	NM	NM	NM
	100.77	9/27/2019	NM	NM	NM	NM	NM	NM
	100.77	12/30/2019	NM	NM	NM	NM	NM	NM
	100.77	12/31/2019	NM	NM	NM	NM	NM	NM
MW-12	100.7	2/11/2011	20.49	12.01	88.69	NA	NA	88.69
	100.7	3/9/2011	20.49	12.29	88.41	NA	NA	88.41
	100.7	4/11/2011	20.49	12.05	88.65	NA	NA	88.65
	100.7	5/10/2011	NM	NM	NM	NA	NA	NM
	100.7	6/15/2011	NM	12.08	88.62	NA	NA	88.62
	100.7	7/13/2011	NM	12.05	88.65	NA	NA	88.65
	100.7	8/9/2011	NM	12.14	88.56	NA	NA	88.56
	100.7	9/29/2011	NM	11.87	88.83	NA	NA	88.83
	100.7	12/14/2011	22.01	11.56	89.14	NA	NA	89.14
	100.7	12/15/2012	22.01	11.44	89.26	NA	NA	89.26
	100.7	1/26/2012	22.05	12.41	88.29	NA	NA	88.29
	100.7	1/27/2012	NM	12.21	88.49	NA	NA	88.49
	100.7	2/28/2012	22.03	12.75	87.95	NA	NA	87.95
	100.7	2/29/2012	NM	12.61	88.09	NA	NA	88.09
	100.7	3/26/2012	22.02	12.97	87.73	NA	NA	87.73
	100.7	3/27/2012	NM	12.95	87.75	NA	NA	87.75
	100.7	4/19/2012	22.07	13.17	87.53	NA	NA	87.53
	100.7	4/20/2012	NM	13.01	87.69	NA	NA	87.69
	100.7	5/24/2012	22.05	13.10	87.60	NA	NA	87.60
	100.7	5/25/2012	NM	13.01	87.69	NA	NA	87.69
	100.7	6/7/2012	22.11	12.99	87.71	NA	NA	87.71
	100.7	6/8/2012	NM	12.95	87.75	NA	NA	87.75
	100.7	7/18/2012	22.10	12.96	87.74	NA	NA	87.74
	100.7	7/19/2012	NM	12.92	87.78	NA	NA	87.78
	100.7	8/15/2012	22.08	12.87	87.83	NA	NA	87.83
	100.7	8/16/2012	NM	12.40	88.30	NA	NA	88.30
	100.7	9/13/2012	19.56	13.60	87.10	NA	NA	87.10
	100.7	9/14/2012	19.84	13.64	87.06	NA	NA	87.06
	100.7	10/25/2012	22.06	11.41	89.29	NA	NA	89.29
	100.7	10/26/2012	NM	13.11	87.59	NA	NA	87.59
	100.7	11/28/2012	22.02	12.64	88.06	NA	NA	88.06
	100.7	11/29/2012	NM	13.00	87.70	NA	NA	87.70
	100.7	12/19/2012	22.12	13.15	87.55	NA	NA	87.55
	100.7	12/20/2012	NM	13.23	87.47	NA	NA	87.47
	100.7	1/28/2013	22.10	12.97	87.73	NA	NA	87.73
	100.7	1/29/2013	NM	13.04	87.66	NA	NA	87.66
	100.7	2/25/2013	22.01	13.00	87.70	NA	NA	87.70
	100.7	2/26/2013	NM	12.88	87.82	NA	NA	87.82
	100.7	3/20/2013	22.10	12.72	87.98	NA	NA	87.98
	100.7	3/21/2013	NM	12.66	88.04	NA	NA	88.04
	100.7	4/29/2013	22.03	12.68	88.02	NA	NA	88.02
	100.7	4/30/2013	NM	12.69	88.01	NA	NA	88.01
	100.7	5/14/2013	22.05	12.66	88.04	NA	NA	88.04
	100.7	5/15/2013	NM	12.67	88.03	NA	NA	88.03
	100.7	6/17/2013	22.02	12.32	88.38	NA	NA	88.38
	100.7	6/18/2013	NM	12.36	88.34	NA	NA	88.34
	100.7	7/17/2013	22.09	12.62	88.08	NA	NA	88.08
	100.7	7/18/2013	NM	12.55	88.15	NA	NA	88.15
	100.7	8/27/2013	21.99	12.77	87.93	NA	NA	87.93

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-12 (Con't)	100.7	8/28/2013	NM	12.79	87.91	NA	NA	87.91
	100.7	9/23/2013	22.00	12.95	87.75	NA	NA	87.75
	100.7	9/24/2013	NM	12.90	87.80	NA	NA	87.80
	100.7	10/24/2013	22.01	13.09	87.61	NA	NA	87.61
	100.7	10/25/2013	NM	13.09	87.61	NA	NA	87.61
	100.7	1/7/2014	22.02	12.87	87.83	NA	NA	87.83
	100.7	1/8/2014	NM	12.85	87.85	NA	NA	87.85
	100.7	4/22/2014	22.05	12.80	87.90	NA	NA	87.90
	100.7	4/23/2014	NM	12.90	87.80	NA	NA	87.80
	100.7	7/24/2014	22.06	14.44	86.26	NA	NA	86.26
	100.7	7/25/2014	NM	14.49	86.21	NA	NA	86.21
	100.7	10/13/2014	22.05	14.78	85.92	NA	NA	85.92
	100.7	10/14/2014	NM	14.83	85.87	NA	NA	85.87
	100.7	1/22/2015	21.94	13.68	87.02	NA	NA	87.02
	100.7	1/26/2015	21.94	13.71	86.99	NA	NA	86.99
	100.7	4/28/2015	22	13.32	87.38	NA	NA	87.38
	100.7	4/29/2015	22	13.14	87.56	NA	NA	87.56
	100.7	7/29/2015	NM	13.24	87.46	NA	NA	87.46
	100.7	7/30/2015	NM	13.20	87.50	NA	NA	87.50
	100.7	10/14/2015	22.07	13.19	87.51	NA	NA	87.51
	100.7	10/15/2015	NM	13.25	87.45	NA	NA	87.45
	100.7	1/20/2016	22.07	13.24	87.46	NA	NA	87.46
	100.7	1/21/2016	NM	13.21	87.49	NA	NA	87.49
	100.7	4/19/2016	NM	NM	NM	NM	NM	NM
	100.7	4/20/2016	NM	NM	NM	NM	NM	NM
	18.19	7/13/2016	22.05	12.99	5.20	NA	NA	5.20
	18.19	7/14/2016	NM	12.94	5.25	NA	NA	5.25
	18.19	10/25/2016	22.11	13.28	4.91	NA	NA	4.91
	18.19	10/26/2016	NM	13.34	4.85	NA	NA	4.85
	18.19	1/31/2017	22.11	13.53	4.66	NA	NA	4.66
	18.19	2/1/2017	NM	13.87	4.32	NA	NA	4.32
	18.19	4/25/2017	22.01	13.00	5.19	NA	NA	5.19
	18.19	4/26/2017	NM	12.83	5.36	NA	NA	5.36
	18.19	7/24/2017	22.01	12.42	5.77	NA	NA	5.77
	18.19	7/25/2017	NM	12.56	5.63	NA	NA	5.63
	18.19	10/9/2017	22.00	13.30	4.89	NA	NA	4.89
	18.19	10/10/2017	NM	13.38	4.81	NA	NA	4.81
	18.19	2/1/2018	22.03	12.99	5.20	NA	NA	5.20
	18.19	2/2/2018	22.07	13.11	5.08	NA	NA	5.08
	18.19	4/25/2018	22.14	12.8	5.39	NA	NA	5.39
	18.19	4/26/2018	22.14	12.89	5.30	NA	NA	5.30
	18.19	7/26/2018	22.07	13.04	5.15	NA	NA	5.15
	18.19	7/27/2018	22.07	13.09	5.10	NA	NA	5.10
	18.19	11/5/2018	22.2	13.04	5.15	NA	NA	5.15
	18.19	11/6/2018	22.1	12.99	5.20	NA	NA	5.20
	18.19	6/27/2019	21.89	12.09	6.10	NA	NA	6.10
	18.19	6/28/2019	21.89	12.22	5.97	NA	NA	5.97
	18.19	9/26/2019	21.84	12.53	5.66	NA	NA	5.66
	18.19	9/27/2019	21.84	12.63	5.56	NA	NA	5.56
	18.19	12/30/2019	22.02	12.39	5.80	NA	NA	5.80
	18.19	12/31/2019	22.04	12.47	5.72	NA	NA	5.72

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-13	99.78	2/11/2011	20.13	11.79	87.99	NA	NA	87.99
	99.78	3/9/2011	20.13	11.79	87.99	NA	NA	87.99
	99.78	4/11/2011	20.13	11.39	88.39	NA	NA	88.39
	99.78	5/10/2011	NM	NM	NM	NA	NA	NM
	99.78	6/15/2011	NM	11.41	88.37	NA	NA	88.37
	99.78	7/13/2011	NM	11.39	88.39	NA	NA	88.39
	99.78	8/9/2011	NM	11.40	88.38	NA	NA	88.38
	99.78	9/29/2011	NM	10.92	88.86	NA	NA	88.86
	99.78	12/14/2011	20.14	11.10	88.68	NA	NA	88.68
	99.78	12/15/2011	20.14	10.59	89.19	NA	NA	89.19
	99.78	1/26/2012	20.17	11.77	88.01	NA	NA	88.01
	99.78	1/27/2012	NM	11.43	88.35	NA	NA	88.35
	99.78	2/28/2012	20.16	12.08	87.70	NA	NA	87.70
	99.78	2/29/2012	NM	11.94	87.84	NA	NA	87.84
	99.78	3/26/2012	20.04	12.12	87.66	NA	NA	87.66
	99.78	3/27/2012	NM	12.20	87.58	NA	NA	87.58
	99.78	4/19/2012	20.24	12.28	87.50	NA	NA	87.50
	99.78	4/20/2012	NM	12.28	87.50	NA	NA	87.50
	99.78	5/24/2012	20.21	12.30	87.48	NA	NA	87.48
	99.78	5/25/2012	NM	12.25	87.53	NA	NA	87.53
	99.78	6/7/2012	20.21	12.15	87.63	NA	NA	87.63
	99.78	6/8/2012	NM	12.11	87.67	NA	NA	87.67
	99.78	7/18/2012	20.21	12.22	87.56	NA	NA	87.56
	99.78	7/19/2012	NM	12.27	87.51	NA	NA	87.51
	99.78	8/15/2012	20.17	12.19	87.59	NA	NA	87.59
	99.78	8/16/2012	NM	12.43	87.35	NA	NA	87.35
	99.78	9/13/2012	21.91	12.97	86.81	NA	NA	86.81
	99.78	9/14/2012	22.10	13.07	86.71	NA	NA	86.71
	99.78	10/25/2012	20.25	12.44	87.34	NA	NA	87.34
	99.78	10/26/2012	NM	12.41	87.37	NA	NA	87.37
	99.78	11/28/2012	20.19	13.05	86.73	NA	NA	86.73
	99.78	11/29/2012	NM	12.39	87.39	NA	NA	87.39
	99.78	12/19/2012	20.18	12.46	87.32	NA	NA	87.32
	99.78	12/20/2012	NM	12.49	87.29	NA	NA	87.29
	99.78	1/28/2013	20.25	12.55	87.23	NA	NA	87.23
	99.78	1/29/2013	NM	12.48	87.30	NA	NA	87.30
	99.78	2/25/2013	20.18	12.31	87.47	NA	NA	87.47
	99.78	2/26/2013	NM	12.30	87.48	NA	NA	87.48
	99.78	3/20/2013	20.25	12.10	87.68	NA	NA	87.68
	99.78	3/21/2013	NM	12.03	87.75	NA	NA	87.75
	99.78	4/29/2013	20.19	12.07	87.71	NA	NA	87.71
	99.78	4/30/2013	NM	12.11	87.67	NA	NA	87.67
	99.78	5/14/2013	20.21	12.12	87.66	NA	NA	87.66
	99.78	5/15/2013	NM	12.17	87.61	NA	NA	87.61
	99.78	6/17/2013	20.22	11.65	88.13	NA	NA	88.13
	99.78	6/18/2013	NM	11.65	88.13	NA	NA	88.13
	99.78	7/17/2013	20.21	11.96	87.82	NA	NA	87.82
	99.78	7/18/2013	NM	11.91	87.87	NA	NA	87.87
	99.78	8/27/2013	20.19	12.09	87.69	NA	NA	87.69
	99.78	8/28/2013	NM	12.11	87.67	NA	NA	87.67
	99.78	9/23/2013	20.20	12.34	87.44	NA	NA	87.44
	99.78	9/24/2013	NM	12.30	87.48	NA	NA	87.48
	99.78	10/24/2013	20.22	12.55	87.23	NA	NA	87.23
	99.78	10/25/2013	NM	12.60	87.18	NA	NA	87.18
	99.78	1/7/2014	20.20	12.03	87.75	NA	NA	87.75
	99.78	1/8/2014	NM	12.08	87.70	NA	NA	87.70

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-13 (Con't)	99.78	4/22/2014	20.17	12.03	87.75	NA	NA	87.75
	99.78	4/23/2014	NM	12.14	87.64	NA	NA	87.64
	99.78	7/24/2014	20.25	12.65	87.13	NA	NA	87.13
	99.78	7/25/2014	NM	12.72	87.06	NA	NA	87.06
	99.78	10/13/2014	20.18	13.32	86.46	NA	NA	86.46
	99.78	10/14/2014	NM	13.27	86.51	NA	NA	86.51
	99.78	1/22/2015	20.10	13.05	86.73	NA	NA	86.73
	99.78	1/26/2015	20.10	13.06	86.72	NA	NA	86.72
	99.78	4/28/2015	20.91	12.41	87.37	NA	NA	87.37
	99.78	4/29/2015	20.91	12.35	87.43	NA	NA	87.43
	99.78	7/29/2015	NM	12.36	87.42	NA	NA	87.42
	99.78	7/30/2015	NM	12.31	87.47	12.30	0.01	87.48
	99.78	10/14/2015	20.23	12.36	87.42	NA	NA	87.42
	99.78	10/15/2015	NM	12.47	87.31	NA	NA	87.31
	99.78	1/20/2016	20.16	12.66	87.12	NA	NA	87.12
	99.78	1/21/2016	NM	12.67	87.11	NA	NA	87.11
	99.78	4/19/2016	20.19	12.32	87.46	NA	NA	87.46
	99.78	4/20/2016	NM	12.33	87.45	NA	NA	87.45
	17.18	7/13/2016	20.49	12.41	4.77	NA	NA	4.77
	17.18	7/14/2016	NM	12.36	4.82	NA	NA	4.82
	17.18	10/25/2016	20.21	12.73	4.45	NA	NA	4.45
	17.18	10/26/2016	NM	12.76	4.42	NA	NA	4.42
	17.18	1/31/2017	20.19	12.60	4.58	NA	NA	4.58
	17.18	2/1/2017	NM	12.72	4.46	NA	NA	4.46
	17.18	4/25/2017	20.17	12.25	4.93	NA	NA	4.93
	17.18	4/26/2017	NM	12.24	4.94	NA	NA	4.94
	17.18	7/24/2017	20.17	11.85	5.33	NA	NA	5.33
	17.18	7/25/2017	NM	11.87	5.31	NA	NA	5.31
	17.18	10/9/2017	20.17	12.31	4.87	NA	NA	4.87
	17.18	10/10/2017	NM	12.36	4.82	NA	NA	4.82
	17.18	2/1/2018	20.23	12.41	4.77	NA	NA	4.77
	17.18	2/2/2018	20.26	12.05	5.13	NA	NA	5.13
	17.18	4/25/2018	20.30	11.93	5.25	NA	NA	5.25
	17.18	4/26/2018	20.30	12.04	5.14	NA	NA	5.14
	17.18	7/26/2018	20.25	12.24	4.94	NA	NA	4.94
	17.18	7/27/2018	20.25	12.27	4.91	NA	NA	4.91
	17.18	11/5/2018	20.36	13.04	4.14	NA	NA	4.14
	17.18	11/6/2018	20.27	12.30	4.88	NA	NA	4.88
	17.18	6/27/2019	20.18	11.57	5.61	NA	NA	5.61
	17.18	6/28/2019	20.18	11.57	5.61	NA	NA	5.61
	17.18	9/26/2019	20.19	12.02	5.16	NA	NA	5.16
	17.18	9/27/2019	20.19	12.17	5.01	NA	NA	5.01
	17.18	12/30/2019	20.38	11.94	5.24	NA	NA	5.24
	17.18	12/31/2019	20.40	11.95	5.23	NA	NA	5.23
MW-14	99.79	2/11/2011	15.91	10.58	89.21	NA	NA	89.21
	99.79	3/9/2011	15.91	10.38	89.41	NA	NA	89.41
	99.79	4/11/2011	15.91	11.10	88.69	NA	NA	88.69
	99.79	5/10/2011	NM	NM	NM	NA	NA	NM
	99.79	6/15/2011	NM	10.75	89.04	NA	NA	89.04
	99.79	7/13/2011	NM	11.20	88.59	NA	NA	88.59
	99.79	8/9/2011	NM	11.06	88.73	NA	NA	88.73
	99.79	9/29/2011	NM	10.10	89.69	NA	NA	89.69
	99.79	12/14/2011	18.10	9.96	89.83	NA	NA	89.83
	99.79	12/15/2011	18.10	10.32	89.47	NA	NA	89.47
	99.79	1/26/2012	18.14	11.09	88.70	NA	NA	88.70
	99.79	1/27/2012	NM	10.95	88.84	NA	NA	88.84
	99.79	2/28/2012	18.11	11.64	88.15	NA	NA	88.15
	99.79	2/29/2012	NM	11.56	88.23	NA	NA	88.23
	99.79	3/26/2012	18.11	11.86	87.93	NA	NA	87.93
	99.79	3/27/2012	NM	11.89	87.90	NA	NA	87.90
	99.79	4/19/2012	18.19	12.01	87.78	NA	NA	87.78

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MW-14 (Con't)	99.79	4/20/2012	NM	11.96	87.83	NA	NA	87.83
	99.79	5/24/2012	18.19	11.60	88.19	NA	NA	88.19
	99.79	5/25/2012	NM	11.48	88.31	NA	NA	88.31
	99.79	6/7/2012	18.22	11.59	88.20	NA	NA	88.20
	99.79	6/8/2012	NM	11.60	88.19	NA	NA	88.19
	99.79	7/18/2012	18.17	11.86	87.93	NA	NA	87.93
	99.79	7/19/2012	NM	10.56	89.23	NA	NA	89.23
	99.79	8/15/2012	18.13	11.80	87.99	NA	NA	87.99
	99.79	8/16/2012	NM	11.68	88.11	NA	NA	88.11
	99.79	9/13/2012	18.82	11.90	87.89	NA	NA	87.89
	99.79	9/14/2012	18.41	12.05	87.74	NA	NA	87.74
	99.79	10/25/2012	18.66	11.69	88.10	NA	NA	88.10
	99.79	10/26/2012	NM	11.91	87.88	NA	NA	87.88
	99.79	11/28/2012	18.06	11.97	87.82	NA	NA	87.82
	99.79	11/29/2012	NM	11.98	87.81	NA	NA	87.81
	99.79	12/19/2012	18.16	11.51	88.28	NA	NA	88.28
	99.79	12/20/2012	NM	11.59	88.20	NA	NA	88.20
	99.79	1/28/2013	18.16	11.84	87.95	NA	NA	87.95
	99.79	1/29/2013	NM	11.88	87.91	NA	NA	87.91
	99.79	2/25/2013	18.11	11.27	88.52	NA	NA	88.52
	99.79	2/26/2013	NM	11.37	88.42	NA	NA	88.42
	99.79	3/20/2013	18.20	11.46	88.33	NA	NA	88.33
	99.79	3/21/2013	NM	10.94	88.85	NA	NA	88.85
	99.79	4/29/2013	18.10	11.62	88.17	NA	NA	88.17
	99.79	4/30/2013	NM	11.60	88.19	NA	NA	88.19
	99.79	5/14/2013	18.12	10.99	88.80	NA	NA	88.80
	99.79	5/15/2013	NM	10.98	88.81	NA	NA	88.81
	99.79	6/17/2013	18.17	10.84	88.95	NA	NA	88.95
	99.79	6/18/2013	NM	10.88	88.91	NA	NA	88.91
	99.79	7/17/2013	18.17	11.47	88.32	NA	NA	88.32
	99.79	7/18/2013	NM	11.42	88.37	NA	NA	88.37
	99.79	8/27/2013	18.11	11.71	88.08	NA	NA	88.08
	99.79	8/28/2013	NM	11.74	88.05	NA	NA	88.05
	99.79	9/23/2013	18.15	11.70	88.09	NA	NA	88.09
	99.79	9/24/2013	NM	11.74	88.05	NA	NA	88.05
	99.79	10/24/2013	18.14	12.17	87.62	NA	NA	87.62
	99.79	10/25/2013	NM	12.14	87.65	NA	NA	87.65
	99.79	1/7/2014	18.15	11.81	87.98	NA	NA	87.98
	99.79	1/8/2014	NM	11.90	87.89	NA	NA	87.89
	99.79	4/22/2014	18.10	12.47	87.32	NA	NA	87.32
	99.79	4/23/2014	NM	12.57	87.22	NA	NA	87.22
	99.79	7/24/2014	18.22	12.23	87.56	NA	NA	87.56
	99.79	7/25/2014	NM	12.31	87.48	NA	NA	87.48
	99.79	10/13/2014	18.15	13.02	86.77	NA	NA	86.77
	99.79	10/14/2014	NM	13.02	86.77	NA	NA	86.77
	99.79	1/22/2015	NM	NM	NM	NM	NM	NM
	99.79	1/26/2015	18.15	12.98	86.81	NA	NA	86.81
	99.79	4/28/2015	18.05	12.14	87.65	NA	NA	87.65
	99.79	4/29/2015	18.05	12.11	87.68	NA	NA	87.68
	99.79	7/29/2015	NM	11.99	87.80	NA	NA	87.80
	99.79	7/30/2015	NM	12.00	87.79	11.99	0.01	87.80
	99.79	10/14/2015	18.15	11.75	88.04	NA	NA	88.04
	99.79	10/15/2015	NM	11.83	87.96	NA	NA	87.96
	99.79	1/20/2016	NM	NM	NM	NM	NM	NM
	99.79	1/21/2016	NM	NM	NM	NM	NM	NM
	99.79	4/19/2016	NM	NM	NM	NM	NM	NM
	99.79	4/20/2016	NM	NM	NM	NM	NM	NM
	99.79	7/13/2016	NM	NM	NM	NM	NM	NM
	99.79	7/14/2016	NM	NM	NM	NM	NM	NM
	99.79	10/25/2016	NM	NM	NM	NM	NM	NM
	99.79	10/26/2016	NM	NM	NM	NM	NM	NM

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MW-14 (Con't)	99.79	1/31/2017	NM	NM	NM	NM	NM	NM
	99.79	2/1/2017	NM	NM	NM	NM	NM	NM
	99.79	4/25/2017	NM	NM	NM	NM	NM	NM
	99.79	4/26/2017	NM	NM	NM	NM	NM	NM
	99.79	7/24/2017	NM	NM	NM	NM	NM	NM
	99.79	7/25/2017	NM	NM	NM	NM	NM	NM
	99.79	10/9/2017	NM	NM	NM	NM	NM	NM
	99.79	10/10/2017	NM	NM	NM	NM	NM	NM
	99.79	2/1/2018	NM	NM	NM	NM	NM	NM
	99.79	2/1/2018	NM	NM	NM	NM	NM	NM
	99.79	4/25/2018	NM	NM	NM	NM	NM	NM
	99.79	4/26/2018	NM	NM	NM	NM	NM	NM
	99.79	7/26/2018	NM	NM	NM	NM	NM	NM
	99.79	7/27/2018	NM	NM	NM	NM	NM	NM
	99.79	11/5/2018	NM	NM	NM	NM	NM	NM
	99.79	11/6/2018	NM	NM	NM	NM	NM	NM
	99.79	6/27/2019	NM	NM	NM	NA	NM	NM
	99.79	6/28/2019	NM	NM	NM	NA	NM	NM
	99.79	9/26/2019	NM	NM	NM	NM	NM	NM
	99.79	9/27/2019	NM	NM	NM	NM	NM	NM
	99.79	12/30/2019	NM	NM	NM	NM	NM	NM
	99.79	12/31/2019	NM	NM	NM	NM	NM	NM
MW-15	99.85	2/11/2011	21.53	10.61	89.24	NA	NA	89.24
	99.85	3/9/2011	21.53	10.87	88.98	NA	NA	88.98
	99.85	4/11/2011	21.53	10.98	88.87	NA	NA	88.87
	99.85	5/10/2011	NM	NM	NM	NA	NA	NM
	99.85	6/15/2011	NM	10.90	88.95	NA	NA	88.95
	99.85	7/13/2011	NM	10.89	88.96	NA	NA	88.96
	99.85	8/9/2011	NM	11.00	88.85	NA	NA	88.85
	99.85	9/29/2011	NM	9.79	90.06	NA	NA	90.06
	99.85	12/14/2011	21.01	10.33	89.52	NA	NA	89.52
	99.85	12/15/2011	21.01	10.13	89.72	NA	NA	89.72
	99.85	1/26/2012	21.05	11.10	88.75	NA	NA	88.75
	99.85	1/27/2012	NM	9.01	90.84	NA	NA	90.84
	99.85	2/28/2012	21.01	11.67	88.18	NA	NA	88.18
	99.85	2/29/2012	NM	11.49	88.36	NA	NA	88.36
	99.85	3/26/2012	21.03	10.93	88.92	NA	NA	88.92
	99.85	3/27/2012	NM	11.88	87.97	NA	NA	87.97
	99.85	4/19/2012	20.00	11.95	87.90	NA	NA	87.90
	99.85	4/20/2012	NM	11.96	87.89	NA	NA	87.89
	99.85	5/24/2012	21.00	11.66	88.19	NA	NA	88.19
	99.85	5/25/2012	NM	11.49	88.36	NA	NA	88.36
	99.85	6/7/2012	20.06	11.66	88.19	NA	NA	88.19
	99.85	6/8/2012	NM	11.65	88.20	NA	NA	88.20
	99.85	7/18/2012	21.09	11.87	87.98	NA	NA	87.98
	99.85	7/19/2012	NM	11.15	88.70	NA	NA	88.70
	99.85	8/15/2012	21.05	11.75	88.10	NA	NA	88.10
	99.85	8/16/2012	NM	11.68	88.17	NA	NA	88.17
	99.85	9/13/2012	21.52	10.91	88.94	NA	NA	88.94
	99.85	9/14/2012	21.32	11.93	87.92	NA	NA	87.92
	99.85	10/25/2012	21.04	11.71	88.14	NA	NA	88.14
	99.85	10/26/2012	NM	11.81	88.04	NA	NA	88.04
	99.85	11/28/2012	21.12	11.24	88.61	NA	NA	88.61
	99.85	11/29/2012	NM	11.37	88.48	NA	NA	88.48
	99.85	12/19/2012	21.10	11.88	87.97	NA	NA	87.97
	99.85	12/20/2012	NM	11.37	88.48	NA	NA	88.48
	99.85	1/28/2013	21.09	11.91	87.94	NA	NA	87.94
	99.85	1/29/2013	NM	11.74	88.11	NA	NA	88.11
	99.85	2/25/2013	21.05	11.19	88.66	NA	NA	88.66
	99.85	2/26/2013	NM	11.22	88.63	NA	NA	88.63
	99.85	3/20/2013	21.05	10.33	89.52	NA	NA	89.52

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MW-15 (Con't)	99.85	3/21/2013	NM	11.02	88.83	NA	NA	88.83
	99.85	4/29/2013	21.03	11.56	88.29	NA	NA	88.29
	99.85	4/30/2013	NM	11.58	88.27	NA	NA	88.27
	99.85	5/14/2013	21.02	11.07	88.78	NA	NA	88.78
	99.85	5/15/2013	NM	11.08	88.77	NA	NA	88.77
	99.85	6/17/2013	21.00	11.91	87.94	NA	NA	87.94
	99.85	6/18/2013	NM	11.46	88.39	NA	NA	88.39
	99.85	7/17/2013	21.05	11.47	88.38	NA	NA	88.38
	99.85	7/18/2013	NM	11.40	88.45	NA	NA	88.45
	99.85	8/27/2013	20.98	11.60	88.25	NA	NA	88.25
	99.85	8/28/2013	NM	11.64	88.21	NA	NA	88.21
	99.85	9/23/2013	21.01	11.61	88.24	NA	NA	88.24
	99.85	9/24/2013	NM	11.65	88.20	NA	NA	88.20
	99.85	10/24/2013	21.00	12.09	87.76	NA	NA	87.76
	99.85	10/25/2013	NM	12.02	87.83	NA	NA	87.83
	99.85	1/7/2014	21.01	11.74	88.11	NA	NA	88.11
	99.85	1/8/2014	NM	11.71	88.14	NA	NA	88.14
	99.85	4/22/2014	21.00	11.45	88.40	NA	NA	88.40
	99.85	4/23/2014	NM	11.57	88.28	NA	NA	88.28
	99.85	7/24/2014	21.05	12.20	87.65	NA	NA	87.65
	99.85	7/25/2014	NM	12.28	87.57	NA	NA	87.57
	99.85	10/13/2014	21.00	12.91	86.94	NA	NA	86.94
	99.85	10/14/2014	NM	12.93	86.92	NA	NA	86.92
	99.85	1/22/2015	NM	NM	NM	NM	NM	NM
	99.85	1/26/2015	21.00	12.88	86.97	NA	NA	86.97
	99.85	4/28/2015	21.04	9.59	90.26	NA	NA	90.26
	99.85	4/29/2015	21.04	11.84	88.01	NA	NA	88.01
	99.85	7/29/2015	NM	11.90	87.95	NA	NA	87.95
	99.85	7/30/2015	NM	11.94	87.91	11.93	0.01	87.92
	99.85	10/14/2015	20.97	11.80	88.05	NA	NA	88.05
	99.85	10/15/2015	NM	11.92	87.93	NA	NA	87.93
	99.85	1/20/2016	NM	NM	NM	NM	NM	NM
	99.85	1/21/2016	NM	NM	NM	NM	NM	NM
	99.85	4/19/2016	21.05	10.40	89.45	NA	NA	89.45
	99.85	4/20/2016	NM	10.43	89.42	NA	NA	89.42
	17.23	7/13/2016	20.97	11.79	5.44	NA	NA	5.44
	17.23	7/14/2016	NM	11.75	5.48	NA	NA	5.48
	17.23	10/25/2016	21.02	11.97	5.26	NA	NA	5.26
	17.23	10/26/2016	NM	12.04	5.19	NA	NA	5.19
	17.23	1/31/2017	20.99	11.70	5.53	NA	NA	5.53
	17.23	2/1/2017	NM	11.82	5.41	NA	NA	5.41
	17.23	4/25/2017	20.85	11.76	5.47	NA	NA	5.47
	17.23	4/26/2017	NM	10.00	7.23	NA	NA	7.23
	17.23	7/24/2017	20.91	10.81	6.42	NA	NA	6.42
	17.23	7/25/2017	NM	10.83	6.40	NA	NA	6.40
	17.23	10/9/2017	20.90	11.69	5.54	NA	NA	5.54
	17.23	10/10/2017	NM	11.74	5.49	NA	NA	5.49
	17.23	2/1/2018	20.88	12.01	5.22	NA	NA	5.22
	17.23	2/2/2018	20.86	12.04	5.19	NA	NA	5.19
	17.23	4/25/2018	20.95	11.40	5.83	NA	NA	5.83
	17.23	4/26/2018	20.95	11.44	5.79	NA	NA	5.79
	17.23	7/26/2018	20.51	12.17	5.06	NA	NA	5.06
	17.23	7/27/2018	20.51	12.26	4.97	NA	NA	4.97
	17.23	11/5/2018	20.57	12.29	4.94	NA	NA	4.94
	17.23	11/6/2018	20.30	12.22	5.01	NA	NA	5.01
	17.23	6/27/2019	20.34	11.53	5.70	NA	NM	5.70
	17.23	6/28/2019	20.34	11.55	5.68	NA	NM	5.68
	17.23	9/26/2019	20.53	11.94	5.29	NA	NA	5.29
	17.23	9/27/2019	20.53	12.09	5.14	NA	NA	5.14
	17.23	12/30/2019	20.66	11.86	5.37	NA	NA	5.37
	17.23	12/31/2019	20.64	11.86	5.37	NA	NA	5.37

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MW-16	94.10	4/19/2012	NM	6.12	87.98	NA	NA	87.98
	94.10	4/20/2012	NM	6.37	87.73	5.94	0.43	88.05
	94.10	5/24/2012	NM	9.20	84.90	9.06	0.14	85.01
	94.10	5/25/2012	NM	6.66	87.44	5.90	0.76	88.01
	94.10	6/7/2012	NM	8.76	85.34	NA	NA	85.34
	94.10	6/8/2012	NM	5.93	88.17	5.91	0.02	88.19
	94.10	7/18/2012	12.88	8.69	85.41	8.67	0.02	85.43
	94.10	7/19/2012	NM	5.98	88.12	NA	NA	88.12
	94.10	8/15/2012	NM	8.84	85.26	NA	NA	85.26
	94.10	8/16/2012	NM	7.78	86.32	NA	NA	86.32
	94.10	9/13/2012	12.66	8.89	85.21	NA	NA	85.21
	94.10	9/14/2012	12.68	7.58	86.52	NA	NA	86.52
	94.10	10/25/2012	NM	8.82	85.28	NA	NA	85.28
	94.10	10/26/2012	NM	6.04	88.06	NA	NA	88.06
	94.10	11/28/2012	NM	8.42	85.68	NA	NA	85.68
	94.10	11/29/2012	NM	6.14	87.96	NA	NA	87.96
	94.10	12/19/2012	8.56	6.12	87.98	NA	NA	87.98
	94.10	12/20/2012	NM	8.52	85.58	NA	NA	85.58
	94.10	1/28/2013	9.29	8.94	85.16	NA	NA	85.16
	94.10	1/29/2013	NM	9.00	85.10	NA	NA	85.10
	94.10	2/25/2013	8.81	6.10	88.00	NA	NA	88.00
	94.10	2/26/2013	NM	8.67	85.43	NA	NA	85.43
	94.10	3/20/2013	8.45	5.63	88.47	NA	NA	88.47
	94.10	3/21/2013	NM	5.58	88.52	NA	NA	88.52
	94.10	4/29/2013	8.49	5.56	88.54	NA	NA	88.54
	94.10	4/30/2013	NM	5.70	88.40	NA	NA	88.40
	94.10	5/14/2013	8.48	5.48	88.62	NA	NA	88.62
	94.10	5/15/2013	NM	5.50	88.60	NA	NA	88.60
	94.10	6/17/2013	8.47	5.40	88.70	5.35	0.05	88.70
	94.10	6/18/2013	NM	8.55	85.55	8.49	0.06	85.55
	94.10	7/17/2013	9.32	8.26	85.84	7.99	0.27	85.84
	94.10	7/18/2013	NM	5.49	88.61	NA	NA	88.61
	94.10	8/27/2013	8.86	5.72	88.38	5.71	0.01	88.39
	94.10	8/28/2013	NM	8.64	85.46	NA	NA	85.46
	94.10	9/23/2013	8.89	8.68	85.42	NA	NA	85.42
	94.10	9/24/2013	NM	8.55	85.55	NA	NA	85.55
	94.10	10/24/2013	9.30	8.94	85.16	NA	NA	85.16
	94.10	10/25/2013	NM	6.11	87.99	NA	NA	87.99
	94.10	1/7/2014	9.31	7.13	86.97	NA	NA	86.97
	94.10	1/8/2014	NM	8.52	85.58	NA	NA	85.58
	94.10	4/22/2014	8.71	5.90	88.20	NA	NA	88.20
	94.10	4/23/2014	NM	6.00	88.10	NA	NA	88.10
	94.10	7/24/2014	12.75	6.75	87.35	6.57	0.18	87.49
	94.10	7/25/2014	NM	6.95	87.15	6.6	0.35	87.41
	94.10	10/13/2014	9.32	7.28	86.82	NA	NA	86.82
	94.10	10/14/2013	NM	7.27	86.83	NA	NA	86.83
	94.10	1/22/2015	7.80?	7.00	87.10	NA	NA	87.10
	94.10	1/26/2015	9.30	6.98	87.12	NA	NA	87.12
	94.10	4/28/2015	8.90	6.15	87.95	NA	NA	87.95
	94.10	4/29/2015	8.90	6.15	87.95	6.13	0.02	87.97
	94.10	7/29/2015	NM	6.42	87.68	6.13	0.29	87.90
	94.10	7/30/2015	NM	6.40	87.70	6.10	0.30	87.93
	94.10	10/14/2015	9.50	6.33	87.77	6.21	0.12	87.86
	94.10	10/15/2015	NM	6.36	87.74	6.19	0.17	87.87
	94.10	1/20/2016	8.92	6.30	87.80	NA	NA	87.80
	94.10	1/21/2016	NM	6.33	87.77	6.12	0.21	87.93
	94.10	4/19/2016	8.92	5.52	88.58	NA	NA	88.58
	94.10	4/20/2016	NM	5.82	88.28	5.62	0.20	88.43
	11.21	7/13/2016	8.90	5.90	5.31	5.89	0.01	5.31
	11.21	7/14/2016	NM	5.85	5.36	5.82	0.03	5.38
	11.21	10/25/2016	8.93	6.40	4.81	6.01	0.39	5.10

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-16 (Con't)	11.21	10/26/2016	NM	6.55	4.66	6.05	0.50	5.04
	11.21	1/31/2017	8.91	6.14	5.07	6.14	Sheen	5.07
	11.21	2/1/2017	NM	6.18	5.03	6.18	Sheen	5.03
	11.21	4/25/2017	12.31	5.79	5.42	5.46	0.33	5.42
	11.21	4/26/2017	NM	5.51	5.70	5.51	Sheen	5.70
	11.21	7/24/2017	12.50	5.11	6.10	5.11	Sheen	6.10
	11.21	7/25/2017	NM	5.14	6.07	5.14	Sheen	6.07
	11.21	10/9/2017	12.10	5.85	5.36	5.85	Sheen	5.36
	11.21	10/10/2017	NM	5.88	5.33	5.88	Sheen	5.33
	11.21	2/1/2018	12.51	6.55	4.66	6.20	0.35	4.92
	11.21	2/2/2018	NM	6.43	4.78	6.31	0.12	4.87
	11.21	4/25/2018	10.20	5.67	5.54	5.68	0.01	5.55
	11.21	4/26/2018	10.20	6.02	5.19	5.80	0.22	5.19
	11.21	7/26/2018	10.20	6.03	5.18	6.00	0.03	5.20
	11.21	7/27/2018	10.20	5.99	5.22	5.97	0.02	5.24
	11.21	11/5/2018	7.00	6.10	5.11	5.93	0.17	5.24
	11.21	11/6/2018	7.18	6.10	5.11	5.88	0.22	5.28
	11.21	6/27/2019	7.16	5.39	5.82	5.00	0.39	6.11
	11.21	6/28/2019	7.16	6.54	4.67	6.52	0.02	4.69
	11.21	9/26/2019	7.43	5.86	5.35	5.33	0.53	5.75
	11.21	9/27/2019	7.43	6.04	5.17	5.91	0.13	5.27
	11.21	12/30/2019	NM	5.44	5.77	5.43	0.01	5.78
	11.21	12/31/2019	7.31	5.46	5.75	5.44	0.02	5.77
MW-17	104.6	5/14/2013	17.72	15.82	88.78	NA	NA	88.78
	104.6	5/15/2013	NM	15.82	88.78	NA	NA	88.78
	104.6	6/17/2013	17.70	15.68	88.92	NA	NA	88.92
	104.6	6/18/2013	NM	15.67	88.93	NA	NA	88.93
	104.6	7/17/2013	17.78	15.73	88.87	NA	NA	88.87
	104.6	7/18/2013	NM	15.75	88.85	NA	NA	88.85
	104.6	8/27/2013	17.72	15.93	88.67	NA	NA	88.67
	104.6	8/28/2013	NM	15.95	88.65	NA	NA	88.65
	104.6	9/23/2013	17.71	16.15	88.45	NA	NA	88.45
	104.6	9/24/2013	NM	16.08	88.52	NA	NA	88.52
	104.6	10/24/2013	17.71	16.39	88.21	NA	NA	88.21
	104.6	10/25/2013	NM	16.33	88.27	NA	NA	88.27
	104.6	1/7/2014	17.7	16.10	88.5	NA	NA	88.5
	104.6	1/8/2014	NM	16.08	88.52	NA	NA	88.52
	104.6	4/22/2014	17.75	16.00	88.6	NA	NA	88.6
	104.6	4/23/2014	NM	16.03	88.57	NA	NA	88.57
	104.6	7/24/2014	17.7	16.59	88.01	NA	NA	88.01
	104.6	7/25/2014	NM	16.6	88	NA	NA	88
	104.6	10/13/2014	17.65	17.35	87.25	NA	NA	87.25
	104.6	10/14/2014	NM	17.35	87.25	NA	NA	87.25
	104.6	1/22/2015	17.68	17.24	87.36	NA	NA	87.36
	104.6	1/26/2015	17.68	17.21	87.39	NA	NA	87.39
	104.6	4/28/2015	17.7	16.22	88.38	NA	NA	88.38
	104.6	4/29/2015	17.7	16.18	88.42	NA	NA	88.42
	104.6	7/29/2015	NM	16.25	88.35	NA	NA	88.35
	104.6	7/30/2015	NM	16.25	88.35	NA	NA	88.35
	104.6	10/14/2015	17.72	16.26	88.34	NA	NA	88.34
	104.6	10/15/2015	NM	16.31	88.29	NA	NA	88.29
	104.6	1/20/2016	17.72	16.52	88.08	NA	NA	88.08
	104.6	1/21/2016	NM	16.52	88.08	NA	NA	88.08
	104.6	4/19/2016	17.72	16.08	88.52	NA	NA	88.52
	104.6	4/20/2016	NM	16.07	88.53	NA	NA	88.53
	22.07	7/13/2016	17.69	16.05	6.02	NA	NA	6.02
	22.07	7/14/2016	NM	16.02	6.05	NA	NA	6.05
	22.07	10/25/2016	17.72	16.3	5.77	NA	NA	5.77
	22.07	10/26/2016	NM	16.32	5.75	NA	NA	5.75
	22.07	1/31/2017	17.72	16.42	5.65	NA	NA	5.65
	22.07	2/1/2017	NM	16.43	5.64	NA	NA	5.64

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	22.07	4/25/2017	17.8	15.8	6.27	NA	NA	6.27
	22.07	4/26/2017	NM	15.84	6.23	NA	NA	6.23
	22.07	7/24/2017	17.68	15.35	6.72	NA	NA	6.72

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MW-17 (Con't)	22.07	7/25/2017	NM	15.38	6.69	NA	NA	6.69
	22.07	10/9/2017	17.78	16.02	6.05	NA	NA	6.05
	22.07	10/10/2017	NM	16.04	6.03	NA	NA	6.03
	22.07	2/1/2018	17.74	16.6	5.47	NA	NA	5.47
	22.07	2/2/2018	17.74	16.64	5.43	NA	NA	5.43
	22.07	4/25/2018	17.9	15.94	6.13	NA	NA	6.13
	22.07	4/26/2018	17.9	15.95	6.12	NA	NA	6.12
	22.07	7/26/2018	17.76	16.24	5.83	NA	NA	5.83
	22.07	7/27/2018	17.76	16.26	5.81	NA	NA	5.81
	22.07	11/5/2018	17.82	16.34	5.73	NA	NA	5.73
	22.07	11/6/2018	17.8	16.3	5.77	NA	NA	5.77
	22.07	6/27/2019	17.67	15.40	6.67	NA	NM	6.67
	22.07	6/28/2019	17.67	15.40	6.67	NA	NM	6.67
	22.07	9/26/2019	17.69	15.87	6.2	NA	NA	6.20
	22.07	9/27/2019	17.69	15.70	6.37	NA	NA	6.37
	22.07	12/30/2019	17.92	15.86	6.21	NA	NA	6.21
	22.07	12/31/2019	17.94	15.86	6.21	NA	NA	6.21
MW-18	100.56	5/14/2013	21.19	12.85	87.71	NA	NA	87.71
	100.56	5/15/2013	NM	12.85	87.71	NA	NA	87.71
	100.56	6/17/2013	21.19	12.59	87.97	NA	NA	87.97
	100.56	6/18/2013	NM	12.62	87.94	NA	NA	87.94
	100.56	7/17/2013	21.20	12.90	87.66	NA	NA	87.66
	100.56	7/18/2013	NM	12.87	87.69	NA	NA	87.69
	100.56	8/27/2013	21.19	13.16	87.40	NA	NA	87.40
	100.56	8/28/2013	NM	13.20	87.36	NA	NA	87.36
	100.56	9/23/2013	21.21	13.32	87.24	NA	NA	87.24
	100.56	9/24/2013	NM	13.26	87.30	NA	NA	87.30
	100.56	10/24/2013	21.20	13.76	86.80	NA	NA	86.80
	100.56	10/25/2013	NM	13.75	86.81	NA	NA	86.81
	100.56	1/7/2014	21.20	13.74	86.82	NA	NA	86.82
	100.56	1/8/2014	NM	13.77	86.79	NA	NA	86.79
	100.56	4/22/2014	21.13	13.11	87.45	NA	NA	87.45
	100.56	4/23/2014	NM	13.65	86.91	NA	NA	86.91
	100.56	7/24/2014	21.20	14.70	85.86	NA	NA	85.86
	100.56	7/25/2014	NM	13.96	86.60	NA	NA	86.60
	100.56	10/13/2014	21.15	14.70	85.86	NA	NA	85.86
	100.56	10/14/2014	NM	14.69	85.87	NA	NA	85.87
	100.56	1/22/2015	21.10	14.11	86.45	NA	NA	86.45
	100.56	1/26/2015	21.10	14.10	86.46	NA	NA	86.46
	100.56	4/28/2015	21.02	12.92	87.64	NA	NA	87.64
	100.56	4/29/2015	21.02	10.04	90.52	NA	NA	90.52
	100.56	7/29/2015	NM	13.68	86.88	NA	NA	86.88
	100.56	7/30/2015	NM	13.63	86.93	NA	NA	86.93
	100.56	10/14/2015	21.13	13.60	86.96	NA	NA	86.96
	100.56	10/15/2015	NM	13.68	86.88	NA	NA	86.88
	100.56	1/20/2016	21.14	13.73	86.83	NA	NA	86.83
	100.56	1/21/2016	NM	13.70	86.86	NA	NA	86.86
	100.56	4/19/2016	19.48	13.51	87.05	NA	NA	87.05
	100.56	4/20/2016	NM	13.55	87.01	NA	NA	87.01
	19.19	7/13/2016	21.14	13.44	5.75	NA	NA	5.75
	19.19	7/14/2016	NM	13.40	5.79	NA	NA	5.79
	19.19	10/25/2016	21.19	13.69	5.50	NA	NA	5.50
	19.19	10/26/2016	NM	13.70	5.49	NA	NA	5.49
	19.19	1/31/2017	21.17	13.57	5.62	NA	NA	5.62
	19.19	2/1/2017	NM	13.66	5.53	NA	NA	5.53
	19.19	4/25/2017	21.10	13.08	6.11	NA	NA	6.11
	19.19	4/26/2017	NM	13.04	6.15	NA	NA	6.15
	19.19	7/24/2017	21.10	12.62	6.57	NA	NA	6.57
	19.19	7/25/2017	NM	12.66	6.53	NA	NA	6.53
	19.19	10/9/2017	21.10	13.39	5.80	NA	NA	5.80
	19.19	10/10/2017	NM	13.48	5.71	NA	NA	5.71

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	19.19	2/1/2018	21.14	13.80	5.39	NA	NA	5.39
	19.19	2/2/2018	21.14	13.93	5.26	NA	NA	5.26
	19.19	4/25/2018	21.17	12.96	6.23	NA	NA	6.23

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MW-18 (Con't)	19.19	4/25/2018	21.17	13.08	6.11	NA	NA	6.11
	19.19	7/26/2018	21.15	13.15	6.04	NA	NA	6.04
	19.19	7/27/2018	21.15	13.24	5.95	NA	NA	5.95
	19.19	11/5/2018	21.27	13.23	5.96	NA	NA	5.96
	19.19	11/6/2018	21.20	13.25	5.94	NA	NA	5.94
	19.19	6/27/2019	21.11	12.58	6.61	NA	NM	6.61
	19.19	6/28/2019	21.11	12.56	6.63	NA	NM	6.63
	19.19	9/26/2019	21.13	12.86	6.33	NA	NA	6.33
	19.19	9/27/2019	21.13	13.06	6.13	NA	NA	6.13
	19.19	12/30/2019	21.42	12.82	6.37	NA	NA	6.37
	19.19	12/31/2019	21.41	12.89	6.30	NA	NA	6.30
MW-19	101.65	5/14/2013	20.65	12.83	88.82	NA	NA	88.82
	101.65	5/15/2013	NM	12.83	88.82	NA	NA	88.82
	101.65	6/17/2013	20.64	12.43	89.22	NA	NA	89.22
	101.65	6/18/2013	NM	12.44	89.21	NA	NA	89.21
	101.65	7/17/2013	20.65	12.85	88.80	NA	NA	88.80
	101.65	7/18/2013	NM	12.86	88.79	NA	NA	88.79
	101.65	8/27/2013	20.62	13.15	88.50	NA	NA	88.50
	101.65	8/28/2013	NM	13.20	88.45	NA	NA	88.45
	101.65	9/23/2013	20.63	13.32	88.33	NA	NA	88.33
	101.65	9/24/2013	NM	13.27	88.38	NA	NA	88.38
	101.65	10/24/2013	20.63	13.69	87.96	NA	NA	87.96
	101.65	10/25/2013	NM	13.70	87.95	NA	NA	87.95
	101.65	1/7/2014	20.64	13.70	87.95	NA	NA	87.95
	101.65	1/8/2014	NM	13.73	87.92	NA	NA	87.92
	101.65	4/22/2014	20.60	13.02	88.63	NA	NA	88.63
	101.65	4/23/2014	NM	13.13	88.52	NA	NA	88.52
	101.65	7/24/2014	20.67	13.68	87.97	NA	NA	87.97
	101.65	7/25/2014	NM	13.72	87.93	NA	NA	87.93
	101.65	10/13/2014	20.63	14.57	87.08	NA	NA	87.08
	101.65	10/14/2014	NM	14.57	87.08	NA	NA	87.08
	101.65	1/22/2015	20.60	14.15	87.50	NA	NA	87.50
	101.65	1/26/2015	20.60	14.18	87.47	NA	NA	87.47
	101.65	4/28/2015	20.50	13.44	88.21	NA	NA	88.21
	101.65	4/29/2015	20.50	13.38	88.27	NA	NA	88.27
	101.65	7/29/2015	NM	13.53	88.12	13.54	0.01	88.13
	101.65	7/30/2015	NM	13.49	88.16	13.50	0.01	88.17
	101.65	10/14/2015	20.62	13.44	88.21	NA	NA	88.21
	101.65	10/15/2015	NM	13.52	88.13	NA	NA	88.13
	101.65	1/20/2016	20.65	13.60	88.05	NA	NA	88.05
	101.65	1/21/2016	NM	13.62	88.03	NA	NA	88.03
	101.65	4/19/2016	19.87	13.40	88.25	NA	NA	88.25
	101.65	4/20/2016	NM	13.40	88.25	NA	NA	88.25
	19.36	7/13/2016	20.57	13.34	6.02	NA	NA	6.02
	19.36	7/14/2016	NM	13.29	6.07	NA	NA	6.07
	19.36	10/25/2016	20.64	13.53	5.83	NA	NA	5.83
	19.36	10/26/2016	NM	13.57	5.79	NA	NA	5.79
	19.36	1/31/2017	20.64	13.86	5.50	NA	NA	5.50
	19.36	2/1/2017	NM	14.41	4.95	NA	NA	4.95
	19.36	4/25/2017	20.60	12.95	6.41	NA	NA	6.41
	19.36	4/26/2017	NM	12.93	6.43	NA	NA	6.43
	19.36	7/24/2017	20.60	12.47	6.89	NA	NA	6.89
	19.36	7/25/2017	NM	12.53	6.83	NA	NA	6.83
	19.36	10/9/2017	20.65	13.29	6.07	NA	NA	6.07
	19.36	10/10/2017	NM	13.36	6.00	NA	NA	6.00

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MW-19 (Con't)	19.36	2/1/2018	20.03	13.81	5.55	NA	NA	5.55
	19.36	2/2/2018	20.04	13.90	5.46	NA	NA	5.46
	19.36	4/25/2018	20.80	12.88	6.48	NA	NA	6.48
	19.36	4/26/2018	20.80	12.99	6.37	NA	NA	6.37
	19.36	7/26/2018	20.81	13.14	6.22	NA	NA	6.22
	19.36	7/27/2018	20.81	13.20	6.16	NA	NA	6.16
	19.36	11/5/2018	20.74	13.37	5.99	NA	NA	5.99
	19.36	11/6/2018	20.65	13.33	6.03	NA	NA	6.03
	19.36	6/27/2019	20.61	12.42	6.94	NA	NM	6.94
	19.36	6/28/2019	20.61	12.44	6.92	NA	NM	6.92
	19.36	9/26/2019	20.64	12.98	6.38	NA	NA	6.38
	19.36	9/27/2019	20.64	13.04	6.32	NA	NA	6.32
	19.36	12/30/2019	20.65	13.00	6.36	NA	NA	6.36
	19.36	12/31/2019	20.63	12.99	6.37	NA	NA	6.37
MW-20	19.7	7/13/2016	19.40	13.10	6.60	NA	NA	6.60
	19.7	7/14/2016	NM	13.11	6.59	NA	NA	6.59
	19.7	10/25/2016	19.25	13.23	6.47	NA	NA	6.47
	19.7	10/26/2016	NM	13.29	6.41	NA	NA	6.41
	19.7	1/31/2017	19.27	13.22	6.48	NA	NA	6.48
	19.7	2/1/2017	NM	13.21	6.49	NA	NA	6.49
	19.7	4/25/2017	19.26	12.82	6.88	NA	NA	6.88
	19.7	4/26/2017	NM	12.73	6.97	NA	NA	6.97
	19.7	7/24/2017	19.23	12.27	7.43	NA	NA	7.43
	19.7	7/25/2017	NM	12.35	7.35	NA	NA	7.35
	19.7	10/9/2017	19.24	13.08	6.62	NA	NA	6.62
	19.7	10/10/2017	NM	13.03	6.67	NA	NA	6.67
	19.7	2/1/2018	19.24	13.59	6.11	NA	NA	6.11
	19.7	2/2/2018	19.22	13.52	6.18	NA	NA	6.18
	19.7	4/25/2018	19.30	12.58	7.12	NA	NA	7.12
	19.7	4/26/2018	19.30	12.57	7.13	NA	NA	7.13
	19.7	7/26/2018	19.30	12.56	7.14	NA	NA	7.14
	19.7	7/27/2018	19.30	12.63	7.07	NA	NA	7.07
	19.7	11/5/2018	19.38	13.07	6.63	NA	NA	6.63
	19.7	11/6/2018	19.30	13.50	6.20	NA	NA	6.20
	19.70	6/27/2019	19.19	12.26	7.44	NA	NM	7.44
	19.70	6/28/2019	19.19	12.28	7.42	NA	NM	7.42
	19.70	9/26/2019	19.21	12.87	6.83	NA	NA	6.83
	19.70	9/27/2019	19.21	12.88	6.82	NA	NA	6.82
	19.70	12/30/2019	19.47	12.97	6.73	NA	NA	6.73
	19.70	12/31/2019	19.46	12.92	6.78	NA	NA	6.78

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-21	20.62	7/13/2016	18.03	14.61	6.01	NA	NA	6.01
	20.62	7/14/2016	NM	14.56	6.06	NA	NA	6.06
	20.62	10/25/2016	18.05	14.88	5.74	NA	NA	5.74
	20.62	10/26/2016	NM	14.89	5.73	NA	NA	5.73
	20.62	1/31/2017	18.08	14.14	6.48	NA	NA	6.48
	20.62	2/1/2017	NM	14.86	5.76	NA	NA	5.76
	20.62	4/25/2017	18.02	14.27	6.35	NA	NA	6.35
	20.62	4/26/2017	NM	14.29	6.33	NA	NA	6.33
	20.62	7/24/2017	18.05	13.83	6.79	NA	NA	6.79
	20.62	7/25/2017	NM	13.87	6.75	NA	NA	6.75
	20.62	10/9/2017	18.01	14.58	6.04	NA	NA	6.04
	20.62	10/10/2017	NM	14.60	6.02	NA	NA	6.02
	20.62	2/1/2018	18.08	15.14	5.48	NA	NA	5.48
	20.62	2/2/2018	18.05	15.19	5.43	NA	NA	5.43
	20.62	4/25/2018	18.10	14.38	6.24	NA	NA	6.24
	20.62	4/26/2018	18.10	14.43	6.19	NA	NA	6.19
	20.62	7/26/2018	18.04	14.67	5.95	NA	NA	5.95
	20.62	7/27/2018	18.04	14.68	5.94	NA	NA	5.94
	20.62	11/5/2018	18.22	14.83	5.79	NA	NA	5.79
	20.62	11/6/2018	18.50	14.76	5.86	NA	NA	5.86
	20.62	6/27/2019	17.98	13.88	6.74	NA	NM	6.74
	20.62	6/28/2019	17.98	13.88	6.74	NA	NM	6.74
	20.62	9/26/2019	18.02	14.23	6.39	NA	NA	6.39
	20.62	9/27/2019	18.02	14.28	6.34	NA	NA	6.34
	20.62	12/30/2019	18.08	14.40	6.22	NA	NA	6.22
	20.62	12/31/2019	18.10	14.38	6.24	NA	NA	6.24
MW-22	11.37	7/13/2016	9.07	5.90	5.47	NA	NA	5.47
	11.37	7/14/2016	NM	5.78	5.59	NA	NA	5.59
	11.37	10/25/2016	9.08	6.12	5.25	NA	NA	5.25
	11.37	10/26/2016	NM	6.18	5.19	NA	NA	5.19
	11.37	1/31/2017	9.10	6.15	5.22	NA	NA	5.22
	11.37	2/1/2017	NM	6.18	5.19	NA	NA	5.19
	11.37	4/25/2017	9.07	5.56	5.81	NA	NA	5.81
	11.37	4/26/2017	NM	5.51	5.86	NA	NA	5.86
	11.37	7/24/2017	9.08	5.05	6.32	NA	NA	6.32
	11.37	7/25/2017	NM	5.10	6.27	NA	NA	6.27
	11.37	10/9/2017	9.08	5.78	5.59	NA	NA	5.59
	11.37	10/10/2017	NM	5.86	5.51	NA	NA	5.51
	11.37	2/1/2018	9.05	6.16	5.21	NA	NA	5.21
	11.37	2/2/2018	9.08	6.24	5.13	NA	NA	5.13
	11.37	4/25/2018	9.10	5.60	5.77	NA	NA	5.77
	11.37	4/26/2018	9.10	5.74	5.63	NA	NA	5.63
	11.37	7/26/2018	9.10	5.96	5.41	NA	NA	5.41
	11.37	7/27/2018	9.10	5.91	5.46	NA	NA	5.46
	11.37	11/5/2018	9.13	5.04	6.33	NA	NA	6.33
	11.37	11/6/2018	9.13	4.95	6.42	NA	NA	6.42
	11.37	6/27/2019	9.08	5.03	6.34	NA	NM	6.34
	11.37	6/28/2019	9.08	5.09	6.28	NA	NM	6.28
	11.37	9/26/2019	9.08	5.32	6.05	NA	NA	6.05
	11.37	9/27/2019	9.08	5.40	5.97	NA	NA	5.97
	11.37	12/30/2019	9.31	5.43	5.94	NA	NA	5.94
	11.37	12/31/2019	9.32	5.45	5.92	NA	NA	5.92

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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-22D	11.39	11/5/2018	35.25	6.15	5.24	NA	NA	5.24
	11.39	11/6/2018	35.30	6.08	5.31	NA	NA	5.31
	11.39	6/27/2019	35.15	5.21	6.18	NA	NM	6.18
	11.39	6/28/2019	35.15	5.27	6.12	NA	NM	6.12
	11.39	9/26/2019	35.16	5.57	5.82	NA	NA	5.82
	11.39	9/27/2019	35.16	5.69	5.70	NA	NA	5.70
	11.39	12/30/2019	35.68	5.64	5.75	NA	NA	5.75
	11.39	12/31/2019	35.66	5.68	5.71	NA	NA	5.71
MW-23	11.42	7/13/2016	10.01	6.09	5.33	NA	NA	5.33
	11.42	7/14/2016	NM	5.97	5.45	NA	NA	5.45
	11.42	10/25/2016	10.03	6.30	5.12	NA	NA	5.12
	11.42	10/26/2016	NM	6.35	5.07	NA	NA	5.07
	11.42	1/31/2017	10.04	6.33	5.09	NA	NA	5.09
	11.42	2/1/2017	NM	6.36	5.06	NA	NA	5.06
	11.42	4/25/2017	10.01	5.74	5.68	NA	NA	5.68
	11.42	4/26/2017	NM	5.72	5.70	NA	NA	5.70
	11.42	7/24/2017	10.01	5.27	6.15	NA	NA	6.15
	11.42	7/25/2017	NM	5.32	6.10	NA	NA	6.10
	11.42	10/9/2017	10.05	5.96	5.46	NA	NA	5.46
	11.42	10/10/2017	NM	6.03	5.39	NA	NA	5.39
	11.42	2/1/2018	10.02	6.30	5.12	NA	NA	5.12
	11.42	2/2/2018	9.98	6.41	5.01	NA	NA	5.01
	11.42	4/25/2018	10.03	5.79	5.63	NA	NA	5.63
	11.42	4/26/2018	10.03	5.86	5.56	NA	NA	5.56
	11.42	7/26/2018	10.03	6.07	5.35	NA	NA	5.35
	11.42	7/27/2018	10.03	6.12	5.30	NA	NA	5.30
	11.42	11/5/2018	10.05	6.07	5.35	NA	NA	5.35
	11.42	11/6/2018	10.01	5.97	5.45	NA	NA	5.45
	11.42	6/27/2019	10.02	5.20	6.22	NA	NM	6.22
	11.42	6/28/2019	10.02	5.27	6.15	NA	NM	6.15
	11.42	9/26/2019	10.02	5.52	5.90	NA	NA	5.90
	11.42	9/27/2019	10.02	5.69	5.73	NA	NA	5.73
	11.42	12/30/2019	10.08	5.56	5.86	NA	NA	5.86
	11.42	12/31/2019	10.07	5.58	5.84	NA	NA	5.84
MW-24	11.29	7/13/2016	8.02	2.57	8.72	NA	NA	8.72
	11.29	7/14/2016	NM	2.42	8.87	NA	NA	8.87
	11.29	10/25/2016	8.33	2.46	8.83	NA	NA	8.83
	11.29	10/26/2016	NM	2.67	8.62	NA	NA	8.62
	11.29	1/31/2017	8.08	2.91	8.38	NA	NA	8.38
	11.29	2/1/2017	NM	2.93	8.36	NA	NA	8.36
	11.29	4/25/2017	8.05	2.46	8.83	NA	NA	8.83
	11.29	4/26/2017	NM	4.13	7.16	NA	NA	7.16
	11.29	7/24/2017	8.00	2.43	8.86	NA	NA	8.86
	11.29	7/25/2017	NM	2.60	8.69	NA	NA	8.69
	11.29	10/9/2017	8.03	3.38	7.91	NA	NA	7.91
	11.29	10/10/2017	NM	5.53	5.76	NA	NA	5.76
	11.29	2/1/2018	8.06	4.33	6.96	NA	NA	6.96
	11.29	2/2/2018	8.05	4.31	6.98	NA	NA	6.98
	11.29	4/25/2018	8.08	3.24	8.05	NA	NA	8.05
	11.29	4/26/2018	8.08	3.12	8.17	NA	NA	8.17
	11.29	7/26/2018	8.08	3.34	7.95	3.23	0.11	8.03
	11.29	7/27/2018	8.08	3.35	7.94	3.33	0.02	7.96
	11.29	11/5/2018	8.10	4.40	6.89	4.37	0.03	6.91
	11.29	11/6/2018	8.10	4.29	7.00	NA	NA	7.00
	11.29	6/27/2019	8.02	3.22	8.07	3.19	0.03	8.09
	11.29	6/28/2019	8.02	3.22	8.07	3.20	0.02	8.09
	11.29	9/26/2019	8.06	3.84	7.45	3.82	0.02	7.47
	11.29	9/27/2019	8.06	3.90	7.39	NA	NA	7.39
	11.29	12/30/2019	8.09	3.75	7.54	NA	NA	7.54
	11.29	12/31/2019	8.08	3.74	7.55	NA	NA	7.55

Table 1
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Well ID	Top of Casing Elevation[1] (feet)	Date	Depth to Bottom of Well (ftbtoc)	Depth to Water (ftbtoc)	Water Table Elevation (feet)	Depth to Product (ftbtoc)	Product Thickness (feet)	Corrected Water Table Elevation[2] (feet)
MW-26	11.31	11/5/2018	13.70	5.08	6.23	NA	NA	6.23
	11.31	11/6/2018	13.68	5.02	6.29	NA	NA	6.29
	11.31	6/27/2019	13.68	4.41	6.90	4.25	0.16	7.02
	11.31	6/28/2019	13.68	4.43	6.88	4.29	0.14	6.99
	11.31	9/26/2019	13.70	4.86	6.45	4.79	0.07	6.45
	11.31	9/27/2019	13.70	4.93	6.38	4.87	0.06	6.43
	11.31	12/30/2019	13.74	4.37	6.94	4.35	0.02	6.94
	11.31	12/31/2019	13.72	4.42	6.89	4.40	0.02	6.91

1 - Initial survey data in 2009 and 2010 provided by Landmark Consulting Corp. based on an arbitrary benchmark of 100 feet. The survey was updated in 2010 by Scott Bleeker, Professional Land Surveyor, and was also based on an arbitrary benchmark of 100 ft. The survey was updated in July 2016 and November 2018 by DPK Land Surveying and includes true elevation datum based on NAVD 1988.

2 - Corrected water table elevation = measured water table elevation + (free product thickness * free product specific gravity of 0.75).

3 - Top of PVC casing elevation altered during building modifications and requires new survey

ftbtoc - feet below top-of-casing

NA - Not applicable, free-phase product not measured in well

NM - Not measured

* Unable to access well

Table 2
34 Berry Street
Brooklyn, New York
Remedial Action Work Plan
Soil Analytical Results of Volatile Organic Compounds (VOCs)

			AKRF Sample ID	SB-22D_14-15_20181026	SB-26_4-6_20181023	SB-X_4-6_20181023
			Laboratory Sample ID	460-167813-1	460-167506-1	460-167506-2
			Date Sampled	10/26/2018 12:00:00 PM	10/23/2018 1:45:00 PM	10/23/2018 1:55:00 PM
			Dilution Factor	50	50	50
			Unit	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q
1,1,1-Trichloroethane	0.68	100		0.095 U	0.11 U	0.15 U
1,1,2,2-Tetrachloroethane	NS	NS		0.095 U	0.11 U	0.15 U
1,1,2-Trichloroethane	NS	NS		0.095 U	0.11 U	0.15 U
1,1-Dichloroethane	0.27	26		0.095 U	0.11 U	0.15 U
1,1-Dichloroethene	0.33	100		0.095 U	0.11 U	0.15 U
1,2,4-Trichlorobenzene	NS	NS		0.36 U	0.37 U	0.42 U
1,2-Dichlorobenzene	1.1	100		0.36 U	0.37 U	0.42 U
1,2-Dichloroethane	**0.02**	3.1		**7.9**	0.11 U	0.15 U
1,2-Dichloropropane	NS	NS		0.22	0.11 U	0.15 U
1,3-Dichlorobenzene	2.4	49		0.36 U	0.37 U	0.42 U
1,4-Dichlorobenzene	1.8	13		0.36 U	0.37 U	0.42 U
2-Hexanone	NS	NS		0.48 U	0.57 U	0.73 U
Acetone	0.05	100		0.48 U	0.57 U	0.73 U
Benzene	0.06	4.8		0.095 U	0.11 U	0.15 U
Bromodichloromethane	NS	NS		0.095 U	0.11 U	0.15 U
Bromoform	NS	NS		0.095 U	0.11 U	0.15 U
Bromomethane	NS	NS		0.095 U	0.11 U	0.15 U
Carbon Disulfide	NS	NS		0.095 U	0.11 UJ	0.15 UJ
Carbon Tetrachloride	0.76	2.4		0.095 U	0.11 U	0.15 U
Chlorobenzene	1.1	100		0.095 U	0.11 U	0.15 U
Chloroethane	NS	NS		0.095 U	0.11 U	0.15 U
Chloroform	0.37	49		0.095 U	0.11 U	0.15 U
Chloromethane	NS	NS		0.095 U	0.11 U	0.15 U
Cis-1,2-Dichloroethylene	0.25	100		0.095 U	0.11 U	0.15 U
Cis-1,3-Dichloropropene	NS	NS		0.095 U	0.11 U	0.15 U
Dibromochloromethane	NS	NS		0.095 U	0.11 U	0.15 U
Ethylbenzene	1	41		0.095 U	0.076 J	0.1 J
Hexachlorobutadiene	NS	NS		0.073 U	0.076 U	0.086 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100		0.48 U	0.57 U	0.73 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	NS		0.48 U	0.57 U	0.73 U
Methylene Chloride	0.05	100		0.095 U	0.11 U	0.15 U
Naphthalene	12	100		0.36 U	0.55	0.19 JL
Styrene	NS	NS		0.095 U	0.11 U	0.15 U
Tetrachloroethylene (PCE)	1.3	19		0.095 U	0.11 U	0.15 U
Toluene	0.7	100		0.095 U	0.11 U	0.15 U
Trans-1,2-Dichloroethene	0.19	100		0.095 U	0.11 U	0.15 U
Trans-1,3-Dichloropropene	NS	NS		0.095 U	0.11 U	0.15 U
Trichloroethylene (TCE)	0.47	21		0.031 J	0.11 U	0.15 U
Vinyl Chloride	0.02	0.9		0.095 U	0.11 U	0.15 U
Xylenes, Total	0.26	100		0.19 U	0.17 J	0.2 J

Table 2
34 Berry Street
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Remedial Action Work Plan
Soil Analytical Results of Volatile Organic Compounds (VOCs)

			AKRF Sample ID	FB_20181023	TB_20181023	TB-20181026
			Laboratory Sample ID	460-167506-3	460-167506-4	460-167813-2
			Date Sampled	10/23/2018 2:30:00 PM	10/23/2018 1:00:00 AM	10/26/2018 1:00:00 AM
			Dilution Factor	1	1	1
			Unit	µg/L	µg/L	µg/L
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q
1,1,1-Trichloroethane	0.68	100		1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NS	NS		1 U	1 UJ	1 U
1,1,2-Trichloroethane	NS	NS		1 U	1 U	1 U
1,1-Dichloroethane	0.27	26		1 U	1 U	1 U
1,1-Dichloroethene	0.33	100		1 U	1 U	1 U
1,2,4-Trichlorobenzene	NS	NS		2 U	1 U	1 U
1,2-Dichlorobenzene	1.1	100		10 U	1 U	1 U
1,2-Dichloroethane	**0.02**	3.1		1 U	1 U	1 U
1,2-Dichloropropane	NS	NS		1 U	1 U	1 U
1,3-Dichlorobenzene	2.4	49		10 U	1 U	1 U
1,4-Dichlorobenzene	1.8	13		10 U	1 U	1 U
2-Hexanone	NS	NS		5 U	5 U	5 U
Acetone	0.05	100		5 U	5 U	5 U
Benzene	0.06	4.8		1 U	1 U	1 U
Bromodichloromethane	NS	NS		1 U	1 U	1 U
Bromoform	NS	NS		1 U	1 U	1 U
Bromomethane	NS	NS		1 U	1 UJ	1 U
Carbon Disulfide	NS	NS		1 U	1 U	1 U
Carbon Tetrachloride	0.76	2.4		1 U	1 U	1 U
Chlorobenzene	1.1	100		1 U	1 U	1 U
Chloroethane	NS	NS		1 U	1 U	1 U
Chloroform	0.37	49		1 U	1 U	1 U
Chloromethane	NS	NS		1 U	1 U	1 U
Cis-1,2-Dichloroethylene	0.25	100		1 U	1 U	1 U
Cis-1,3-Dichloropropene	NS	NS		1 U	1 U	1 U
Dibromochloromethane	NS	NS		1 U	1 U	1 U
Ethylbenzene	1	41		1 U	1 U	1 U
Hexachlorobutadiene	NS	NS		1 U	1 U	1 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100		5 U	5 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	NS		5 U	5 U	5 U
Methylene Chloride	0.05	100		1 U	1 U	1 U
Naphthalene	12	100		10 U	10 U	10 U
Styrene	NS	NS		1 U	1 U	1 U
Tetrachloroethylene (PCE)	1.3	19		1 U	1 U	1 U
Toluene	0.7	100		1 U	1 U	1 U
Trans-1,2-Dichloroethene	0.19	100		1 U	1 U	1 U
Trans-1,3-Dichloropropene	NS	NS		1 U	1 U	1 U
Trichloroethylene (TCE)	0.47	21		1 U	1 U	1 U
Vinyl Chloride	0.02	0.9		1 U	1 U	1 U
Xylenes, Total	0.26	100		2 U	2 U	2 U

Table 3
34 Berry Street
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Remedial Action Work Plan
Soil Analytical Results of Semivolatile Organic Compounds (SVOCs)

		AKRF Sample ID	SB-22D_14-15_20181026	SB-26_4-6_20181023	SB-X_4-6_20181023	FB_20181023
		Laboratory Sample ID	460-167813-1	460-167506-1	460-167506-2	460-167506-3
		Date Sampled	10/26/2018 12:00:00 PM	10/23/2018 1:45:00 PM	10/23/2018 1:55:00 PM	10/23/2018 2:30:00 PM
		Dilution Factor	1	1	1	1
		Unit	mg/kg	mg/kg	mg/kg	µg/L
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q
1,2,4-Trichlorobenzene	NS	NS	0.036 U	0.037 U	0.042 U	2 U
1,2-Dichlorobenzene	1.1	100	0.36 U	0.37 U	0.42 U	10 U
1,3-Dichlorobenzene	2.4	49	0.36 U	0.37 U	0.42 U	10 U
1,4-Dichlorobenzene	1.8	13	0.36 U	0.37 U	0.42 U	10 U
2,4,5-Trichlorophenol	NS	NS	0.36 U	0.37 U	0.42 U	10 U
2,4,6-Trichlorophenol	NS	NS	0.14 U	0.15 U	0.17 U	10 U
2,4-Dichlorophenol	NS	NS	0.14 U	0.15 U	0.17 U	10 U
2,4-Dimethylphenol	NS	NS	0.36 U	0.37 U	0.42 U	10 U
2,4-Dinitrophenol	NS	NS	0.29 UJ	0.3 UJ	0.34 UJ	20 U
2,4-Dinitrotoluene	NS	NS	0.073 U	0.076 U	0.086 U	2 U
2,6-Dinitrotoluene	NS	NS	0.073 UJ	0.076 U	0.086 U	2 U
2-Chloronaphthalene	NS	NS	0.36 U	0.37 U	0.42 U	10 U
2-Chlorophenol	NS	NS	0.36 U	0.37 U	0.42 U	10 U
2-Methylnaphthalene	NS	NS	0.36 U	2.2	0.45	10 U
2-Nitroaniline	NS	NS	0.36 U	0.37 U	0.42 U	10 U
2-Nitrophenol	NS	NS	0.36 U	0.37 U	0.42 U	10 U
3,3'-Dichlorobenzidine	NS	NS	0.14 U	0.15 U	0.17 U	10 U
3-Nitroaniline	NS	NS	0.36 U	0.37 U	0.42 U	10 U
4,6-Dinitro-2-Methylphenol	NS	NS	0.29 UJ	0.3 U	0.34 U	20 U
4-Bromophenyl Phenyl Ether	NS	NS	0.36 U	0.37 U	0.42 U	10 U
4-Chloro-3-Methylphenol	NS	NS	0.36 U	0.37 U	0.42 U	10 U
4-Chloroaniline	NS	NS	0.36 U	0.37 U	0.42 U	10 U
4-Chlorophenyl Phenyl Ether	NS	NS	0.36 U	0.37 U	0.42 U	10 U
4-Methylphenol (P-Cresol)	0.33	NS	0.36 U	0.37 U	0.42 U	10 U
4-Nitroaniline	NS	NS	0.36 U	0.37 U	0.42 U	10 U
4-Nitrophenol	NS	NS	0.73 U	0.76 U	0.86 U	20 U
Acenaphthene	20	100	0.36 U	0.37 U	0.42 U	10 U
Acenaphthylene	100	100	0.36 U	0.37 U	0.42 U	10 U
Anthracene	100	100	0.36 U	0.37 U	0.1 J	10 U
Benzo(a)Anthracene	1	1	0.036 U	0.033 J	0.019 JL	1 U
Benzo(a)Pyrene	1	1	0.036 U	0.028 J	0.011 JL	1 U
Benzo(b)Fluoranthene	1	1	0.036 U	0.034 J	0.016 JL	2 U
Benzo(g,h,i)Perylene	100	100	0.36 U	0.37 U	0.42 U	10 U
Benzo(k)Fluoranthene	0.8	3.9	0.036 U	0.016 J	0.042 U	1 U
Benzyl Butyl Phthalate	NS	NS	0.36 U	0.37 U	0.42 U	10 U
Bis(2-Chloroethoxy) Methane	NS	NS	0.36 U	0.37 U	0.42 U	10 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	NS	NS	0.036 U	0.037 U	0.042 U	1 U
Bis(2-Chloroisopropyl) Ether	NS	NS	0.36 U	0.37 UJ	0.42 UJ	10 U
Bis(2-Ethylhexyl) Phthalate	NS	NS	0.032 J	0.37 U	0.42 U	2 U
Carbazole	NS	NS	0.36 U	0.37 U	0.42 U	10 U
Chrysene	1	3.9	0.36 U	0.027 J	0.42 U	2 U
Dibenz(a,h)Anthracene	0.33	0.33	0.036 U	0.037 U	0.042 U	1 U
Dibenzofuran	7	59	0.36 U	0.37 U	0.42 U	10 U
Diethyl Phthalate	NS	NS	0.36 U	0.37 U	0.42 U	10 U
Dimethyl Phthalate	NS	NS	0.36 U	0.37 U	0.42 U	10 U
Di-N-Butyl Phthalate	NS	NS	0.36 U	0.37 U	0.42 U	10 U
Di-N-Octylphthalate	NS	NS	0.36 U	0.37 UJ	0.42 UJ	10 U
Fluoranthene	100	100	0.36 U	0.37 U	0.031 J	10 U
Fluorene	30	100	0.36 U	1.5	0.49 JL	10 U
Hexachlorobenzene	0.33	1.2	0.036 U	0.037 U	0.042 U	1 U
Hexachlorobutadiene	NS	NS	0.073 U	0.076 U	0.086 U	1 U
Hexachlorocyclopentadiene	NS	NS	0.36 U	370 R	420 R	10 U
Hexachloroethane	NS	NS	0.036 U	0.037 U	0.042 U	2 U
Indeno(1,2,3-c,d)Pyrene	0.5	0.5	0.036 U	0.037 U	0.042 U	2 UJ
Naphthalene	12	100	0.36 U	0.55	0.19 JL	10 U
Nitrobenzene	NS	NS	0.036 U	0.037 U	0.042 U	1 U
N-Nitrosodi-N-Propylamine	NS	NS	0.036 U	0.037 U	0.042 U	1 U
N-Nitrosodiphenylamine	NS	NS	0.36 U	0.37 U	0.42 U	10 U
Pentachlorophenol	0.8	6.7	0.29 U	0.3 UJ	0.34 UJ	20 U
Phenanthrene	100	100	0.36 U	5.1	1.6 JL	10 U
Phenol	0.33	100	0.36 U	0.37 U	0.42 U	10 U
Pyrene	100	100	0.36 U	0.093 J	0.035 JL	10 U

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Groundwater Analytical Results of Volatile Organic Compounds (VOCs)

	AKRF Sample ID	MW-02_20181105	MW-02_20181105	MW-3R_20181107	MW-04_20181105
	Laboratory Sample ID	460-168652-5	460-168652-5	460-168856-2	460-168652-2
	Date Sampled	11/5/2018 4:00:00 PM	11/5/2018 4:00:00 PM	11/7/2018 12:06:00 PM	11/5/2018 12:15:00 PM
	Unit	µg/L	µg/L	µg/L	µg/L
	Dilution Factor	1	5	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1-Trichloroethane	5	1 U	NR	1 U	1 U
1,1,2,2-Tetrachloroethane	5	1 U	NR	1 U	1 U
1,1,2-Trichloroethane	1	1 U	NR	1 U	1 U
1,1-Dichloroethane	5	1 U	NR	1 U	1 U
1,1-Dichloroethene	5	1 U	NR	1 U	1 U
1,2,4-Trichlorobenzene	5	NR	10 U	2 U	2 U
1,2-Dichlorobenzene	3	NR	52 U	10 U	10 U
1,2-Dichloroethane	**0.6**	**55**	NR	1 U	**4.3**
1,2-Dichloropropane	**1**	**1.4**	NR	0.49 J	0.69 J
1,3-Dichlorobenzene	3	NR	52 U	10 U	10 U
1,4-Dichlorobenzene	3	NR	52 U	10 U	10 U
2-Hexanone	50	5 U	NR	5 U	5 U
Acetone	50	5 U	NR	5 U	5 U
Benzene	**1**	0.59 J	NR	**430**	1 U
Bromodichloromethane	50	1 U	NR	1 U	1 U
Bromoform	50	1 U	NR	1 U	1 U
Bromomethane	5	1 U	NR	1 U	1 U
Carbon Disulfide	60	1 U	NR	1 U	1 U
Carbon Tetrachloride	5	1 U	NR	1 U	1 U
Chlorobenzene	**5**	1 U	NR	1 U	1 U
Chloroethane	5	1 U	NR	1 U	1 U
Chloroform	**7**	1 U	NR	1.4	1 U
Chloromethane	5	1 U	NR	1 U	1 U
Cis-1,2-Dichloroethylene	5	1 U	NR	0.27 J	1 U
Cis-1,3-Dichloropropene	NS	1 U	NR	1 U	1 U
Dibromochloromethane	50	1 U	NR	1 U	1 U
Ethylbenzene	5	1 U	NR	1.4	1 U
Hexachlorobutadiene	0.5	NR	5.2 U	1 U	1 U
Methyl Ethyl Ketone (2-Butanone)	50	5 U	NR	5 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	5 U	NR	5 U	5 U
Methylene Chloride	5	1 U	NR	0.47 J	1 U
Naphthalene	10	NR	52 U	10 U	10 U
Styrene	5	1 U	NR	1 U	1 U
Tetrachloroethylene (PCE)	**5**	1 U	NR	1 U	1 U
Toluene	**5**	0.5 J	NR	2.9	1 U
Trans-1,2-Dichloroethene	5	2	NR	1 U	1 U
Trans-1,3-Dichloropropene	NS	1 U	NR	1 U	1 U
Trichloroethylene (TCE)	**5**	0.34 J	NR	1 U	1 U
Vinyl Chloride	2	1 U	NR	1 U	1 U
Xylenes, Total	NS	1.6 J	NR	1.9 J	2 U

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Groundwater Analytical Results of Volatile Organic Compounds (VOCs)

	AKRF Sample ID	MW-X01_20181105	MW-05_20181105	MW-07_20181105	MW-08_20181107	MW-09_20181107
	Laboratory Sample ID	460-168652-3	460-168652-1	460-168652-4	460-168856-3	460-168856-4
	Date Sampled	11/5/2018 12:25:00 PM	11/5/2018 11:25:00 AM	11/5/2018 1:45:00 PM	11/7/2018 11:45:00 AM	11/7/2018 12:55:00 PM
	Unit	µg/L	µg/L	µg/L	µg/L	µg/L
	Dilution Factor	1	1	1	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1-Trichloroethane	5	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	2.1 U	2.1 U	2.1 U	2 U	2 U
1,2-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	**0.6**	**4.8**	**62**	1 U	1 U	1 U
1,2-Dichloropropane	**1**	0.81 J	**3.1**	1 U	1 U	1 U
1,3-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50	5 U	5 U	5 U	5 U	5 U
Acetone	50	5 U	5 U	5 U	5 U	5 U
Benzene	**1**	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50	1 U	1 U	1 U	1 U	1 U
Bromoform	50	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	60	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	5	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	**5**	1 U	1 U	1.6	1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	0.64 J
Chloroform	**7**	1 U	1 U	1 U	1 U	1 U
Chloromethane	5	1 U	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethylene	5	1 U	0.42 J	1 U	1 U	0.69 J
Cis-1,3-Dichloropropene	NS	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	0.5	1 U	1 U	1 U	1 U	1 U
Methyl Ethyl Ketone (2-Butanone)	50	5 U	5 U	5 U	5 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	5 U	5 U	5 U	5 U	5 U
Methylene Chloride	5	1 U	1 U	1 U	1 U	1 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Styrene	5	1 U	1 UJ	1 U	1 U	1 U
Tetrachloroethylene (PCE)	**5**	1 U	0.37 J	1 U	1 U	1 U
Toluene	**5**	1 U	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	NS	1 U	1 U	1 U	1 U	1 U
Trichloroethylene (TCE)	**5**	0.33 J	0.82 J	1 U	1 U	1 U
Vinyl Chloride	2	1 U	1 U	1 U	1 U	1 U
Xylenes, Total	NS	2 U	2 U	2 U	2 U	2 U

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Groundwater Analytical Results of Volatile Organic Compounds (VOCs)

	AKRF Sample ID	MW-10_20181107	MW-17_20181108	MW-18_20181107	MW-18_20181107	MW-19_20181108
	Laboratory Sample ID	460-168856-5	460-168856-10	460-168856-6	460-168856-6	460-168856-8
	Date Sampled	11/7/2018 2:12:00 PM	11/8/2018 11:25:00 AM	11/7/2018 4:40:00 PM	11/7/2018 4:40:00 PM	11/8/2018 9:55:00 AM
	Unit	µg/L	µg/L	µg/L	µg/L	µg/L
	Dilution Factor	1	1	1	5	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1-Trichloroethane	5	1 U	1 U	1 U	NR	1 U
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	NR	1 U
1,1,2-Trichloroethane	1	1 U	1 U	1 U	NR	1 U
1,1-Dichloroethane	5	1 U	1 U	1 U	NR	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	NR	1 U
1,2,4-Trichlorobenzene	5	2 U	2 U	2 U	NR	2 U
1,2-Dichlorobenzene	3	10 U	10 U	10 U	NR	10 U
1,2-Dichloroethane	**0.6**	1 U	1 U	NR	**660 D**	1 U
1,2-Dichloropropane	**1**	1 U	1 U	**160**	NR	1 U
1,3-Dichlorobenzene	3	10 U	10 U	10 U	NR	10 U
1,4-Dichlorobenzene	3	10 U	10 U	10 U	NR	10 U
2-Hexanone	50	5 U	5 U	5 U	NR	5 U
Acetone	50	7.3	5 U	5 U	NR	5 U
Benzene	**1**	1 U	1 U	1 U	NR	1 U
Bromodichloromethane	50	1 U	1 U	1 U	NR	1 U
Bromoform	50	1 U	1 U	1 U	NR	1 U
Bromomethane	5	1 U	1 U	1 U	NR	1 U
Carbon Disulfide	60	1 U	1 U	1 U	NR	1 U
Carbon Tetrachloride	5	1 U	1 U	1 U	NR	1 U
Chlorobenzene	**5**	1 U	1 U	1 U	NR	1 U
Chloroethane	5	1 U	1 U	1 U	NR	1 U
Chloroform	**7**	1 U	1 U	1.8	NR	1 U
Chloromethane	5	1 U	1 U	1 U	NR	1 U
Cis-1,2-Dichloroethylene	5	0.34 J	1 U	1 U	NR	1 U
Cis-1,3-Dichloropropene	NS	1 U	1 U	1 U	NR	1 U
Dibromochloromethane	50	1 U	1 U	1 U	NR	1 U
Ethylbenzene	5	1 U	1 U	1 U	NR	1 U
Hexachlorobutadiene	0.5	1 U	1 U	1 U	NR	1 U
Methyl Ethyl Ketone (2-Butanone)	50	5 U	5 U	5 U	NR	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	5 U	5 U	5 U	NR	5 U
Methylene Chloride	5	1 U	1 U	1 U	NR	1 U
Naphthalene	10	10 U	10 U	10 U	NR	10 U
Styrene	5	1 U	1 U	1 U	NR	1 U
Tetrachloroethylene (PCE)	**5**	1 U	0.41 J	0.34 J	NR	1 U
Toluene	**5**	1 U	1 U	1 U	NR	1 U
Trans-1,2-Dichloroethene	5	1 U	1 U	1 U	NR	1 U
Trans-1,3-Dichloropropene	NS	1 U	1 U	1 U	NR	1 U
Trichloroethylene (TCE)	**5**	1 U	1 U	**21**	NR	1 U
Vinyl Chloride	2	1 U	1 U	1 U	NR	1 U
Xylenes, Total	NS	2 U	2 U	2 U	NR	2 U

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Groundwater Analytical Results of Volatile Organic Compounds (VOCs)

	AKRF Sample ID	MW-20_20181108	MW-21_20181108	MW-22_20181106	MW-22D_20181107	MW-23_20181106
	Laboratory Sample ID	460-168856-7	460-168856-9	460-168652-6	460-168856-1	460-168652-7
	Date Sampled	11/8/2018 10:28:00 AM	11/8/2018 1:50:00 PM	11/6/2018 10:53:00 AM	11/7/2018 10:00:00 AM	11/6/2018 11:35:00 AM
	Unit	µg/L	µg/L	µg/L	µg/L	µg/L
	Dilution Factor	1	1	1	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1-Trichloroethane	5	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	1 U	1 U	1 U	0.86 J	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	2 U	2 U	2.1 U	2 U	2.1 U
1,2-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	**0.6**	1 U	1 U	**33**	**270**	**12**
1,2-Dichloropropane	**1**	1 U	1 U	**1.1**	**11**	0.36 J
1,3-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
2-Hexanone	50	5 U	5 U	5 U	5 U	5 U
Acetone	50	5 U	5 U	5 U	5.5	5 U
Benzene	**1**	1 U	1 U	1 U	**6.1**	**1.7**
Bromodichloromethane	50	1 U	1 U	0.41 J	1 U	1 U
Bromoform	50	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	1 UJ	1 U	1 U	1 U	1 U
Carbon Disulfide	60	1 U	1 U	1 U	2.8	1 U
Carbon Tetrachloride	5	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	**5**	1 U	1 U	1 U	1 U	**5.7**
Chloroethane	5	1 U	1 U	1 U	1 U	1 U
Chloroform	**7**	1.4	1 U	**9.2**	**34**	1 U
Chloromethane	5	1 U	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethylene	5	1 U	1 U	1 U	0.61 J	1 U
Cis-1,3-Dichloropropene	NS	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1.7	0.56 J
Hexachlorobutadiene	0.5	1 U	1 U	1 U	1 U	1 U
Methyl Ethyl Ketone (2-Butanone)	50	5 U	5 U	5 U	5 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	5 U	5 U	5 U	5 U	5 U
Methylene Chloride	5	1 U	1 U	1 U	0.97 J	1 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Styrene	5	1 U	1 U	1 U	0.57 J	1 U
Tetrachloroethylene (PCE)	**5**	0.36 J	1 U	1 U	**13**	1 U
Toluene	**5**	1 U	1 U	1 U	**17**	0.41 J
Trans-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	NS	1 U	1 U	1 U	1 U	1 U
Trichloroethylene (TCE)	**5**	1 U	1 U	1 U	1.3	1 U
Vinyl Chloride	2	1 U	1 U	1 U	1 U	1 U
Xylenes, Total	NS	2 U	2 U	2 U	5	2 U

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Groundwater Analytical Results of Volatile Organic Compounds (VOCs)

	AKRF Sample ID	MW-26_20181106	FB-01_20181106	TB-01_20181106	TB-02_20181108
	Laboratory Sample ID	460-168652-8	460-168652-9	460-168652-10	460-168856-11
	Date Sampled	11/6/2018 1:26:00 PM	11/6/2018 3:35:00 PM	11/6/2018	11/8/2018
	Unit	µg/L	µg/L	µg/L	µg/L
	Dilution Factor	1	1	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1-Trichloroethane	5	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	1 U	1 UJ	1 U	1 U
1,1,2-Trichloroethane	1	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	2.1 U	2.1 U	2.1 U	2.1 U
1,2-Dichlorobenzene	3	10 U	10 U	10 U	10 U
1,2-Dichloroethane	**0.6**	1 U	1 U	1 U	1 U
1,2-Dichloropropane	**1**	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3	10 U	10 U	10 U	10 U
2-Hexanone	50	5 U	5 U	5 U	5 U
Acetone	50	5 U	6.9	5 U	5 U
Benzene	**1**	**4.1**	1 U	1 U	1 U
Bromodichloromethane	50	1 U	1 U	1 U	1 U
Bromoform	50	1 U	1 U	1 U	1 U
Bromomethane	5	1 U	1 UJ	1 U	1 U
Carbon Disulfide	60	0.31 J	1 U	1 U	1 U
Carbon Tetrachloride	5	1 U	1 U	1 U	1 U
Chlorobenzene	**5**	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U
Chloroform	**7**	1 U	1 U	1 U	1 U
Chloromethane	5	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethylene	5	1 U	1 U	1 U	1 U
Cis-1,3-Dichloropropene	NS	1 U	1 U	1 U	1 U
Dibromochloromethane	50	1 U	1 U	1 U	1 U
Ethylbenzene	5	0.44 J	1 U	1 U	1 U
Hexachlorobutadiene	0.5	1 U	1 U	1 U	1 U
Methyl Ethyl Ketone (2-Butanone)	50	5 U	5 U	5 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	5 U	5 U	5 U	5 U
Methylene Chloride	5	1 U	1.4	1 U	1 U
Naphthalene	10	10 U	10 U	10 U	10 U
Styrene	5	1 U	1 U	1 U	1 U
Tetrachloroethylene (PCE)	**5**	1 U	1 U	1 U	1 U
Toluene	**5**	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	NS	1 U	1 U	1 U	1 U
Trichloroethylene (TCE)	**5**	1 U	1 U	1 U	1 U
Vinyl Chloride	2	1 U	1 U	1 U	1 U
Xylenes, Total	NS	1.2 J	2 U	2 U	2 U

Table 5
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Groundwater Analytical Results of Semivolatile Organic Compounds (SVOCs)

	AKRF Sample ID	MW-02_20181105	MW-3R_20181107	MW-04_20181105	MW-X01_20181105	MW-05_20181105
	Laboratory Sample ID	460-168652-5	460-168856-2	460-168652-2	460-168652-3	460-168652-1
	Date Sampled	11/5/2018 4:00:00 PM	11/7/2018 12:06:00 PM	11/5/2018 12:15:00 PM	11/5/2018 12:25:00 PM	11/5/2018 11:25:00 AM
	Unit	µg/L	µg/L	µg/L	µg/L	µg/L
	Dilution Factor	5	1	1	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,2,4-Trichlorobenzene	5	10 U	2 U	2 U	2.1 U	2.1 U
1,2-Dichlorobenzene	3	52 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	3	52 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3	52 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	NS	52 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	NS	52 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	5	52 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50	52 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	10	100 U	20 UJ	20 UJ	21 UJ	21 UJ
2,4-Dinitrotoluene	5	10 U	2 U	2 U	2.1 U	2.1 U
2,6-Dinitrotoluene	5	10 U	2 U	2 U	2.1 U	2.1 U
2-Chloronaphthalene	10	52 U	10 U	10 U	10 U	10 U
2-Chlorophenol	NS	52 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	NS	52 U	10 U	10 U	10 U	10 U
2-Nitroaniline	5	52 U	10 U	10 U	10 U	10 U
2-Nitrophenol	NS	52 U	10 UJ	10 U	10 U	10 U
3,3'-Dichlorobenzidine	5	52 U	10 U	10 U	10 U	10 UJ
3-Nitroaniline	5	52 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-Methylphenol	NS	100 U	20 UJ	20 U	21 U	21 U
4-Bromophenyl Phenyl Ether	NS	52 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	NS	52 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5	52 U	10 UJ	10 U	10 U	10 U
4-Chlorophenyl Phenyl Ether	NS	52 U	10 U	10 U	10 U	10 U
4-Methylphenol (P-Cresol)	NS	52 U	10 U	10 U	10 U	10 U
4-Nitroaniline	5	52 U	10 U	10 U	10 U	10 U
4-Nitrophenol	NS	100 U	20 UJ	20 UJ	21 UJ	21 UJ
Acenaphthene	20	17 J	10 U	10 U	10 U	10 U
Acenaphthylene	NS	52 U	10 U	10 U	10 U	10 U
Anthracene	50	52 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene	0.002	5.2 U	1 U	1 U	1 U	1 U
Benzo(a)Pyrene	ND	5.2 U	1 U	1 U	1 U	1 U
Benzo(b)Fluoranthene	0.002	10 U	2 U	2 U	2.1 U	2.1 U
Benzo(g,h,i)Perylene	NS	52 U	10 U	10 U	10 U	10 U
Benzo(k)Fluoranthene	0.002	5.2 U	1 U	1 U	1 U	1 U
Benzyl Butyl Phthalate	50	52 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethoxy) Methane	5	52 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	1	5.2 U	1 U	1 U	1 U	1 U
Bis(2-Chloroisopropyl) Ether	5	52 U	10 U	10 UJ	10 UJ	10 UJ
Bis(2-Ethylhexyl) Phthalate	5	10 U	2 U	2 U	2.1 U	2.1 U
Carbazole	NS	52 U	10 U	10 U	10 U	10 U
Chrysene	0.002	10 U	2 U	2 U	2.1 U	2.1 U
Dibenz(a,h)Anthracene	NS	5.2 U	1 UJ	1 U	1 U	1 U
Dibenzofuran	NS	8.5 J	10 U	10 U	10 U	10 U
Diethyl Phthalate	50	52 U	10 U	10 U	10 U	10 U
Dimethyl Phthalate	50	52 U	10 U	10 U	10 U	10 U
Di-N-Butyl Phthalate	50	52 U	10 U	10 U	10 U	10 U
Di-N-Octylphthalate	50	52 U	10 U	10 UJ	10 UJ	10 UJ
Fluoranthene	50	5.4 J	10 U	10 U	10 U	10 U
Fluorene	50	26 J	10 U	10 U	10 U	10 U
Hexachlorobenzene	0.04	5.2 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	0.5	5.2 U	1 U	1 U	1 U	1 U
Hexachlorocyclopentadiene	5	52 U	10 U	10 U	10 U	10 U
Hexachloroethane	5	10 U	2 U	2 U	2.1 U	2.1 U
Indeno(1,2,3-c,d)Pyrene	0.002	10 U	2 UJ	2 U	2.1 U	2.1 U
Naphthalene	10	52 U	10 U	10 U	10 U	10 U
Nitrobenzene	0.4	5.2 U	1 U	1 U	1 U	1 U
N-Nitrosodi-N-Propylamine	NS	5.2 U	1 U	1 U	1 U	1 U
N-Nitrosodiphenylamine	50	52 U	10 U	10 U	10 U	10 UJ
Pentachlorophenol	NS	100 U	20 U	20 U	21 U	21 U
Phenanthrene	50	52 U	10 U	10 U	10 U	10 U
Phenol	1	52 U	0.99 JL	10 U	10 U	10 U
Pyrene	50	52 U	10 U	10 U	10 U	10 U

Table 5
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Brooklyn, New York
Remedial Action Work Plan
Groundwater Analytical Results of Semivolatile Organic Compounds (SVOCs)

	AKRF Sample ID	MW-07_20181105	MW-08_20181107	MW-09_20181107	MW-10_20181107	MW-17_20181108
	Laboratory Sample ID	460-168652-4	460-168856-3	460-168856-4	460-168856-5	460-168856-10
	Date Sampled	11/5/2018 1:45:00 PM	11/7/2018 11:45:00 AM	11/7/2018 12:55:00 PM	11/7/2018 2:12:00 PM	11/8/2018 11:25:00 AM
	Unit	µg/L	µg/L	µg/L	µg/L	µg/L
	Dilution Factor	1	1	1	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,2,4-Trichlorobenzene	5	2.1 U	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	NS	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	NS	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	5	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	10	21 UJ	20 U	20 UJ	20 U	20 UJ
2,4-Dinitrotoluene	5	2.1 U	2 U	2 U	2 U	2 U
2,6-Dinitrotoluene	5	2.1 U	2 U	2 U	2 U	2 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	NS	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	NS	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	5	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	NS	10 U	10 U	10 UJ	10 U	10 UJ
3,3'-Dichlorobenzidine	5	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	5	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-Methylphenol	NS	21 U	20 U	20 UJ	20 U	20 UJ
4-Bromophenyl Phenyl Ether	NS	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	NS	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5	10 U	10 UJ	10 UJ	10 UJ	10 UJ
4-Chlorophenyl Phenyl Ether	NS	10 U	10 U	10 U	10 U	10 U
4-Methylphenol (P-Cresol)	NS	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	5	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	NS	21 UJ	20 UJ	20 UJ	20 UJ	20 UJ
Acenaphthene	20	10 U	1.3 J	10 U	10 U	10 U
Acenaphthylene	NS	10 U	10 U	10 U	10 U	10 U
Anthracene	50	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene	0.002	1 U	1 U	1 U	1 U	1 U
Benzo(a)Pyrene	ND	1 U	1 U	1 U	1 U	1 U
Benzo(b)Fluoranthene	0.002	2.1 U	2 U	2 U	2 U	2 U
Benzo(g,h,i)Perylene	NS	10 U	10 U	10 UJ	10 U	10 U
Benzo(k)Fluoranthene	0.002	1 U	1 U	1 U	1 U	1 U
Benzyl Butyl Phthalate	50	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethoxy) Methane	5	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	1	1 U	1 U	1 U	1 U	1 U
Bis(2-Chloroisopropyl) Ether	5	10 UJ	10 U	10 U	10 U	10 U
Bis(2-Ethylhexyl) Phthalate	5	2.1 U	2 U	2 U	2 U	2 U
Carbazole	NS	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002	2.1 U	2 U	2 U	2 U	2 U
Dibenz(a,h)Anthracene	NS	1 U	1 U	1 U	1 U	1 UJ
Dibenzofuran	NS	10 U	1.1 J	10 U	1.1 J	10 U
Diethyl Phthalate	50	10 U	10 U	10 U	10 U	10 U
Dimethyl Phthalate	50	10 U	10 U	10 U	10 U	10 U
Di-N-Butyl Phthalate	50	10 U	10 U	10 U	10 U	10 U
Di-N-Octylphthalate	50	10 UJ	10 U	10 U	10 U	10 U
Fluoranthene	50	10 U	10 U	10 U	10 U	10 U
Fluorene	50	10 U	5.6 J	10 U	3.1 J	10 U
Hexachlorobenzene	0.04	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	0.5	1 U	1 U	1 U	1 U	1 U
Hexachlorocyclopentadiene	5	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	5	2.1 U	2 U	2 U	2 U	2 U
Indeno(1,2,3-c,d)Pyrene	0.002	2.1 U	2 U	2 UJ	2 U	2 UJ
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	0.4	1 U	1 U	1 U	1 U	1 U
N-Nitrosodi-N-Propylamine	NS	1 U	1 U	1 U	1 U	1 U
N-Nitrosodiphenylamine	50	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	NS	21 U	20 UJ	20 U	20 UJ	20 U
Phenanthrene	50	10 U	10 U	10 U	10 U	10 U
Phenol	1	10 U	10 U	10 U	10 U	10 U
Pyrene	50	10 U	10 U	10 U	10 U	10 U

Table 5
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Remedial Action Work Plan
Groundwater Analytical Results of Semivolatile Organic Compounds (SVOCs)

	AKRF Sample ID	MW-18_20181107	MW-19_20181108	MW-20_20181108	MW-21_20181108	MW-22_20181106
	Laboratory Sample ID	460-168856-6	460-168856-8	460-168856-7	460-168856-9	460-168652-6
	Date Sampled	11/7/2018 4:40:00 PM	11/8/2018 9:55:00 AM	11/8/2018 10:28:00 AM	11/8/2018 1:50:00 PM	11/6/2018 10:53:00 AM
	Unit	µg/L	µg/L	µg/L	µg/L	µg/L
	Dilution Factor	1	1	1	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,2,4-Trichlorobenzene	5	2 U	2 U	2 U	2 U	2.1 U
1,2-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	NS	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	NS	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	5	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	10	20 UJ	20 UJ	20 UJ	20 UJ	21 UJ
2,4-Dinitrotoluene	5	2 U	2 U	2 U	2 U	2.1 U
2,6-Dinitrotoluene	5	2 U	2 U	2 U	2 U	2.1 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	NS	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	NS	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	5	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	NS	10 UJ	10 UJ	10 UJ	10 UJ	10 U
3,3'-Dichlorobenzidine	5	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	5	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-Methylphenol	NS	20 UJ	20 UJ	20 UJ	20 UJ	21 UJ
4-Bromophenyl Phenyl Ether	NS	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	NS	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5	10 UJ	10 UJ	10 UJ	10 UJ	10 U
4-Chlorophenyl Phenyl Ether	NS	10 U	10 U	10 U	10 U	10 U
4-Methylphenol (P-Cresol)	NS	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	5	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	NS	20 UJ	20 UJ	20 UJ	20 UJ	21 U
Acenaphthene	20	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	NS	10 U	10 U	10 U	10 U	10 U
Anthracene	50	10 U	10 U	10 U	10 U	10 U
Benzo(a)Anthracene	0.002	1 U	1 U	1 U	1 U	1 U
Benzo(a)Pyrene	ND	1 U	1 U	1 U	1 U	1 U
Benzo(b)Fluoranthene	0.002	2 U	2 U	2 U	2 U	2.1 U
Benzo(g,h,i)Perylene	NS	10 U	10 U	10 U	10 U	10 U
Benzo(k)Fluoranthene	0.002	1 U	1 U	1 U	1 U	1 U
Benzyl Butyl Phthalate	50	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethoxy) Methane	5	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	1	1 U	1 U	1 U	1 U	1 U
Bis(2-Chloroisopropyl) Ether	5	10 U	10 U	10 U	10 U	10 UJ
Bis(2-Ethylhexyl) Phthalate	5	2 U	2 U	2 U	2 U	2.1 U
Carbazole	NS	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002	2 U	2 U	2 U	2 U	2.1 U
Dibenz(a,h)Anthracene	NS	1 UJ	1 UJ	1 UJ	1 UJ	1 U
Dibenzofuran	NS	10 U	10 U	10 U	10 U	10 U
Diethyl Phthalate	50	10 U	10 U	10 U	10 U	10 U
Dimethyl Phthalate	50	10 U	10 U	10 U	10 U	10 U
Di-N-Butyl Phthalate	50	10 U	10 U	10 U	10 U	10 U
Di-N-Octylphthalate	50	10 U	10 U	10 U	10 U	10 UJ
Fluoranthene	50	10 U	10 U	10 U	10 U	10 U
Fluorene	50	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	0.04	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	0.5	1 U	1 U	1 U	1 U	1 U
Hexachlorocyclopentadiene	5	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	5	2 U	2 U	2 U	2 U	2.1 U
Indeno(1,2,3-c,d)Pyrene	0.002	2 UJ	2 UJ	2 UJ	2 UJ	2.1 U
Naphthalene	10	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	0.4	1 U	1 U	1 U	1 U	1 U
N-Nitrosodi-N-Propylamine	NS	1 U	1 U	1 U	1 U	1 U
N-Nitrosodiphenylamine	50	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	NS	20 U	20 U	20 U	20 U	21 U
Phenanthrene	50	10 U	10 U	10 U	10 U	10 U
Phenol	1	10 U	10 U	10 U	10 U	10 U
Pyrene	50	10 U	10 U	10 U	10 U	10 U

Table 5
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Remedial Action Work Plan
Groundwater Analytical Results of Semivolatile Organic Compounds (SVOCs)

	AKRF Sample ID	MW-22D_20181107	MW-23_20181106	MW-26_20181106	FB-01_20181106
	Laboratory Sample ID	460-168856-1	460-168652-7	460-168652-8	460-168652-9
	Date Sampled	11/7/2018 10:00:00 AM	11/6/2018 11:35:00 AM	11/6/2018 1:26:00 PM	11/6/2018 3:35:00 PM
	Unit	µg/L	µg/L	µg/L	µg/L
	Dilution Factor	1	1	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,2,4-Trichlorobenzene	5	2 U	2.1 U	2.1 U	2.1 U
1,2-Dichlorobenzene	3	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	3	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	NS	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	NS	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	5	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	10	20 UJ	21 UJ	21 UJ	21 UJ
2,4-Dinitrotoluene	5	2 U	2.1 U	2.1 U	2.1 U
2,6-Dinitrotoluene	5	2 U	2.1 U	2.1 U	2.1 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U
2-Chlorophenol	NS	10 U	10 U	10 U	10 U
2-Methylnaphthalene	NS	10 U	10 U	10 U	10 U
2-Nitroaniline	5	10 U	10 U	10 U	10 U
2-Nitrophenol	NS	10 UJ	10 U	10 U	10 U
3,3'-Dichlorobenzidine	5	10 U	10 U	10 U	10 U
3-Nitroaniline	5	10 U	10 U	10 U	10 U
4,6-Dinitro-2-Methylphenol	NS	20 UJ	21 U	21 U	21 U
4-Bromophenyl Phenyl Ether	NS	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	NS	10 U	10 U	10 U	10 U
4-Chloroaniline	5	10 UJ	10 U	10 U	10 U
4-Chlorophenyl Phenyl Ether	NS	10 U	10 U	10 U	10 U
4-Methylphenol (P-Cresol)	NS	10 U	10 U	10 U	10 U
4-Nitroaniline	5	10 U	10 U	10 U	10 U
4-Nitrophenol	NS	20 UJ	21 UJ	21 UJ	21 UJ
Acenaphthene	20	10 U	10 U	10 U	10 U
Acenaphthylene	NS	10 U	10 U	10 U	10 U
Anthracene	50	10 U	10 U	10 U	10 U
Benzo(a)Anthracene	0.002	1 U	1 U	1 U	1 U
Benzo(a)Pyrene	ND	1 U	1 U	1 U	1 U
Benzo(b)Fluoranthene	0.002	2 U	2.1 U	2.1 U	2.1 U
Benzo(g,h,i)Perylene	NS	10 U	10 U	10 U	10 U
Benzo(k)Fluoranthene	0.002	1 U	1 U	1 U	1 U
Benzyl Butyl Phthalate	50	10 U	10 U	10 U	10 U
Bis(2-Chloroethoxy) Methane	5	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	1	1 U	1 U	1 U	1 U
Bis(2-Chloroisopropyl) Ether	5	10 U	10 U	10 UJ	10 UJ
Bis(2-Ethylhexyl) Phthalate	5	2 U	2.1 U	2.1 U	2.1 U
Carbazole	NS	10 U	10 U	10 U	10 U
Chrysene	0.002	2 U	2.1 U	2.1 U	2.1 U
Dibenz(a,h)Anthracene	NS	1 UJ	1 U	1 U	1 U
Dibenzofuran	NS	10 U	10 U	1.2 J	10 U
Diethyl Phthalate	50	10 U	10 U	10 U	10 U
Dimethyl Phthalate	50	10 U	10 U	10 U	10 U
Di-N-Butyl Phthalate	50	10 U	10 U	10 U	10 U
Di-N-Octylphthalate	50	10 U	10 UJ	10 UJ	10 UJ
Fluoranthene	50	10 U	10 U	10 U	10 U
Fluorene	50	10 U	2.9 J	2.8 J	10 U
Hexachlorobenzene	0.04	1 U	1 U	1 U	1 U
Hexachlorobutadiene	0.5	1 U	1 U	1 U	1 U
Hexachlorocyclopentadiene	5	10 U	10 U	10 U	10 U
Hexachloroethane	5	2 U	2.1 U	2.1 U	2.1 U
Indeno(1,2,3-c,d)Pyrene	0.002	2 UJ	2.1 U	2.1 U	2.1 U
Naphthalene	10	10 U	10 U	10 U	10 U
Nitrobenzene	0.4	1 U	1 U	1 U	1 U
N-Nitrosodi-N-Propylamine	NS	1 U	1 U	1 U	1 U
N-Nitrosodiphenylamine	50	10 U	10 U	10 U	10 U
Pentachlorophenol	NS	20 U	21 U	21 U	21 U
Phenanthrene	50	10 U	10 U	4.2 J	10 U
Phenol	1	10 U	10 U	10 U	10 U
Pyrene	50	10 U	10 U	10 U	10 U

Table 6
34 Berry Street
Brooklyn, New York
Remedial Action Work Plan
Groundwater Analytical Results of Emerging Contaminants

	AKRF Sample ID	MW-02_20181105	MW-02_20181105	MW-3R_20181107	MW-3R_20181107
	Laboratory Sample ID	200-46077-5	460-168652-5	200-46136-2	460-168856-2
	Date Sampled	11/5/2018 4:00:00 PM	11/5/2018 4:00:00 PM	11/7/2018 12:06:00 PM	11/7/2018 12:06:00 PM
	Unit	ng/l	µg/L	ng/l	µg/L
	Dilution Factor	20	1	10	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,4-Dioxane (P-Dioxane)	NS	NR	0.22 U	NR	0.2 U
6:2 Fluorotelomer sulfonate	NS	381 U	NR	172 U	NR
8:2 Fluorotelomer sulfonate	NS	381 U	NR	172 U	NR
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	381 U	NR	172 U	NR
N-methyl perfluorooctanesulfonamidoacetic acid	NS	381 U	NR	172 U	NR
Perfluorobutanesulfonic acid	NS	70.6	NR	107	NR
Perfluorobutanoic acid	NS	119	NR	36.8	NR
Perfluorodecanesulfonic acid	NS	38.1 U	NR	17.2 U	NR
Perfluorodecanoic acid	NS	38.1 U	NR	17.2 U	NR
Perfluorododecanoic acid	NS	38.1 U	NR	17.2 U	NR
Perfluoroheptanesulfonic acid	NS	38.1 U	NR	17.2 U	NR
Perfluoroheptanoic acid	NS	13.8 J	NR	26.9	NR
Perfluorohexanesulfonic acid	NS	38.1 U	NR	17.2 U	NR
Perfluorohexanoic acid	NS	28.7 J	NR	16.9 J	NR
Perfluorononanoic acid	NS	38.1 U	NR	10.9 J	NR
Perfluorooctanesulfonic acid	NS	14.6 J	NR	16.1 J	NR
Perfluorooctanoic acid	NS	36.6 J	NR	49.9	NR
Perfluoropentanoic acid	NS	29.9 J	NR	62	NR
Perfluorotetradecanoic acid	NS	38.1 U	NR	17.2 U	NR
Perfluorotridecanoic acid	NS	38.1 U	NR	17.2 U	NR
Perfluoroundecanoic acid	NS	38.1 U	NR	17.2 U	NR
Perfluroroctanesulfonamide	NS	38.1 U	NR	17.2 U	NR

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	AKRF Sample ID	MW-04_20181105	MW-04_20181105	MW-X01_20181105	MW-X01_20181105
	Laboratory Sample ID	200-46077-2	460-168652-2	200-46077-3	460-168652-3
	Date Sampled	11/5/2018 12:15:00 PM	11/5/2018 12:15:00 PM	11/5/2018 12:25:00 PM	11/5/2018 12:25:00 PM
	Unit	ng/l	µg/L	ng/l	µg/L
	Dilution Factor	1	1	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,4-Dioxane (P-Dioxane)	NS	NR	0.22 U	NR	0.22 U
6:2 Fluorotelomer sulfonate	NS	9.57 JK	NR	9.55 JK	NR
8:2 Fluorotelomer sulfonate	NS	20.9 U	NR	20.9 U	NR
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	20.9 U	NR	20.9 U	NR
N-methyl perfluorooctanesulfonamidoacetic acid	NS	20.9 U	NR	20.9 U	NR
Perfluorobutanesulfonic acid	NS	28.2	NR	28.6	NR
Perfluorobutanoic acid	NS	28.7	NR	24.6	NR
Perfluorodecanesulfonic acid	NS	2.09 U	NR	2.09 U	NR
Perfluorodecanoic acid	NS	1.13 J	NR	0.61 JL	NR
Perfluorododecanoic acid	NS	2.09 U	NR	2.09 U	NR
Perfluoroheptanesulfonic acid	NS	2.09 U	NR	2.09 U	NR
Perfluoroheptanoic acid	NS	9.28	NR	10.7	NR
Perfluorohexanesulfonic acid	NS	2.44	NR	2.39	NR
Perfluorohexanoic acid	NS	17.9	NR	21.9	NR
Perfluorononanoic acid	NS	2.32	NR	2.21	NR
Perfluorooctanesulfonic acid	NS	11.1	NR	11.8	NR
Perfluorooctanoic acid	NS	40.5	NR	38.1	NR
Perfluoropentanoic acid	NS	41	NR	29.3	NR
Perfluorotetradecanoic acid	NS	2.09 U	NR	2.09 U	NR
Perfluorotridecanoic acid	NS	2.09 U	NR	2.09 U	NR
Perfluoroundecanoic acid	NS	0.31 J	NR	0.26 J	NR
Perfluroroctanesulfonamide	NS	2.09 U	NR	2.09 U	NR

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	AKRF Sample ID	MW-05_20181105	MW-05_20181105	MW-07_20181105	MW-07_20181105
	Laboratory Sample ID	200-46077-1	460-168652-1	200-46077-4	200-46077-4
	Date Sampled	11/5/2018 11:25:00 AM	11/5/2018 11:25:00 AM	11/5/2018 1:45:00 PM	11/5/2018 1:45:00 PM
	Unit	ng/l	µg/L	ng/l	ng/l
	Dilution Factor	1	1	5	10
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,4-Dioxane (P-Dioxane)	NS	NR	0.22 U	NR	NR
6:2 Fluorotelomer sulfonate	NS	18.1 U	NR	NR	191 U
8:2 Fluorotelomer sulfonate	NS	18.1 U	NR	NR	191 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	18.1 U	NR	95.6 U	NR
N-methyl perfluorooctanesulfonamidoacetic acid	NS	18.1 U	NR	95.6 U	NR
Perfluorobutanesulfonic acid	NS	10.5	NR	248	NR
Perfluorobutanoic acid	NS	21.9	NR	1160	NR
Perfluorodecanesulfonic acid	NS	1.81 U	NR	9.56 U	NR
Perfluorodecanoic acid	NS	1.81 U	NR	2.12 J	NR
Perfluorododecanoic acid	NS	1.81 U	NR	9.56 U	NR
Perfluoroheptanesulfonic acid	NS	1.81 U	NR	9.56 U	NR
Perfluoroheptanoic acid	NS	15.9	NR	NR	71.9 D
Perfluorohexanesulfonic acid	NS	3.57	NR	9.56 U	NR
Perfluorohexanoic acid	NS	22.9	NR	48	NR
Perfluorononanoic acid	NS	6.28	NR	22.3	NR
Perfluorooctanesulfonic acid	NS	7.89	NR	8.87 J	NR
Perfluorooctanoic acid	NS	65.8	NR	65.3	NR
Perfluoropentanoic acid	NS	26	NR	258	NR
Perfluorotetradecanoic acid	NS	1.81 U	NR	9.56 U	NR
Perfluorotridecanoic acid	NS	1.81 U	NR	9.56 U	NR
Perfluoroundecanoic acid	NS	0.25 J	NR	9.56 U	NR
Perfluroroctanesulfonamide	NS	1.81 U	NR	9.56 U	NR

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	AKRF Sample ID	MW-07_20181105	MW-08_20181107	MW-08_20181107	MW-09_20181107
	Laboratory Sample ID	460-168652-4	200-46136-3	460-168856-3	200-46136-4
	Date Sampled	11/5/2018 1:45:00 PM	11/7/2018 11:45:00 AM	11/7/2018 11:45:00 AM	11/7/2018 12:55:00 PM
	Unit	µg/L	ng/l	µg/L	ng/l
	Dilution Factor	1	1	1	5
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,4-Dioxane (P-Dioxane)	NS	0.55	NR	0.17 J	NR
6:2 Fluorotelomer sulfonate	NS	NR	3.54 J	NR	95.8 U
8:2 Fluorotelomer sulfonate	NS	NR	18.6 U	NR	95.8 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NR	18.6 U	NR	95.8 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NR	18.6 U	NR	95.8 U
Perfluorobutanesulfonic acid	NS	NR	1.86 U	NR	39.7
Perfluorobutanoic acid	NS	NR	9.96	NR	18.2
Perfluorodecanesulfonic acid	NS	NR	1.86 U	NR	9.58 U
Perfluorodecanoic acid	NS	NR	1.86 U	NR	5.36 J
Perfluorododecanoic acid	NS	NR	1.86 U	NR	9.58 U
Perfluoroheptanesulfonic acid	NS	NR	1.86 U	NR	9.58 U
Perfluoroheptanoic acid	NS	NR	0.65 J	NR	13.4
Perfluorohexanesulfonic acid	NS	NR	1.86 U	NR	9.58 U
Perfluorohexanoic acid	NS	NR	0.57 J	NR	9.14 J
Perfluorononanoic acid	NS	NR	1.86 U	NR	8.17 J
Perfluorooctanesulfonic acid	NS	NR	1.86 U	NR	21.9
Perfluorooctanoic acid	NS	NR	1.32 J	NR	36.4
Perfluoropentanoic acid	NS	NR	0.84 J	NR	72.3
Perfluorotetradecanoic acid	NS	NR	1.86 U	NR	9.58 U
Perfluorotridecanoic acid	NS	NR	1.86 U	NR	9.58 U
Perfluoroundecanoic acid	NS	NR	1.86 U	NR	9.58 U
Perfluroroctanesulfonamide	NS	NR	1.86 U	NR	9.58 U

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	AKRF Sample ID	MW-09_20181107	MW-10_20181107	MW-10_20181107	MW-17_20181108
	Laboratory Sample ID	460-168856-4	200-46136-5	460-168856-5	200-46136-10
	Date Sampled	11/7/2018 12:55:00 PM	11/7/2018 2:12:00 PM	11/7/2018 2:12:00 PM	11/8/2018 11:25:00 AM
	Unit	µg/L	ng/l	µg/L	ng/l
	Dilution Factor	1	5	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,4-Dioxane (P-Dioxane)	NS	0.18 J	NR	0.16 J	NR
6:2 Fluorotelomer sulfonate	NS	NR	14.2 J	NR	18.7 U
8:2 Fluorotelomer sulfonate	NS	NR	87.9 U	NR	18.7 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NR	87.9 U	NR	18.7 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NR	87.9 U	NR	18.7 U
Perfluorobutanesulfonic acid	NS	NR	15.6	NR	14.9
Perfluorobutanoic acid	NS	NR	357	NR	36
Perfluorodecanesulfonic acid	NS	NR	8.79 U	NR	1.87 U
Perfluorodecanoic acid	NS	NR	4.69 J	NR	1.87 U
Perfluorododecanoic acid	NS	NR	8.79 U	NR	1.87 U
Perfluoroheptanesulfonic acid	NS	NR	8.79 U	NR	1.87 U
Perfluoroheptanoic acid	NS	NR	24.2	NR	15.1
Perfluorohexanesulfonic acid	NS	NR	3.95 J	NR	4.59
Perfluorohexanoic acid	NS	NR	19.6	NR	17.5
Perfluorononanoic acid	NS	NR	23	NR	1.87 U
Perfluorooctanesulfonic acid	NS	NR	20.5	NR	1.87 U
Perfluorooctanoic acid	NS	NR	113	NR	62.5
Perfluoropentanoic acid	NS	NR	61.1	NR	23.9
Perfluorotetradecanoic acid	NS	NR	8.79 U	NR	1.87 U
Perfluorotridecanoic acid	NS	NR	8.79 U	NR	1.87 U
Perfluoroundecanoic acid	NS	NR	8.79 U	NR	1.87 U
Perfluroroctanesulfonamide	NS	NR	8.79 U	NR	1.87 U

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	AKRF Sample ID	MW-17_20181108	MW-18_20181107	MW-18_20181107	MW-19_20181108
	Laboratory Sample ID	460-168856-10	200-46136-6	460-168856-6	200-46136-8
	Date Sampled	11/8/2018 11:25:00 AM	11/7/2018 4:40:00 PM	11/7/2018 4:40:00 PM	11/8/2018 9:55:00 AM
	Unit	µg/L	ng/l	µg/L	ng/l
	Dilution Factor	1	5	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,4-Dioxane (P-Dioxane)	NS	0.25	NR	0.21	NR
6:2 Fluorotelomer sulfonate	NS	NR	89.1 U	NR	19 U
8:2 Fluorotelomer sulfonate	NS	NR	89.1 U	NR	19 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NR	89.1 U	NR	19 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NR	89.1 U	NR	19 U
Perfluorobutanesulfonic acid	NS	NR	49.5	NR	7.36
Perfluorobutanoic acid	NS	NR	34.8	NR	16.5
Perfluorodecanesulfonic acid	NS	NR	8.91 U	NR	1.9 U
Perfluorodecanoic acid	NS	NR	8.91 U	NR	11.5
Perfluorododecanoic acid	NS	NR	8.91 U	NR	1.9 U
Perfluoroheptanesulfonic acid	NS	NR	8.91 U	NR	1.9 U
Perfluoroheptanoic acid	NS	NR	12.4	NR	17.6
Perfluorohexanesulfonic acid	NS	NR	1.63 J	NR	1.01 J
Perfluorohexanoic acid	NS	NR	25.3	NR	20.1
Perfluorononanoic acid	NS	NR	2.31 J	NR	4.54
Perfluorooctanesulfonic acid	NS	NR	4.81 J	NR	4.08
Perfluorooctanoic acid	NS	NR	24.3	NR	101
Perfluoropentanoic acid	NS	NR	50.3	NR	18.5
Perfluorotetradecanoic acid	NS	NR	8.91 U	NR	1.9 U
Perfluorotridecanoic acid	NS	NR	8.91 U	NR	1.9 U
Perfluoroundecanoic acid	NS	NR	8.91 U	NR	1.9 U
Perfluroroctanesulfonamide	NS	NR	8.91 U	NR	1.9 U

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	AKRF Sample ID	MW-19_20181108	MW-20_20181108	MW-20_20181108	MW-21_20181108
	Laboratory Sample ID	460-168856-8	200-46136-7	460-168856-7	200-46136-9
	Date Sampled	11/8/2018 9:55:00 AM	11/8/2018 10:28:00 AM	11/8/2018 10:28:00 AM	11/8/2018 1:50:00 PM
	Unit	µg/L	ng/l	µg/L	ng/l
	Dilution Factor	1	1	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,4-Dioxane (P-Dioxane)	NS	0.22	NR	0.55	NR
6:2 Fluorotelomer sulfonate	NS	NR	18.1 U	NR	1.29 J
8:2 Fluorotelomer sulfonate	NS	NR	18.1 U	NR	18.7 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NR	18.1 U	NR	18.7 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NR	18.1 U	NR	18.7 U
Perfluorobutanesulfonic acid	NS	NR	11.3	NR	10.4
Perfluorobutanoic acid	NS	NR	30	NR	42
Perfluorodecanesulfonic acid	NS	NR	1.21 J	NR	1.87 U
Perfluorodecanoic acid	NS	NR	3.01	NR	0.95 J
Perfluorododecanoic acid	NS	NR	1.81 U	NR	1.87 U
Perfluoroheptanesulfonic acid	NS	NR	1.81 U	NR	1.87 U
Perfluoroheptanoic acid	NS	NR	10.1	NR	13.6
Perfluorohexanesulfonic acid	NS	NR	0.99 J	NR	2.6
Perfluorohexanoic acid	NS	NR	21.8	NR	19.3
Perfluorononanoic acid	NS	NR	11.1	NR	7.69
Perfluorooctanesulfonic acid	NS	NR	6.71	NR	47.7
Perfluorooctanoic acid	NS	NR	18.1	NR	39.7
Perfluoropentanoic acid	NS	NR	33	NR	22.4
Perfluorotetradecanoic acid	NS	NR	1.81 U	NR	1.87 U
Perfluorotridecanoic acid	NS	NR	1.81 U	NR	1.87 U
Perfluoroundecanoic acid	NS	NR	1.81 U	NR	1.87 U
Perfluroroctanesulfonamide	NS	NR	1.81 U	NR	1.87 U

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	AKRF Sample ID	MW-21_20181108	MW-22_20181106	MW-22_20181106	MW-22D_20181107
	Laboratory Sample ID	460-168856-9	200-46077-6	460-168652-6	200-46136-1
	Date Sampled	11/8/2018 1:50:00 PM	11/6/2018 10:53:00 AM	11/6/2018 10:53:00 AM	11/7/2018 10:00:00 AM
	Unit	µg/L	ng/l	µg/L	ng/l
	Dilution Factor	1	5	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,4-Dioxane (P-Dioxane)	NS	0.19 J	NR	0.22 U	NR
6:2 Fluorotelomer sulfonate	NS	NR	91.5 U	NR	18.8
8:2 Fluorotelomer sulfonate	NS	NR	91.5 U	NR	18.3 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NR	91.5 U	NR	18.3 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NR	91.5 U	NR	18.3 U
Perfluorobutanesulfonic acid	NS	NR	12.1	NR	1.14 J
Perfluorobutanoic acid	NS	NR	22	NR	10.9
Perfluorodecanesulfonic acid	NS	NR	9.15 U	NR	1.83 U
Perfluorodecanoic acid	NS	NR	3.46 J	NR	1.83 U
Perfluorododecanoic acid	NS	NR	9.15 U	NR	1.83 U
Perfluoroheptanesulfonic acid	NS	NR	9.15 U	NR	1.83 U
Perfluoroheptanoic acid	NS	NR	23.6	NR	2.13
Perfluorohexanesulfonic acid	NS	NR	2.04 J	NR	1.83 U
Perfluorohexanoic acid	NS	NR	28.7	NR	3.18
Perfluorononanoic acid	NS	NR	7.45 J	NR	0.67 J
Perfluorooctanesulfonic acid	NS	NR	38.8	NR	1.1 J
Perfluorooctanoic acid	NS	NR	130	NR	7.92
Perfluoropentanoic acid	NS	NR	33.7	NR	2.42
Perfluorotetradecanoic acid	NS	NR	9.15 U	NR	1.83 U
Perfluorotridecanoic acid	NS	NR	9.15 U	NR	1.83 U
Perfluoroundecanoic acid	NS	NR	9.15 U	NR	1.83 U
Perfluroroctanesulfonamide	NS	NR	9.15 U	NR	1.83 U

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	AKRF Sample ID	MW-22D_20181107	MW-23_20181106	MW-23_20181106	MW-26_20181106
	Laboratory Sample ID	460-168856-1	200-46077-7	460-168652-7	200-46077-8
	Date Sampled	11/7/2018 10:00:00 AM	11/6/2018 11:35:00 AM	11/6/2018 11:35:00 AM	11/6/2018 1:26:00 PM
	Unit	µg/L	ng/l	µg/L	ng/l
	Dilution Factor	1	5	1	5
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q	CONC Q
1,4-Dioxane (P-Dioxane)	NS	0.69	NR	0.22 U	NR
6:2 Fluorotelomer sulfonate	NS	NR	95.7 U	NR	17.3 JK
8:2 Fluorotelomer sulfonate	NS	NR	95.7 U	NR	94.8 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NR	95.7 U	NR	94.8 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NR	95.7 U	NR	94.8 U
Perfluorobutanesulfonic acid	NS	NR	57	NR	24.9
Perfluorobutanoic acid	NS	NR	252	NR	28.6
Perfluorodecanesulfonic acid	NS	NR	9.57 U	NR	9.48 U
Perfluorodecanoic acid	NS	NR	2.48 J	NR	9.48 U
Perfluorododecanoic acid	NS	NR	9.57 U	NR	9.48 U
Perfluoroheptanesulfonic acid	NS	NR	9.57 U	NR	9.48 U
Perfluoroheptanoic acid	NS	NR	22.8	NR	13.9
Perfluorohexanesulfonic acid	NS	NR	3.11 J	NR	6.93 J
Perfluorohexanoic acid	NS	NR	24.7	NR	34.1
Perfluorononanoic acid	NS	NR	6.16 J	NR	4.91 J
Perfluorooctanesulfonic acid	NS	NR	13.7	NR	11.1
Perfluorooctanoic acid	NS	NR	39.4	NR	22.8
Perfluoropentanoic acid	NS	NR	145	NR	9.48 U
Perfluorotetradecanoic acid	NS	NR	9.57 U	NR	9.48 U
Perfluorotridecanoic acid	NS	NR	9.57 U	NR	9.48 U
Perfluoroundecanoic acid	NS	NR	9.57 U	NR	9.48 U
Perfluroroctanesulfonamide	NS	NR	9.57 U	NR	9.48 U

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	AKRF Sample ID	MW-26_20181106	FB-01_20181106	FB-01_20181106
	Laboratory Sample ID	460-168652-8	200-46077-9	460-168652-9
	Date Sampled	11/6/2018 1:26:00 PM	11/6/2018 3:35:00 PM	11/6/2018 3:35:00 PM
	Unit	µg/L	ng/l	µg/L
	Dilution Factor	1	1	1
Compound	**AWQSGVs**	CONC Q	CONC Q	CONC Q
1,4-Dioxane (P-Dioxane)	NS	0.22 U	NR	0.12 J
6:2 Fluorotelomer sulfonate	NS	NR	16.8 U	NR
8:2 Fluorotelomer sulfonate	NS	NR	16.8 U	NR
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NR	16.8 U	NR
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NR	16.8 U	NR
Perfluorobutanesulfonic acid	NS	NR	1.68 U	NR
Perfluorobutanoic acid	NS	NR	1.19 J	NR
Perfluorodecanesulfonic acid	NS	NR	1.68 U	NR
Perfluorodecanoic acid	NS	NR	1.68 U	NR
Perfluorododecanoic acid	NS	NR	1.68 U	NR
Perfluoroheptanesulfonic acid	NS	NR	1.68 U	NR
Perfluoroheptanoic acid	NS	NR	1.68 U	NR
Perfluorohexanesulfonic acid	NS	NR	1.68 U	NR
Perfluorohexanoic acid	NS	NR	0.36 J	NR
Perfluorononanoic acid	NS	NR	1.68 U	NR
Perfluorooctanesulfonic acid	NS	NR	1.68 U	NR
Perfluorooctanoic acid	NS	NR	1.68 U	NR
Perfluoropentanoic acid	NS	NR	0.66 J	NR
Perfluorotetradecanoic acid	NS	NR	1.68 U	NR
Perfluorotridecanoic acid	NS	NR	1.68 U	NR
Perfluoroundecanoic acid	NS	NR	1.68 U	NR
Perfluroroctanesulfonamide	NS	NR	1.68 U	NR

Table 7
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Soil-Slab Soil Gas, Indoor Air, and Ambient Air Analytical Results of
Volatile Organic Compounds (VOCs)

			Sample ID	SG-01_20181024	SG-01_20181024	SG-01_20190827	SG-01_20190827	IA-01_20181024
			Lab Sample ID	200-45887-1	200-45887-1	200-50299-1	200-50299-1	200-45887-2
			Date Sampled	10/24/2018 10:58:00 AM	10/24/2018 10:58:00 AM	8/27/2019 12:21:00 PM	8/27/2019 12:21:00 PM	10/24/2018 7:58:00 AM
			Unit	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
			Dilution Factor	1	5	1	5	1
Compound	**EPA 2001 BASE 90th percentile Indoor**	**NYSDOH 2003 SV Indoor Upper Fence**	**NYSDOH 2006 SV Intrusion Air Guideline**	Conc Q	Conc Q	Conc Q	Conc Q	Conc Q
1,1,1-Trichloroethane	20.6	2.5	NS	1.1 U	NR	1.1 U	NR	1.1 U
1,1,2,2-Tetrachloroethane	NS	0.4	NS	1.4 U	NR	1.4 U	NR	1.4 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	3.5	2.5	NS	1.5 U	NR	0.33 J	NR	1.5 U
1,1,2-Trichloroethane	1.5	0.4	NS	1.1 U	NR	1.1 U	NR	1.1 U
1,1-Dichloroethane	0.7	0.4	NS	0.81 U	NR	0.81 U	NR	0.81 U
1,1-Dichloroethene	1.4	0.4	NS	0.14 U	NR	0.14 U	NR	0.14 U
1,2,4-Trichlorobenzene	6.8	0.5	NS	3.7 U	NR	3.7 U	NR	3.7 U
1,2,4-Trimethylbenzene	9.5	9.8	NS	10	NR	2.6	NR	5.5
1,2-Dibromoethane (Ethylene Dibromide)	1.5	0.4	NS	1.5 U	NR	1.5 U	NR	1.5 U
1,2-Dichlorobenzene	1.2	0.5	NS	1.2 U	NR	1.2 U	NR	1.2 U
1,2-Dichloroethane	0.9	0.4	NS	1.1	NR	0.81 U	NR	0.81 U
1,2-Dichloropropane	1.6	0.4	NS	2.5	NR	0.92 U	NR	0.92 U
1,2-Dichlorotetrafluoroethane	6.8	0.4	NS	1.4 U	NR	1.4 U	NR	1.4 U
1,3,5-Trimethylbenzene (Mesitylene)	3.7	3.9	NS	5.8	NR	0.75 J	NR	1.8
1,3-Butadiene	3	NS	NS	0.44 U	NR	0.44 U	NR	0.44 U
1,3-Dichlorobenzene	2.4	0.5	NS	1.2 U	NR	1.2 U	NR	1.2 U
1,4-Dichlorobenzene	5.5	1.2	NS	1.2 U	NR	1.2 U	NR	1.2 U
2,2,4-Trimethylpentane	NS	5	NS	8.2	NR	3.2	NR	3
2-Chlorotoluene	NS	NS	NS	1 U	NR	1 U	NR	1 U
2-Hexanone	NS	NS	NS	2 U	NR	2 U	NR	2 U
4-Ethyltoluene	3.6	NS	NS	4.6	NR	0.56 J	NR	1.8
Acetone	98.9	115	NS	NR	330 D	NR	320 D	NR
Allyl Chloride (3-Chloropropene)	NS	NS	NS	1.6 U	NR	1.6 U	NR	1.6 U
Benzene	9.4	13	NS	1.3	NR	0.98	NR	2.3
Benzyl Chloride	6.8	NS	NS	1 U	NR	1 U	NR	1 U
Bromodichloromethane	NS	NS	NS	1.3 U	NR	1.3 U	NR	1.3 U
Bromoform	NS	NS	NS	2.1 U	NR	2.1 U	NR	2.1 U
Bromomethane	1.7	0.5	NS	0.78 U	NR	0.78 U	NR	0.78 U
Carbon Disulfide	4.2		NS	2.2	NR	1.6 U	NR	1.6 U
Carbon Tetrachloride	1.3	1.3	NS	0.44	NR	0.32	NR	0.38
Chlorobenzene	0.9	0.4	NS	0.92 U	NR	0.92 U	NR	0.92 U
Chloroethane	1.1	0.4	NS	1.3 U	NR	1.3 U	NR	1.3 U
Chloroform	1.1	1.2	NS	1.2	NR	2.1	NR	0.98 U
Chloromethane	3.7	4.2	NS	1 U	NR	0.9 J	NR	1 U
Cis-1,2-Dichloroethylene	1.9	0.4	NS	0.2 U	NR	0.14 U	NR	0.2 U
Cis-1,3-Dichloropropene	2.3	0.4	NS	0.91 U	NR	0.91 U	NR	0.91 U
Cyclohexane	NS	6.3	NS	25	NR	1.4	NR	1.8
Cymene	NS	NS	NS	1.1 U	NR	1.1 U	NR	1.1 U
Dibromochloromethane	NS	NS	NS	1.7 U	NR	1.7 U	NR	1.7 U
Dichlorodifluoromethane	16.5	10	NS	2.5 U	NR	1.9 J	NR	2.5 U
Ethylbenzene	5.7	6.4	NS	NR	190 D	1.2	NR	7.5
Hexachlorobutadiene	6.8	0.5	NS	2.1 U	NR	2.1 U	NR	2.1 U
Isopropanol	250	NS	NS	12 U	NR	22	NR	24
Isopropylbenzene (Cumene)	NS	0.8	NS	0.98 U	NR	0.98 U	NR	0.98 U
M,P-Xylenes	22.2	11	NS	NR	1200 D	5	NR	30
Methyl Ethyl Ketone (2-Butanone)	12	16	NS	13	NR	12	NR	2.5
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	6	1.9	NS	2 U	NR	1.7 J	NR	2.9
Methylene Chloride	10	16	60	1.7 U	NR	1.7 U	NR	1.7 U
Naphthalene	5.1	NS	NS	2.6 U	NR	2.6 U	NR	2.6 U
N-Butylbenzene	NS	1.1	NS	1.1 U	NR	1.1 U	NR	1.1 U
N-Heptane	NS	18	NS	0.82 U	NR	2	NR	2.3
N-Hexane	10.2	14	NS	1.8	NR	2.2	NR	3.5
N-Propylbenzene	NS	1.5	NS	0.98 U	NR	0.41 J	NR	1.1
O-Xylene (1,2-Dimethylbenzene)	7.9	7.1	NS	NR	580 D	1.9	NR	8.4
Sec-Butylbenzene	NS	1.2	NS	1.1 U	NR	1.1 U	NR	1.1 U
Styrene	1.9	1.4	NS	0.85 U	NR	0.39 J	NR	0.85 U
T-Butylbenzene	NS	1.3	NS	1.1 U	NR	1.1 U	NR	1.1 U
Tert-Butyl Alcohol	NS	NS	NS	15 U	NR	13 J	NR	15 U
Tert-Butyl Methyl Ether	11.5	14	NS	0.72 U	NR	2.8	NR	0.72 U
Tetrachloroethylene (PCE)	15.9	2.5	30	4.4	NR	1.1 J	NR	2.8
Tetrahydrofuran	NS	0.8	NS	15 U	NR	15 U	NR	15 U
Toluene	43	57	NS	35	NR	6.3	NR	NR
Trans-1,2-Dichloroethene	NS	NS	NS	0.79 U	NR	0.79 U	NR	0.79 U
Trans-1,3-Dichloropropene	1.3	ND	NS	0.91 U	NR	0.91 U	NR	0.91 U
Trichloroethylene (TCE)	4.2	0.5	**2**	**12**	NR	0.19 U	NR	0.21
Trichlorofluoromethane	18.1	12	NS	1.1 U	NR	1.1	NR	1.1 U
Vinyl Bromide	NS	NS	NS	0.87 U	NR	0.87 U	NR	0.87 U
Vinyl Chloride	1.9	0.4	NS	9.4	NR	0.09 U	NR	0.2 U

Table 7
34 Berry Street
Brooklyn, New York
Remedial Action Work Plan
Soil-Slab Soil Gas, Indoor Air, and Ambient Air Analytical Results of
Volatile Organic Compounds (VOCs)

			Sample ID	IA-01_20181024	IA-01_20190827	SG-02_20181024	SG-02_20181024	SG-02_20190827
			Lab Sample ID	200-45887-2	200-50299-4	200-45887-3	200-45887-3	200-50299-2
			Date Sampled	10/24/2018 7:58:00 AM	8/27/2019 12:22:00 PM	10/24/2018 7:46:00 AM	10/24/2018 7:46:00 AM	8/27/2019 12:25:00 PM
			Unit	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
			Dilution Factor	10	1	1	3	1
Compound	**EPA 2001 BASE 90th percentile Indoor**	**NYSDOH 2003 SV Indoor Upper Fence**	**NYSDOH 2006 SV Intrusion Air Guideline**	Conc Q	Conc Q	Conc Q	Conc Q	Conc Q
1,1,1-Trichloroethane	20.6	2.5	NS	NR	1.1 U	1.1 UJ	NR	1.1 U
1,1,2,2-Tetrachloroethane	NS	0.4	NS	NR	1.4 U	1.4 UJ	NR	1.4 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	3.5	2.5	NS	NR	0.44 J	1.5 UJ	NR	0.35 J
1,1,2-Trichloroethane	1.5	0.4	NS	NR	1.1 U	1.1 UJ	NR	1.1 U
1,1-Dichloroethane	0.7	0.4	NS	NR	0.81 U	0.81 UJ	NR	0.81 U
1,1-Dichloroethene	1.4	0.4	NS	NR	0.14 U	0.14 UJ	NR	0.14 U
1,2,4-Trichlorobenzene	6.8	0.5	NS	NR	3.7 U	3.7 UJ	NR	3.7 U
1,2,4-Trimethylbenzene	9.5	9.8	NS	NR	0.84 J	4 J	NR	2.4
1,2-Dibromoethane (Ethylene Dibromide)	1.5	0.4	NS	NR	1.5 U	1.5 UJ	NR	1.5 U
1,2-Dichlorobenzene	1.2	0.5	NS	NR	1.2 U	1.2 UJ	NR	1.2 U
1,2-Dichloroethane	0.9	0.4	NS	NR	0.81 U	0.81 UJ	NR	0.81 U
1,2-Dichloropropane	1.6	0.4	NS	NR	0.92 U	0.92 UJ	NR	0.92 U
1,2-Dichlorotetrafluoroethane	6.8	0.4	NS	NR	1.4 U	1.4 UJ	NR	1.4 U
1,3,5-Trimethylbenzene (Mesitylene)	3.7	3.9	NS	NR	0.98 U	2 J	NR	0.65 J
1,3-Butadiene	3	NS	NS	NR	0.44 U	0.44 UJ	NR	0.44 U
1,3-Dichlorobenzene	2.4	0.5	NS	NR	1.2 U	1.2 UJ	NR	1.2 U
1,4-Dichlorobenzene	5.5	1.2	NS	NR	1.2 U	1.2 UJ	NR	1.2 U
2,2,4-Trimethylpentane	NS	5	NS	NR	0.72 J	0.93 UJ	NR	3.6
2-Chlorotoluene	NS	NS	NS	NR	1 U	1 UJ	NR	1 U
2-Hexanone	NS	NS	NS	NR	2 U	2 UJ	NR	2 U
4-Ethyltoluene	3.6	NS	NS	NR	0.98 U	0.98 UJ	NR	0.52 J
Acetone	98.9	115	NS	580 D	25	NR	140 JD	NR
Allyl Chloride (3-Chloropropene)	NS	NS	NS	NR	1.6 U	1.6 UJ	NR	1.6 U
Benzene	9.4	13	NS	NR	0.41 J	4.1	NR	1.5
Benzyl Chloride	6.8	NS	NS	NR	1 U	1 UJ	NR	1 U
Bromodichloromethane	NS	NS	NS	NR	1.3 U	1.3 UJ	NR	1.3 U
Bromoform	NS	NS	NS	NR	2.1 U	2.1 UJ	NR	2.1 U
Bromomethane	1.7	0.5	NS	NR	0.78 U	0.78 UJ	NR	0.78 U
Carbon Disulfide	4.2		NS	NR	1.6 U	2.6	NR	0.39 J
Carbon Tetrachloride	1.3	1.3	NS	NR	0.33	0.77 J	NR	0.34
Chlorobenzene	0.9	0.4	NS	NR	0.92 U	0.92 UJ	NR	0.92 U
Chloroethane	1.1	0.4	NS	NR	1.3 U	1.3 UJ	NR	1.3 U
Chloroform	1.1	1.2	NS	NR	0.41 J	1.4	NR	0.56 J
Chloromethane	3.7	4.2	NS	NR	1.1	1 UJ	NR	1 U
Cis-1,2-Dichloroethylene	1.9	0.4	NS	NR	0.14 U	0.2 UJ	NR	0.14 U
Cis-1,3-Dichloropropene	2.3	0.4	NS	NR	0.91 U	0.91 UJ	NR	0.91 U
Cyclohexane	NS	6.3	NS	NR	0.63 J	6 J	NR	0.77
Cymene	NS	NS	NS	NR	1.1 U	1.1 UJ	NR	1.1 U
Dibromochloromethane	NS	NS	NS	NR	1.7 U	1.7 UJ	NR	1.7 U
Dichlorodifluoromethane	16.5	10	NS	NR	1.9 J	2.5 UJ	NR	1.9 J
Ethylbenzene	5.7	6.4	NS	NR	0.79 J	3.2 J	NR	2.4
Hexachlorobutadiene	6.8	0.5	NS	NR	2.1 U	2.1 UJ	NR	2.1 U
Isopropanol	250	NS	NS	NR	12 U	12 UJ	NR	22
Isopropylbenzene (Cumene)	NS	0.8	NS	NR	0.98 U	0.98 UJ	NR	0.98 U
M,P-Xylenes	22.2	11	NS	NR	3.1	16 J	NR	9.6
Methyl Ethyl Ketone (2-Butanone)	12	16	NS	NR	0.98 J	7.8 J	NR	16
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	6	1.9	NS	NR	2 U	2 UJ	NR	2.4
Methylene Chloride	10	16	60	NR	1.7 U	1.7 UJ	NR	1.7 U
Naphthalene	5.1	NS	NS	NR	2.6 U	2.6 UJ	NR	2.6 U
N-Butylbenzene	NS	1.1	NS	NR	1.1 U	1.1 UJ	NR	1.1 U
N-Heptane	NS	18	NS	NR	0.7 J	5.1 J	NR	2.4
N-Hexane	10.2	14	NS	NR	0.64 J	3.9 J	NR	2.4
N-Propylbenzene	NS	1.5	NS	NR	0.98 U	0.98 UJ	NR	0.98 U
O-Xylene (1,2-Dimethylbenzene)	7.9	7.1	NS	NR	1	6.6 J	NR	2.9
Sec-Butylbenzene	NS	1.2	NS	NR	1.1 U	1.1 UJ	NR	1.1 U
Styrene	1.9	1.4	NS	NR	0.85 U	0.85 UJ	NR	0.85 U
T-Butylbenzene	NS	1.3	NS	NR	1.1 U	1.1 UJ	NR	1.1 U
Tert-Butyl Alcohol	NS	NS	NS	NR	15 U	NR	150 JD	19
Tert-Butyl Methyl Ether	11.5	14	NS	NR	0.72 U	0.72 UJ	NR	1.3
Tetrachloroethylene (PCE)	15.9	2.5	30	NR	0.5 J	5.3 J	NR	0.72 J
Tetrahydrofuran	NS	0.8	NS	NR	15 U	15 UJ	NR	15 U
Toluene	43	57	NS	290 D	4.9	10 J	NR	6.9
Trans-1,2-Dichloroethene	NS	NS	NS	NR	0.79 U	0.79 UJ	NR	0.79 U
Trans-1,3-Dichloropropene	1.3	ND	NS	NR	0.91 U	0.91 UJ	NR	0.91 U
Trichloroethylene (TCE)	4.2	0.5	**2**	NR	0.19 U	1.1 J	NR	0.19 U
Trichlorofluoromethane	18.1	12	NS	NR	1.1	1.1 UJ	NR	1.4
Vinyl Bromide	NS	NS	NS	NR	0.87 U	0.87 UJ	NR	0.87 U
Vinyl Chloride	1.9	0.4	NS	NR	0.09 U	0.2 UJ	NR	0.09 U

Table 7
34 Berry Street
Brooklyn, New York
Remedial Action Work Plan
Soil-Slab Soil Gas, Indoor Air, and Ambient Air Analytical Results of
Volatile Organic Compounds (VOCs)

				Sample ID	SG-02_20190827	SG-X_20181024	IA-02_20181024	SG-03_20181024	SG-03_20190827
				Lab Sample ID	200-50299-2	200-45887-5	200-45887-4	200-45887-6	200-50299-3
				Date Sampled	8/27/2019 12:25:00 PM	10/24/2018 7:46:00 AM	10/24/2018 7:46:00 AM	10/24/2018 7:43:00 AM	8/27/2019 12:28:00 PM
				Unit	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3
				Dilution Factor	5	1	1	1	1
Compound	**EPA 2001 BASE 90th percentile Indoor**	**NYSDOH 2003 SV Indoor Upper Fence**	**NYSDOH 2006 SV Intrusion Air Guideline**	Conc Q	Conc Q	Conc Q	Conc Q	Conc Q
1,1,1-Trichloroethane	20.6	2.5	NS	NR	1.1 U	1.1 U	1.1 U	1.1 U
1,1,2,2-Tetrachloroethane	NS	0.4	NS	NR	1.4 U	1.4 U	1.4 U	1.4 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	3.5	2.5	NS	NR	1.5 U	1.5 U	1.5 U	0.39 J
1,1,2-Trichloroethane	1.5	0.4	NS	NR	1.1 U	1.1 U	1.1 U	1.1 U
1,1-Dichloroethane	0.7	0.4	NS	NR	0.81 U	0.81 U	0.81 U	0.81 U
1,1-Dichloroethene	1.4	0.4	NS	NR	0.14 U	0.14 U	0.14 U	0.14 U
1,2,4-Trichlorobenzene	6.8	0.5	NS	NR	3.7 U	3.7 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	9.5	9.8	NS	NR	2 JL	2	1.8	2.6
1,2-Dibromoethane (Ethylene Dibromide)	1.5	0.4	NS	NR	1.5 U	1.5 U	1.5 U	1.5 U
1,2-Dichlorobenzene	1.2	0.5	NS	NR	1.2 U	1.2 U	1.2 U	1.2 U
1,2-Dichloroethane	0.9	0.4	NS	NR	0.81 U	0.81 U	1.2	0.81 U
1,2-Dichloropropane	1.6	0.4	NS	NR	0.92 U	0.92 U	0.92 U	0.92 U
1,2-Dichlorotetrafluoroethane	6.8	0.4	NS	NR	1.4 U	1.4 U	1.4 U	1.4 U
1,3,5-Trimethylbenzene (Mesitylene)	3.7	3.9	NS	NR	0.99 JL	0.98 U	0.98 U	0.63 J
1,3-Butadiene	3	NS	NS	NR	0.44 U	0.44 U	0.52	0.35 J
1,3-Dichlorobenzene	2.4	0.5	NS	NR	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	5.5	1.2	NS	NR	1.2 U	1.2 U	1.2 U	1.2 U
2,2,4-Trimethylpentane	NS	5	NS	NR	4.9	4.7	3.6	3.3
2-Chlorotoluene	NS	NS	NS	NR	1 U	1 U	1 U	1 U
2-Hexanone	NS	NS	NS	NR	2 U	2 U	2 U	2 U
4-Ethyltoluene	3.6	NS	NS	NR	0.98 U	0.98 U	0.98 U	0.56 J
Acetone	98.9	115	NS	380 D	89	26	67	NR
Allyl Chloride (3-Chloropropene)	NS	NS	NS	NR	1.6 U	1.6 U	1.6 U	1.6 U
Benzene	9.4	13	NS	NR	4.5	3	3.1	2.2
Benzyl Chloride	6.8	NS	NS	NR	1 U	1 U	1 U	1 U
Bromodichloromethane	NS	NS	NS	NR	1.3 U	1.3 U	1.3 U	1.3 U
Bromoform	NS	NS	NS	NR	2.1 U	2.1 U	2.1 U	2.1 U
Bromomethane	1.7	0.5	NS	NR	0.78 U	0.78 U	0.78 U	0.78 U
Carbon Disulfide	4.2		NS	NR	1.6 U	1.6 U	5.3	11
Carbon Tetrachloride	1.3	1.3	NS	NR	0.39	0.22	0.39	0.31
Chlorobenzene	0.9	0.4	NS	NR	0.92 U	0.92 U	0.92 U	0.92 U
Chloroethane	1.1	0.4	NS	NR	1.3 U	1.3 U	1.3 U	1.3 U
Chloroform	1.1	1.2	NS	NR	0.98 U	0.98 U	1.4	1.1
Chloromethane	3.7	4.2	NS	NR	1 U	1 U	1.8	0.53 J
Cis-1,2-Dichloroethylene	1.9	0.4	NS	NR	0.2 U	0.2 U	0.2 U	0.14 U
Cis-1,3-Dichloropropene	2.3	0.4	NS	NR	0.91 U	0.91 U	0.91 U	0.91 U
Cyclohexane	NS	6.3	NS	NR	2.7	1.5	2.3	0.83
Cymene	NS	NS	NS	NR	1.1 U	1.1 U	1.1 U	0.41 J
Dibromochloromethane	NS	NS	NS	NR	1.7 U	1.7 U	1.7 U	1.7 U
Dichlorodifluoromethane	16.5	10	NS	NR	2.5 U	2.5 U	2.5 U	2 J
Ethylbenzene	5.7	6.4	NS	NR	1.9 JL	1.9	1.8	2.5
Hexachlorobutadiene	6.8	0.5	NS	NR	2.1 U	2.1 U	2.1 U	2.1 U
Isopropanol	250	NS	NS	NR	12 U	12 U	12 U	15
Isopropylbenzene (Cumene)	NS	0.8	NS	NR	0.98 U	0.98 U	0.98 U	0.98 U
M,P-Xylenes	22.2	11	NS	NR	6.2 JL	6.1	6	9.9
Methyl Ethyl Ketone (2-Butanone)	12	16	NS	NR	3.7	4.1	4.5	16
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	6	1.9	NS	NR	2 U	2 U	2 U	2.6
Methylene Chloride	10	16	60	NR	1.7 U	1.7 U	1.7 U	1.7 U
Naphthalene	5.1	NS	NS	NR	2.6 U	2.6 U	16	2.6 U
N-Butylbenzene	NS	1.1	NS	NR	1.1 U	1.1 U	1.1 U	1.1 U
N-Heptane	NS	18	NS	NR	2.5 JL	2.7	1.8	2.4
N-Hexane	10.2	14	NS	NR	4.1	4.7	3.2	2.8
N-Propylbenzene	NS	1.5	NS	NR	0.98 U	0.98 U	0.98 U	0.98 U
O-Xylene (1,2-Dimethylbenzene)	7.9	7.1	NS	NR	2.6 JL	2.3	2.4	3.2
Sec-Butylbenzene	NS	1.2	NS	NR	1.1 U	1.1 U	1.1 U	1.1 U
Styrene	1.9	1.4	NS	NR	0.85 U	0.85 U	0.85 U	0.85 U
T-Butylbenzene	NS	1.3	NS	NR	1.1 U	1.1 U	1.1 U	1.1 U
Tert-Butyl Alcohol	NS	NS	NS	NR	57	15 U	16	15 U
Tert-Butyl Methyl Ether	11.5	14	NS	NR	0.72 U	0.72 U	0.72 U	0.64 J
Tetrachloroethylene (PCE)	15.9	2.5	30	NR	1.8 JL	1.4 U	1.9	0.76 J
Tetrahydrofuran	NS	0.8	NS	NR	15 U	15 U	15 U	15 U
Toluene	43	57	NS	NR	18	16	9.1	7.5
Trans-1,2-Dichloroethene	NS	NS	NS	NR	0.79 U	0.79 U	0.79 U	0.45 J
Trans-1,3-Dichloropropene	1.3	ND	NS	NR	0.91 U	0.91 U	0.91 U	0.91 U
Trichloroethylene (TCE)	4.2	0.5	**2**	NR	0.28 JL	0.19 U	0.78	0.19 U
Trichlorofluoromethane	18.1	12	NS	NR	1.1 U	1.1 U	1.1 U	1.2
Vinyl Bromide	NS	NS	NS	NR	0.87 U	0.87 U	0.87 U	0.87 U
Vinyl Chloride	1.9	0.4	NS	NR	0.2 U	0.2 U	0.2 U	0.09 U

Table 7
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Soil-Slab Soil Gas, Indoor Air, and Ambient Air Analytical Results of
Volatile Organic Compounds (VOCs)

			Sample ID	SG-03_20190827	IA-03_20181024	AA-01_20181024	AA-01_20190827
			Lab Sample ID	200-50299-3	200-45887-7	200-45887-8	200-50299-5
			Date Sampled	8/27/2019 12:28:00 PM	10/24/2018 7:44:00 AM	10/24/2018 7:52:00 AM	8/27/2019 12:10:00 PM
			Unit	µg/m³	µg/m³	µg/m³	µg/m³
			Dilution Factor	5	1	1	1
Compound	**EPA 2001 BASE 90th percentile Indoor**	**NYSDOH 2003 SV Indoor Upper Fence**	**NYSDOH 2006 SV Intrusion Air Guideline**	Conc Q	Conc Q	Conc Q	Conc Q
1,1,1-Trichloroethane	20.6	2.5	NS	NR	1.1 U	1.1 U	1.1 U
1,1,2,2-Tetrachloroethane	NS	0.4	NS	NR	1.4 U	1.4 U	1.4 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	3.5	2.5	NS	NR	1.5 U	1.5 U	0.34 J
1,1,2-Trichloroethane	1.5	0.4	NS	NR	1.1 U	1.1 U	1.1 U
1,1-Dichloroethane	0.7	0.4	NS	NR	0.81 U	0.81 U	0.81 U
1,1-Dichloroethene	1.4	0.4	NS	NR	0.14 U	0.14 U	0.14 U
1,2,4-Trichlorobenzene	6.8	0.5	NS	NR	3.7 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	9.5	9.8	NS	NR	1.5	0.98 U	0.44 J
1,2-Dibromoethane (Ethylene Dibromide)	1.5	0.4	NS	NR	1.5 U	1.5 U	1.5 U
1,2-Dichlorobenzene	1.2	0.5	NS	NR	1.2 U	1.2 U	1.2 U
1,2-Dichloroethane	0.9	0.4	NS	NR	0.81 U	0.81 U	0.81 U
1,2-Dichloropropane	1.6	0.4	NS	NR	0.92 U	0.92 U	0.92 U
1,2-Dichlorotetrafluoroethane	6.8	0.4	NS	NR	1.4 U	1.4 U	1.4 U
1,3,5-Trimethylbenzene (Mesitylene)	3.7	3.9	NS	NR	0.98 U	0.98 U	0.98 U
1,3-Butadiene	3	NS	NS	NR	0.44 U	0.44 U	0.44 U
1,3-Dichlorobenzene	2.4	0.5	NS	NR	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	5.5	1.2	NS	NR	1.2 U	1.2 U	1.2 U
2,2,4-Trimethylpentane	NS	5	NS	NR	4.6	0.93 U	0.75 J
2-Chlorotoluene	NS	NS	NS	NR	1 U	1 U	1 U
2-Hexanone	NS	NS	NS	NR	2 U	2 U	2 U
4-Ethyltoluene	3.6	NS	NS	NR	0.98 U	0.98 U	0.98 U
Acetone	98.9	115	NS	360 D	17	12 U	9.1 J
Allyl Chloride (3-Chloropropene)	NS	NS	NS	NR	1.6 U	1.6 U	1.6 U
Benzene	9.4	13	NS	NR	3	0.79	0.45 J
Benzyl Chloride	6.8	NS	NS	NR	1 U	1 U	1 U
Bromodichloromethane	NS	NS	NS	NR	1.3 U	1.3 U	1.3 U
Bromoform	NS	NS	NS	NR	2.1 U	2.1 U	2.1 U
Bromomethane	1.7	0.5	NS	NR	0.78 U	0.78 U	0.78 U
Carbon Disulfide	4.2		NS	NR	1.6 U	1.6 U	1.1 J
Carbon Tetrachloride	1.3	1.3	NS	NR	0.41	0.36	0.37
Chlorobenzene	0.9	0.4	NS	NR	0.92 U	0.92 U	0.92 U
Chloroethane	1.1	0.4	NS	NR	1.3 U	1.3 U	1.3 U
Chloroform	1.1	1.2	NS	NR	0.98 U	0.98 U	0.98 U
Chloromethane	3.7	4.2	NS	NR	1 U	1 U	1
Cis-1,2-Dichloroethylene	1.9	0.4	NS	NR	0.2 U	0.2 U	0.14 U
Cis-1,3-Dichloropropene	2.3	0.4	NS	NR	0.91 U	0.91 U	0.91 U
Cyclohexane	NS	6.3	NS	NR	1.5	0.69 U	0.69 U
Cymene	NS	NS	NS	NR	1.1 U	1.1 U	1.1 U
Dibromochloromethane	NS	NS	NS	NR	1.7 U	1.7 U	1.7 U
Dichlorodifluoromethane	16.5	10	NS	NR	2.5 U	2.5 U	2.1 J
Ethylbenzene	5.7	6.4	NS	NR	1.7	0.87 U	0.87 U
Hexachlorobutadiene	6.8	0.5	NS	NR	2.1 U	2.1 U	2.1 U
Isopropanol	250	NS	NS	NR	12 U	12 U	12 U
Isopropylbenzene (Cumene)	NS	0.8	NS	NR	0.98 U	0.98 U	0.98 U
M,P-Xylenes	22.2	11	NS	NR	5.7	2.2 U	0.94 J
Methyl Ethyl Ketone (2-Butanone)	12	16	NS	NR	1.5 U	1.5 U	1.2 J
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	6	1.9	NS	NR	2 U	2 U	2 U
Methylene Chloride	10	16	60	NR	1.7 U	1.7 U	0.72 J
Naphthalene	5.1	NS	NS	NR	2.6 U	2.6 U	2.6 U
N-Butylbenzene	NS	1.1	NS	NR	1.1 U	1.1 U	1.1 U
N-Heptane	NS	18	NS	NR	2.2	0.82 U	0.82 U
N-Hexane	10.2	14	NS	NR	4.7	0.84	0.68 J
N-Propylbenzene	NS	1.5	NS	NR	0.98 U	0.98 U	0.98 U
O-Xylene (1,2-Dimethylbenzene)	7.9	7.1	NS	NR	1.9	0.87 U	0.87 U
Sec-Butylbenzene	NS	1.2	NS	NR	1.1 U	1.1 U	1.1 U
Styrene	1.9	1.4	NS	NR	0.85 U	0.85 U	0.85 U
T-Butylbenzene	NS	1.3	NS	NR	1.1 U	1.1 U	1.1 U
Tert-Butyl Alcohol	NS	NS	NS	NR	15 U	15 U	15 U
Tert-Butyl Methyl Ether	11.5	14	NS	NR	0.72 U	0.72 U	0.72 U
Tetrachloroethylene (PCE)	15.9	2.5	30	NR	1.4 U	1.4 U	0.32 J
Tetrahydrofuran	NS	0.8	NS	NR	15 U	15 U	15 U
Toluene	43	57	NS	NR	12	1	2
Trans-1,2-Dichloroethene	NS	NS	NS	NR	0.79 U	0.79 U	0.79 U
Trans-1,3-Dichloropropene	1.3	ND	NS	NR	0.91 U	0.91 U	0.91 U
Trichloroethylene (TCE)	4.2	0.5	**2**	NR	0.19 U	0.19 U	0.19 U
Trichlorofluoromethane	18.1	12	NS	NR	1.1 U	1.1 U	1.1
Vinyl Bromide	NS	NS	NS	NR	0.87 U	0.87 U	0.87 U
Vinyl Chloride	1.9	0.4	NS	NR	0.2 U	0.2 U	0.09 U

Tables 1-7
34 Berry Street
Brooklyn, New York
Remedial Action Work Plan
Notes

DEFINITIONS

B	:	Indicates the analyte is detected in the associated blank as well as in the sample.
D	:	Indicates an identified compound in an analysis that has been diluted. This flag alerts the data user to any differences between the concentrations reported in the two analyses.
E	:	Identifies compounds whose concentration exceed the calibration range of the instrument for that specific analysis.
F	:	Field parameter with a holding time of 15 minutes
J	:	The reported value is estimated
JL	:	The result is an estimated quantity, but the results may be biased low
JK	:	The result is an estimated quantity, but the results may be biased high
K	:	Reported concentration value is proportional to dilution factor and may be exagerated
L	:	Sample result is estimated and biased low.
ND	:	The standard is a non-detectable concentration by the approved analytical method.
NS	:	No standard
NR	:	Not reported
R	:	Indicates the reported result is unusable. (note: the analyte may or may not be present.)
T	:	Indicates that a quality control parameter has exceeded laboratory limits
U	:	Indicates that the compound was analyzed for, but not detected.
UJ	:	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise
mg/kg	:	miligrams per kilogram = parts per million (ppm)
mg/L	:	milligrams per Liter = parts per million (ppm)
ng/L	:	nanograms per Liter = parts per trillion (ppt)
µg/L	:	micrograms per Liter = parts per billion (ppb)
µg/m^3	:	micrograms per cubic meter of air

STANDARDS

Part 375 Soil Cleanup Objectives	:	Soil Cleanup Objectives listed in New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations [6 New York Codes, Rules and Regulations (NYCRR) Part 375].

Exceedances of Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCOs) are highlighted in bold font.
Exceedances of Part 375 Restricted Residential Soil Cleanup Objectives (RRSCOs) are highlighted in gray shading.

NYSDEC Class GA AWQSGVs	:	New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (1.1.1): Class GA Ambient Water Quality Standards and Guidance Values (AWQSGVs).

Exceedances of NYSDEC Class GA AWQSGVs are highlighted in bold font and gray shading.

NYSDOH Soil Vapor Intrusion Air Guideline Value	:	NYSDOH Air Guideline Values (AGVs) presented in the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006 (“NYSDOH Vapor Intrusion Guidance Document”), updated August 2015.
NYSDOH 2003 Soil Vapor Indoor Upper Fence	:	Upper fence indoor air values from "Table C1. NYSDOH 2003: Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes", published in the "NYSDOH Soil Vapor Intrusion Guidance Document, Appendix C” (October 2006).
EPA 2001 BASE 90th percentile	:	90th Percentile indoor air values from “Table C-2. EPA 2001: Building Assessment and Survey Evaluation (BASE) Database, SUMMA canister method”, published in the "NYSDOH Soil Vapor Intrusion Guidance Document, Appendix C” (October 2006).

Exceedences of NYSDOH Soil Vapor AGVs are highlighted in bold font.

Table 8
34 Berry Street
Brooklyn, New York
Remedial Action Work Plan
Track 4 Soil and Groundwater Cleanup Objectives

Client ID Lab Sample ID Date Sampled	NYSDEC Part 375 Restricted Residential SCO
VOCs	
1,1,1,2-Tetrachloroethane	NS
1,1,1-Trichloroethane	100
1,1,2,2-Tetrachloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	26
1,1-Dichloroethene	100
1,1-Dichloropropene	NS
1,2,3-Trichlorobenzene	NS
1,2,3-Trichloropropane	NS
1,2,4,5-Tetramethylbenzene	NS
1,2,4-Trichlorobenzene	NS
1,2,4-Trimethylbenzene	52
1,2-Dibromo-3-chloropropane	NS
1,2-Dibromoethane	NS
1,2-Dichlorobenzene	100
1,2-Dichloroethane	3.1
1,2-Dichloroethene, Total	NS
1,2-Dichloropropane	NS
1,3,5-Trimethylbenzene	52
1,3-Dichlorobenzene	49
1,3-Dichloropropane	NS
1,3-Dichloropropene, Total	NS
1,4-Dichlorobenzene	13
1,4-Dioxane	13
2,2-Dichloropropane	NS
2-Butanone	100
2-Hexanone	NS
4-Methyl-2-pentanone	NS
Acetone	100
Acrylonitrile	NS
Benzene	4.8
Bromobenzene	NS
Bromochloromethane	NS
Bromodichloromethane	NS
Bromoform	NS
Bromomethane	NS
Carbon disulfide	NS
Carbon tetrachloride	2.4
Chlorobenzene	100
Chloroethane	NS
Chloroform	49
Chloromethane	NS
cis-1,2-Dichloroethene	100
cis-1,3-Dichloropropene	NS
Dibromochloromethane	NS
Dibromomethane	NS
Dichlorodifluoromethane	NS
Ethyl ether	NS
Ethylbenzene	41

Table 8
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Remedial Action Work Plan
Track 4 Soil and Groundwater Cleanup Objectives

Client ID Lab Sample ID Date Sampled	NYSDEC Part 375 Restricted Residential SCO
VOCs	
Hexachlorobutadiene	NS
Isopropylbenzene	NS
Methyl tert butyl ether	100
Methylene chloride	100
Naphthalene	100
n-Butylbenzene	100
n-Propylbenzene	100
o-Chlorotoluene	NS
o-Xylene	NS
p/m-Xylene	NS
p-Chlorotoluene	NS
p-Diethylbenzene	NS
p-Ethyltoluene	NS
p-Isopropyltoluene	NS
sec-Butylbenzene	100
Styrene	NS
tert-Butylbenzene	100
Tetrachloroethene	19
Toluene	100
trans-1,2-Dichloroethene	100
trans-1,3-Dichloropropene	NS
trans-1,4-Dichloro-2-butene	NS
Trichloroethene	21
Trichlorofluoromethane	NS
Vinyl acetate	NS
Vinyl chloride	0.9
Xylenes, Total	100
SVOCs	
1,2,4,5-Tetrachlorobenzene	NS
1,2,4-Trichlorobenzene	NS
1,2-Dichlorobenzene	100
1,3-Dichlorobenzene	49
1,4-Dichlorobenzene	13
2,4,5-Trichlorophenol	NS
2,4,6-Trichlorophenol	NS
2,4-Dichlorophenol	NS
2,4-Dimethylphenol	NS
2,4-Dinitrophenol	NS
2,4-Dinitrotoluene	NS
2,6-Dinitrotoluene	NS
2-Chloronaphthalene	NS
2-Chlorophenol	NS
2-Methylnaphthalene	NS
2-Methylphenol	100
2-Nitroaniline	NS
2-Nitrophenol	NS
3,3'-Dichlorobenzidine	NS
3-Methylphenol/4-Methylphenol	100

Table 8
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Client ID Lab Sample ID Date Sampled	NYSDEC Part 375 Restricted Residential SCO
SVOCs	
3-Nitroaniline	NS
4,6-Dinitro-o-cresol	NS
4-Bromophenyl phenyl ether	NS
4-Chloroaniline	NS
4-Chlorophenyl phenyl ether	NS
4-Nitroaniline	NS
4-Nitrophenol	NS
Acenaphthene	100
Acenaphthylene	100
Acetophenone	NS
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(ghi)perylene	100
Benzo(k)fluoranthene	3.9
Benzoic Acid	NS
Benzyl Alcohol	NS
Biphenyl	NS
Bis(2-chloroethoxy)methane	NS
Bis(2-chloroethyl)ether	NS
Bis(2-chloroisopropyl)ether	NS
Bis(2-ethylhexyl)phthalate	NS
Butyl benzyl phthalate	NS
Carbazole	NS
Chrysene	3.9
Dibenzo(a,h)anthracene	0.33
Dibenzofuran	59
Diethyl phthalate	NS
Dimethyl phthalate	NS
Di-n-butylphthalate	NS
Di-n-octylphthalate	NS
Fluoranthene	100
Fluorene	100
Hexachlorobenzene	1.2
Hexachlorobutadiene	NS
Hexachlorocyclopentadiene	NS
Hexachloroethane	NS
Indeno(1,2,3-cd)pyrene	0.5
Isophorone	NS
Naphthalene	100
NDPA/DPA	NS
Nitrobenzene	NS
n-Nitrosodi-n-propylamine	NS
p-Chloro-m-cresol	NS
Pentachlorophenol	6.7
Phenanthrene	100
Phenol	100
Pyrene	100

Table 8
34 Berry Street
Brooklyn, New York
Remedial Action Work Plan
Track 4 Soil and Groundwater Cleanup Objectives

Client ID Lab Sample ID Date Sampled	NYSDEC Part 375 Restricted Residential SCO
Metals	
Aluminum	NS
Antimony	NS
Arsenic	16
Barium	400
Beryllium	72
Cadmium	4.3
Calcium	NS
Chromium, Total	180***
Chromium, Hexavalent	110
Chromium, Trivalent	180
Cobalt	NS
Copper	270
Iron	NS
Lead	400
Magnesium	NS
Manganese	2,000
Mercury	0.81
Nickel	310
Potassium	NS
Selenium	180
Silver	180
Sodium	NS
Thallium	NS
Vanadium	NS
Zinc	10,000
PCBs	
Aroclor 1016	NS
Aroclor 1221	NS
Aroclor 1232	NS
Aroclor 1242	NS
Aroclor 1248	NS
Aroclor 1254	NS
Aroclor 1260	NS
Aroclor 1262	NS
Aroclor 1268	NS
PCBs, Total	1
Pesticides	
4,4'-DDD	13
4,4'-DDE	8.9
4,4'-DDT	7.9
Aldrin	0.097
Alpha-BHC	0.48
Beta-BHC	0.36
Chlordane	NS
cis-Chlordane	4.2
Delta-BHC	100
Dieldrin	0.2
Endosulfan I	NS
Endosulfan II	NS

Table 8
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Remedial Action Work Plan
Track 4 Soil and Groundwater Cleanup Objectives

Client ID Lab Sample ID Date Sampled	NYSDEC Part 375 Restricted Residential SCO
Pesticides	
Endosulfan sulfate	NS
Endosulfans, ABS	24
Endrin	11
Endrin aldehyde	NS
Endrin ketone	NS
Heptachlor	2.1
Heptachlor epoxide	NS
Lindane	1.3
Methoxychlor	NS
Toxaphene	NS
trans-Chlordane	NS

Table 8
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Remedial Action Work Plan
Track 4 Soil and Groundwater Cleanup Objectives

Client ID Lab Sample ID Date Sampled	NYSDEC Class GA AWQSGVs µg/L
VOCs	
1,1,1,2-Tetrachloroethane	5
1,1,1-Trichloroethane	5
1,1,2,2-Tetrachloroethane	5
1,1,2-Trichloroethane	1
1,1-Dichloroethane	5
1,1-Dichloroethene	5
1,1-Dichloropropene	5
1,2,3-Trichlorobenzene	5
1,2,3-Trichloropropane	0.04
1,2,4,5-Tetramethylbenzene	5
1,2,4-Trichlorobenzene	5
1,2,4-Trimethylbenzene	5
1,2-Dibromo-3-chloropropane	0.04
1,2-Dibromoethane	0.0006
1,2-Dichlorobenzene	3
1,2-Dichloroethane	0.6
1,2-Dichloroethene, Total	NS
1,2-Dichloropropane	1
1,3,5-Trimethylbenzene	5
1,3-Dichlorobenzene	3
1,3-Dichloropropane	5
1,3-Dichloropropene, Total	0.4
1,4-Dichlorobenzene	3
1,4-Dioxane	NS
2,2-Dichloropropane	5
2-Butanone	50
2-Hexanone	50
4-Methyl-2-pentanone	NS
Acetone	50
Acrylonitrile	5
Benzene	1
Bromobenzene	5
Bromochloromethane	5
Bromodichloromethane	50
Bromoform	50
Bromomethane	5
Carbon disulfide	60
Carbon tetrachloride	5
Chlorobenzene	5
Chloroethane	5
Chloroform	7
Chloromethane	5
cis-1,2-Dichloroethene	5
cis-1,3-Dichloropropene	NS
Dibromochloromethane	50
Dibromomethane	5
Dichlorodifluoromethane	5
Ethyl ether	NS
Ethylbenzene	5

Table 8
34 Berry Street
Brooklyn, New York
Remedial Action Work Plan
Track 4 Soil and Groundwater Cleanup Objectives

Client ID Lab Sample ID Date Sampled	NYSDEC Class GA AWQSGVs µg/L
VOCs	
Hexachlorobutadiene	0.5
Isopropylbenzene	5
Methyl tert butyl ether	10
Methylene chloride	5
Naphthalene	10
n-Butylbenzene	5
n-Propylbenzene	5
o-Chlorotoluene	5
o-Xylene	5
p/m-Xylene	5
p-Chlorotoluene	5
p-Diethylbenzene	NS
p-Ethyltoluene	NS
p-Isopropyltoluene	5
sec-Butylbenzene	5
Styrene	5
tert-Butylbenzene	5
Tetrachloroethene	5
Toluene	5
trans-1,2-Dichloroethene	5
trans-1,3-Dichloropropene	NS
trans-1,4-Dichloro-2-butene	5
Trichloroethene	5
Trichlorofluoromethane	5
Vinyl acetate	NS
Vinyl chloride	2
Xylenes, Total	NS
SVOCs	
1,2,4,5-Tetrachlorobenzene	5
1,2,4-Trichlorobenzene	5
1,2-Dichlorobenzene	3
1,3-Dichlorobenzene	3
1,4-Dichlorobenzene	3
2,4,5-Trichlorophenol	NS
2,4,6-Trichlorophenol	NS
2,4-Dichlorophenol	5
2,4-Dimethylphenol	50
2,4-Dinitrophenol	10
2,4-Dinitrotoluene	5
2,6-Dinitrotoluene	5
2-Chloronaphthalene	10
2-Chlorophenol	NS
2-Methylnaphthalene	NS
2-Methylphenol	NS
2-Nitroaniline	5
2-Nitrophenol	NS
3,3'-Dichlorobenzidine	5
3-Methylphenol/4-Methylphenol	NS

Table 8
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Track 4 Soil and Groundwater Cleanup Objectives

Client ID Lab Sample ID Date Sampled	NYSDEC Class GA AWQSGVs µg/L
SVOCs	
3-Nitroaniline	5
4,6-Dinitro-o-cresol	NS
4-Bromophenyl phenyl ether	NS
4-Chloroaniline	5
4-Chlorophenyl phenyl ether	NS
4-Nitroaniline	5
4-Nitrophenol	NS
Acenaphthene	20
Acenaphthylene	NS
Acetophenone	NS
Anthracene	50
Benzo(a)anthracene	0.002
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	0.002
Benzo(ghi)perylene	NS
Benzo(k)fluoranthene	0.002
Benzoic Acid	NS
Benzyl Alcohol	NS
Biphenyl	5
Bis(2-chloroethoxy)methane	5
Bis(2-chloroethyl)ether	1
Bis(2-chloroisopropyl)ether	5
Bis(2-ethylhexyl)phthalate	5
Butyl benzyl phthalate	50
Carbazole	NS
Chrysene	0.002
Dibenzo(a,h)anthracene	NS
Dibenzofuran	NS
Diethyl phthalate	50
Dimethyl phthalate	50
Di-n-butylphthalate	50
Di-n-octylphthalate	50
Fluoranthene	50
Fluorene	50
Hexachlorobenzene	0.04
Hexachlorobutadiene	0.5
Hexachlorocyclopentadiene	5
Hexachloroethane	5
Indeno(1,2,3-cd)pyrene	0.002
Isophorone	50
Naphthalene	10
NDPA/DPA	50
Nitrobenzene	0.4
n-Nitrosodi-n-propylamine	NS
p-Chloro-m-cresol	NS
Pentachlorophenol	NS
Phenanthrene	50
Phenol	1
Pyrene	50

Table 8
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Track 4 Soil and Groundwater Cleanup Objectives

Client ID Lab Sample ID Date Sampled	NYSDEC Class GA AWQSGVs µg/L
Metals	
Aluminum	NS
Antimony	3
Arsenic	25
Barium	1,000
Beryllium	3
Cadmium	5
Calcium	NS
Chromium, Total	50
Chromium, Hexavalent	50
Chromium, Trivalent	NS
Cobalt	NS
Copper	200
Iron	300
Lead	25
Magnesium	35,000
Manganese	300
Mercury	0.7
Nickel	100
Potassium	NS
Selenium	10
Silver	50
Sodium	20,000
Thallium	0.5
Vanadium	NS
Zinc	2,000
PCBs	
Aroclor 1016	NS
Aroclor 1221	NS
Aroclor 1232	NS
Aroclor 1242	NS
Aroclor 1248	NS
Aroclor 1254	NS
Aroclor 1260	NS
Aroclor 1262	NS
Aroclor 1268	NS
PCBs, Total	0.09
Pesticides	
4,4'-DDD	0.3
4,4'-DDE	0.2
4,4'-DDT	0.2
Aldrin	ND
Alpha-BHC	0.01
Beta-BHC	0.04
Chlordane	0.05
cis-Chlordane	NS
Delta-BHC	0.04
Dieldrin	0.004
Endosulfan I	NS
Endosulfan II	NS

Table 8
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Track 4 Soil and Groundwater Cleanup Objectives

Client ID Lab Sample ID Date Sampled	NYSDEC Class GA AWQSGVs µg/L
Pesticides	
Endosulfan sulfate	NS
Endrin	ND
Endrin aldehyde	5
Endrin ketone	5
Heptachlor	0.04
Heptachlor epoxide	0.03
Lindane	0.05
Methoxychlor	35
Toxaphene	0.06
trans-Chlordane	NS

APPENDIX A

HEALTH AND SAFETY PLAN AND COMMUNITY AIR MONITORING PLAN

34 Berry Street

BROOKLYN, NEW YORK

Health and Safety Plan (HASP) and
Community Air Monitoring Plan (CAMP)

BCP Site #: C224268

AKRF Project Number: 11259

Prepared for:

34 Berry Street LLC (LCOR)
34 Berry Street
Brooklyn, NY 11249

Prepared by:

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440 Park Avenue South, 7th Floor
New York, NY 10016
212-696-0670

MAY 2020

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1.0 INTRODUCTION

This Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) were prepared by AKRF, Inc. (AKRF) on behalf of 34 Berry Street, LLC (the Volunteer) for the 34 Berry Street site located at 34 Berry Street in the Williamsburg neighborhood of Brooklyn, New York, herein referred to as "the Site". The Site is also identified as Brooklyn Borough Tax Block 2289, Lot 14. The Site consists of a 36,000 square foot, irregularly shaped lot. The Site is currently enrolled in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) (BCP Site No. C224268).

The Site is occupied by an L-shaped, seven-story residential building that fronts Berry and North 12th Streets, with an open courtyard area located behind the building, in the central portion of the Site. A basement level parking garage is located under the building and courtyard, with an entrance ramp located on North 11th Street. A small, street-level valet parking lot is also located on North 11th Street, immediately east of the garage entrance ramp. The Site is surrounded by: North 11th Street and two low-rise residential buildings to the south, and a warehouse building used by the Brooklyn Brewery to the west. The surrounding neighborhood is primarily residential and commercial in nature, containing apartment buildings, businesses and storage warehouses.

Available records have documented that the property was historically developed with industrial and manufacturing uses. Based on investigations and quarterly monitoring conducted to date, identified contamination at the Site includes light non-aqueous phase liquid (LNAPL), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) associated with a petroleum spill, and chlorinated VOCs associated with a solvent plume in groundwater. Operation, monitoring, and maintenance (OM&M) activities completed to monitor remediation efforts to clean up the spill has identified a chlorinated solvent plume in groundwater. This HASP identifies the hazards of concern, the specific chemicals associated with the Site-specific hazards, and measures to provide protection for on-site workers from exposure to the hazards during the remedial action work. The CAMP (section 2.6.3) describes perimeter air monitoring requirements, corrective action levels, and associated response actions to prevent exposures to the surrounding community.

All AKRF employees are directed that all work must be performed in accordance with the Company's Generic HASP and all OSHA applicable regulations for the work activities required for the project. All project personnel are furthermore directed that they are not permitted to enter Permit Required Confined Spaces (as defined by OSHA). For issues unrelated to contaminated materials, all non-AKRF employees are to be bound by all applicable OSHA regulations as well as any more stringent requirements specified by their employer in their corporate HASP or otherwise. AKRF is not responsible for providing oversight for issues unrelated to contaminated materials for non-employees. This oversight shall be the responsibility of the employer of that worker or other official designated by that employer.

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	(**X**) Explosive/Flammable	( ) Oxygen Deficient Atm
(**X**) Heat Stress	(**X**) Cold Stress	( ) Carbon Monoxide
Comments: No personnel are permitted to enter permit confined spaces.		

2.1.2 Physical Characteristics

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

2.1.3 Hazardous Materials

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

2.1.4 Chemicals of Concern

Chemicals	REL/PEL/STEL	Health Hazards
1,2 Dichloroethane (DCA)	REL = 1 ppm PEL = 50 ppm	Headaches, lung irritation, dizziness, poor coordination, impaired heart function, unconsciousness, and nerve, kidney and liver damage.
Benzene	REL = 0.1 ppm PEL = 1 ppm 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 PEL = 200 ppm STEL = 300 ppm	Irritation eyes, nose; lassitude, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia (skin tingling or numbness); dermatitis; liver, kidney damage.
Ethylbenzene	REL = 100 ppm PEL = 100 ppm	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma.
Xylenes	REL = 100 ppm PEL = 100 ppm	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, poor coordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis.
Naphthalene	REL = 10 ppm PEL = 10 ppm	Irritation eyes; headache, confusion, excitement, malaise; nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage.
Polycyclic Aromatic Hydrocarbons (PAHs)	PEL = 5 mg/m^3	Harmful effects to skin, bodily fluids, and ability to fight disease, reproductive problems; [potential occupational carcinogen]
Fuel Oil	REL = 350 mg/m^3 PEL = 400 ppm	Nausea, irritation – eyes, hypertension, headache, light-headedness, loss of appetite, poor coordination; long-term exposure – kidney damage, blood clotting problems; potential carcinogen.
Tetrachloroethylene (PCE)	REL = Lowest possible PEL = 100 ppm STEL = 100 ppm	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination, headache, drowsiness, skin erythema (skin redness), and liver damage.
Trichloroethylene (TCE)	REL = 25 ppm PEL = 100 ppm	Headaches, lung irritation, dizziness, poor coordination, impaired heart function, unconsciousness, and nerve, kidney and liver damage.
1,2-Dichloroethane (DCA)	REL = 1 ppm PEL = 50 ppm	Irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]
1,2 Dichloroethene (DCE)	REL = 200 ppm PEL = 200 ppm	Nausea, drowsy, tiredness possible heart damage.
Comments: REL = NIOSH Recommended Exposure Limit PEL = OSHA Permissible Exposure Limit STEL = OSHA Short Term Exposure Limit ppm = parts per million mg/m^3 = milligrams per cubic meter		

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 have a 4-year college degree in occupational safety or a related science/engineering field, and experience in

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 enter 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;
- 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 is the zone 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.

Task	Exclusion Zone	CRZ	Support Zone
Soil Borings/ Injection, Extraction, and Monitoring	10 ft from drilling/excavation equipment or	25 ft from drilling equipment or sampling personnel,	As Needed

Wells/Groundwater Pumping and Recirculation Wells/Trenching	sampling personnel	or within the interior room where the work is being performed.	
Comments: Control measures such as "caution tape" and/or traffic cones will be placed around the perimeter of the work area when work is being done in a public area.			

2.6 Air Monitoring

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

2.6.1 Volatile Organic Compounds

A photoionization detector (PID) will be used to perform air monitoring during soil disturbance activities to determine airborne levels of total VOCs. The PID will be calibrated at the start of the work day with a 100 ppm isobutylene standard.

2.6.2 Work Zone Air Monitoring

Real time air monitoring will be performed with the PID. 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 20 ppm	Level C
	More than 20 ppm	Stop work. Resume work when readings are less then 20 ppm.
Notes: ppm = parts per million		

2.7 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 Section 2.6.

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

2.8 General Work Practices

To protect the health and safety of the field personnel, field personnel will adhere to the guidelines listed below 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 COMMUNITY AIR MONITORING PLAN

Community air monitoring will be conducted during all intrusive site activities in compliance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP). Real-time air monitoring for volatile compounds at the perimeter of the exclusion zone and at additional remote air monitoring sations will be performed as described below.

VOC Monitoring

Periodic monitoring for VOCs will be conducted during non-intrusive activities such as the collection of groundwater samples. Periodic monitoring may include obtaining measurements upon arrival at a location, while opening a monitoring well cap, when bailing/purging a well, and upon leaving the

location. In some instances, depending on the proximity of exposed individuals, continuous monitoring may be conducted during these activities.

Continuous monitoring for VOCs will be conducted during all ground intrusive activities (e.g., injection/recovery well installation, trenching for piping). VOC concentrations will be measured in the work zone and at select remote monitoring stations at the start of each workday, and periodically thereafter to establish background concentrations. Since all of the work described in the RAWP is being completed indoors, monitoring locations will selected based on access points (i.e., hallways) and any ventilation structures that would potentially be connected to air flow within the work area to provide for appropriate protection for building occupants.

Exclusion Zone Perimeter Monitoring

VOCs will be monitored continuously at the perimeter of the exclusion zone using handheld equipment. Monitoring will be conducted with a photoionization detector (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 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 exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet – is below 5 ppm 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 shut down, and the Major Vapor Emission Response Plan will be automatically implemented.

More frequent intervals of monitoring will be conducted if required as determined by the SSO. All 15-minute readings will be recorded and available for NYSDEC and NYSDOH personnel to review. Instantaneous readings, if any, will also be recorded.

Remote Fixed Air Monitoring Stations

Fixed monitoring stations will be included outside of the exclusion zone at potential exposure points for building occupants. These locations may include hallways and/or areas adjacent to ventilation features that connect with the work zone. The fixed monitoring stations will be fully enclosed and equipped with the following:

- A PID equipped with an 10.6 eV lamp capable of calculating 15-minute running average VOC concentrations;

All air monitoring data recorded at the fixed monitoring stations will be available for NYSDOH and/or NYSDEC review and will be included in the Final Engineering Report (FER).

Major Vapor Emission Response Plan

If any organic levels greater than 1 ppm over background are identified at a remote fixed monitoring station, 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 1 ppm above background at a monitoring station, then the following contingency measures will be implemented:

- If total organic vapor levels exceed 1 ppm above background for the 15-minute average at the monitoring station, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 1 ppm above background, work activities will resume with continued monitoring.
- If total organic vapor levels at the monitoring station persist at levels in excess of 1 ppm above background, 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 at the monitoring station is below 1 ppm above background for the 15-minute average.
- If the total organic vapor level remains above 1 ppm at the monitoring station, activities will be shut down, and the Major Vapor Emission Response Plan will be automatically implemented.
- *Major Vapor Emission Response Plan*
- 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 immediately be contacted by the SSO and advised of the situation;
- Frequent air monitoring will be conducted at 30-minute intervals at the monitoring stations. 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.

4.0 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 taken to a hospital by on-site personnel. Directions to the hospital are provided below, and a hospital route map is attached.

4.1 Hospital Directions

Hospital Name:	Woodhull Medical Center
Phone Number:	(718) 963-8000
Address/Location:	760 Broadway Brooklyn, NY 11206 (The Emergency Department is located at the intersection of Flushing Avenue and Throop Avenue)
Directions:	1. Go NORTHEAST on *Berry Street* 2. Continue onto *Nassau Avenue* 3. Turn LEFT onto *Bedford Avenue* 4. Turn RIGHT onto *Lorimer Street* 5. Turn LEFT onto *Broadway* 6. Turn RIGHT on *Flushing Avenue* The Emergency Department entrance will be at the intersection of Flushing Avenue and Throop Avenue.

4.2 Emergency Contacts

Company	Individual Name	Title	Contact Number
AKRF	Marc Godick	Project Director	914-922-2356
	Bryan Zieroff	Project Manager	914-922-2382 (office) 203-246-1566 (cell)
	Mark Jepsen	Deputy Project Manager	646-388-9567 (office) 614-560-5425 (cell)
	Mark Jepsen	Site Safety Officer (SSO)	646-388-9869 (office) 718-864-6329 (cell)
	Tom Giordano	SSO Alternate	646-388-9833 (office) 828-550-2612 (cell)
34 Berry Street, LLC (LCOR)	Joseph C. Venuto, Jr.	Asset Manager	610-408-4436
Ambulance, Fire Department & Police Department	-	-	911
NYSDEC Spill Hotline	-	-	800-457-7362

5.0 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 34 Berry 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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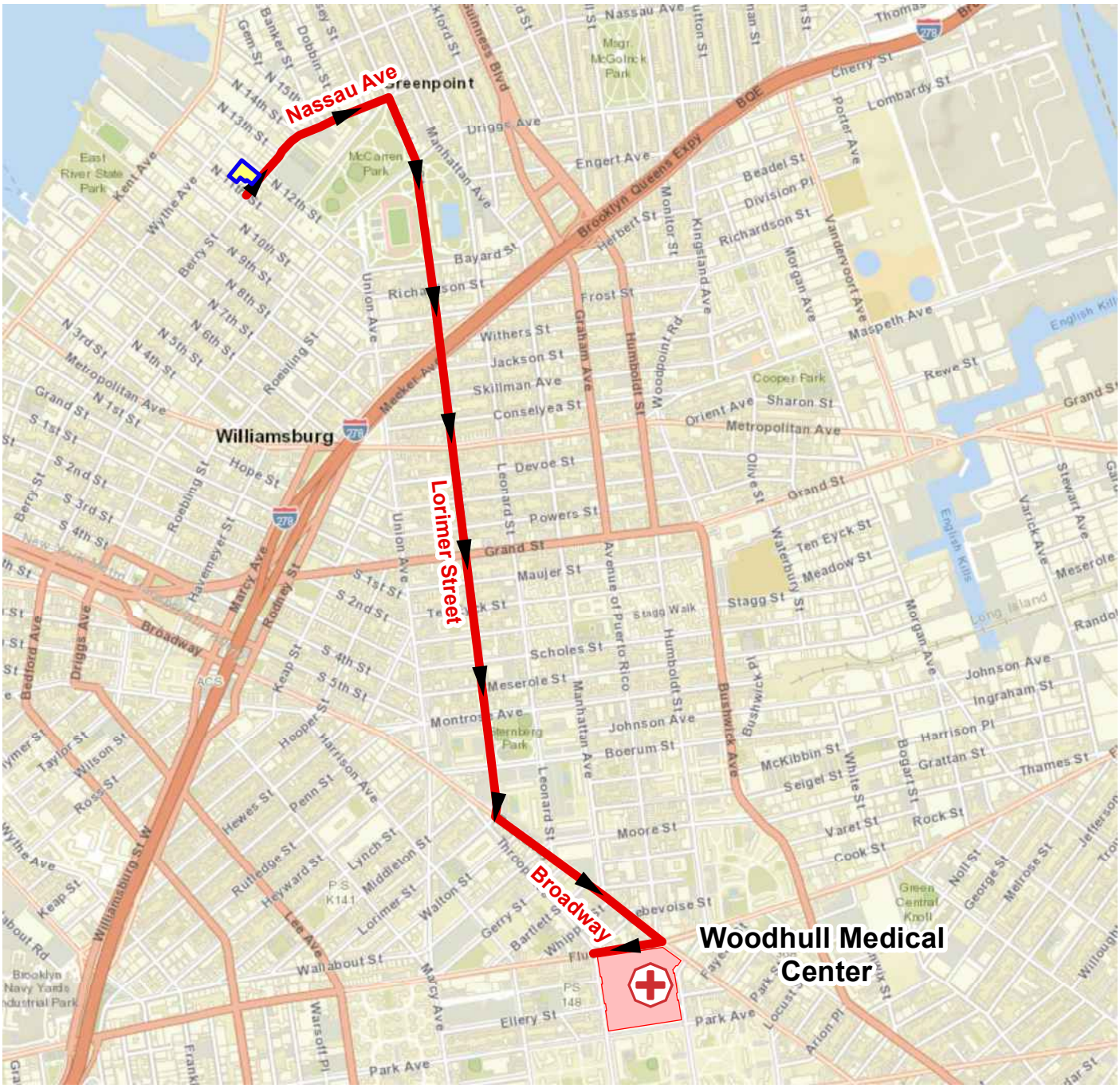
FIGURE 1

HOSPITAL ROUTE MAP



Service Layer Credits: ESRC World Street Map 2016

LEGEND

- ROUTE TO HOSPITAL
- PROJECT SITE BOUNDARY
- HOSPITAL LOCATION

Woodhull Medical Center
760 Broadway
Brooklyn, NY 11206

0 1,500 3,000
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

34 Berry Street
Brooklyn, New York

HOSPITAL ROUTE MAP

DATE
3/5/2020

PROJECT NO.
11259

FIGURE
1

APPENDIX A

POTENTIAL HEALTH EFFECTS FROM ON-SITE CONTAMINANTS

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

1,2-DICHLOROETHANE

CAS #107-06-2

Division of Toxicology ToxFAQs™ **September 2001**

This fact sheet answers the most frequently asked health questions (FAQs) about 1,2-Dichloroethane. 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 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 1,2-dichloroethane usually occurs by breathing contaminated air in workplaces that use 1,2-dichloroethane. Breathing or ingesting high levels of 1,2-dichloroethane can cause damage to the nervous system, liver, kidneys, and lungs and may cause cancer. This substance has been found in at least 570 of the 1,585 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is 1,2-dichloroethane?

1,2-Dichloroethane, also called ethylene dichloride, is a manufactured chemical that is not found naturally in the environment. It is a clear liquid and has a pleasant smell and sweet taste.

The most common use of 1,2-dichloroethane is in the production of vinyl chloride which is used to make a variety of plastic and vinyl products including polyvinyl chloride (PVC) pipes, furniture and automobile upholstery, wall coverings, housewares, and automobile parts. It is also used to as a solvent and is added to leaded gasoline to remove lead.

What happens to 1,2-dichloroethane when it enters the environment?

❑ Most of the 1,2-dichloroethane released to the environment is released to the air. In the air, 1,2-dichloroethane breaks down by reacting with other compounds formed by sunlight. It can stay in the air for more than 5 months before it is broken down.
❑ 1,2-Dichloroethane can also be released into rivers and lakes. It breaks down very slowly in water and most of it will evaporate to the air.
❑ 1,2-Dichloroethane released in soil will either evaporate into the air or travel down through the soil and enter underground water.

How might I be exposed to 1,2-dichloroethane?

❑ The general population may be exposed to 1,2-dichloroethane by breathing air or drinking water that contains 1,2-dichloroethane.
❑ People who work or live near a factory where 1,2-dichloroethane is used, may be exposed to higher than usual levels.
❑ People living near uncontrolled hazardous waste sites may also be exposed to higher than usual levels of 1,2-dichloroethane.

How can 1,2-dichloroethane affect my health?

Nervous system disorders, liver and kidney diseases, and lung effects have been reported in humans ingesting or inhaling large amounts of 1,2-dichloroethane.

In laboratory animals, breathing or ingesting large amounts of 1,2-dichloroethane have also caused nervous system disorders and liver, kidney, and lung effects. Animal studies also suggest that 1,2-dichloroethane may damage the

immune system. Kidney disease has also been seen in animals ingesting low doses of 1,2-dichloroethane for a long time. Studies in animals indicate that 1,2-dichloroethane does not affect reproduction.

How likely is 1,2-dichloroethane to cause cancer?

Human studies examining whether 1,2-dichloroethane can cause cancer have been considered inadequate. In animals, increases in the occurrence of stomach, mammary gland, liver, lung, and endometrium cancers have been seen following inhalation, oral, and dermal exposure.

The Department of Health and Human Services (DHHS) has determined that 1,2-dichloroethane may reasonably be expected to cause cancer. The EPA has determined that 1,2-dichloroethane is a probable human carcinogen and the International Agency for Cancer Research (IARC) considers it to be a possible human carcinogen.

How can 1,2-dichloroethane affect children?

We do not know if exposure to 1,2-dichloroethane will result in birth defects or other developmental effects in people. Studies in animals suggest that 1,2-dichloroethane does not produce birth defects.

It is likely that health effects seen in children exposed to high levels of 1,2-dichloroethane will be similar to the effects seen in adults.

How can families reduce the risk of exposure to 1,2-dichloroethane?

The general population is not likely to be exposed to large amounts of 1,2-dichloroethane. In the past, it was used in small amounts in household products such as cleaning agents, pesticides, and wallpaper and carpet glue. Risk of exposure from this source could be eliminated if these older products were immediately discarded.

Children should avoid playing in soils near uncontrolled hazardous waste sites where 1,2-dichloroethane may have been discarded.

Is there a medical test to show whether I've been exposed to 1,2-dichloroethane?

Tests are available to measure 1,2-dichloroethane in breath, blood, breast milk, and urine of exposed people. Because 1,2-dichloroethane leaves the body fairly quickly, these tests need to be done within a couple of days of exposure. These tests cannot be used to predict the nature or severity of toxic effects. These tests are not usually done in the doctor's office.

Has the federal government made recommendations to protect human health?

The EPA allows 0.005 milligrams of 1,2-dichloroethane per liter of drinking water (0.005 mg/L).

The Occupational Safety and Health Administration has set a limit of 50 parts of 1,2-dichloroethane per million parts of air (50 ppm) in workplace air for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2001. Toxicological Profile for 1,2-Dichloroethane. 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.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

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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AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

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.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

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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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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NAPHTHALENE
CAS # 91-20-3

1-METHYLNAPHTHALENE
CAS # 90-12-0

2-METHYLNAPHTHALENE
CAS # 91-57-6

Division of Toxicology ToxFAQs™ **August 2005**

This fact sheet answers the most frequently asked health questions (FAQs) about naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. 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 is important you understand this information because these substances 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 naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene happens mostly from breathing air contaminated from the burning of wood, tobacco, or fossil fuels, industrial discharges, or moth repellents. Exposure to large amounts of naphthalene may damage or destroy some of your red blood cells. Naphthalene has caused cancer in animals. Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene have been found in at least 687, 36, and 412, respectively, of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What are naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

Naphthalene is a white solid that evaporates easily. Fuels such as petroleum and coal contain naphthalene. It is also called white tar, and tar camphor, and has been used in mothballs and moth flakes. Burning tobacco or wood produces naphthalene. It has a strong, but not unpleasant smell. The major commercial use of naphthalene is in the manufacture of polyvinyl chloride (PVC) plastics. Its major consumer use is in moth repellents and toilet deodorant blocks.

1-Methylnaphthalene and 2-methylnaphthalene are naphthalene-related compounds. 1-Methylnaphthalene is a clear liquid and 2-methylnaphthalene is a solid; both can be smelled in air and in water at very low concentrations.

1-Methylnaphthalene and 2-methylnaphthalene are used to make other chemicals such as dyes and resins. 2-Methylnaphthalene is also used to make vitamin K.

What happens to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene when they enter the environment?

- ❏ Naphthalene enters the environment from industrial and domestic sources, and from accidental spills.
- ❏ Naphthalene can dissolve in water to a limited degree and may be present in drinking water from wells close to hazardous waste sites and landfills.
- ❏ Naphthalene can become weakly attached to soil or pass through soil into underground water.
- ❏ In air, moisture and sunlight break it down within 1 day. In water, bacteria break it down or it evaporates into the air.
- ❏ Naphthalene does not accumulate in the flesh of animals or fish that you might eat.
- ❏ 1-Methylnaphthalene and 2-methylnaphthalene are expected to act like naphthalene in air, water, or soil because they have similar chemical and physical properties.

How might I be exposed to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

- ❏ Breathing low levels in outdoor air.
- ❏ Breathing air contaminated from industrial discharges or smoke from burning wood, tobacco, or fossil fuels.
- ❏ Using or making moth repellents, coal tar products, dyes or inks could expose you to these chemicals in the air.
- ❏ Drinking water from contaminated wells.
- ❏ Touching fabrics that are treated with moth repellents containing naphthalene.
- ❏ Exposure to naphthalene, 1-methylnaphthalene and 2-methylnaphthalene from eating foods or drinking beverages is unlikely.

How can naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene affect my health?

Exposure to large amounts of naphthalene may damage or destroy some of your red blood cells. This could cause you to have too few red blood cells until your body replaces the destroyed cells. This condition is called hemolytic anemia. Some symptoms of hemolytic anemia are fatigue, lack of appetite, restlessness, and pale skin. Exposure to large amounts of naphthalene may also cause nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin. Animals sometimes develop cloudiness in their eyes after swallowing high amounts of naphthalene. It is not clear whether this also develops in people. Rats and mice that breathed naphthalene vapors daily for a lifetime developed irritation and inflammation of their nose and lungs. It is unclear if naphthalene

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

causes reproductive effects in animals; most evidence says it does not.

There are no studies of humans exposed to 1-methylnaphthalene or 2-methylnaphthalene.

Mice fed food containing 1-methylnaphthalene and 2-methylnaphthalene for most of their lives had part of their lungs filled with an abnormal material.

How likely are naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene to cause cancer?

There is no direct evidence in humans that naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene cause cancer. However, cancer from naphthalene exposure has been seen in animal studies. Some female mice that breathed naphthalene vapors daily for a lifetime developed lung tumors. Some male and female rats exposed to naphthalene in a similar manner also developed nose tumors.

Based on the results from animal studies, the Department of Health and Humans Services (DHHS) concluded that naphthalene is reasonably anticipated to be a human carcinogen. The International Agency for Research on Cancer (IARC) concluded that naphthalene is possibly carcinogenic to humans. The EPA determined that naphthalene is a possible human carcinogen (Group C) and that the data are inadequate to assess the human carcinogenic potential of 2-methylnaphthalene.

How can naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene affect children?

Hospitals have reported many cases of hemolytic anemia in children, including newborns and infants, who either ate naphthalene mothballs or deodorants cakes or who were in close contact with clothing or blankets stored in naphthalene mothballs. Naphthalene can move from a pregnant woman's blood to the unborn baby's blood. Naphthalene has been detected in some samples of breast milk from the general U.S. population, but not at levels that are expected to be of concern.

There is no information on whether naphthalene has affected development in humans. No developmental abnormalities were observed in the offspring from rats, mice, and rabbits fed naphthalene during pregnancy.

We do not have any information on possible health effects of 1-methylnaphthalene or 2-methylnaphthalene on children.

How can families reduce the risks of exposure to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

❑ Families can reduce the risks of exposure to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene by avoiding smoking tobacco, generating smoke during cooking, or using fireplaces or heating appliances in the their homes.

❑ If families use naphthalene-containing moth repellents, the material should be enclosed in containers that prevent vapors from escaping, and kept out of the reach from children.

❑ Blankets and clothing stored with naphthalene moth repellents should be aired outdoors to remove naphthalene odors and washed before they are used.

❑ Families should inform themselves of the contents of air deodorizers that are used in their homes and refrain from using deodorizers with naphthalene.

Is there a medical test to determine whether I've been exposed to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

Tests are available that measure levels of these chemicals and their breakdown products in samples of urine, feces, blood, maternal milk, or body fat. These tests are not routinely available in a doctor's office because they require special equipment, but samples can be sent to special testing laboratories. These tests cannot determine exactly how much naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene you were exposed to or predict whether harmful effects will occur. If the samples are collected within a day or two of exposure, then the tests can show if you were exposed to a large or small amount of naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene.

Has the federal government made recommendations to protect human health?

The EPA recommends that children not drink water with over 0.5 parts per million (0.5 ppm) naphthalene for more than 10 days or over 0.4 ppm for any longer than 7 years. Adults should not drink water with more than 1 ppm for more than 7 years. For water consumed over a lifetime (70 years), the EPA suggests that it contain no more than 0.1 ppm naphthalene.

The Occupational Safety and Health Administration (OSHA) set a limit of 10 ppm for the level of naphthalene in workplace air during an 8-hour workday, 40-hour workweek. The National Institute for Occupational Safety and Health (NIOSH) considers more than 500 ppm of naphthalene in air to be immediately dangerous to life or health. This is the exposure level of a chemical that is likely to impair a worker's ability to leave a contaminate area and therefore, results in permanent health problems or death.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Toxicological Profile for Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene (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 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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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 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.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

FUEL OILS

CAS # 8008-20-6, 70892-10-3, 68476-30-2, 68476-34-6, 68476-31-3

This fact sheet answers the most frequently asked health questions (FAQs) about fuel oils. 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: Fuel oils are liquid mixtures produced from petroleum, and their use mostly involves burning them as fuels. Drinking or breathing fuel oils may cause nausea or nervous system effects. However, exposure under normal use conditions is not likely to be harmful. Fuel oils have been found in at least 26 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are fuel oils?

(Pronounced fyo͞o′əl oilz)

Fuel oils are a variety of yellowish to light brown liquid mixtures that come from crude petroleum. Some chemicals found in fuel oils may evaporate easily, while others may more easily dissolve in water.

Fuel oils are produced by different petroleum refining processes, depending on their intended uses. Fuel oils may be used as fuel for engines, lamps, heaters, furnaces, and stoves, or as solvents.

Some commonly found fuel oils include kerosene, diesel fuel, jet fuel, range oil, and home heating oil. These fuel oils differ from one another by their hydrocarbon compositions, boiling point ranges, chemical additives, and uses.

What happens to fuel oils when they enter the environment?

- Some chemicals found in fuel oils may evaporate into the air from open containers or contaminated soil or water.
- Some chemicals found in fuel oils may dissolve in water after spills to surface waters or leaks from underground storage tanks.
- Some chemicals found in fuel oils may stick to particles in water, which will eventually cause them to settle to the bottom sediment.
- Some of the chemicals found in fuel oils may be broken down slowly in air, water, and soil by sunlight or small organisms.
- Some of the chemicals found in fuel oils may build up significantly in plants and animals.

How might I be exposed to fuel oils?

- Using a home kerosene heater or stove, or using fuel oils at work.
- Breathing air in home or building basements that has been contaminated with fuel oil vapors entering from the soil.
- Drinking or swimming in water that has been contaminated with fuel oils from a spill or a leaking underground storage tank.
- Touching soil contaminated with fuel oils.
- Using fuel oils to wash paint or grease from skin or equipment.

How can fuel oils affect my health?

Little information is available about the health effects that may be caused by fuel oils. People who use kerosene

stoves for cooking do not seem to have any health problems related to their exposure.

Breathing some fuel oils for short periods may cause nausea, eye irritation, increased blood pressure, headache, lightheadedness, loss of appetite, poor coordination, and difficulty concentrating. Breathing diesel fuel vapors for long periods may cause kidney damage and lower your blood's ability to clot.

Drinking small amounts of kerosene may cause vomiting, diarrhea, coughing, stomach swelling and cramps, drowsiness, restlessness, painful breathing, irritability, and unconsciousness. Drinking large amounts of kerosene may cause convulsions, coma, or death. Skin contact with kerosene for short periods may cause itchy, red, sore, or peeling skin.

How likely are fuel oils to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that some fuel oils (heavy) may possibly cause cancer in humans, but for other fuel oils (light) there is not enough information to make a determination. IARC has also determined that occupational exposures to fuel oils during petroleum refining are probably carcinogenic in humans.

Some studies with mice have suggested that repeated contact with fuel oils may cause liver or skin cancer. However, other mouse studies have found this not to be the case. No studies are available in other animals or in people on the carcinogenic effects of fuel oils.

Is there a medical test to show whether I've been exposed to fuel oils?

There is no medical test that shows if you have been exposed to fuel oils. Tests are available to determine if some of the chemicals commonly found in fuel oils are in your blood. However, the presence of these chemicals in blood may not necessarily mean that you have been exposed to fuel oils.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) and the Air Force Office of Safety and Health (AFOSH) have set a permissible exposure level (PEL) of 400 parts of petroleum distillates per million parts of air (400 ppm) for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that average workplace air levels not exceed 350 milligrams of petroleum distillates per cubic meter of air (350 mg/m^3) for a 40-hour workweek.

The Department of Transportation (DOT) lists fuel oils as hazardous materials and, therefore, regulates their transportation.

Glossary

Carcinogenic: Able to cause cancer.

CAS: Chemical Abstracts Service.

Evaporate: To change into a vapor or a gas.

Hydrocarbon: Any compound made up of hydrogen and carbon.

Milligram (mg): One thousandth of a gram.

ppm: Parts per million.

Sediment: Mud and debris that have settled to the bottom of a body of water.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for fuel oils. 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.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TRICHLOROETHYLENE

CAS # 79-01-6

Division of Toxicology ToxFAQs™ **July 2003**

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. 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: Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene (TCE) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene dissolves a little in water, but it can remain in ground water for a long time.
- Trichloroethylene quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- Trichloroethylene evaporates less easily from the soil than from surface water. It may stick to particles and remain for a long time.
- Trichloroethylene may stick to particles in water, which will cause it to eventually settle to the bottom sediment.
- Trichloroethylene does not build up significantly in plants and animals.

How might I be exposed to trichloroethylene?

- Breathing air in and around the home which has been contaminated with trichloroethylene vapors from shower water or household products such as spot removers and typewriter correction fluid.
- Drinking, swimming, or showering in water that has been contaminated with trichloroethylene.
- Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site.
- Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment.

How can trichloroethylene affect my health?

Breathing small amounts may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

Breathing large amounts of trichloroethylene may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage.

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

Drinking large amounts of trichloroethylene may cause nausea, liver damage, unconsciousness, impaired heart function, or death.

Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear.

Skin contact with trichloroethylene for short periods may cause skin rashes.

How likely is trichloroethylene to cause cancer?

Some studies with mice and rats have suggested that high levels of trichloroethylene may cause liver, kidney, or lung cancer. Some studies of people exposed over long periods to high levels of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. Although, there are some concerns about the studies of people who were exposed to trichloroethylene, some of the effects found in people were similar to effects in animals.

In its 9th Report on Carcinogens, the National Toxicology Program (NTP) determined that trichloroethylene is "reasonably anticipated to be a human carcinogen." The International Agency for Research on Cancer (IARC) has determined that trichloroethylene is "probably carcinogenic to humans."

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

If you have recently been exposed to trichloroethylene, it can be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene.

Exposure to larger amounts is assessed by blood and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level for trichloroethylene in drinking water at 0.005 milligrams per liter (0.005 mg/L) or 5 parts of TCE per billion parts water.

The EPA has also developed regulations for the handling and disposal of trichloroethylene.

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

Glossary

Carcinogenicity: The ability of a substance to cause cancer.
CAS: Chemical Abstracts Service.
Evaporate: To change into a vapor or gas.
Milligram (mg): One thousandth of a gram.
Nonflammable: Will not burn.
ppm: Parts per million.
Sediment: Mud and debris that have settled to the bottom of a body of water.
Solvent: A chemical that dissolves other substances.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Trichloroethylene (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 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.

Tetrachloroethylene - ToxFAQs™

CAS # 127-18-4

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the CDC 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'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 (NPL) 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(PERC), 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 tetrachloroethylene 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.

Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences

ATSDR

CS249955-AH

Tetrachloroethylene

CAS # 127-18-4

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 per formed 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

Carcinogenicity: The ability of a substance 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 and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30333.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is http://www.atsdr.cdc.gov/toxfaqs/index.asp.

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

1,2-DICHLOROETHENE
CAS # 540-59-0, 156-59-2, and 156-60-5

This fact sheet answers the most frequently asked health questions (FAQs) about 1,2-dichloroethene. 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: Exposure to 1,2-dichloroethene occurs mainly in workplaces where it is made or used. Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired. *cis*-1,2-Dichloroethene has been found in at least 146 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA). *trans*-1,2-Dichloroethene was found in at least 563 NPL sites. 1,2-Dichloroethene was found at 336 sites, but the isomer (*cis*- or *trans*-) was not specified.

What is 1,2-dichloroethene?

(Pronounced 1,2-dī-klôr′ ō-ĕth′ēn)

1,2-Dichloroethene, also called 1,2-dichloroethylene, is a highly flammable, colorless liquid with a sharp, harsh odor. It is used to produce solvents and in chemical mixtures. You can smell very small amounts of 1,2-dichloroethene in air (about 17 parts of 1,2-dichloroethene per million parts of air [17 ppm]).

There are two forms of 1,2-dichloroethene; one is called *cis*-1,2-dichloroethene and the other is called *trans*-1,2-dichloroethene. Sometimes both forms are present as a mixture.

What happens to 1,2-dichloroethene when it enters the environment?

- 1,2-Dichloroethene evaporates rapidly into air.
- In the air, it takes about 5-12 days for half of it to break down.
- Most 1,2-dichloroethene in the soil surface or bodies of water will evaporate into air.
- 1,2-Dichloroethene can travel through soil or dissolve in water in the soil. It is possible that it can contaminate groundwater.
- In groundwater, it takes about 13-48 weeks to break down.
- There is a slight chance that 1,2-dichloroethene will break down into vinyl chloride, a different chemical which is believed to be more toxic than 1,2-dichloroethene.

How might I be exposed to 1,2-dichloroethene?

- Breathing 1,2-dichloroethene that has leaked from hazardous waste sites and landfills.
- Drinking contaminated tap water or breathing vapors from contaminated water while cooking, bathing, or washing dishes.
- Breathing 1,2-dichloroethene, touching it, or touching contaminated materials in the workplace.

How can 1,2-dichloroethene affect my health?

Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired; breathing very high levels can kill you.

When animals breathed high levels of *trans*-1,2-dichloroethene for short or longer periods of time, their livers and lungs were damaged and the effects were more severe with longer exposure times. Animals that breathed very high

levels of *trans*-1,2-dichloroethene had damaged hearts.

Animals that ingested extremely high doses of *cis*- or *trans*-1,2-dichloroethene died.

Lower doses of *cis*-1,2-dichloroethene caused effects on the blood, such as decreased numbers of red blood cells, and also effects on the liver.

The long-term (365 days or longer) human health effects after exposure to low concentrations of 1,2-dichloroethene aren't known. One animal study suggested that an exposed fetus may not grow as quickly as one that hasn't been exposed.

Exposure to 1,2-dichloroethene hasn't been shown to affect fertility in people or animals.

How likely is 1,2-dichloroethene to cause cancer?

The EPA has determined that *cis*-1,2-dichloroethene is not classifiable as to its human carcinogenicity.

No EPA cancer classification is available for *trans*-1,2-dichloroethene.

Is there a medical test to show whether I've been exposed to 1,2-dichloroethene?

Tests are available to measure concentrations of the breakdown products of 1,2-dichloroethene in blood, urine, and tissues. However, these tests aren't used routinely to determine whether a person has been exposed to this compound. This is because after you are exposed to 1,2-dichloroethene, the breakdown products in your body that are detected with these tests may be the same as those that come from exposure to other chemicals. These tests aren't available in most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum allowable level of *cis*-1,2-dichloroethene in drinking water at 0.07 milligrams per liter of water (0.07 mg/L) and *trans*-1,2-dichloroethene at 0.1 mg/L.

The EPA requires that any spills or accidental release of 1,000 pounds or more of 1,2-dichloroethene must be reported to the EPA.

The Occupational Health Safety and Health Administration (OSHA) has set the maximum allowable amount of 1,2-dichloroethene in workroom air during an 8-hour workday in a 40-hour workweek at 200 parts of 1,2-dichloroethene per million parts of air (200 ppm).

Glossary

Carcinogenicity: Ability of a substance to cause cancer.

CAS: Chemical Abstracts Service.

Fertility: Ability to reproduce.

Ingest: To eat or drink something.

Milligram (mg): One thousandth of a gram.

ppm: Parts per million.

Solvent: A chemical that can dissolve other substances.

References

This ToxFAQs information is taken from the 1996 Toxicological Profile for 1,2-Dichloroethene 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.

APPENDIX B
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

APPENDIX C
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 BREATHE! — **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

34 BERRY STREET

BROOKLYN, NEW YORK

Quality Assurance Project Plan

AKRF Project Number: 11259
BCP Site Number: C224268

Prepared for:

NYSDEC Region 2
1 Hunter's Point Plaza
47-40 21st Street
Long Island City, New York 11101

On Behalf Of:

34 Berry Street, LLC (LCOR)
34 Berry Street
Brooklyn, NY 11249

Prepared by:

AKRF, Inc.
440 Park Avenue South
New York, New York 10016
(212) 696-0670

NOVEMBER 2020

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ATTACHMENTS

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) describes the protocols and procedures that will be followed during implementation of all environmental action items as stated in the Remedial Action Work Plan (RAWP) at the 34 Berry Street site (the Site), hereafter referred to as the Site. The legal definition of the Site is Brooklyn Borough Tax Block 2289, Lot 14. The Site is located on the western side of Berry Street, between North 11th and North 12th Streets, and is comprised of a seven-story residential building and courtyard area, with a basement level parking garage. A Site Location Plan is provided as Figure 1.

The project scope of work includes the implementation of an in-situ remediation program including injections with groundwater recirculation to enhance recovery of non-aqueous phase liquid (NAPL) and to treat dissolved contamination in groundwater. The in-situ remediation program includes the installation of injection wells, recovery wells, and specific equipment (pumps, piping, containment vessels, and electronic control devices). The goals of the project is to successfully treat NAPL and dissolved groundwater contamination to meet the Remedial Action Objectives identified in the RAWP, and will include the collection of groundwater and soil gas samples to monitor the effectiveness of the remediation program.

The objective of this QAPP is to provide for Quality Assurance (QA) and maintain Quality Control (QC) for any environmental investigative, sampling, and remedial activities conducted under the New York State Department of Environmental Conservation (NYSDEC) oversight in the Brownfield Cleanup Program (BCP) (BCP Site No. C224268). Adherence to the QAPP will ensure that defensible data will be obtained during all environmental work at the Site.

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 field program decision-making. The project director will communicate regularly with all members of the AKRF project team and the NYSDEC to ensure a smooth flow of information between involved parties. Marc Godick will serve as the project director for the RAWP. Mr. Godick's resume is included in Attachment A.

2.2 REMEDIAL ENGINEER

The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the remedial program. The Remedial Engineer will certify in the Final Engineering Report (FER) that the remedial activities were observed by qualified environmental professionals under her supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. The Remedial Engineer for this project will be Rebecca Kinal, P.E. Ms. Kinal's resume is included in Attachment A.

2.3 QUALITY ASSURANCE/ QUALITY CONTROL (QA/QC) OFFICER

Mr. Marcus Simons will serve as the QA/QC officer and will be responsible for adherence to the QAPP. The QA/QC officer will review the procedures with all personnel prior to commencing any fieldwork and will conduct periodic Site visits to assess implementation of the procedures. The QA/QC officer will also be responsible for reviewing Data Usability Summary Reports (DUSRs) for soil analytical results. Mr. Simon's resume is included in Attachment A.

2.4 PROJECT MANAGER

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

2.5 PROJECT MANAGER ALTERNATE

The project manager alternate will be responsible for assisting the project manager. The project manager alternate will help prepare reports and will participate in meetings with the Site owner/Volunteer, and/or the NYSDEC. Mark Jepsen will serve as the project manager alternate for the RAWP. Mr. Jepsen's resume is included in Attachment A.

2.6 FIELD TEAM LEADER, FIELD TECHNICIAN, AND SITE SAFETY OFFICER, AND ALTERNATES

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), included in Appendix B of the RAWP. The field team leader will also act as the field technician and Site safety officer (SSO), and will report to the project manager or project manager alternate on a regular basis regarding daily progress and any deviations from the work plan. The field team leader will be a qualified and responsible person able to act professionally and promptly during environmental work at the Site. Mr. Jepsen will also act at the field team leader. The field team leader alternate is Tom Giordano of AKRF. Resumes for Mr. Jepsen and Mr. Giordano are included in Attachment A.

2.7 LABORATORY QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) OFFICER

The laboratory QA/QC officer will be responsible for quality control procedures and checks in the laboratory and ensuring adherence to laboratory protocols. The QA/QC officer will track the movement of samples from the time they are checked in at the laboratory to the time that analytical results are issued, and will conduct a final check on the analytical calculations and sign off on the laboratory reports. The laboratory QA/QC officer will be Carl Ambruster of Eurofins TestAmerica Laboratories (TestAmerica), the New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)-certified laboratory being employed for all environmental sampling at the Site. Mr. Ambruster's resume is included in Attachment A.

2.8 LABORATORY DATA VALIDATOR

The laboratory data validator will be responsible for third party data validation and preparation of Data Usability Summary Reports (DUSRs). The third-party laboratory data validator will be Lori Beyer of L.A.B. Validation Corp. Ms. Beyer's resume is included in Attachment A.

3.0 STANDARD OPERATING PROCEDURES (SOPS)

The following sections describe the SOPs for the remedial activities included in the RIWP. During these operations, safety monitoring will be performed as described in the HASP, included as Appendix B of the RAWP.

3.1 INJECTION/RECOVERY WELL INSTALLATION AND DEVELOPMENT

Additional injection and/or recovery wells will be installed at the Site to supplement the current network of wells for implementation of the approved remedial action. All recovery and injection wells, including a replacement recovery well for MW-3R, will be advanced with limited access hollow stem auger technology. A target depth of approximately 5 feet below the water table (10 feet below basement grade) will be used for injection wells, and a target depth of up to 8 feet below the water table (13 feet below basement grade) will be used for the recovery wells. Injection wells will be constructed with 5 feet of PVC screen, whereas the recovery wells will be constructed with 10 feet of PVC screen. The first attempt for recovery wells will include 6.25-inch inside diameter augers to install a 4-inch PVC recovery well. If the target depth is not reachable using the larger diameter augers, a second attempt will include 4.25-inch inside diameter augers to install a 2-inch PVC well. The 4.25-inch inside diameter augers will be used to install two-inch PVC injection wells.

Morie sand will be backfill around the screen zone of each new well to a depth of 2 feet above the screen. The annular space around the well riser will be sealed with bentonite extending one to two feet above the sand filter pack and completed with a non-shrinking cement mixture to approximately one foot below grade. Each injection/recovery well will be completed using flush to grade locking gate boxes. Due to the documented low yielding conditions, each well will be developed by agitating the well screen with a surge block and pumping out the sediment until clear, if practical. The location/elevation of each new PVC well will be surveyed by a licensed surveyor and incorporated into the existing site map.

3.2 DECONTAMINATION OF SAMPLING EQUIPMENT

All sampling equipment (augers, drilling rods, split spoon samplers, probe rods, pumps, etc.) will be either dedicated or decontaminated between sampling locations. Decontamination will be conducted on plastic sheeting (or equivalent) that is bermed to prevent discharge to the ground. 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® mixture and bristle brush.
4. Rinse with tap water.
5. Rinse with distilled water.
6. Air-dry the equipment, if possible.

3.3 MANAGEMENT OF INVESTIGATION DERIVED WASTE (IDW)

IDW, with the exception of purged groundwater, will be containerized in New York State Department of Transportation (NYSDOT)-approved 55-gallon drums during the remedial activities. The drums will be sealed at the end of each work day and labeled with the date, the boring location(s), the type of waste e.g., drill cuttings, excavated trenching material), and the name and phone number of an AKRF point-of-contact. All IDW collected into drums will be

sampled and disposed of or treated according to applicable local, state, and federal regulations. Purged groundwater will be poured into the on-site LNAPL groundwater treatment system.

4.0 SAMPLING AND LABORATORY PROCEDURES

Groundwater and soil gas sampling will be completed for baseline sampling and remediation performance monitoring. The sampling objectives and details are described in the RAWP (Sections 9.1.4 to 9.1.7), and the sampling locations are shown on Figure 3 of the RAWP.

4.1 MONITORING WELL SAMPLING

Groundwater samples for baseline/post-treatment monitoring will be collected using low-flow sampling techniques, as described in U.S. EPA's Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers [EPA 542-S-02-001, May 2002]. Sampling will be conducted according to the following procedure:

- Prepare the sampling area by placing plastic sheeting over the well. Cut a hole in the sheeting to provide access to the well cover.
- Slowly remove the locking cap and immediately measure the vapor concentrations in the well with a PID calibrated to the manufacturer's specifications.
- Measure the depth to water and total well depth, and check for the presence of NAPL using an oil/water interface probe. Measure the thickness of NAPL, if any, and record in field book and well log. Groundwater samples will not be collected from wells containing measurable NAPL.
- Use the water level and total well depth measurements to calculate the length of the mid-point of the water column within the screened interval. For example, for a well where the total depth is 20 feet, screened interval is 10 to 20 feet, and depth to water is 14 feet, the mid-point of the water column within the screened interval would be 17 feet.
- Connect dedicated tubing to either a submersible bladder pump or peristaltic pump, and lower the pump such that the intake of the pump is set at the mid-point of the water column within the screened interval of the well. Connect the discharge end of the tubing to the flow-through cell of a YSI multi-parameter (or equivalent) meter. Connect tubing to the output of the cell and place the discharge end of the tubing in a five-gallon bucket. Since each on-site NAPL recovery well requires purging with a peristaltic pump, and the existing 1-inch wells have a limited diameter for access, and a peristaltic has been used for all previous sampling events, AKRF recommends purging each well with a peristaltic for consistency. The peristaltic pump will allow for sample collection without the need for high density bladders when analyzing for emerging contaminants and minimize the potential for tainting the samples during collection.
- Activate the pump at the lowest flow rate setting of the pump.
- Measure the depth to water within the well. The pump flow rate may be increased such that the water level measurements do not change by more than 0.3 feet as compared to the initial static reading. The well-purging rate should be adjusted so as to produce a smooth, constant (laminar) flow rate and so as not to produce excessive turbulence in the well. The expected targeted purge rate will be approximately 0.5 liters/minute and will be no greater than 3.8 liters/minute.
- Transfer discharged water from the 5-gallon buckets to on-site LNAPL remediation system.

- During purging, collect periodic samples and analyze for water quality indicators (e.g., turbidity, pH, temperature, dissolved oxygen (DO), reduction-oxidation potential (ORP), and specific conductivity) with measurements collected approximately every five minutes.
- Continue purging the well until turbidity is less than 50 nephelometric turbidity units (NTUs) and water quality indicators have stabilized to the extent practicable. The criteria for stabilization will be three successive readings for the following parameters and criteria:

Stabilization Criteria

Parameter	Stabilization Criteria
PH	+/- 0.1 pH units
Specific Conductance	+/- 3% mS/cm
ORP/Eh	+/- 10mV
Turbidity	<50 NTU
Dissolved Oxygen	+/- 0.3 mg/l

Notes: mS/cm = millisievert per centimeter
mV = millivolts
NTU = nephthalometric turbidity units
mg/l = milligrams per liter

- If the water quality parameters do not stabilize and/or turbidity is greater than 50 NTU within two hours, purging may be discontinued. Efforts to stabilize the water quality for the well must be recorded in the field book, and samples may then be collected as described herein.
- After purging, disconnect the tubing to the inlet of the flow-through cell. Collect groundwater samples directly from the discharge end of the tubing and place into the required sample containers as described in Section 4.4 of this QAPP. Label the containers as described in Section 4.4.1.1, Table 2 of this QAPP and place in a chilled cooler.
- Once sampling is complete, remove the pump and tubing from the well. Dispose of the sampling materials and PPE in a designated 55-gallon drum. The purge water will be managed as described in Section 3.5 of this QAPP.
- Decontaminate the pump (where necessary), oil/water interface probe, and flow-through cell, as described in Section 3.3 of this QAPP.
- Record all measurements (depth to water, depth to NAPL, water quality parameters, turbidity), calculations (well volume) and observations in the project logbook and field data sheet, if applicable.
- Additional well sampling at MW-22 and MW-22D will include the installation of biotraps to obtain general chemistry conditions of the groundwater. The passive biotrap devices are small cylinders that are attached to a safety line and lowered to the midpoint of the saturated screen section of a monitoring well, similar to a sampling pump, and left in place for a designated period of time (30-60 days) to collect the desired data. They are retrieved by pulling the unit out using the safety line.

4.2 SOIL GAS SAMPLING

The soil gas sampling will be conducted to confirm that the remediation system is not off-gassing contaminants during operation. Eight-hour flow regulators will be used for the sampling. Soil gas samples will be collected using the following procedures

4.2.1 Sample Set-up

7. Install a 2-foot by 2-foot 6-mil plastic shroud over sampling point, seal to concrete floor using duct tape along the perimeter, and pull the Teflon soil gas sampling tubing through the shroud to allow for sampling collection.
8. Pierce the plastic shroud, insert one of new tubing into the shroud, and connect the other end of the tubing to the helium tank.
9. Install new flexible hose to a peristaltic pump and connect the Teflon sample tubing to the hose. Connect the other end (discharge end) of the flexible tubing to a 0.5-liter Tedlar bag. Purge the soil gas sampler of approximately three sampler volumes (0.4 liters) by activating the pump to fill the Tedlar bag to near capacity (see Attachment B for sampler volume calculations). The air withdrawal flow rate shall be 0.2 liters/minute or less.
10. During purging, a flow of helium gas will be introduced into the plastic shroud overlying the soil gas sampling point. The Tedlar bag will be analyzed in the field using a Marks Model 9822 helium detector to check for short-circuiting of outside air into the sampling port. If helium is detected at a concentration of greater than 10 percent, then the soil gas point will be resealed with hydrated bentonite. The point will then be retested to ensure that the helium concentration is less than 10 percent.
11. Disconnect the sample tubing from the peristaltic pump and connect it to the inlet of a labeled 1-liter Summa canister.
12. Repeat procedure for all sampling locations.

4.2.2 Sample Collection

13. After Summa canisters are set up at all of the sampling locations, record the vacuum reading from the vacuum gauge on the canister at the beginning of the 8-hour sampling period. Open the valve of the canister and record the time in the field book.
14. At the end of the 8-hour sampling period, close the valve, remove the flow-rate controllers and vacuum gauges, install caps on canisters, and record the time at the end of the sampling period.
15. Place canisters in shipping containers for transportation to laboratory.
16. Repeat procedure for all sampling locations.

4.3 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. TestAmerica of Edison, New Jersey, a NYSDOH ELAP-certified laboratory subcontracted to AKRF, will be used for all chemical analyses in accordance with the Division of Environmental Remediation (DER)-10 2.1(b) and 2.1(f) with Category B Deliverables. Additional methods for the biotrap samplers will be included in the In-situ Design Document (IDD)

Table 1
Laboratory Analytical Methods for Groundwater

Matrix	Analysis	EPA Method	Bottle Type	Preservative	Hold Time
Groundwater	VOCs	8260C	3 40 mL Glass Vials	HCl to pH < 2 and ≤ 6 °C	14 days to analyze
	SVOCs	8270D	2,000 mL Amber Jar	≤ 6 °C	7 days to extract; 40 days to analyze
Notes: EPA - Environmental Protection Agency HDPE – High Density Poly Ethylene					

4.4 QUALITY CONTROL (QC) SAMPLING

In addition to the laboratory analysis of the groundwater samples, additional analysis will be included for QC measures, as required by the Category B sampling techniques. These samples will include field blank, trip blank, matrix spike/matrix spike duplicate (MS/MSD), and blind duplicate samples at a frequency of one sample per 20 field samples collected or per sample delivery group (SDG). QC samples will be analyzed for the same parameters as the accompanying samples, with the exception of any trip blanks, which will be analyzed for the VOC list only.

TABLE 2
FIELD SAMPLE AND QC SAMPLE QUANTITIES

Sample Type	Parameters	EPA Method	Field Samples	QC Samples			
				Duplicate	MS/MSD	Equipment Blank	Trip Blank
Groundwater	VOCs	EPA 8260	20	1	1	1	1
	SVOCs	EPA 8270	13	1	1	1	
Soil Gas	VOCs	TO-15	3	1	1		

4.5 SAMPLE HANDLING

4.5.1 Sample Identification

All samples will be consistently identified in all field documentation, chain-of-custody (COC) documents, and laboratory reports. All samples will be amended with a collection date at the end of the sample same in a year, month, day (YYYYMMDD) format. Blind duplicate sample nomenclature will consist of the sample type, followed by an "X"; MS/MSD samples nomenclature will consist of the parent sample name, followed by "MS/MSD"; and trip and field blanks will consist of "TB-" and "FB-", respectively, followed by a sequential number of the trip/field blanks collected within the SDG. Special characters, including primes/apostrophes (’), will not be used for sample nomenclature.

4.5.1.1. Remedial Action (RA) Sample Identification

Groundwater samples collected during the Remedial Action will be identified with "MW-" followed by groundwater monitoring well number. Table 2 provides examples of the sampling identification scheme for samples collected during the site remediation.

Table 3
Remedial Action Sample Nomenclature

Sample Description	Sample Designation
Groundwater sample collected from groundwater monitoring well MW-7 on August 1, 2020	MW-7_20200801
Matrix spike/matrix spike duplicate sample of groundwater sample collected from groundwater monitoring well MW-7 on August 1, 2020	MW-7_20200801_MS/MSD
Blind duplicate sample of groundwater sample collected from groundwater monitoring well MW-7 on August 1, 2020	MW-X_20200801
Second field blank collected on August 1, 2020	TB-2_20200801

4.5.1.2. Waste Classification

Any waste classification samples will be amended with "WC-" and the alphanumeric drum identification. Table 3 provides examples of the sampling identification scheme for proposed waste classification samples and any hotspot or tank excavation samples.

Table 4
Waste Classification Sample Nomenclature

Sample Description	Sample Designation
Waste classification sample collected from Drum 1 on August 1, 2017	WC-D1 20170801

Sample Labeling and Shipping

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

- Project identification, including Site name, BCP Site number, Site address
- 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 cooler(s) as needed.

The samples will be prepared for shipment by placing each sample in laboratory-supplied glassware, then wrapping each container in bubble wrap to prevent breakage, and adding freezer packs and/or fresh ice in sealable plastic bags. The COC form will be properly completed by the sampler in ink, and all sample shipment transactions will be

documented with signatures, and the date and time of custody transfer. 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 samples remain under strict COC protocol.

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.

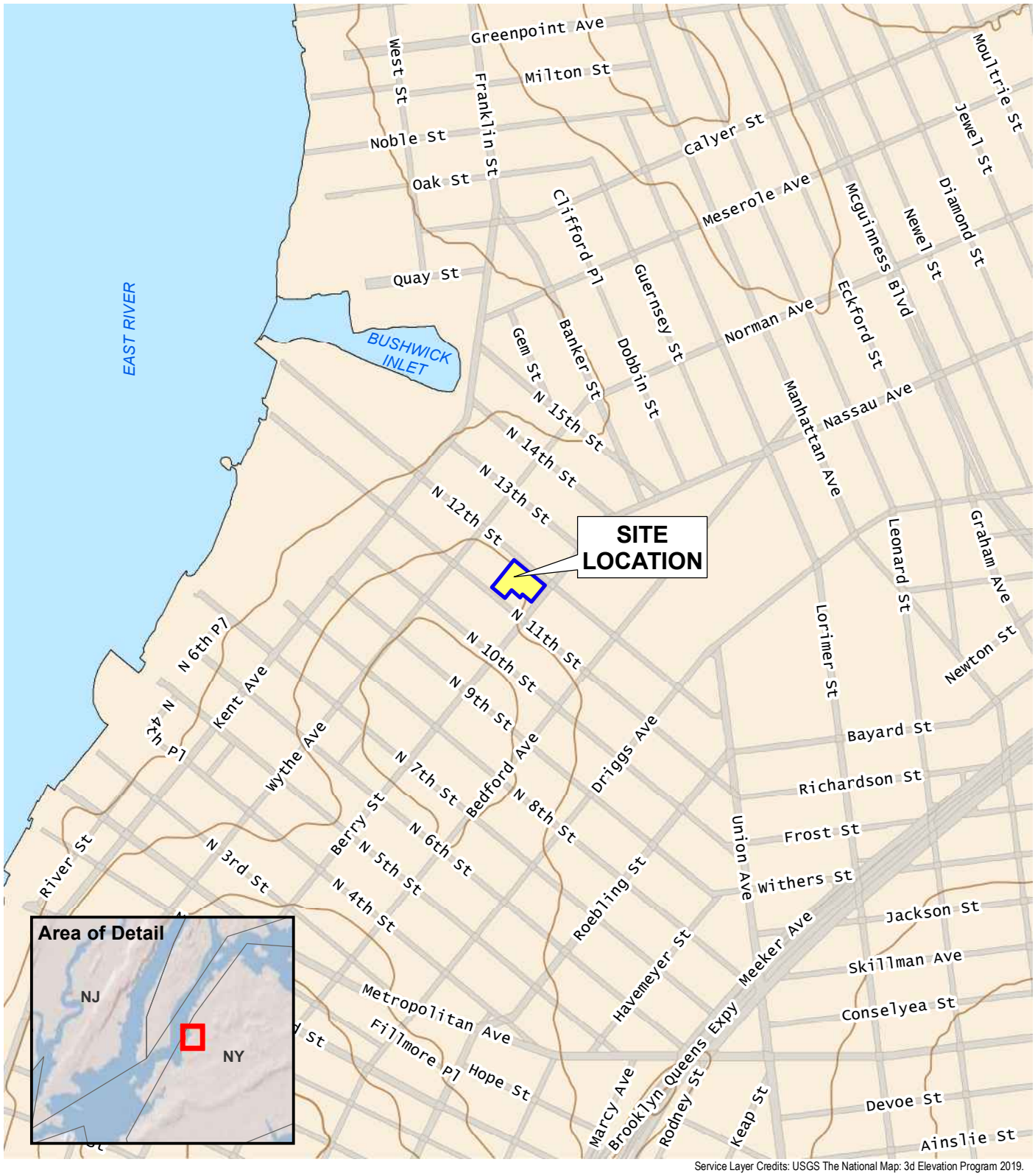
4.6 FIELD INSTRUMENTATION

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 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 equipped with an 11.7 electron volt (eV) lamp and will be calibrated each day using 100 parts per million (ppm) isobutylene standard gas in accordance with the manufacturer's standards.

4.7 QUALITY ASSURANCE (QA)

All soil and groundwater laboratory analytical data will be reviewed by a third-party validator and a Data Usability Summary Report (DUSR) will be prepared to document the usability and validity of the data. The objective of the third party validator is to provide an unbiased review to confirm that the laboratory followed all method and reporting requirements, and to provide a basis for making decisions about the minimum quality of environmental data that is sufficient to support risk assessment remedial performance decisions. The Final Engineering Report (FER) will include a detailed description of sampling activities, data summary tables, concentration map showing sample locations and concentrations, DUSR, and laboratory reports.

FIGURES



Service Layer Credits: USGS The National Map: 3d Elevation Program 2019.

0 800 1,600

SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

34 Berry Street
Brooklyn, New York

SITE LOCATION

DATE
3/3/2020

PROJECT NO.
11259

FIGURE
1

ATTACHMENT A

RESUMES OF PROJECT DIRECTOR, PROJECT MANAGER, PROJECT MANAGER ALTERNATE, AND FIELD TEAM LEADER

MARC S. GODICK, LEP

SENIOR VICE PRESIDENT

Marc S. Godick, a Senior Vice President of the firm, has 20 years of experience in the environmental consulting industry. Mr. Godick's broad-based environmental experience includes expertise in remedial investigation, design and implementation of remedial measures, environmental/compliance assessment, litigation support, and storage tank management.

RELEVANT EXPERIENCE

Queens West Development Project, AvalonBay Communities, Queens, NY

Mr. Godick managed one of the largest remediation projects completed to date under the New York State Department of Environmental Conservation (NYSDEC) Brownfields Cleanup Program (BCP). The remedy for the site, which was contaminated by coal tar and petroleum, included the installation of a hydraulic barrier (sheet pile cut off wall), excavation of contaminated soil under a temporary structure to control odors during remediation, a vapor mitigation system below the buildings, and implementation of institution controls. The investigation, remediation design, remedy implementation, and final sign-off (issuance of Certificate of Completion) were completed in two years. Total remediation costs were in excess of $13 million.

Williamsburg Waterfront Redevelopment, RD Management/L&M Equities/Toll Brothers, Brooklyn, NY

The project is one of the largest development projects in the Greenpoint/Williamsburg Rezoning Area, which includes the construction of nearly 1 million square feet of residential and retail space along the Williamsburg waterfront. The site had a variety of industrial uses, including a railyard, junk yard, and waste transfer station. As part of the City's rezoning, the site was assigned an E-designation for hazardous materials. Mr. Godick managed the preparation of the Phase I and II environmental site assessments, remedial action plan (RAP), and construction health and safety plan (CHASP). Mr. Godick obtained NYSDEC closure of an open spill associated with former underground storage tanks at the site. The NYCDEP-approved RAP and CHASP included provisions for reuse of the existing fill material, with the excess being disposed off-site, installation of a vapor barrier below the new buildings, installation of a site cap, and environmental monitoring during the construction activities. Mr. Godick is currently managing the environmental monitoring work that began in 2006. A Notice of Satisfaction has been issued by NYCDEP for the first phase of the development.

BACKGROUND

Education

M.E., Engineering Science/Environmental Engineering, Pennsylvania State University, 1998

B.S., Chemical Engineering, Carnegie Mellon University, 1989

Licenses/Certifications

Licensed Environmental Professional (License # 396) – State of Connecticut – 2003

40 Hour HAZWOPER and Annual Refresher Training, 1990-2008

Supervisors of Hazardous Waste Operations (8 Hour), 1990

Professional Memberships

Chair, Village of Larchmont/Town of Mamaroneck Coastal Zone Management Commission, 1997 - Present

Chair, Westchester County Soil and Water Conservation District, 2005 - Present

Member, NYSDEC Risk-Based Corrective Action (RBCA) Advisory Group for Petroleum-Impacted Sites, 1997

Community Leadership Alliance, Pace University School of Law, 2001

Years of Experience

Year started in company: 2002

Year started in industry: 1990

Landfill Closure & Compost Facility Application, White Plains, NY

Mr. Godick is currently managing the closure of a formal ash landfill, which is currently being utilized as a leaf and yard waste compost facility by the City of White Plains. The remedial investigation included on-site and off-site assessment of soil, groundwater, and soil gas to delineate the extent of methane and solvent contamination associated with the landfill. The landfill closure plan includes provisions for enhancing the existing cap, methane venting, and groundwater treatment for solvent contamination. Mr. Godick also managed the preparation of the compost facility permit application, which required modification to the facility's operations necessary to close the landfill and address other regulatory requirements.

Landfill Redevelopment – RD Management, Orangeburg, NY

Mr. Godick is currently managing the remediation of the former Orangeburg Pipe site under the NYSDEC Voluntary Cleanup Program. The site contains widespread fill material, which has fragments of Orangeburg pipe that is impregnated with asbestos and coal tar. The site is being redeveloped for retail use. The site's closure plan provides for reuse of all fill material on-site and methane mitigation (vapor barrier and passive sub-slab ventilation system) for all new buildings. The fill management activities will include dust and sediment control measures and air monitoring to prevent airborne dust in accordance with a closure plan, stormwater pollution prevention plan (SWPPP), and CHASP. In pervious areas, the site cap will consist of 2 feet of clean fill and a liner in larger areas.

National Grid – Halesite Manufactured Gas Plant Site, Town of Huntington, NY

Mr. Godick managed the remedial design and engineering work associated with remediation of National Grid's former manufactured gas plant (MGP) located in the Town of Huntington. The site is situated in a sensitive location along the waterfront, surrounded by commercial and residential properties, and half the property where the remediation was conducted is a steep slope. The remedy consisted of soil removal, oxygen injection, and non-aqueous phase liquid recovery. Mr. Godick was responsible for the development of the remedial work plans, design/construction documents, landscape architecture, confirmatory sampling, air monitoring, supervision, and preparation of close-out documentation in accordance with NYSDEC requirements.

Site Investigation–7 World Trade Center Substation, Con Edison, New York, NY

Mr. Godick managed the site investigation at the former 7 World Trade Center Substation in an effort to delineate and recover approximately 140,000 gallons of transformer and feeder oil following the collapse of the building. The project involved coordination with several crews, Con Edison, and other site personnel.

Site Investigation–Former Manufactured Gas Plant (MGP) Facilities, Con Edison, New York, NY

Mr. Godick managed site investigations at four former MGP facilities. The investigations at three of the four sites were completed at a Con Edison substation, flush pit facility, and service center, respectively. The details associated with the fourth site are confidential. Site characterizations at the substation and flush pit facility were conducted in preparation of expansion at these locations. The findings from these characterizations were used by Con 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.

Verizon, Investigation & Remediation, Various Locations, NY, PA and DE

Mr. Godick managed over 50 geologic/hydrogeologic assessments and site remediation projects related to petroleum releases at various facilities. Responsibilities included annual budgeting, day-to-day project management, development and implementation of soil and ground water investigation workplans, ground water modeling, risk evaluation, remedial action work plans, remedial design, system installation, waste disposal, well abandonment, and operation and maintenance. Many of the assessment and remedial projects followed a risk-based approach. Remedial technologies implemented included air sparging, soil vapor extraction, bioremediation, pump and treat, soil excavation, and natural attenuation.

Storage Tank Management, Verizon, Various Locations, NY, PA, DE, and MA

Mr. Godick managed the removal and replacement of underground and aboveground storage tank systems for Verizon in New York, Pennsylvania, Delaware, and Massachusetts. Responsibilities included the management of design, preparation of specifications, contractor bidding, construction oversight, project budget, and documentation. For selected AST sites, managed the development of Spill Control, Contingency and Countermeasures (SPCC) plans.

Brownfield Opportunity Area (BOA) Grant Program Services for the Town of Babylon, Wyandanch, NY

AKRF was retained by the Town of Babylon to prepare a blight study, market study, NYS BOA Step 2 Nomination, an Urban Renewal Plan, and a Generic Environmental Impact Statement (GEIS) as part of a revitalization and redevelopment effort for downtown Wyandanch. Mr. Godick was responsible for overseeing the environmental data collection effort for the 226 brownfields identified in the 105-acre project area, and for identifying strategic sites for which site assessment funding should be sought. He also prepared the Hazardous Materials section of the Wyandanch Downtown Revitalization Plan (which incorporates the Nomination, Urban Renewal Plan, and GEIS), involving a summary of available environmental reports, a review of regulatory records, and limited street-level site inspections.

Alexander Street Urban Renewal Plan, Master Plan, Brownfield Opportunity Area Plan, Yonkers, NY

AKRF was retained by the City of Yonkers to prepare an Urban Renewal Plan, Master Plan, Brownfield Opportunity Area Plan, and a Generic Environmental Impact Statement (GEIS) for a 153 acre industrial area along Alexander Street on the Yonkers Waterfront. Mr. Godick was responsible for the Hazardous Materials sections of the GEIS and Urban Renewal Plan. Mr. Godick managed the environmental data collection effort for the entire study area which involved review and summary of existing environmental reports, a review of regulatory records, and field inspections. The collected information was used to prioritize individual parcels for funding and remediation. The Master Plan for the area called for the development of a mixed-use neighborhood consisting of residential, neighborhood retail, and office space uses with substantial public open space, access to the Hudson River, and marina facilities.

SEMINARS, LECTURES & PUBLICATIONS

"Let Nature Do the Work – Onsite Stormwater Management," Westchester County Department of Parks, Recreation and Conservation, Fall 2003

"Water Pollution Control and Site Assessments and Audits," Environmental Health and Safety Issues Course, Building Owners and Managers Institute (BOMI), 1997-1999

"Hydrogeologic and Geological Aspects of Tank Closures and Remedial Action," Underground Storage Tanks Course, Government Institutes, Summer 1996, Fall 1997

MARCUS SIMONS

SENIOR VICE PRESIDENT

Marcus Simons is a Senior Vice President of AKRF with 20 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 on Tishman/Blackrock's 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 and E-designation 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.

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

Mr. Simons has managed some of the most complex cleanup sites in New York State including: the recently completed cleanup of a 12-acre PCB-contaminated former utility property in Flushing, Queens where a 3 million square foot retail/residential building is nearing completion (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). Mr. Simons also has extensive experience with transportation projects (Second Avenue Subway, MTA/LIRR East Side Access, Cross Harbor Freight Movement Study, Route 9A Reconstruction), large-scale rezoning projects (Long Island City, Downtown Brooklyn, Jamaica) and public and private redevelopment work (Atlantic Yards, School Construction Authority, Queens West).

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 the purchaser's environmental due diligence efforts for the bidding and subsequent acquisition 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 will manage oversight of activities that involve disturbance of MGP-contaminated soils, as well as future testing and potentially remediation.

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 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.

REBECCA KINAL, P.E.

VICE PRESIDENT

Rebecca Kinal has over 20 years of experience in the assessment and remediation of soil and groundwater contamination and other hazardous/non-hazardous waste problems. Ms. Kinal's experience includes environmental due diligence, soil and groundwater investigations, leaking underground storage tank studies, soil gas/vapor intrusion surveys, and oversight of small- and large-scale remediation programs, including design of groundwater remediation systems and vapor mitigation systems. She has directed numerous Phase I and Phase II investigations and remediation programs, many of them in conjunction with commercial/residential developers, law firms, lending institutions, and public agencies. She is experienced in the cleanup of contaminated properties under New York State Brownfield Cleanup Program (BCP) regulations and the New York City "E-designation" program. As a part of this work, her duties have included technical and report review, proposal writing, scheduling, budgeting, and acting as liaison between clients and regulatory agencies, and project coordination with federal, state, and local authorities.

BACKGROUND

Education

M.S., Hydrogeology, Rensselaer Polytechnic Institute, 1995

B.S., Civil Engineering, Lafayette College, 1992

Licenses/Certifications

State of New York, P.E. Registration No. 082046, 2004

Years of Experience

Year started in company: 2000

Year started in industry: 1996

RELEVANT EXPERIENCE

New York City School Construction Authority On-Call Contract for Environmental Consulting Services, Various Sites, NY

Ms. Kinal serves as the project manager for AKRF's on-call hazardous materials consulting contract with the New York City School Construction Authority for over 8 years. For potential new school sites, assignments include initial due diligence, Phase I environmental site assessments, (ESAs) and subsurface investigation of soil, groundwater, and soil vapor to determine the suitability of a site for development as a school, likely remediation requirements, and associated costs. For sites undergoing design and development, assignments include preparation of remediation plan, contract specifications, and design drawings. The work has also included conducting indoor air quality testing, vapor intrusion assessments, preparation of specifications, supervision of storage tank removals, and investigation and remediation of spills for existing schools. Due to the sensitivity of school sites, work under this contract is often conducted on short notice and during non-school hours.

USTA National Tennis Center, Queens, NY

AKRF prepared an EIS for the New York City Departments of City Planning (DCP) and Environmental Protection (DEP) as co-lead agencies to analyze the expansion of the National Tennis Center, which includes

multiple improvements and construction projects at the USTA campus over several years. As part of the EIS requirements, AKRF prepared a Remedial Action Plan for implementation during the proposed project's construction. In accordance with the RAP, vapor mitigation systems were incorporated into the design for several of the proposed structures at the facility, including two new stadiums, a new transportation center, and several practice court facilities. Ms. Kinal prepared the specifications and design drawings for the vapor mitigation and is providing on-going construction support to review contractor submittals and inspect the vapor barrier and sub-slab depressurization system installations.

Montefiore Medical Center, Various Locations, NY

Ms. Kinal provides due diligence assistance to Montefiore Medical Center (MMC) for the ongoing expansion of their facilities, primarily in the Bronx and Westchester County. She conducts and manages environmental due diligence tasks related to their property transactions, including Phase I Environmental Site Assessments (ESAs), Phase II investigations, and geophysical surveys. She also assists MMC in making decisions with respect to environmental risk issues.

Queens West Development Project, Long Island City, NY

For over 20 years, AKRF has played a key role in advancing the Queens West development, which promises to transform an underused industrial waterfront property into one of largest and most vibrant mixed-use communities just across the East River from the United Nations. AKRF has prepared an Environmental Impact Statement that examines issues pertaining to air quality, land use and community character, economic impacts, historic and archaeological resources, and infrastructure. As part of the project, AKRF also undertook the largest remediation ventures completed to date under the NYSDEC Brownfields Cleanup Program (BCP). Ms. Kinal helped prepare the Remedial Work Plan (RWP) and oversaw the remediation of Parcel 9, a 1.8-acre former industrial site. Remediation includes installation of a sheet pile containment wall, excavation of coal tar- and petroleum-contaminated soil under a temporary structure to control odors during remediation, vapor mitigation for the future buildings, and institutional controls. Upon completion of the remediation activities, Ms. Kinal managed the preparation of a Final Engineering Report (FER) to document the clean-up activities. The NYSDEC issued a Certificate of Completion (COC) for the Parcel 9 site in December 2006. Ms. Kinal continues to oversee post-remediation monitoring and site management activities to ensure that the remedy remains in-place and effective.

Roosevelt Union Free School District, Roosevelt, NY

Ms. Kinal is managing environmental investigation and remediation activities for the sites of three new elementary schools and a new middle school in Roosevelt, New York. Remediation activities include removal/closure of contaminated dry wells and underground petroleum storage tanks, and excavation and off-site disposal of petroleum- and pesticide-contaminated soil.

Proposed NYC Public School Campus, Bronx, NY

Ms. Kinal provided environmental consulting services to the selected environmental remediation contractor for this former manufactured gas plant in the Mott Haven neighborhood of the Bronx, which was remediated under the NYSDEC BCP. These services included: preparation of an in situ sampling plan and excavation plan for waste characterization and disposal; supervision of waste characterization sampling activities; development and implementation of a community air monitoring program during all remediation activities; and daily reporting to the NYC School Construction Authority.

National Grid – Halesite Manufactured Gas Plant Site, Town of Huntington, NY

Ms. Kinal served as the project manager for the remedial design and engineering work associated with remediation of National Grid's former manufactured gas plant (MGP) located in the Town of Huntington. The site is situated

in a sensitive location along the waterfront, surround by commercial and residential properties, and half the property where the remediation was conducted is a steep slope. The remedy consisted of soil removal, oxygen injection, and non-aqueous phase liquid recovery. Ms. Kinal developed the remedial work plans, design/construction documents, and managed environmental oversight of the remedial work, including waste characterization and tracking, confirmatory endpoint sampling, air monitoring, and reporting to the NYSDEC. After the remediation work was completed, Ms. Kinal prepared appropriate close-out documentation in accordance with NYSDEC requirements.

Shell Service Station, Millwood, NY

Ms. Kinal planned and oversaw a Phase I Environmental Site Assessment and Phase II Subsurface Investigation of this active gasoline station in northern Westchester County. The Phase I/Phase II investigations were performed for the potential buyer of the property who wished to redevelop it with a more modern service station and convenience store. Ms. Kinal also prepared a conceptual remediation plan to address several areas of petroleum contamination identified during the Phase II. The plan, which was approved by NYSDEC, will be implemented in conjunction with the site redevelopment activities to achieve closure for several spills reported at the site.

Pelham Plaza Shopping Center Site Investigation & Remediation, Pelham Manor, NY

Ms. Kinal managed a Site Investigation at Pelham Plaza, an approximately ten-acre site that formerly contained a manufactured gas plant. The site was investigated under a voluntary clean-up agreement entered into with the NYSDEC by the site owner. The site investigation included advancing over 100 soil borings with continuous soil sampling to bedrock, installing monitoring and recovery wells, and conducting test pitting both indoor and outdoor locations to collect soil and groundwater samples and determine the extent of Non-Aqueous Phase Liquid (NAPL). The investigation also included: soil gas sampling to determine contaminant concentrations in the vapors beneath the foundation of an on-site retail store; sediment sampling in an adjacent creek to identify off-site impacts; and a tidal survey to determine tidal influence on groundwater levels at the site. Ms. Kinal also oversaw on-going interim remedial measures, which include biweekly pumping of recovery wells to remove dense NAPL (DNAPL) from the site subsurface.

Shaws Supermarket Redevelopment Project, New Fairfield, CT

Ms. Kinal managed the Remedial Investigation (RI) for an approximately nine-acre shopping center site that was contaminated by releases from former dry cleaning operations. The site was being redeveloped with a new supermarket and separate retail stores. The investigation included the installation of monitoring wells in the intermediate overburden aquifer and bedrock aquifer, sampling of existing and newly installed wells, geophysical logging in bedrock wells, and pump testing in intermediate and bedrock wells. Ms. Kinal prepared a Remedial Action Work Plan (RAWP) based on results from the RI, which included a groundwater pump and treat system to contain a plume of perchlorethylene (PCE)-contaminated groundwater, and excavation and disposal of contaminated soil in the presumed source area. Following CTDEP approval of the RAWP, Ms. Kinal prepared bid specifications for soil excavation and remediation system installation, and oversaw their implementation. Ms. Kinal also prepared NPDES permit applications for discharges from construction dewatering and the groundwater remediation system, and conducted associated discharge monitoring.

Yankee Stadium, Bronx, NY

Ms. Kinal performed the hazardous materials analysis for the Draft Environmental Impact Statement for the proposed new Yankee Stadium. The analysis included a Phase I Environmental Site Assessment of the entire project area and Subsurface (Phase II) Investigation in areas where environmental conditions were identified. The Phase II investigation included geophysical surveys to search for potential underground storage tanks; and soil, soil gas, and groundwater sampling at over 40 locations to determine potential environmental impacts during and after the proposed construction.

Avalon on the Sound, New Rochelle, NY

Ms. Kinal oversaw environmental investigation and soil remediation during the construction of two luxury high-rise apartment buildings and an associated parking garage. Investigation activities included an electromagnetic survey to search for possible underground storage tanks, and subsurface sampling to characterize soil and groundwater. Remediation activities included removing underground storage tanks, excavating and disposing of soil contaminated with volatile and semi-volatile organic compounds, and collecting end-of-excavation confirmation samples.

Davids Island Environmental Audit, New Rochelle, NY

Ms. Kinal managed the hazardous materials portion of the audit of this undeveloped island site, including a Phase I Environmental Site Assessment (ESA) and Subsurface (Phase II) Investigation in areas where environmental conditions were identified. The Phase II investigation included collecting soil samples from more than 100 locations and analyzing them for targeted compounds, including volatile organic compounds, semi-volatile compounds, metals, pesticides, and polychlorinated biphenyls (PCBs). Ms. Kinal also oversaw an electromagnetic (EM) survey conducted to identify the location of suspected underground storage tanks on the island. Based on soil sample results, Ms. Kinal estimated the volume of contaminated soil requiring remediation and prepared cost estimates for soil excavation and for transportation and disposal of contaminated soil and hazardous materials.

Outlet City Site Investigation, Queens, NY

Ms. Kinal prepared a work plan for remedial investigation of the Outlet City site, a property in Long Island City that was formerly occupied by a manufacturer of industrial cleaners and pharmaceuticals. The site is being investigated and remediated under the NYSDEC voluntary clean-up program. In preparing the work plan, Ms. Kinal evaluated results from several previous investigations and conducted a limited groundwater sampling program to determine future data needs for designing remediation of creosote-contaminated soil and groundwater. The work plan included additional soil and groundwater sampling, a tidal survey to determine tidal influence on groundwater levels, and pilot free product recovery testing. Ms. Kinal also helped design a venting system for an on-site basement and performed exposure calculations for the vented vapors.

Yonkers Waterfront Redevelopment Project, Yonkers, NY

For this redevelopment along Yonkers' Hudson River waterfront, Ms. Kinal supervised the remediation of Parcels H and I that were contaminated with hazardous soil. During the remediation process, she reviewed the subcontractor health and safety plans, delineated the areas of excavation, and oversaw field activities to ensure compliance with the specifications and appropriate regulations. This property was remediated under the NYSDEC Environmental Restoration Program (ERP).

U.S. Post Office Main Vehicle Maintenance Facility, Washington, D.C.

While with another firm, Ms. Kinal designed and supervised the installation of a remediation system to treat petroleum-contaminated groundwater. Ms. Kinal also established O&M and monitoring protocols to ensure efficient operation of the air sparging/soil vapor extraction system, and to monitor contaminant recovery/degradation rates.

Aberdeen Proving Ground Building 4025 Site, Aberdeen, MD

While with another firm, Ms. Kinal provided services for this leaking underground storage tank site, Ms. Kinal planned and oversaw investigation and pilot testing activities to delineate contamination and determine feasible in-situ remediation options. Investigation activities included soil and groundwater sampling using a direct-push (Geoprobe) rig and mobile laboratory. Pilot testing included in-situ respirometry testing, and field testing of bioremediation and free-product recovery technologies.

BRYAN ZIEROFF, LEP

SENIOR HYDROGEOLOGIST

Bryan Zieroff has 15 years of experience in the environmental consulting industry. Mr. Zieroff's experience includes the conceptual design, implementation and reporting of detailed field investigations including assessments of ground-water supplies for residential, municipal and industrial users, and evaluation, monitoring and remediation of soil and ground-water contamination for sites regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), Connecticut's Remediation Standard Regulations, and by the New York State Department of Environmental Conservation's (New York State Department of Environmental Conservation's (NYSDEC)) cleanup programs. These studies include investigations at sites impacted by petroleum products, chlorinated solvents, metals and landfill leachate. Mr. Zieroff's tasks often include characterization of the extent of contamination in soil, ground water, and soil vapor, evaluation of compliance with the established regulatory criteria, and operation and maintenance of remediation systems. Mr. Zieroff's familiarity with various field investigation techniques enhances his management skills.

BACKGROUND

Education

B.S., Geological Sciences, The Ohio State University, 1994

Licenses/Certifications

Certified Professional Geologist-American Institute of Professional Geologists, License # CPG-11197

40 Hour HAZWOPER and Annual Refresher Training

Supervisors of Hazardous Waste Operations (8 Hour)

Professional Memberships

American Institute of Professional Geologists

Association of Ground-Water Scientists and Engineers (National Ground Water Association)

Environmental Professionals' Organization of Connecticut (EPOC)

Years of Experience

Year started in company: 2006

Year started in industry: 1995

RELEVANT EXPERIENCE

Gedney Way Leaf and Yard Waste Composting Facility, White Plains, NY

Mr. Zieroff is Project Manager for a remediation and landfill closure project at an existing composting facility. The project included documenting the entire disposal history and completing a site-wide investigation to confirm the extent of a solvent release and to provide data necessary to complete landfill closure. The investigation was required to satisfy the requirements in the NYSDEC DER-10 and 6NYCRR Part 360. After receiving state approval of the Site Investigation Report, the project has moved into the remediation and landfill closure design phase. The remedial design includes the testing and implementation of a chemical oxidation injection program, and landfill closure includes design, state approval, and construction of a landfill cap.

New City Plaza, New City, NY

Mr. Zieroff is Project Manager for an investigation and remediation project at a former dry cleaning facility. Investigation and remediation at the site currently are being conducted under review of the NYSDEC Brownfield Cleanup Program. Tasks have included preparation and state approval of a Site Investigation Work Plan, Site Quality Assurance Project Plan, Health and Safety Plan, a Community Participation Plan, and completion of the investigation phase of the Brownfield's program. Interim Remedial activities include contamination source removal from soil and installation of a sub-slab depressurization system to address soil vapor. A feasibility study is currently being completed to determine the optimal remedial approach for site-wide remediation.

Orangeburg Pipe Site, Orangeburg, NY

Mr. Zieroff completed a subsurface investigation to determine the extent of soil and groundwater contamination at the former Orangeburg Pipe facility. The investigation results were used to develop a Remedial Action Plan to address solid waste, petroleum contamination, worker safety during site development, and capping requirements to satisfy the NYSDEC Voluntary Remediation Program. The Remedial Action Plan included a Heath and Safety Plan, Community Air Monitoring Plan, and specifications for soil management, a vapor mitigation system and dewatering procedures during the construction of multiple commercial buildings.

Magna Metals Facility, Cortlandt, NY

Mr. Zieroff managed a soil-gas investigation project at an existing commercial warehouse and office building. The project included installation of permanent soil gas sampling points and completion of a sampling program that met the requirements of the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Site activities included a pre-sampling investigation with the NYSDOH to document materials storage, air flow specifications, historical uses, site uses and areas of concern for sub-slab and ambient air sampling. The investigation work was being conducted to satisfy the NYSDEC consent order.

Paragon Paint Company Facility, Long Island City, NY

Mr. Zieroff was Project Manager for an investigation and remediation project at a former paint manufacturing facility. The project has included a multiple subsurface investigations to determine the extent of solvent and petroleum contamination at the site. All phases of remediation at the site are being completed under review of the NYSDEC Brownfield Cleanup Program. Tasks include completion and state approval of a Site Investigation Work Plan, Quality Assurance Project Plan, Health and Safety Plan, Community Participation Plan, Remedial Action Plan, and Final Remediation Report.

Pathmark Stores Site, Bronx, NY

Mr. Zieroff completed a Remedial Action Plan, Construction Health and Safety Plan and a Soil Management Plan for a former materials storage facility associated with Manhattan College. The plans were completed to provide worker safety and soil handling guidelines during the construction of a large retail facility and parking garage. Development activities at the site were conducted under oversight of the New York City Department of Environmental Protection (NYCDEP). A Notice of Satisfaction was received after project completion.

Yale and Towne Site, Stamford, CT

Mr. Zieroff provided oversight services for a remediation project at a former industrial site. The site included over 35 buildings and 87 areas of environmental concern that required investigation and remediation. Tasks included providing technical support in understanding the Connecticut regulatory requirements, investigation and remediation costs, and confirmation of appropriate schedules to address the environmental issues during redevelopment of the project site.

Aluminum Company of America (ALCOA) Facility, Guilford, CT

Mr. Zieroff managed a ground-water remediation project at an existing aluminum manufacturing facility. The project included soil, vapor and ground-water sampling to confirm the extent of a solvent release, determination of ground water and aquifer characteristics, operation and maintenance of a ground-water pump-and-treat system and compliance sampling in association with a Connecticut Department of Environmental Protections (CTDEP) consent order.

Coats North America Facility, Watertown, CT

Mr. Zieroff was the Project Manager for site compliance work at an existing synthetic treads facility. The project included an evaluation of activities, chemical uses and waste handling practices to determine areas of environmental concern. Investigations to determine the status of these areas included installation of monitoring wells, soil and ground-water sampling, soil-vapor sampling, liquid storage tank removal and Resource Conservation and Recovery Act (RCRA) closure of waste storage areas. The project activities were completed in compliance with the CTDEP property transfer program.

United Parcel Service, Storm Water Management, 9 Connecticut Facilities

Mr. Zieroff managed the design and implementation of a storm water pollution prevention project at nine United Parcel Service facilities. The project included analysis of drainage areas, determination of sheet flow characteristics and the collection of storm-water discharge samples and SMR reporting in accordance with the CTDEP General Permit for the Discharge of Storm Water.

Meriden Enterprise Center, Meriden, CT

Mr. Zieroff developed and directed a subsurface investigation to determine the nature and extent of contamination related to releases from multiple underground storage tank farms, silverware plating, machining and furniture stripping operations. Project activities included ground-penetrating radar, drilling of test borings, installation of monitoring wells, developing a conceptual site model for the established releases and preparing a report detailing remedial alternatives for the property and owner requirements under the CTDEP Property Transfer Act.

Development properties in Kent, Ridgefield, and Greenwich, CT and Mahopac and Brewster, NY

Mr. Zieroff directed an evaluation and testing program of bedrock water-supply wells to determine long-term yield, impact on local users, and water quality results. The project included compilation of data, construction of hydrographs, determination of aquifer characteristics and reporting.

Bettsville Quarry, Bettsville, OH

Mr. Zieroff directed a pumping test of dewatering wells to determine yield requirements for dewatering a carbonate rock quarry. The dewatering program included a determination of offsite impacts to local ground-water users. Mr. Zieroff developed an offsite monitoring program to document and protect local users during the quarry dewatering process.

Burning Tree Country Club, Greenwich, CT

Mr. Zieroff directed an in-situ percolation test to determine recharge rates for a proposed upgrade to the facility septic system. The project included compilation of slug test data and software analysis to determine K values.

MARK JEPSEN

ENVIRONMENTAL SCIENTIST

Mark Jepsen is an Environmental Scientist in AKRF's Hazardous Materials group. He has a great deal of experience in both environmental science and natural resources, including environmental remediation and consulting, groundwater quality and soil science, hydrology, and geology.

Since Joining AKRF at the beginning of 2014, Mr. Jepsen has overseen a wide variety of environmental investigations. He has performed oversight at large scale construction sites entailing complex remediation techniques. He has performed various Phase I site visits and reports. Additionally, Mr. Jepsen has followed up these Phase I investigations with performing Phase II remedial investigations including soil, groundwater, and soil vapor sampling. Also, Mr. Jepsen has a great deal of experience creating environmental reports discussing results found during the preliminary and supplemental investigations, Remedial Action Work Plans (RAWPs), Construction Health and Safety Plans (CHASP), Remedial Closure Reports, Environmental Bid Specifications and Design Coordination. Mr. Jepsen has a knowledgeable background in environmental issues and challenges pertaining to the New York metropolitan area and technical guidelines. Mr. Jepsen has a great deal of experience working on projects involved with multiple governmental regulators including NYSDEC, NJDEP, NYCDEP, and NYCOER.

Before joining AKRF, Mr. Jepsen worked for Bluestone Environmental Services in Somerset, New Jersey. He was responsible for performing a wide array of field work activities including groundwater sampling, monitoring well gauging, soil sampling, and more for Bluestone's various clients including: ExxonMobil, International-Matex Tank Terminals (IMTT) and various gas stations. He was responsible for maintaining an understanding of large and active remediation sites and dealing with an extensive groundwater monitoring well network, as well as acting as an on-site safety supervisor for all Bluestone employees and subcontractors.

BACKGROUND

Education
B.S., Environmental Science, The Ohio State University, 2012

New Jersey Regulatory Seminars
Combined Sewer Outfalls (CSO) for LSRPs: Remediation Alternatives to Better Manage Storm Water

Certifications
40 Hour OSHA HAZWOPER – annual refresher every year
10 Hour OSHA Construction Training
Gold Certified Brownfield Professional by New York City Office of Environmental Remediation
Transportation Worker Identification Credential (TWIC)
NYSDEC Erosion and Sediment Control Inspector
Boating license

Years of Experience
Date started at AKRF: March 2014
Prior industry experience: Bluestone Environmental Services (NJ) – January 2013 to March 2014

RELEVANT AKRF EXPERIENCE

432 East 14th Street, Environmental Management Specifications, Design Coordination and Pre-Characterization of Soil for Off-site Disposal, New York, NY

Mr. Jepsen supported AKRF's preparation of Environmental Management Specifications and Design Coordination, and collection and laboratory analysis of soil samples to pre-characterize soil beneath the Site for off-site disposal. Mr. Jepsen also performed the Phase II remedial investigation of this site which included soil, groundwater, and soil vapor sampling. Mr. Jepsen was also responsible for construction oversight during the foundation excavation for the proposed building. Following completion of excavation, Mr. Jepsen was responsible for inspecting the vapor barrier system installed as an engineering control for the proposed building. He has also been involved with creating the Remedial Closure Report.

77 Commercial Street, Environmental Services, Greenpoint, NY

Mr. Jepsen supported AKRF's environmental services, including Preparation of a Remedial Investigation (Phase II) Work Plan; Remedial Investigation (RI) and Report; Preparation of a Remedial Action Work Plan (RAWP) and Construction Health and Safety Plan (CHASP); Pre-Characterization of Soil for Off-site Disposal; Environmental Monitoring; Remedial Closure Report; and Environmental Bid Specifications and Design Coordination.

Bronx Pro 2264-2272 Morris Avenue, Environmental Consulting Services, Bronx, NY

Mr. Jepsen is supporting AKRF's environmental consulting services for this site including, Phase I Environmental Site Assessment (ESA) and update, Phase II remedial site investigations and subsurface sampling, ongoing construction oversight and vapor barrier inspections.

Memorial Sloan Kettering Cancer Center Hospital 74th Street, Environmental Services, New York, NY

Mr. Jepsen supported AKRF's environmental services, including construction oversight and air monitoring, groundwater sampling, and monitoring well decommissioning. Also, Mr. Jepsen has overseen large scale UST closure and removal at this site. Mr. Jepsen was responsible for the on-site implementation of AKRF's Remedial Action Work Plan (RAWP) and Construction Health and Safety Plan (CHASP). He has also been involved with creating the Remedial Closure Report.

School Construction Authority, New York, NY

Under an on-call contract, AKRF provides the New York City School Construction Authority (NYCSCA) with hazardous materials consulting services. Mr. Jepsen is involved with various due diligence and environmental assessment projects including Phase I Environmental Site Assessments (ESAs); Phase II (Subsurface) Environmental Site Investigations (soil, groundwater and soil vapor intrusion investigations); Indoor Air Quality (IAQ) Assessments; Underground Storage Tank (UST) and Aboveground Storage Tank (AST) inspections relating to boiler conversions; and peer review of other consultant's due diligence reports.

Indoor Air Quality Monitoring, New York, NY

Mr. Jepsen has performed a variety of indoor air quality investigations and surveys at sites including educational institutions and various residential buildings. Mr. Jepsen performed interviews pertaining to environmental site conditions and background with property owners and operators.

11 Greene Street, Environmental Consulting Services, New York, NY

Investigation and remediation of the Site is being conducted to satisfy NYC Office of Environmental Remediation (NYCOER) requirements under the Voluntary Clean-Up Program (VCP) and CEQR. Mr. Jepsen is supporting AKRF's environmental consulting services for this site including Waste Classification testing and delineation, preparation of a Remedial Investigation (Phase II) Work Plan; Remedial Investigation (RI) and Report; Preparation

of a NYCDEP Dewatering Application and Permit; Preparation of a Remedial Action Work Plan (RAWP) and Construction Health and Safety Plan (CHASP); Pre-Characterization of Soil for Off-site Disposal; Environmental Monitoring; and Environmental Bid Specifications and Design Coordination.

3200 Jerome Avenue, Environmental Consulting Services, Bronx, New York

AKRF conducted a Phase I ESA and an Indoor Air Quality Survey of this property in the Bronx during due diligence investigations for the NYCSCA which identified levels of trichloroethene (TCE) in indoor air that exceeded the New York State Department of Health (NYSDOH) standards. NYCSCA subsequently terminated its lease of the site and discontinued its use as a school. Following the termination of NYCSCA's lease of the site, AKRF was retained by the owner to conduct an investigation and cleanup. Mr. Jepsen helped to conduct groundwater sampling requirements set by the NYSDEC as part of the Brownfield Cleanup Agreement for the project site. Mr. Jepsen is supporting the ongoing operations and maintenance of an active sub-slab depressurization system installed beneath the building. Mr. Jepsen has also overseen in-situ chemical oxidation (ISCO) groundwater treatment injection activities performed on-site.

98-100 Franklin Street, Manhattan, NY

AKRF completed a Phase I Environmental Site Assessment (ESA), Phase II ESI, prepared a Remedial Action Work Plan, a NYCDEP Dewatering Application and Permit, and performed soil waste classification sampling (which required the preparation of a NYC Transit Subsurface Investigation Permit to perform the associated soil borings) for the proposed redevelopment for a 29,564-square foot, eight-story mixed-use building with a cellar. As the assistant project manager, Mr. Jepsen coordinated with the client and contactors and performed oversight of on-site remediation activities.

NYSDOT/NYSTA Tappan Zee Hudson River Crossing, Rockland and Westchester Counties, NY

AKRF completed an EIS for this project on a fast-track schedule. Findings of the study were utilized to develop numerous documents prepared to guide the construction team, including a Remedial Action Plan and a Construction Health and Safety Plan for the five-year bridge replacement project. As part of the findings of the study, additional mitigation was required to ensure safety of endangered species inhabiting the Hudson River. Mr. Jepsen has been responsible for captaining and assisting in vessel-based monitoring of endangered species within and surrounding the marine construction zone of the new Tappan Zee Bridge located in Tarrytown and Nyack, NY on the Hudson River.

Previous Experience

International-Matex Tank Terminals (IMTT) and ExxonMobil, Environmental Consulting Services, Bayonne, NJ

Mr. Jepsen was responsible for conducting operations and maintenance of an extensive groundwater monitoring well network at an active storage tank terminal located in Bayonne, NJ. Mr. Jepsen also conducted site investigation field activities; including soil, groundwater sampling, and monitoring well installation. Mr. Jepsen aided with the operation and maintenance of active remedial systems, including oil recovery skimming systems and water treatment and discharge systems. Mr. Jepsen was responsible for maintaining client relationships and acting as an on-site safety supervisor for all Bluestone employees and subcontractors. Mr. Jepsen assisted with relevant compliance reporting requirements, remedial work plans, and general work permitting

Various Gas Stations, Environmental Consulting Services, Various Locations, NJ

Mr. Jepsen conducted site investigation field activities, including groundwater sampling and monitoring well installation at various gas stations with open petroleum spills reported the NJDEP. Mr. Jepsen acted as an on-site safety supervisor for all Bluestone employees and subcontractors. Mr. Jepsen assisted with relevant compliance reporting requirements.

L.A.B. Validation Corp., 14 West Point Drive, East Northport, New York 11731

Lori A. Beyer

SUMMARY: General Manager/Laboratory Director with a solid technical background combined with Management experience in environmental testing industry. Outstanding organizational, leadership, communication and technical skills. Customer focused, quality oriented professional with consistently high marks in customer/employee satisfaction.

EXPERIENCE:

1998-Present L.A.B. Validation Corporation, 14 West Point Drive, East Northport, NY
President

- Perform Data Validation activities relating to laboratory generated Organic and Inorganic Environmental Data.

1998-Present American Analytical Laboratories, LLC. 56 Toledo Street, Farmingdale, NY
Laboratory Director/Technical Director

- Plan, direct and control the operation, development and implementation of programs for the entire laboratory in order to meet AAL's financial and operational performance standards.
- Ensures that all operations are in compliance with AAL's QA manual and other appropriate regulatory requirements.
- Actively maintains a safe and healthy working environmental that is demanded by local laws/regulations.
- Monitors and manages group's performance with respect to data quality, on time delivery, safety, analyst development/goal achievement and any other key performance indices.
- Reviews work for accuracy and completeness prior to release of results to customers.

1996-1998 Nytest Environmental, Inc. (NEI) Port Washington, New York
General Manager

- Responsible for controlling the operation of an 18,000 square foot facility to meet NEI's financial and operational performance standards.
- Management of 65 FTEs including Sales and Operations
- Ensure that all operations are in compliance with NEI's QA procedures
- Ensures that productivity indicators, staffing levels and other cost factors are held within established guidelines
- Maintains a quantified model of laboratory's capacity and uses this model as the basis for controlling the flow of work into and through the lab so as to ensure that customer requirements and lab's revenue and contribution targets are achieved.

1994-1996 Nytest Environmental, Inc. (NEI) Port Washington, New York
Technical Project Manager

- Responsible for the coordination and implementation of environmental testing programs requirements between NEI and their customers
- Supervise Customer Service Department
- Assist in the development of major proposals
- Complete management of all Federal and State Contracts and assigned commercial contracts
- Provide technical assistance to the customer, including data validation and interpretation
- Review and implement Project specific QAPP's.

1995-1996 Nytest Environmental, Inc. (NEI) Port Washington, New York
Corporate QA/QC Officer

- Responsible for the implementation of QA practices as required in the NJDEP and EPA Contracts
- Primary contact for NJDEP QA/QC issues including SOP preparation, review and approval
- Responsible for review, verification and adherence to the Contract requirements and NEI QA Plan

1992-1994 Nytest Environmental, Inc. (NEI) Port Washington, New York
Data Review Manager

- Responsible for the accurate compilation, review and delivery of analytical data to the company's customers. Directly and effectively supervised a department of 22 personnel.
- Managed activities of the data processing software including method development, form creation, and production
- Implement new protocol requirements for report and data management formats
- Maintained control of data storage/archival areas as EPA/CLP document control officer

1987-1991 Nytest Environmental, Inc. (NEI) Port Washington, New York
Data Review Specialist

- Responsible for the review of GC, GC/MS, Metals and Wet Chemistry data in accordance with regulatory requirements
- Proficient with USEPA, NYSDEC, NJDEP and NEESA requirements
- Review data generated in accordance with SW846, NYSDEC ASP, EPA/CLP and 40 CFR Methodologies

1986-1987 Nytest Environmental, Inc (NEI) Port Washington, New York
GC/MS VOA Analyst

EDUCATION:

1982-1985 State University of New York at Stony Brook, New York; BS Biology/Biochemistry
1981-1982 University of Delaware; Biology/Chemistry
5/91 Rutgers University; Mass Spectral Data Interpretation Course, GC/MS Training
8/92 Westchester Community College; Organic Data Validation Course
9/93 Westchester Community College; Inorganic Data Validation Course

Westchester Community College

Professional Development Center

Awards this Certificate of Achievement To

LORI BEYER

for Successfully Completing

ORGANIC DATA VALIDATION COURSE (35 HOURS)

Dr. John Samuelian

Date AUGUST 1992

Assistant Dean
Professional Development Center

President

The Professional
Development Center

SUNY
WESTCHESTER COMMUNITY COLLEGE
Valhalla, New York 10595

Westchester Community College

Professional Development Center

Awards this Certificate of Achievement To

LORI BEYER

for Successfully Completing

INORGANIC DATA VALIDATION

Instructor: Dale Boshart

Date MARCH 1993

Assistant Dean
Professional Development Center

President

The Professional
Development Center

SUNY
WESTCHESTER COMMUNITY COLLEGE
Valhalla, New York 10595

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Thomas C. Jorling
Commissioner

July 8, 1992

Ms. Elaine Sall
Program Coordinator
Westchester Community College
Valhalla, NY 10595-1698

Dear Elaine,

Thank you for your letter of June 29, 1992. I have reviewed the course outline for organic data validation, qualifications for teachers and qualifications for students. The course that you propose to offer would be deemed equivalent to that which is offered by EPA. The individuals who successfully complete the course and pass the final written exam would be acceptable to perform the task of organic data validation for the Department of Environmental Conservation, Division of Hazardous Waste Remediation.

As we have discussed in our conversation of July 7, 1992, you will forward to me prior to the August course deadline, the differences between the EPA SOW/90 and the NYSDEC ASP 12/91. You stated these differences will be compiled by Mr. John Samulian.

I strongly encourage you to offer an inorganic data validation course. I anticipate the same list of candidates would be interested in an inorganic validation course as well, since most of the data to be validated consists of both organic and inorganic data.

Thank you for you efforts and please contact me if I can be of any further assistance.

Sincerely,

Maureen P. Serafini

Maureen P. Serafini
Environmental Chemist II
Division of Hazardous Waste
Remediation

The Professional
Development Center
AT
WESTCHESTER COMMUNITY COLLEGE

914 285-6619

October 2, 1992

Ms. Lori Beyer
3 sparkill Drive
East Northport, NY 11731

Dear Ms. Beyer:

Congratulations upon successful completion of the Organic Data Validation course held August 17 - 21, 1992, through Westchester Community College, Professional Development Center. This course has been deemed by New York State Department of Environmental Conservation as equivalent to EPA's Organic Data Validation Course.

Enclosed is your Certificate. Holders of this Certificate are deemed competent to perform organic data validation for the New York State DEC Division of Hazardous Waste Remediation.

The Professional Development Center at Westchester Community College plans to continue to offer courses and seminars which will be valuable to environmental engineers, chemists and related personnel. Current plans include a TCLP seminar on November 17th and a conference on Environmental Monitoring Regulations on November 18th.

We look forward to seeing you again soon at another environmental program or event. Again, congratulations.

Very truly yours,

Passing Grade is 70%
Your Grade is 99%

Elaine Sall
Program Coordinator

ES/bf

SUNY
WESTCHESTER COMMUNITY COLLEGE
Valhalla, New York 10595

The Professional
Development Center
AT
WESTCHESTER COMMUNITY COLLEGE

914 285-6619

June 21, 1993

Dear Ms. Beyer:

Enclosed is your graded final examination in the Inorganic Data Validation course you completed this past March. A score of 70% was required in order to receive a certificate of satisfactory completion. Persons holding this certificate are deemed acceptable to perform Inorganic Data Validation for the New York State Department of Environmental Conservation, Division of Hazardous Waste Remediation.

I am also enclosing a course evaluation for you to complete if you have not already done so. The information you provide will greatly aid us in structuring further courses. We wish to make these course offerings as relevant, targeted and comprehensive as possible. Your evaluation is vital to that end.

Congratulations on your achievement. I look forward to seeing you again at another professional conference or course. We will be co-sponsoring an environmental monitoring conference on October 21, 1993 with the New York Water Pollution Control Association, Lower Hudson Chapter, at IBM's Yorktown Heights, NY site. Information regarding this event will be going out in August.

Very truly yours,

Elaine Sall

Elaine Sall
Program Coordinator

ES/bf

Enclosures

SUNY
WESTCHESTER COMMUNITY COLLEGE
Valhalla, New York 10595

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Personnel Resume

Melissa Haas
Project Manager II

Qualifications Summary

Ms. Haas has over 20 years of experience in the environmental laboratory industry which includes project management, inorganic chemistry department management, LIMS implementation, human resources, and data reporting. She has a proven ability to handle multiple projects and tasks and a passion for the highest achievable level of quality and customer service.

Professional Experience

Project Manager – TestAmerica - 2012 to Present

Ms. Haas coordinates and manages clients' projects through all phases of the laboratory operations, ensuring fulfillment of TestAmerica's commitments to client requirements and on-time delivery. She maintains communications with clients and account executives and serves as a liaison between clients and laboratory operations to meet clients' needs. She reviews contractual documents and Quality Assurance Project Plans (QAPPs) to ensure certification and laboratory analytical requirements. Ms. Haas assists clients in identifying project requirements and manages project setup on behalf of the laboratory. She also develops business relationships with clients to further enhance client service and sales. She ensures accuracy and on-time delivery of client reports.

Laboratory Information Management (LIMS) Implementor – TestAmerica − 2011 to 2012

Ms. Haas was responsible for method and reference data setup for laboratories that were scheduled to implement the TALS LIMs system. She communicated with laboratory personnel to acquire information about standard operating procedures to ensure that methods and reference data were set up to meet the needs of the laboratory. She also provided on-site support for laboratories during the Go-Live period of the implementation and was the primary lead for the newly developed Certification Module. She trained laboratory and corporate personnel on the specifications of the software. She also provided remote data review assistance for laboratories to aid in the validation of the methods and reference data setup as well as the accuracy of the analysts' review process.

Metals Department Manager – TestAmerica – 2009-2011

Ms. Haas managed the operational activities of the metals department, including managing staff through clearly setting goals and providing performance reviews and feedback. She monitored the daily laboratory workload and ensured resources and staff were in place to complete projects on time. She prepared inorganic chemistry data packages and reviewed data for accuracy while prioritizing work to ensured timely delivery of quality data packages to clients. She oversaw the quality control of the department including demonstration of capabilities, method detection limit studies, SOP updates, audit responses, and performance evaluation responses.

Human Resources Coordinator – TestAmerica – 2007-2009

Ms. Haas provided support to the laboratory and Corporate Human Resources by implementing and administering Human Resources programs and procedures. She advised managers on Human Resources-related issues and managed the interview process for laboratory hires. She also served as a resource to the lab employees with HR-related issues and coordinated employee recognition programs and special events to promote employee satisfaction.

Wet Chemistry Department Manager – TestAmerica – 2001-2007

Ms. Haas managed the operational activities of the wet chemistry department and supervised a staff of eight analysts. She was responsible for data review, training, and quality control for the department. She increased productivity levels by providing key contributions toward automation of laboratory.

Wet Chemistry Analyst – Severn Trent Labs/AEN – 1997-2001

Veterinary Technician− Mobile Veterinary Clinic − 1994-1997

Campus Organizer –NJ Public Interest Research Group − 1990-1993

Education

- Rutgers University, New Brunswick, NJ 1986-1990, Bachelor of Science, Animal Science

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Personnel Resume

Carl Armbruster
QA Manager

Qualifications Summary

Mr. Armbruster has over 30 years of experience in the environmental laboratory and engineering industry that includes extensive technical, management/leadership experience in all aspects of the laboratory business. He is an action-oriented manager dedicated to ensuring the laboratory maintains a quality program that holds the highest credentials in PT scores, accreditations and customer satisfaction. His unique experience lends itself to working successfully with employees, managers and clients at all levels.

Professional Experience

Quality Assurance Manager – TestAmerica Edison - 2005 to Present

Mr. Armbruster is responsible for establishing and implementing the quality assurance program at the Edison facility; and for interfacing with the corporate Quality Assurance Director to ensure adherence with the overall Quality Management Plan. He is also responsible for monitoring implementation and compliance with NELAC and TestAmerica's QMP, conducting annual management system audits and data audits, as well as providing regulatory updates and technical support to the Laboratory Director, Operations Manager, Client Services and Sales department.

Project Manager/Assistant Technical Director – STL Edison --2000 to 2005

Laboratory Director − STL Whippany − 1998 to 2000

Account Manager − Clean Harbors Environmental Services − 1997 to 1998

Laboratory Manager − Waste Management Inc., and Chemical Waste Management Inc − 1988 to 1997

Environmental Scientist − ICF Technology − 1987 to 1988

Analytical Chemist − IT Corporation – 1985 to 1987

Analytical Chemist − Hess Environmental Laboratories – 1983 to 1985

Education

- MS in Biology – East Stroudsburg University, 1984
- BS in Environmental Studies - East Stroudsburg University, 1980

APPENDIX C
PREVIOUS ENVIRONMENTAL REPORTS

APPENDIX D

CITIZEN PARTICIPATION PLAN

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan
for
34 Berry Street

May 2018

BCP Site #C224268
34 Berry Street
Brooklyn, New York City
Kings County, NY 11249

Prepared by:
AKRF

AKRF, Inc.
440 Park Avenue South, 7th Floor
New York, NY 10016
212-696-0670

Contents

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Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicant: **34 Berry Street LLC ("Applicant")**
Site Name: **34 Berry Street ("Site")**
Site Address: **34 Berry Street, Brooklyn**
Site County: **Kings County**
Site Number: **C224268**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at:
http://www.dec.ny.gov/chemical/8450.html .

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision-makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment.

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process.

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process.

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community.

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision-making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the Site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the Site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the Site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web-site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the Site and by other means, as appropriate.

Site Contact List

Appendix B contains the Site Contact List. This list has been developed to keep the community informed about, and involved in, the Site's investigation and cleanup

process. The Site Contact List will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the Site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

The Site contact list includes, at a minimum:

- Chief executive officer and planning board chairperson of each county, city, town and village in which the Site is located;
- Residents, owners, and occupants of the Site and properties adjacent to the Site;
- The public water supplier that services the area in which the Site is located;
- Any person who has requested to be placed on the Site contact list;
- The administrator of any school or day care facility located on or near the Site for purposes of posting and/or dissemination of information at the facility; and
- Location(s) of reports and information.

The Site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the Site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the Site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first Site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the Site. See http://www.dec.ny.gov/chemical/61092.html .

Subsequent fact sheets about the Site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC Site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the Site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the Site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program.

Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the Site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the Site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine whether the Site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the Site, as described in Section 5.

If the Site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the Site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the Site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the Site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the Site had not yet been made.

To verify the significant threat status of the Site, the interested public may contact the NYSDEC project manager identified in Appendix A.

For more information about TAGs, go online at:
http://www.dec.ny.gov/regulations/2590.html

Note: The table identifying the citizen participation activities related to the Site's investigation and cleanup program follows on the next page:

Citizen Participation Activities	Timing of CP Activity(ies)
Application Process:	
• Prepare Site contact list • Establish document repository(ies) • Prepare Remedial Investigation (RI) Work Plan	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the Site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report.
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to Site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to Site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to Site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time NYSDEC approves Final Engineering Report. These two fact sheets are combined if possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the Site. Additional major issues of public concern may be identified during the course of the Site's investigation and cleanup process.

The Site is not located in an Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities. There is no need to translate future fact sheets into another language. For additional information, visit: https://popfactfinder.planning.nyc.gov/profile/1934/census

The current site owner (34 Berry Street LLC or Owner) has voluntarily entered the BCP in order to remediate contamination related to historic site uses (see Section 4 for a history of site use and the environmental work already completed by the owner). Contamination in the form of petroleum and chlorinated solvent compounds that were associated with the historic uses is currently present in soil and groundwater underlying the Site. Issues of public concern are associated with the potential exposure to the existing contamination. Since the contamination exists underlying the site, direct contact is not readily feasible, and groundwater below the site is not pumped out or otherwise consumed in any fashion. The potential for exposure is associated with vapors that evaporate from the contamination and have the potential to migrate up through the foundation and into buildings located on and directly adjacent to the 34 Berry Street property. The investigation work to be completed by the owner, under oversight of the NYSDEC, will be performed to define the nature and extent of the contamination and thereby determine the potential for exposure to the existing contamination. It should be noted that the 34 Berry Street building contains measures as part of the building design to minimize the intrusion of vapors into the building. The remediation work completed by the owner to clean-up the site will be designed to remove the contamination and, therefore, reduce potential risk of exposure.

Investigation/Remediation Related Issues

Short term issues to the residents at 34 Berry Street and the immediately surrounding buildings include the potential exposure to vapors while drilling into the ground during the investigation and remediation phases of the project. In order to mitigate this risk and provide a measure of protection for the downwind community, air monitoring will be completed during all work that goes below ground. The specific steps for completing the monitoring work to protect residents and the surrounding community are to be included in the Community Air Monitoring Plan (CAMP) which is reviewed and approved

by NYSDEC prior to implementation, and this document can be reviewed at the document repositories identified in Appendix A of this document.

4. Site Information

Appendix C contains a map identifying the location of the Site.

Site Description
The Site is located at 34 Berry Street in the Williamsburg neighborhood of Brooklyn, NY and is legally defined as Tax Block 2289, Lot 14. The Site is approximately 36,472 square feet and is occupied by an L-shaped, seven-story residential building that fronts Berry and North 12th Streets, with an open courtyard area located behind the building, in the central portion of the Site. A basement level parking garage is located under the building and courtyard, with an entrance ramp located on North 11th Street. A small, street-level valet parking lot is also located on North 11th Street, immediately east of the garage entrance ramp. The Site is bounded to the north by North 12th Street, to the east by Berry Street, to the south by North 11th Street and two low-rise residential buildings, and to the west by a warehouse building used by the Brooklyn Brewery. The surrounding neighborhood is primarily residential and commercial in nature, containing apartment buildings, businesses, and storage warehouses.

History of Site Use, Investigation, and Cleanup

According to historic Sanborn fire insurance maps, the Site was developed with industrial and manufacturing uses, including the New York Quinine and Chemical Works between 1887 and 1951. After 1951, the Site was used for freight loading and parking of vehicles. Sanborn maps from 1965 to 2006 (after decommissioning of the quinine factory) depict a large 2-story freight loading facility and warehouse in the western portion of the Site, a 2-story truck repair facility/warehouse and a 4-story unspecified manufacturing facility in the southwestern portion of the Site, and a parking lot in the eastern portion of the Site containing two gasoline tanks of unspecified capacity. In 2006, the on-site buildings contained artist loft residences, a furniture manufacturer warehouse, a garage, a forklift sales and service facility, and an empty warehouse. The eastern parking lot was used for vehicle parking and storage. The adjacent and surrounding properties were occupied at various times by an iron foundry, various manufacturing operations, and by a Manufactured Gas Plant.

A June 2006 Subsurface (Phase II) Investigation Report prepared by Langan Engineering and Environmental Services, P.C. identified petroleum and chlorinated solvent contamination in soil and groundwater that appeared to be related to the historic operations at the Site. As a result of the discovery of this contamination, a “spill” was reported to the NYSDEC [Spill No. 07-12424 (the “Spill”)]. The Owner acquired the title to the Site in December 2007.

Site redevelopment was subject to New York City's "E"-designation requirements for hazardous materials as part of the Greenpoint-Williamsburg Rezoning. Due to the presence of subsurface contamination, the "E" designation requirements included preparation and implementation of a Remedial Action Plan (RAP) to address the contamination issues at the Site. Redevelopment began in April 2008 after the New York City Department of Environmental Protection (NYCDEP) approved the RAP. Excavation extended between approximately 10-17 feet below grade throughout the Site, and included the disposal of 18,676 tons of soil. At the end of the excavation work, separate phase product [called a non-aqueous phase liquid (NAPL)] identified as petroleum fuel oil was observed floating on groundwater in the northwest corner of the site. NYSDEC issued a November 19, 2008 letter indicating that no additional soil would need to be removed from the Site; however, continued light NAPL (LNAPL) monitoring and recovery would be required after redevelopment. Redevelopment of the Site was completed in December 2009, and included the construction of the current Site building. Building construction included installation of engineering controls including a vapor barrier, passive sub-slab venting system, and a site cap.

On March 3, 2010, a Closure Report that detailed all of the remediation work and protective measures was prepared and submitted to the New York City Mayor's Office of Environmental Remediation (OER) as part of the "E"-designation requirements for the Site. OER issued a Notice of No Objection (NNO) for the Site on April 20, 2010, which indicated that the "E"-designation requirements had been fulfilled. On September 13, 2012, a Notice of Satisfaction (NOS) was issued to the Owner after entering into a Stipulation Agreement with NYSDEC to address the Spill. The Stipulation Agreement specified the required remediation and monitoring measures to be implemented with respect to LNAPL that remained in the saturated zone beneath the building slab at the Site in order to achieve case closure with respect to the NYSDEC Spill case. After receiving the NOS, a final Certificate of Occupancy (CO) was issued by NYCDOB in September 2012.

To address the Spill, and under NYSDEC review, a LNAPL recovery system consisting of four recovery wells was installed at the end of building construction in early 2009. A fifth recovery well was added in April 2012. Operation, Monitoring, and Maintenance (OM&M) of the LNAPL recovery system and submission of monitoring reports were conducted based upon an agreed upon schedule with NYSDEC. From September 2009 through December 2014, monthly OM&M visits and quarterly groundwater sampling were completed to monitor Site conditions and the effectiveness of the NAPL recovery system. From January 2014 to the present day, quarterly OM&M visits with semi-annual groundwater sampling were completed. The results of each visit were compiled and reported to NYSDEC for review and approval. The OM&M program documented that the system has been effective in reducing the amount of LNAPL beneath the building.

OM&M activities associated with the LNAPL recovery system documented that a solvent compound called 1,2-dichloroethane (DCA) was present in groundwater, and

the results suggested that the 1,2-DCA source area was located in the vicinity of the southern (upgradient) property boundary.

Between November 2010 and July 2016, the Owner completed three separate subsurface investigations to determine whether potential off-site sources were contributing to petroleum contamination observed at the property, to identify the potential 1,2-DCA solvent source area, and to address investigation data gaps for the Site. The investigations indicated that the petroleum-related contamination at the Site was most likely not originating from an off-site source, and that the 1,2-DCA solvent source area may be located along the property boundary between 34 Berry and 44 Berry Street, or may originate from the upgradient adjacent 44 Berry Street property.
In March 2018, the Owner entered the BCP to complete the remaining work needed to address the remaining solvent and petroleum contamination.

5. Investigation and Cleanup Process

Application

The Applicant has applied for, and been accepted into, New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the Site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination on-site, and must conduct a "qualitative exposure assessment," a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the Site and to contamination that has migrated from the Site.

The Applicant in its Application proposes that the Site will continue to be used for residential purposes.

To achieve this goal, the Applicant will conduct investigation activities at the Site and on the adjacent property at 44 Berry Street with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant on March 20, 2018 sets forth the responsibilities of each party in conducting these activities at the Site.

Investigation

The Applicant has completed several phases of subsurface investigation prior to entering the BCP. An additional subsurface investigation will be completed in order to fulfill the BCP remedial investigation (RI) requirements. The Applicant submitted a draft "Remedial Investigation Work Plan" to NYSDEC for review and approval along with the BCP application. NYSDEC made the draft plan available to the public review during the

30-day public comment period.

The Site investigation has several goals:

1) Define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) Identify the source(s) of the contamination;
3) Assess the impact of the contamination on public health and the environment; and
4) Provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the Site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the Site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a “Certificate of Completion” (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a “Remedial Work Plan”. The Remedial Work Plan describes the Applicant’s proposed remedy for addressing contamination related to the Site.

When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the site Decision Document.

The Applicant may then design and perform the cleanup action to address the Site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a Final Engineering Report (FER) that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the Site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the Site, it will approve the FER. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for Site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the Site after it receives a COC.

Site Management

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the Site cleanup program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the Site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An *institutional control* is a non-physical restriction on use of the Site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the Site suitable for some, but not all uses.

An *engineering control* is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that pumps and treats groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A -
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the Site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Shaun Bollers
Project Manager
NYSDEC Region 2
Division of Environmental Remediation
1 Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101
Phone: (718) 482-4096
Email: shaun.bollers@dec.ny.gov

Thomas V. Panzone
Public Participation Specialist
NYSDEC Region 2
1 Hunters Point Plaza
47-20 21st Street
Long Island City, NY 11101
Phone: (718) 482-4953
Email: Thomas.panzone@dec.ny.gov

New York State Department of Health (NYSDOH):

Steven Berninger
Project Manager
NYSDOH - Empire State Plaza
Corning Tower Room 1782
Albany, NY 12237
Phone: (518) 402-7860
Email: BEEI@health.ny.gov

The facilities identified below are being used to provide the public with convenient access to important project documents:

Brooklyn Public Library – Leonard Branch 81 Devoe Street Brooklyn, NY 11211 Attn: Ms. Alexa Orr, Managing Libriarian Phone: (718) 486-6006 Hours: Monday, Wednesday, Friday, 10AM-6PM Tuesday, 1PM-8PM Thursday, 10AM-8PM Saturday, 10AM-5PM Sunday-closed	NYSDEC Region 2 1 Hunter's Point Plaza 47-40 21st Street Long Island City, NY 11101 Attn: Shaun Bollers Phone: (718) 482-4096 Hours: Monday-Friday, 9AM-5PM (call for appointment)	Brooklyn Community Board District 1 435 Graham Avenue Brooklyn, New York 11211 Attn: Mr. Gerald A. Esposito, District Manager Phone: (718) 389-0009 Hours: Monday-Friday, 10AM-4PM

Appendix B - Site Contact List

	A	B	C	D	E	F	G	H	I	J
1										
2	Site Contact List									
3	Site #: C224268									
4	Site Name: 34 Berry Street Site			List Last Updated: 9-						
5	Current Occupant	Name, Title	Address 1	Address 2	Address 3	Street Address	City	State	Zip	Site Name (County)
6	Current Occupant	Hon. Bill de Blasio	NYC Mayor			City Hall	New York	NY	10007	34 Berry Street Site (Kings)
7	Current Occupant	Hon. Scott Stringer	NYC Comptroller			1 Centre Street	New York	NY	10007	34 Berry Street Site (Kings)
8	Current Occupant	Hon. Jumaane Williams	Public Advocate			1 Centre Street	New York	NY	10007	34 Berry Street Site (Kings)
9	Current Occupant	Marisa Lago	Commissioner, NYC Dept. of City Planning			120 Broadway, 31st Floor	New York	NY	10271	34 Berry Street Site (Kings)
10		Vincent Sapienza	Commissioner, NYC Dept. of Environmental Protection			59-17 Junction Boulevard	Flushing	NY	11373	34 Berry Street Site (Kings)
11		Mark McIntyre, Director	NYC Office of Environmental Remediation			100 Gold Street - 2nd Floor	New York	NY	10038	34 Berry Street Site (Kings)
12		Julie Stein	Office of Environmental Assessment & Planning	NYC Dept. of Environmental Protection		96-05 Horace Harding Expressw	Flushing	NY	11373	34 Berry Street Site (Kings)
13		Hon. Eric Adams	Brooklyn Borough President			209 Joralemon Street	Brooklyn	NY	11201	34 Berry Street Site (Kings)
14		Shaun Bollers	NYSDEC Project Manager			47-40 21st Street	Long Island City	NY	11101	34 Berry Street Site (Kings)
15		Thomas V. Panzone	NYSDEC Public Participation Specialist			47-40 21st Street	Long Island City	NY	11101	34 Berry Street Site (Kings)
16		Larry Ennist	NYSDEC			625 Broadway	Albany	NY	12233	34 Berry Street Site (Kings)
17		Steve Berninger	NYSDOH Public Health Specialist		Empire State Plaza	Corning Tower, Room 1787	Albany	NY	12237	34 Berry Street Site (Kings)
18		Hon Charles Schumer	U.S. Senator			780 Third Avenue, Suite 2301	New York	NY	10017	34 Berry Street Site (Kings)
19		Hon. Kirsten Gillibrand	U.S. Senator			780 Third Avenue, Suite 2601	New York	NY	10017	34 Berry Street Site (Kings)
20		Hon. Carolyn B. Maloney	U.S. House of Representatives			619 Lorimer Street	Brooklyn	NY	11211	34 Berry Street Site (Kings)
21		Hon. Stephen Levin	NYC Councilmember			410 Atlantic Avenue	Brooklyn	NY	11217	34 Berry Street Site (Kings)
22		Hon. Brian Kavanagh	NYS Senator			209 Joralemon Street, Suite 300	Brooklyn	NY	11201	34 Berry Street Site (Kings)
23		Hon. Joseph Lentol	NYS Assemblymember			619 Lorimer Street	Brooklyn	NY	11211	34 Berry Street Site (Kings)
24		Gerald Esposito, District Manager	Brooklyn Community Board 1			435 Grahame Avenue	Brooklyn	NY	11211	34 Berry Street Site (Kings)
25		Dealice Fuller, Chairwoman	Brooklyn Community Board 1			435 Grahame Avenue	Brooklyn	NY	11211	34 Berry Street Site (Kings)
26		Trina McKeever, Environmental Committee Chair	Brooklyn Community Board 1 Environmental Committee			435 Grahame Avenue	Brooklyn	NY	11211	34 Berry Street Site (Kings)
27		Nancy T. Sunshine	Kings County Clerk			360 Adams Street, Room 189	Brooklyn	NY	11201	34 Berry Street Site (Kings)
28		Antonia Yuille, Director	Consolidated Edison Corporate Affairs			30 Flatbush Avenue	Brooklyn	NY	11217	34 Berry Street Site (Kings)
29		Elizabeth Hulsen, President	94th NYPD Police Precinct Council			100 Meserole Avenue	Brooklyn	NY	11222	34 Berry Street Site (Kings)
30		Engine 229 Ladder 146	FDNY			75 Richardson Street	Brooklyn	NY	11211	34 Berry Street Site (Kings)
31		NYC Department of City Planning	Brooklyn Borough Office			16 Court Street, 7th Floor	Brooklyn	NY	11241	34 Berry Street Site (Kings)
32		Current Occupant				113 North 12th Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
33		Current Occupant				44 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
34		Mihata Corporation				100 North 4th Street	Brooklyn	NY	11201	34 Berry Street Site (Kings)
35		CCM Ventures 7, LLC				331 W. 57th Street, Suite 301	New York	NY	10019	34 Berry Street Site (Kings)
36		Current Occupant	The William Vale			111 North 12th Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
37		Current Occupant				50 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
38		Wythe Berry Fee Owner LLC				199 Lee Avenue, #693	Brooklyn	NY	11211	34 Berry Street Site (Kings)
39		North 11 Associates LLC				199 Lee Avenue, Suite 608	Brooklyn	NY	11211	34 Berry Street Site (Kings)
40		Current Occupant				150 North 12th Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
41		Brooklyn Bowl, LLC				61 Wythe Avenue	Brooklyn	NY	11249	34 Berry Street Site (Kings)
42		Elrob Realty LLC				64 Greenpoint Avenue	Brooklyn	NY	11222	34 Berry Street Site (Kings)
43		Current Occupant	Brooklyn Brewery			79 North 11th Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
44		119 North 11th Realty Corporation				119 North 11th Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
45		75 Wythe Avenue, LLC				179 Morgan Avenue	Brooklyn	NY	11237	34 Berry Street Site (Kings)
46		Brooklyn Daily Eagle				16 Court Street, Suite 1208	Brooklyn	NY	11241	34 Berry Street Site (Kings)
47		The Brooklyn Papers				1 Metrotech Center, Suite 1001	Brooklyn	NY	11201	34 Berry Street Site (Kings)
48		Spectrum NY 1 News				75 Ninth Avenue	New York	NY	10011	34 Berry Street Site (Kings)
49		Greenpoint Gazette				597 Manhattan Avenue	Brooklyn	NY	11222	34 Berry Street Site (Kings)
50		Courier-Life Publications				1 Metro-Tech Center North - 10(	Brooklyn	NY	11201	34 Berry Street Site (Kings)
51		New York Post				1211 Avenue of the Americas	New York	NY	10036	34 Berry Street Site (Kings)
52		New York Daily News				4 New York Plaza	New York	NY	10004	34 Berry Street Site (Kings)
53		Learning Steps Day Care Center and Preschool	Beata Spizarna			544 Union Avenue	Brooklyn	NY	11211	34 Berry Street Site (Kings)
54		ABC Child Center	Eileen Zarcone			109 Nassau Avenue	Brooklyn	NY	11222	34 Berry Street Site (Kings)
55		Smarter Toddler Nursery & Preschool	Reanne Agbayani			17 N. 6th Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
56		John Oravecx Child Care				25 Nassau Avenue	Brooklyn	NY	11222	34 Berry Street Site (Kings)
57		Automotive High School	Kevin Bryant			50 Bedford Avenue	Brooklyn	NY	11222	34 Berry Street Site (Kings)
58		Northside Charter High School	Principal: Suzanne Curran			424 Leonard Street	Brooklyn	NY	11222	34 Berry Street Site (Kings)
59		Citizens of the World Charter School Williamsburg	Meredith Lewis			424 Leonard Street	Brooklyn	NY	11222	34 Berry Street Site (Kings)
60		John Ericsson Middle School 126, Magnet School	Principal: Maria Ortega			424 Leonard Street	Brooklyn	NY	11222	34 Berry Street Site (Kings)
61		P.S. 34 Oliver H Perry	Carmen Asselta			131 Norman Avenue	Brooklyn	NY	11222	34 Berry Street Site (Kings)
62		Open Space Alliance for North Brooklyn				79 North 11th Street	Brooklyn	NY	11211	34 Berry Street Site (Kings)
63		Friends of McCarren Park				community@gogreenbk.org				34 Berry Street Site (Kings)
64		Greenpoint Business Alliance	C/o North Brooklyn Development Corp.			148-150 Huron Street	Brooklyn	NY	11222	34 Berry Street Site (Kings)
65		Williamsburg Greenpoint Preservation Alliance				302 Bedford Avenue, #113	Brooklyn	NY	11211	34 Berry Street Site (Kings)
66		Greenpoint Waterfront Association for Parks and Planning				108 Huron Street	Brooklyn	NY	11222	34 Berry Street Site (Kings)
67		Concerned Citizens of Greenpoint, Inc.				1044 Manhattan Avenue	Brooklyn	NY	11222	34 Berry Street Site (Kings)
68		Greenpoint Muslim Community Center Inc.				602 Leonard Street	Brooklyn	NY	11222	34 Berry Street Site (Kings)
69		Hispanos Unidos De Greenpoint Inc.	C/o Edwin Perez			1074 Manhattan Avenue	Brooklyn	NY	11222	34 Berry Street Site (Kings)
70	Adjacent Properties	Resident/Business Owner				104 North 12th Street	Brooklyn	NY	Adjacent Pro	34 Berry Street Site (Kings)
71		75th Wythe Avenue LLC				73rd Wythe Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
72		Resident/Business Owner				44 Berry Street	Brooklyn	NY		34 Berry Street Site (Kings)
73		Kimaqu Corporation				74 Wythe Avenue	Brooklyn	NY		34 Berry Street Site (Kings)

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3	Site #: C224268									
4	Site Name: 34 Berry Street Site			List Last Updated: 9-						
5	Current Occupant	Name, Title	Address 1	Address 2	Address 3	Street Address	City	State	Zip	Site Name (County)
74		Wythe Hotel LLC				75 North 11th Street	Brooklyn	NY		34 Berry Street Site (Kings)
75		61 North LLC				94 North 12th Street	Brooklyn	NY		34 Berry Street Site (Kings)
76		North 12th Associates LLC				35 Kent Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
77		Resident/Business Owner				119 North 11th Street	Brooklyn	NY		34 Berry Street Site (Kings)
78		Jon Kessler				121 North 11th Street	Brooklyn	NY		34 Berry Street Site (Kings)
79		Resident/Business Owner				162 North 12th Street	Brooklyn	NY		34 Berry Street Site (Kings)
80		Sean Cunningham				141 North 11th Street	Brooklyn	NY		34 Berry Street Site (Kings)
81		ROBERT E. BERGMANN, AS TRUSTEE OF ELLIS FAMILY TRUST				143 North 11th Street	Brooklyn	NY		34 Berry Street Site (Kings)
82		Stable Art Inc				166th North 12th Street	Brooklyn	NY		34 Berry Street Site (Kings)
83		147-149 MCCARREN LLC				156 NORTH 12 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
84		Crisco Realty				108 Bedford Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
85		106 BEDFORD REALTY ASSOCIATES LLC				106 Bedford Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
86		KMK BEDFORD LLC				104 Bedford Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
87		102 BEDFORD AVE, LLC				102 Bedford Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
88		100 BEDFORD AVENUE LLC				100 Bedford Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
89		BEDFORD FLATS LLC				96 Bedford Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
90		LORETTA EHRESMAN LIV				94 Bedford Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
91		19 Kent Acquisition LLC				19 Kent Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
92		WYTHE BERRY FEE OWNER LLC				55 Wythe Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
93		MIHATA CORP				125 North 12th Street	Brooklyn	NY		34 Berry Street Site (Kings)
94		MIHATA CORP				132 NORTH 13 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
95		MIHATA CORP				129 NORTH 12 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
96		MIHATA CORP				120 NORTH 13 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
97		MIHATA CORP				32 Berry Street	Brooklyn	NY		34 Berry Street Site (Kings)
98		MIHATA CORP				28 Berry Street	Brooklyn	NY		34 Berry Street Site (Kings)
99		MIHATA CORP				24 Berry Street	Brooklyn	NY		34 Berry Street Site (Kings)
100		MIHATA CORP				20 Berry Street	Brooklyn	NY		34 Berry Street Site (Kings)
101		LOEFFLER REALTY LLC				90 Wythe Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
102		LOEFFLER REALTY LLC				94 Wythe Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
103		96 WYTHE ACQUISITION LLC				96 Wythe Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
104		Rodrigo Ricardo				57 North 10th Street	Brooklyn	NY		34 Berry Street Site (Kings)
105		Rodrigo Ricardo				55 North 10th Street	Brooklyn	NY		34 Berry Street Site (Kings)
106		GrandField Realty Corp.				54 North 11th Street	Brooklyn	NY		34 Berry Street Site (Kings)
107		61 Kent Avenue LLC				61 Kent Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
108		LOEFFLER PROPERTIES LLC				55 Kent Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
109		Nancy Civitello				53 Kent Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
110		51 Lunney Realty				51 Kent Avenue	Brooklyn	NY		34 Berry Street Site (Kings)
111		Frank Myszak				52 North 11th Street	Brooklyn	NY		34 Berry Street Site (Kings)
112		86 NORTH 11TH OWNER LLC				87 WYTHE AVENUE	Brooklyn	NY		34 Berry Street Site (Kings)
113		Resident/Business Owner				79 NORTH 10 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
114		Resident/Business Owner				97 NORTH 10 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
115		Resident/Business Owner				111 NORTH 10 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
116		55 BERRY STREET CONDOMINIUM				55 Berry Street	Brooklyn	NY		34 Berry Street Site (Kings)
117		Resident/Business Owner				125 NORTH 10 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
118		CLPF-PRINTHOUSE LOFTS, LLC				137 North 10th Street	Brooklyn	NY		34 Berry Street Site (Kings)
119		SZUMILO, ROMUALD				143 NORTH 10 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
120		KURDZIEL LUDWIK				142 NORTH 11 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
121		NORTH 11 FLATS LLC				144 NORTH 11 STREET	Brooklyn	NY		34 Berry Street Site (Kings)
122		LORETTA EHRESMAN LIV				94 BEDFORD AVENUE	Brooklyn	NY		34 Berry Street Site (Kings)
123		BEDFORD FLATS LLC				96 BEDFORD AVENUE	Brooklyn	NY		34 Berry Street Site (Kings)
124		SHIRLEY VIDAL				98 BEDFORD AVENUE	Brooklyn	NY		34 Berry Street Site (Kings)
125		100 BEDFORD AVENUE LLC				100 BEDFORD AVENUE	Brooklyn	NY		34 Berry Street Site (Kings)
126		102 BEDFORD AVE, LLC				102 BEDFORD AVENUE	Brooklyn	NY		34 Berry Street Site (Kings)
127		106 BEDFORD REALTY ASSOCIATES LLC				106 BEDFORD AVENUE	Brooklyn	NY	11249	34 Berry Street Site (Kings)
128		CRISCO REALTY LLC				108 BEDFORD AVENUE	Brooklyn	NY	11249	34 Berry Street Site (Kings)
129	**On-site residents (as of 9/4/20)**									
130		Current Resident		Unit 1A		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
131		Current Resident		Unit 1B		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
132		Current Resident		Unit 1C		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
133		Current Resident		Unit 1D		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
134		Current Resident		Unit 1E		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
135		Current Resident		Unit 1F		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
136		Current Resident		Unit 1G		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
137		Current Resident		Unit 1H		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
138		Current Resident		Unit 1I		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
139		Current Resident		Unit 1J		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
140		Current Resident		Unit 1K		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)

	A	B	C	D	E	F	G	H	I	J
1										
2	Site Contact List									
3	Site #: C224268									
4	Site Name: 34 Berry Street Site			List Last Updated: 9-						
5	Current Occupant	Name, Title	Address 1	Address 2	Address 3	Street Address	City	State	Zip	Site Name (County)
141		Current Resident		Unit 1L		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
142		Current Resident		Unit 1M		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
143		Current Resident		Unit 1N		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
144		Current Resident		Unit 1O		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
145		Current Resident		Unit 1P		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
146		Current Resident		Unit 1Q		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
147		Current Resident		Unit 1R		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
148		Current Resident		Unit 1S		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
149		Current Resident		Unit 2A		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
150		Current Resident		Unit 2B		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
151		Current Resident		Unit 2C		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
152		Current Resident		Unit 2D		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
153		Current Resident		Unit 2E		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
154		Current Resident		Unit 2F		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
155		Current Resident		Unit 2G		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
156		Current Resident		Unit 2H		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
157		Current Resident		Unit 2I		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
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159		Current Resident		Unit 2K		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
160		Current Resident		Unit 2L		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
161		Current Resident		Unit 2M		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
162		Current Resident		Unit 2N		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
163		Current Resident		Unit 2O		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
164		Current Resident		Unit 2P		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
165		Current Resident		Unit 2Q		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
166		Current Resident		Unit 2R		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
167		Current Resident		Unit 2S		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
168		Current Resident		Unit 2T		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
169		Current Resident		Unit 2U		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
170		Current Resident		Unit 2V		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
171		Current Resident		Unit 2W		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
172		Current Resident		Unit 2X		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
173		Current Resident		Unit 2Y		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
174		Current Resident		Unit 3A		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
175		Current Resident		Unit 3B		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
176		Current Resident		Unit 3C		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
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188		Current Resident		Unit 3O		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
189		Current Resident		Unit 3P		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
190		Current Resident		Unit 3Q		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
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195		Current Resident		Unit 3V		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
196		Current Resident		Unit 3W		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
197		Current Resident		Unit 3X		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
198		Current Resident		Unit 3Y		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
199		Current Resident		Unit 4A		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
200		Current Resident		Unit 4B		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
201		Current Resident		Unit 4C		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
202		Current Resident		Unit 4D		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
203		Current Resident		Unit 4E		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
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209		Current Resident		Unit 4K		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
210		Current Resident		Unit 4L		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
211		Current Resident		Unit 4M		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)

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1										
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3	Site #: C224268									
4	Site Name: 34 Berry Street Site			List Last Updated: 9-						
5	Current Occupant	Name, Title	Address 1	Address 2	Address 3	Street Address	City	State	Zip	Site Name (County)
212		Current Resident		Unit 4N		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
213		Current Resident		Unit 4O		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
214		Current Resident		Unit 4P		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
215		Current Resident		Unit 4Q		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
216		Current Resident		Unit 4R		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
217		Current Resident		Unit 4S		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
218		Current Resident		Unit 4T		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
219		Current Resident		Unit 4U		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
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221		Current Resident		Unit 4W		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
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223		Current Resident		Unit 4Y		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
224		Current Resident		Unit 5A		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
225		Current Resident		Unit 5B		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
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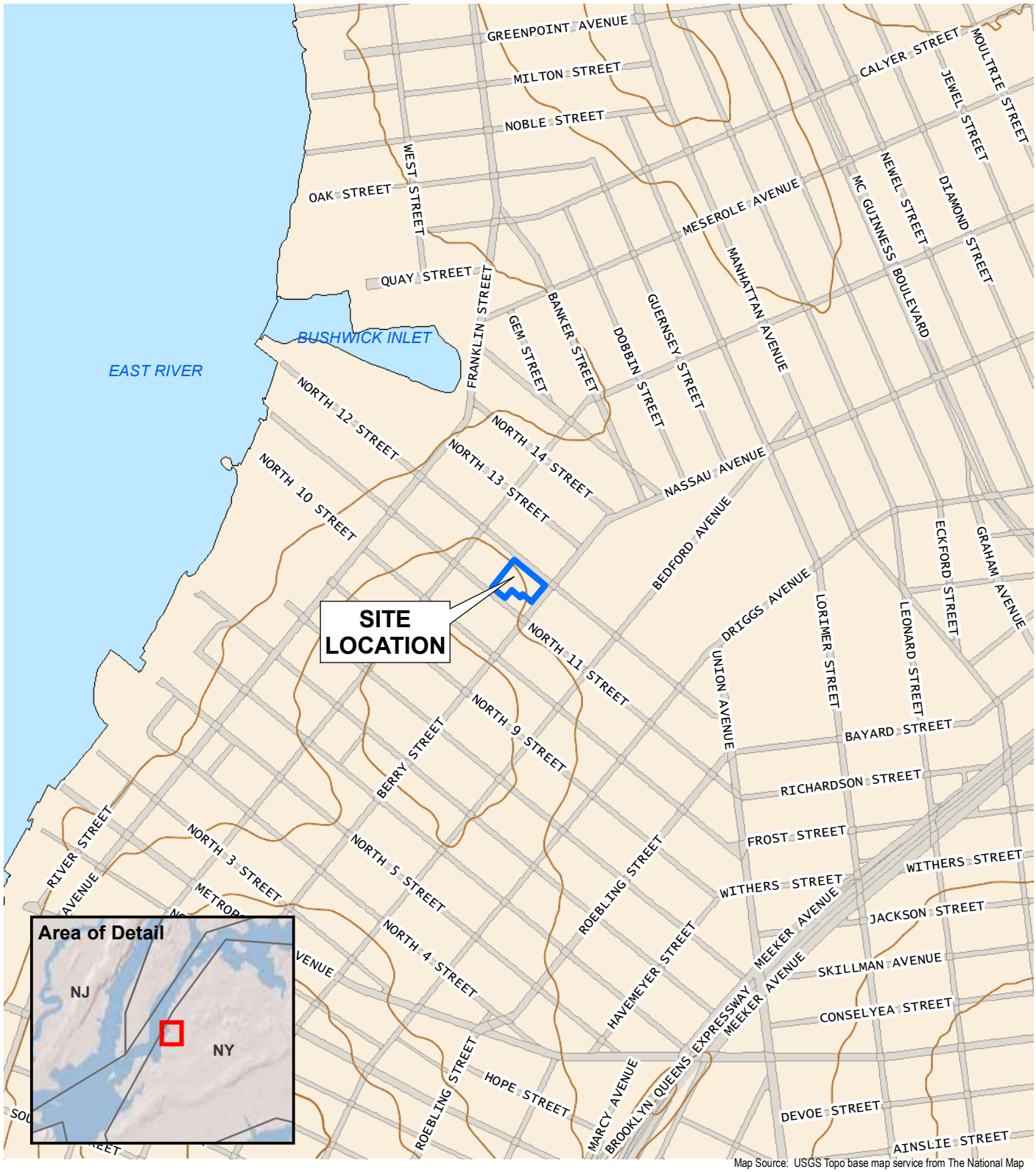
265		Current Resident		Unit 6Q		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
266		Current Resident		Unit PHA		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
267		Current Resident		Unit PHB		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
268		Current Resident		Unit PHC		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
269		Current Resident		Unit PHD		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
270		Current Resident		Unit PHE		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)
271		Current Resident		Unit PHF		34 Berry Street	Brooklyn	NY	11249	34 Berry Street Site (Kings)

Appendix C - Site Location Map



Map Source: USGS Topo base map service from The National Map

0 800 1,600

SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

34 Berry Street
Brooklyn, New York

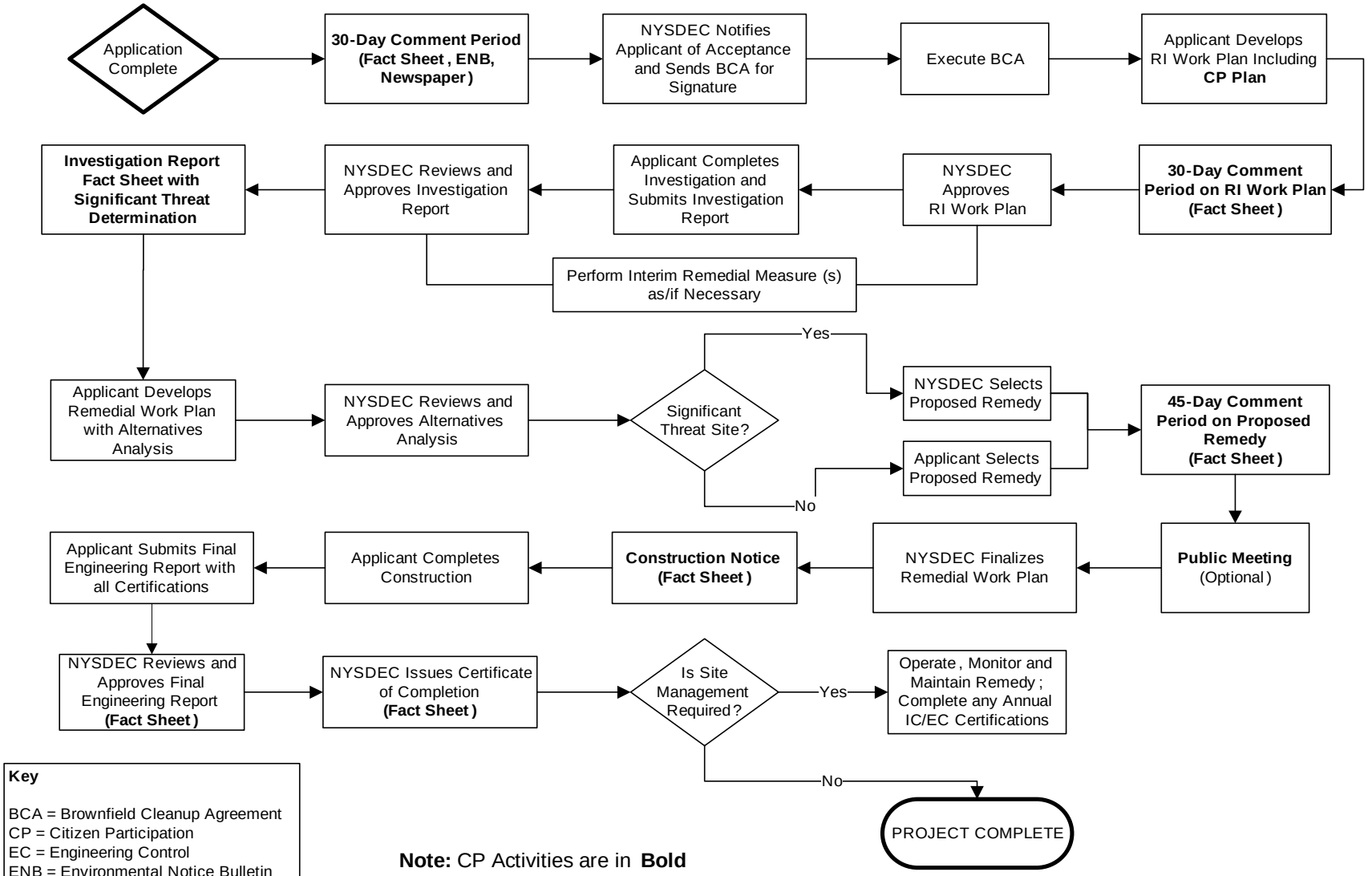
SITE LOCATION

DATE
4/26/2018

PROJECT NO.
11259

APPENDIX
C

Appendix D– Brownfield Cleanup Program Process



Key

BCA = Brownfield Cleanup Agreement
CP = Citizen Participation
EC = Engineering Control
ENB = Environmental Notice Bulletin
IC = Institutional Control
RI = Remedial Investigation

Note: CP Activities are in **Bold**

Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern (see instructions)

Site Name: 34 Berry Street

Site Number: C224268

Site Address and County: 34 Berry Street, Brooklyn, NY

Remedial Party(ies): 34 Berry Street LLC

Note: For Parts 1. – 3. the individuals, groups, organizations, businesses and units of government identified should be added to the site contact list as appropriate.

Part 1. List major issues of public concern and information the community wants. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and information needs. **Use this information as an aid to prepare or update the Major Issues of Public Concern section of the site Citizen Participation Plan.**
Contamination in the form of petroleum and solvent compounds that were associated with the historic uses is currently present in soil and groundwater below the site. Issues of public concern are associated with exposure to the existing contamination. Since the contamination exists below the site, direct contact is not readily feasible, and groundwater below the site is not pumped out or used. The potential for exposure is associated with vapors that evaporate from the contamination and have the potential to migrate up through the foundation and into buildings located on and directly adjacent to the 34 Berry Street property. The investigation work completed by the owner, which is completed under oversight of the NYSDEC, will be performed to confirm the potential for exposure to the existing contamination. It should be noted that the 34 Berry Street building contains measures as part of the building design to minimize the intrusion of vapors into the building. The remediation work completed by the owner to clean-up the site will be designed to remove the contamination and, therefore, reduce potential risk of exposure. For more information about the Site or BCP program, contact the NYSDEC or NYSDOH Project Manager. Contact information is located in Appendix A. Adjacent property occupants and owners will be kept informed about the progress of the Site cleanup activities. Periodic fact sheets will be sent by mail. Local, state, and federal officials will be contacted about the Site remediation activities. Next steps include finalizing the Remedial Investigation Work Plan (RIWP) and determining whether any additional investigations or reporting are warranted to support the Remedial Action Work Plan (RAWP). The Site will be cleaned up to levels that are safe for the current uses. Certain uses will be restricted and will be determined once cleanup is complete.

How were these issues and/or information needs identified?
The issues were identified by completing investigations that were conducted in accordance with NYSDEC, NYCDEP, or NYCOER-approved work plans. Each report documenting the investigations is available for review at the document repositories listed in Appendix A.

Part 2. List important information needed **from** the community, if applicable. Identify individuals, groups, organizations, businesses and/or units of government related to the information needed.
Information needed from the community includes any questions or concerns about site conditions and the BCP process, and any issues that may arise for the community during the investigation and remediation work. Each person listed as a site contact, plus anyone from the public, can reach out at any time to the Site's NYSDEC or NYSDOH project manager for information about the site or to express concerns. Each individual, group, organization, business, and government representative currently associated with this project are included in Attachment A.

How were these information needs identified?
These needs were identified by researching the conditions of the area surrounding the Site, and following the established NYSDEC requirements of the BCP.

Part 3. List major issues and information that need to be communicated **to** the community. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and/or information.
Information that the community needs includes the results of the remedial investigation, the results of site remediation, and opportunity to review work plans and reports. Each person listed as a site contact, plus anyone from the public, can reach out at any time to the Site's NYSDEC or NYSDOH project manager for information about the site or to express concerns. Each and any individual, group, organization, business, government entity, and other contacts are included in Attachment A.

Document repositories where copies of all documents regarding the investigation and remediation of the Site are available to the public, have been established at the New York Public Library – Williamsburg Branch, 240 Division Avenue, Brooklyn, NY 11211, NYSEDC – Region 2, 47-40 21st Street, Long Island City, NY 11101, and Brooklyn Community Board District 1, 435 Graham Avenue, Brooklyn, NY 11211.

How were these issues and/or information needs identified?
These needs were identified by researching the conditions of the area surrounding the Site, and following the established NYSDEC requirements of the BCP.

Part 4. Identify the following characteristics of the affected/interested community. This knowledge will help to identify and understand issues and information important to the community, and ways to effectively develop and implement the site citizen participation plan (mark all that apply):

a. Land use/zoning at and around site:
☒ **Residential** ☐ **Agricultural** ☒ **Recreational** ☒ **Commercial** ☐ **Industrial**

b. Residential type around site:
☒ **Urban** ☐ **Suburban** ☐ **Rural**

c. Population density around site:
☒ **High** ☐ **Medium** ☐ **Low**

d. Water supply of nearby residences:
☒ **Public** ☐ **Private Wells** ☐ **Mixed site**

e. Is part or all of the water supply of the affected/interested community currently impacted by the site?
☐ **Yes** ☒ **No**

Provide details if appropriate:
Not applicable

f. Other environmental issues significantly impacted/impacting the affected community?
☐ **Yes** ☒ **No**

Provide details if appropriate:
Not applicable

g. Is the site and/or the affected/interested community wholly or partly in an Environmental Justice Area?
☐ **Yes** ☒ **No**

h. Special considerations:

☐ **Language** ☐ **Age** ☐ **Transportation** ☐ **Other**

Explain any marked categories in **h:**
Not applicable

Part 5. The site contact list must include, at a minimum, the individuals, groups, and organizations identified in Part 2. of the Citizen Participation Plan under 'Site Contact List'. Are *other* individuals, groups, organizations, and units of government affected by, or interested in, the site, or its remedial program? (Mark and identify all that apply, then adjust the site contact list as appropriate.)

☐ **Non-Adjacent Residents/Property Owners:** Click here to enter text.

☒ **Local Officials:** See list in Appendix B of the Citizen Participation Plan

☒ **Media:** See list in Appendix B of the Citizen Participation Plan

☐ **Business/Commercial Interests:** Click here to enter text.

☐ **Labor Group(s)/Employees:** Click here to enter text.

☐ **Indian Nation:** Click here to enter text.

☒ **Citizens/Community Group(s):** See list in Appendix B of the Citizen Participation Plan

☒ **Environmental Justice Group(s):** See list in Appendix B of the Citizen Participation Plan

☒ **Environmental Group(s):** See list in Appendix B of the Citizen Participation Plan

☒ **Civic Group(s):** See list in Appendix B of the Citizen Participation Plan

☒ **Recreational Group(s):** See list in Appendix B of the Citizen Participation Plan

☐ **Other(s):** Click here to enter text.

Prepared/Updated By: Bryan Zieroff, AKRF, Inc. **Date:** 3/29/18

Reviewed/Approved By: Thomas V. Panzone **Date:** 4/23/18