OFFSITE INVESTIGATION REPORT

8 WALWORTH STREET
BROOKLYN, NY
NYSDEC SITE C224239

PREPARED FOR

TOLDOS YEHUDAH LLC

PREPARED BY:

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File No. 134860-002

Certification

This report documents the offsite investigation activities conducted at the Site at 8 Walworth Street, Brooklyn, New York.

I, James M. Bellew, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Revised Supplemental Remedial Investigation Report[1] was prepared in accordance with all 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(s) and any DER-approved modifications.

11 June 2021

James M. Bellew, Senior Associate *Date*

[1] Certification applies to remedial investigation activities conducted after the execution of the Brownfield Cleanup Agreement dated [1 March 2018].

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List of Acronyms and Abbreviations

A	
AA	Alternatives Analysis
AAR	Alternatives Analysis Report
Alpha	Alpha Analytical Laboratories, Inc.
AOCs	Areas of Concern
ASP	Analytical Services Protocol
AWQS	Ambient Water Quality Standards
B	
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bgs	below ground surface
C	
cis-1,2-DCE	cis-1,2-dichloroethene
COCs	Contaminants of Concern
CP-51	Commissioners Policy-51 *(specifically "October 2010 NYSDEC Commissioners Policy 51")*
CSM	Conceptual Site Model
CVOCs	chlorinated volatile organic compounds
D	
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichlroethene
DCE	Dichloroethene
DER-10	Division of Environmental Remediation-10 *(specifically "May 2010 NYSDEC Technical Guidance for Site Investigation and Remediation")*
DOT	Department of Transportation
DUSR	Data Usability Summary Report
E	
EBC	Environmental Business Consultants
Eastern	Eastern Environmental Solutions
EPA	U.S. Environmental Protection Agency
H	
FER	Final Engineering Report
Haley & Aldrich	Haley & Aldrich of New York
M	
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MDL	method detection limit
mg/kg	milligrams per kilogram

N

NYCRR	New York Codes, Rules and Regulations
NY-MCL	New York Maximum Concentrations Limit
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health

P

PCB	polychlorinated biphenyl
PCE	perchloroethene/tetrachloroethene
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PVC	polyvinyl chloride
PWG	P.W. Grosser Consulting
PID	Photoionization Detector

Q

QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QHHEA	Qualitative Human Health Exposure Assessment

R

RA	Remedial Action
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RCSCOs	Restricted Commercial Soil Cleanup Objectives
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan

S

SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
Site	the property located at 8 Walworth Street, Brooklyn, New York
SMP	Site Management Plan
SRI	Supplemental Remedial Investigation
SRIR	Supplemental Remedial Investigation Report
SRIWP	Supplemental Remedial Investigation Work Plan
SSDS	Sub-Slab Depressurization System
SVOC	Semi-Volatile Organic Compound

T

1,1,1-TCA	1,1,1-trichloroethane
TCE	trichloroethene
TCL	Target Compound List
Techtronic	Techtronics Ecological Corporation
TOGS 1.1.1	Technical and Operational Guidance Series 1.1.1 *(Specifically "June 1998 NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1*

	Ambient Water Quality Standards and Guidance Values, Class GA for the protection of a source of drinking water modified per the April 2000 addendum")
TPH	Total Petroleum Hydrocarbons
Toldos Yehudah	Toldos Yehudah LLC
trans-1,2-DCE	trans-1,2-Dichloroethene

U

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
USGS	United States Geologic Survey
UUSCOs	Unrestricted Use Soil Cleanup Objectives

V

VOCs	Volatile Organic Compounds

1. Introduction

This Offsite Investigation Report (OIR) was developed by Haley & Aldrich of New York (Haley & Aldrich) on behalf of Toldos Yehudah LLC (Toldos Yehudah) for the property located at 8 Walworth Street, Brooklyn, New York (the Site). This OIR was prepared as an addendum to the Supplemental Remedial Investigation Report (SRIR) submitted to New York State Department of Environmental Conservation (NYSDEC) in November 2020. The Site, identified as Block 1715 Lot 33 on the New York City tax map, is 3,910-square feet (sf) and is bounded by a vacant lot to the north, a warehouse to the south, Walworth Street to the east, and a vacant lot to the west. The Site location is shown in Figure 1 and the Site boundaries and surrounding land use is shown in Figure 2.

The Site is currently in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) identified as NYSDEC Site Number C224239 with Toldos Yehudah listed as a participant. The Site was operated by Techtronics Ecological Corporation (Techtronics) from 1962 through the 1990s. The Site is also identified in the Resource Conservation and Recovery Act (RCRA) database as a Large Quantity Generator under RCRA ID NYD000824334.

The activities detailed in this OIR were completed on 31 March through 2 April 2021 and were implemented in accordance with the "Offsite Investigation Work Plan" (OIWP) approved by NYSDEC on 18 February 2021 and provided in Appendix A.

1.1 PURPOSE AND OBJECTIVES

As part of the BCP requirements, a Remedial Investigation (RI) was conducted at the Site from November 2018 through February 2019. A Remedial Investigation Report (RIR), dated 9 September 2019, was submitted to NYSDEC by Environmental Business Consultants (EBC). On 12 November 2019, NYSDEC responded to EBC's submission noting the RIR indicated the presence of elevated chlorinated volatile organic compounds (CVOCs) in soil, groundwater, and soil vapor at the Site. Based on the RIR findings, NYSDEC requested additional vertical delineation of the nature and extent of CVOC contamination both on and offsite. In addition, an investigation of offsite properties was requested by NYSDEC in the RIR comments included in the 17 January 2020 response letter from the New York State Department of Health (NYSDOH), as well as comments discussed during an onsite meeting attended by Haley & Aldrich and NYSDEC on 26 February 2020. The Offsite Investigation Work Plan (OIWP) addressed the aforementioned comments by investigating offsite groundwater and soil. The Offsite Investigation Report is submitted in addendum to the Supplemental Remedial Investigator Report (SRIR) submitted to NYSDEC on 25 November 2020.

2. Site Background

2.1 SITE LOCATION AND DESCRIPTION

The Site, identified as Block 1715 Lot 33 on the New York City tax map, is 3,910 square feet and bounded by a vacant lot to the north, a warehouse to the south, Walworth Street to the east, and a vacant lot to the west. The Site location is shown on Figure 1. Existing Site features and surrounding land use are shown on Figure 2. The Site is currently a vacant one-story warehouse encompassing the entire lot, and the land is currently zoned as manufacturing M1-2. The Site is located in an urban area surrounded by light industrial, commercial, and residential properties served by municipal water.

2.2 GEOLOGY AND HYDROGEOLOGY

Stratigraphy observed during the Offsite Investigation from the surface down consists of historical fill material to depths as great as 4 to 5 feet, underlain by fine to medium sand with varying amounts of silt to approximately 15 feet below grade (ft bgs). From 15 to 45 ft bgs, brown to gray fine to coarse grained sands and gravels were observed and contained cobbles. Depth to groundwater ranged from 15 to 16 ft bgs and groundwater flow is from the north-northwest to the south-southeast.

2.3 SITE HISTORY

The Site was developed as early as 1887 with a one-story residence and shed on the south side of the property, a two-story storefront building with a single story garage in the middle of the Site along Walworth Street, and a three-story residence on the north side of the Site. The surrounding vicinity was primarily developed with residences, commercial buildings, and industrial/manufacturing use facilities. The Site remained largely unchanged through the early 1900s.

By 1918, the adjoining property to the west was occupied by a junk yard and was developed into an indoor parking garage by 1935. The Site remained developed with residences until 1950, when only the two-story residential structure and sheds remained present on the south side of the property. A one-story warehouse used for chemical drum storage was erected on the north side of the Site by 1965 and the northern and southern adjacent properties were used for paint storage and mixing in the mid-1960s. By 1977, the two-story residence to the north was no longer present, but the chemical drum warehouse remained. In 1982, the Site was redeveloped with the existing one-story warehouse building, occupied by Techtronics, and utilized for the mixing and storage of paints and other coatings. The adjoining property to the north was partially included in the Techtronics facility and labeled as “Techtronics A” with the 8 Walworth Site reported as “Techtronics B.” Techtronics ceased operations in the 1900s. The Site and neighboring properties have remained largely unchanged through the present.

Previous environmental investigations and regulatory history of the Site are detailed in the SRIWP submitted to NYSDEC in March 2020 and the Supplemental Remedial Investigation Report (SRIR) submitted to NYSDEC in November 2020.

2.4 REDEVELOPMENT PLANS

The redevelopment plan includes construction of a four-story mixed-use commercial and community facility. The proposed redevelopment will not include a cellar space. The upper floors will reach 57 feet above grade. A bulkhead will extend above the top of the fourth floor to 67 feet above grade. The first floor will consist of a lobby, worship areas, mechanical and meter rooms, an elevator, and bathrooms. The second through fourth floors will be used for storage and office space totaling 11 storage units and 15 offices. Each floor will be equipped with two bathrooms. A bulkhead located on the roof will house the elevator and machine rooms.

2.5 REGIONAL LAND USE

The Site is located in a mixed use residential, commercial, and light industrial area. The Site is bounded by a vacant lot to the north, a warehouse to the south, Walworth Street to the east beyond which are warehouse buildings and a vacant lot to the west. The vacant lot to the north, 480 Flushing Avenue, and the vacant lot to the west, 11 Spencer Street, are both currently enrolled in the NYSDEC BCP due to similar contaminants of concern. Eight schools or daycare facilities are located within one-quarter mile radius of the Site. The properties immediately surrounding the Site are zoned M1-2. The vacant lot to the north, 480 Flushing Avenue, and the vacant lot to the west, 11 Spencer Street, are both currently enrolled in the NYSDEC BCP due to similar contaminants of concern.

2.6 SUPPLEMENTAL REMEDIAL INVESTIGATION

Haley & Aldrich implemented the activities of the approved SRIWP in June and July 2020. Based on the results of SRI, the following conclusions have been identified:

1. Contaminants of concern for the Site are primarily CVOCs including TCE, PCE and cis-1,2,-dichloroethene which impact soil, groundwater and soil vapor.
2. There is a source area of contamination located on the northwestern portion of the site in the vicinity of MW02.
3. The origin of the CVOC contamination source is unknown but is likely attributed to former operations by Techtronics, a paints and coatings manufacturer. Additional impact to Site coming from the upgradient adjoining properties, 480 Flushing Avenue, and 11 Spencer Street, is highly probable due to the direction of groundwater flow from north-northwest to south-southeast. Analytical results of the SRI also provide further evidence of the presence of comingling groundwater plumes throughout the area as noted in previous investigations for the adjoining properties.
4. The on-Site CVOC contamination has been both horizontally and vertically delineated. CVOC concentrations dissipate in groundwater with depth throughout the Site indicating contamination is highest at the groundwater interface and smear zone.
5. Offsite contamination is likely partially a result of former and current area operations including adhesive manufacturing, tannery operations, foundry operations and casting cleaning and grinding operations.

Further details of the SRI were provided in the revised SRIR submitted to NYSDEC in November 2020.

3. Remedial Investigation Approach

3.1 PROJECT TEAM

A project team for the Site was created based on qualifications and experience with personnel suited for successfully completion of the project.

The NYSDEC Case Manager/Project Manager was Mr. Aaron Fisher. The Case Manager/Project Manager was responsible for overseeing the successful completion of the project work and adherence to the approved SRIWP on behalf of NYSDEC.

James Bellew was the Qualified Environmental Professional and Principal in Charge for this work. In this role, Mr. Bellew was responsible for the overall completion of each task as per the requirements outlined in this work plan and in accordance with the DER-10 guidance.

Mari Conlon was the Haley & Aldrich Project Manager for this work. In this role, Ms. Conlon managed the day-to-day tasks, including coordination and supervision of field engineers and scientists, adherence to the work plan and oversight of project schedule. As the Project Manager, Ms. Conlon was responsible for communications with the NYSDEC Case Manager regarding project status, schedule, issues and updates for project work.

Zachary Simmel was the field engineer responsible for implementing the field effort for this work. Mr. Simmel's responsibilities included implementing the work plan activities and directing the subcontractors to ensure successful completion of field activities.

The drilling subcontractor was Eastern Environmental Solutions (Eastern). Eastern provided a Geoprobe operator to implement the scope of work of the approved OIWP.

Samples were collected in laboratory prepared sample bottles (pre-preserved when appropriate), placed in ice-packed coolers maintained at approximately 4 degrees Celsius under standard chain of custody procedures and transported to Alpha Analytical Laboratories, Inc. (Alpha) of Westborough, Massachusetts (Certification No. 07010T). Alpha was responsible for analyzing the samples as per the analyses and methods identified in the approved OIWP.

3.2 SOIL BORING INSTALLATION AND SOIL SAMPLING

Two soil borings were installed to 45 ft bgs by a track-mounted sonic drill rig (Geoprobe®) operated by Eastern. Soil samples were collected from above the groundwater interface at 13 to 15 ft bgs using a stainless steel trowel or sampling spoon which was decontaminated after each use. Samples were collected directly into laboratory-provided clean bottle ware. VOC grab samples were collected using terra cores.

Soil was logged continuously by an engineer. The presence of staining, odors, if any, and photoionization detector response was noted.

Soil samples were analyzed for:

- Volatile Organic Compounds (VOCs) using U.S. Environmental Protection Agency (EPA) Method 5035;
- Polychlorinated biphenyls (PCBs) using EPA Method 8082; and
- Total Metals (including hexavalent chromium) by EPA Method 3050B

As per NYDSEC DER-10 requirements, soil samples were collected for emerging contaminants. Soil collected from 13 to 15 ft bgs in both soil borings were analyzed for:

- NYSDEC and Per- and Polyfluoroalkyl Substances (PFAS) List (21 compounds) by USEPA Method 537.1; and
- 1,4-dioxane by USEPA Method 8270

Samples analyzed for PFAS and 1,4-dioxane were collected and analyzed in accordance with the NYSDEC issued January 2020 “Guidelines for Sampling and Analysis of PFAS” and the June 2019 “Sampling for 1,4-dioxane and Per- and Polyfluoroalkyl Substances (PFAS) Under DECs Part 375 Remedial Programs,” respectively. Soil boring locations are shown in Figure 3.

3.3 PERMANENT MONITORING WELL INSTALLATION AND GROUNDWATER SAMPLING

Two-inch clustered permanent monitoring wells were installed in two offsite locations. Monitoring wells were installed using an 8140LS Sonic drill rig operated by Eastern using 8-inch diameter casing. Monitoring well clusters included a shallow well screened from 10 to 20 feet bgs, an intermediate well screened from 30 to 35 feet bgs and a deep well screened from 40 to 45 feet bgs. Groundwater was encountered at approximately 15 to 16 feet bgs. In each cluster, the intermediate and deep wells were installed into one casing and the shallow well was installed in another casing. Wells were installed with two inches of annular space, with flush mount manhole covers and concrete pads. Wells were screened with 0.010-inch slotted PVC. Wells were installed with #00 Morie or equivalent placed to a minimum of 2 feet above the screen, and a bentonite seal was placed directly above the filter pack. Installation included use of sonic drilling techniques. Well construction logs are provided in Appendix B. One monitoring well cluster was installed per day as detailed in the daily reports submitted to NYSDEC included in Appendix C.

Monitoring wells were developed by surging a pump. Development was completed until the water turbidity measured 50 nephelometric turbidity units (NTU) or less or 10 well volumes were removed, if possible. Well development logs are provided in Appendix D.

The well casings were surveyed by a New York State licensed surveyor on 14 May 2021. Monitoring well locations are shown in Figure 3. During surveying, Haley & Aldrich performed a synoptic monitoring well gauging event of the offsite monitoring wells and the onsite monitoring wells installed as part of the SRI. Results of the gauging event are provided in Appendix E. Groundwater flows from north-northwest to south-southeast. A groundwater contour map is provided in Figure 4.

Groundwater monitoring wells were sampled utilizing low flow sampling procedures for groundwater sampling. Prior to sampling each monitoring well the water level was measured using an electronic water level meter. Groundwater from each well was purged using low pumping rates (less than 500 milliliters per minute) to limit drawdown of the water level. Peristaltic and bladder pumps were used during this groundwater sampling event. Dedicated disposable field equipment used at each well included high density polyethylene and silicon tubing. The bladder pumps were decontaminated, and the bladders were replaced between monitoring wells. Wells were purged until turbidity, pH, temperature, dissolved oxygen, and specific conductivity stabilized. Field measurements collected from the flow cell were logged and are included in Appendix F.

Samples were collected from the shallow, intermediate, and deep zones of monitoring wells MW-06 and MW-07 and were analyzed for:

- TCL Volatile Organic Compounds (VOCs) using EPA method 8260;
- Polychlorinated Biphenyls (PCBs) using EPA Method 8280A;
- NYSDEC Per- and Polyfluoroalkyl Substances (PFAS) List (21 compounds) by EPA Method 537; and
- 1,4-dioxane by EPA method 8270 SIM.

Samples analyzed for PFAS and 1,4-dioxane were collected and analyzed in accordance with the NYSDEC issued January 2020 “Guidelines for Sampling and Analysis of PFAS” and the June 2019 “Sampling for 1,4-dioxane and Per- and Polyfluoroalkyl Substances (PFAS) Under DECs Part 375 Remedial Programs,” respectively.

3.3.1 Deviations from the OIWP

Offsite soil vapor sampling was not conducted during this investigation due to access issues. A formal access request was sent via certified mail to the owners of several properties in the vicinity of the subject Site in January 2021. A response was only received from 490 Flushing LLC, the owner of Block 1717 Lots 26, 29, 31 allowing access to the property. Details of requests and the response are included in the OIWP.

In the comments received from NYSDEC regarding the OIWP on 18 February 2021, NYSDEC stated that a field survey/observation, an Indoor Air Quality Questionnaire, and a Building Inventory form of 490 Flushing Avenue must be completed and submitted to the NYSDEC and the NYSDOH prior to any SVI sampling.

A confirmation and request for date of access was sent via certified mail to 490 Flushing Avenue in February 2021 as well as a second copy delivered in person by H&A personnel to the property on 16 March 2021. The confirmation and request for access date was left under the door as no tenants were available at the building. No response was received to date. While on Site completing the installation of groundwater monitoring wells on 31 March 2021, field staff made an inquiry at the property regarding access to complete the Indoor Air Questionnaire, building inventory, and subsequent vapor sampling. The building owner stated no access would be provided to the interior of the building and would only permit sampling in the sidewalks adjacent to the building. NYSDEC was notified of this via email on 30 March 2021.

3.4 QUALITY ASSURANCE/QUALITY CONTROL

The Offsite Investigation was conducted in accordance with Haley & Aldrich's Quality Assurance Project Plan (QAPP) provided in Appendix B of the SRIR. Haley & Aldrich's sampling program included several types of quality assurance/quality control (QA/QC) samples and measures to ensure the usability of the data. QA/QC samples included equipment rinsate/field blanks, trip blanks, sample duplicates, and matrix spike/matrix spike duplicates (MS/MSDs).

When applicable, the sample result summary tables list the laboratory method detection limit (MDL) at which a compound was non-detectable. The laboratory results were reported to the sample-specific practical quantitation limit (PQL), equal to the sample-specific MDL, supported by the instrument calibrations.

The reliability of laboratory data is supported by compliance with sample holding times and laboratory MDLs below cleanup criteria. The accuracy and precision of the laboratory analytical methods were maintained by using calibration and calibration verification procedures, laboratory control samples, and surrogate, matrix, and analytical spikes. A review of the laboratory data packages indicates that holding times were met and no significant non-conformance issues were reported. Details of the laboratory report are provided in Appendix G. Data was validated as detailed in Section 6.4 and summarized in Data Usability Summary Reports (DUSRs) included in Appendix H.

3.5 REPORTING

Daily reports were provided to NYSDEC including a summary of Site activities, investigation progress updates, and photographs of field work. The submitted daily reports are included in Appendix C.

3.6 INVESTIGATION DERIVED WASTE

Soil cuttings generated during monitor well installation was separated and placed into sealed and labeled Department of Transportation (DOT)-approved 55-gallon drum pending characterization and offsite disposal. Groundwater purged from the monitoring wells during development and sample collection was placed into DOT -approved 55-gallon drum pending offsite disposal.

4. Health and Safety

The work outlined above was completed under a Site-specific Health and Safety Plan (HASP) in accordance with Occupational Safety and Health Administration Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations. Work was completed in Modified Level D personal protective equipment (PPE).

The offsite investigation activities were conducted in accordance with a Site-specific Community Air Monitoring Plan (CAMP). CAMP data was provided to NYSDEC in the daily reports included in Appendix C.

5. Contaminants of Concern and Nature and Extent of Contamination

5.1 APPLICABLE STANDARDS

Soil analytical results were compared to NYSDEC 6NYCRR Part 375 UUSCOs and RRSCOs.

Groundwater analytical results were compared to 6NYCRR Part 703.5 NYSDEC AWQS.

5.2 SOIL SAMPLING RESULTS

Tables 1 through 1d summarize the analytical results from the soil sampling event. Figure 5 shows a summary of exceedances in soil results. Details of the soil boring logs are provided in Appendix I.

Volatile Organic Compounds

No VOCs were detected in soil samples above the UUSCOs or RRSCOs. Tetrachloroethene was detected above method detection limits in sample B06 (13-15') at 0.0028 mg/kg but not exceeding standards. No other VOCs were detected in any soil sample above method detection limits.

Polychlorinated biphenyls

PCBs were not detected in soil samples above method detection limits.

Emerging Contaminants

1,4-dioxane was not detected above method detection limits in any soil sample.

Perfluorooctanesulfonic Acid (PFOS) was detected in B06 (13-15') above the method detection limit at 0.00121 mg/kg. No other perfluorinated alkyl acids (PFOA/PFAS) were detected above method detection limits in any soil sample.

Metals

Trivalent chromium was detected in both samples above method detection limits, but not exceeding UUSCOs or RRSCOs. Hexavalent chromium was not detected above method detection limits in any soil sample. Several other metals including arsenic, barium, copper, lead, manganese, nickel, and zinc were detected in both borings above method detection limits but not exceeding UUSCOs or RRSCOs.

5.3 GROUNDWATER SAMPLING RESULTS

Tables 2a through 2c summarize the analytical results from the groundwater sampling event. Figure 6 shows a summary of exceedances in groundwater results. Sample logs are provided in Appendix F.

Volatile Organic Compounds

CVOCs, including PCE and TCE and daughter products were detected in both groundwater monitoring well clusters. PCE and was detected at a maximum concentration of 210 µg/L in MW06-I and TCE was detected at a maximum concentration of 140 µg/L in MW06-S. Cis-1,2-dichloroethene was detected at a maximum concentration of 530 µg/L in MW06-S and chloroform was detected at a maximum concentration of 10 µg/L in MW06-I. Several other daughter products were found specifically in MW06-S, including 1,1-DCA (13 µg/L), 1,1,1-trichloroethane (9.2 µg/L), vinyl chloride (210 µg/L), and 1,1-DCE (7.4 µg/L). PCE and TCE were also detected in the MW07 well cluster with maximum concentrations of both in MW07-D at 110 µg/L and 13 µg/L respectively.

Additionally, several petroleum related VOCs were detected above AWQS in the MW07 well cluster only, with the greatest concentrations detected in MW07-D. Toluene (6.4 µg/L), ethylbenzene (8 µg/L), naphthalene (15 µg/L), o-xylene (20 µg/L), 1,3,5-trimethylbenzene (7.8 µg/L) were detected in MW07-D only. 1,2,4-trimethylbenzene was detected in both MW07-I and MW07-D at a maximum concentration of 7.8 µg/L in MW07-D and p/m-xylene was also detected in both wells at a maximum concentration of 35 µg/L in MW07-D.

Polychlorinated biphenyls

No PCBs were detected above the method detection limit in any groundwater sample.

Emerging Contaminants

Emerging contaminants 1,4-dioxane and PFOA/PFAS were compared to the New York Maximum Concentrations Limit (NY-MCL) for drinking water, adopted by NYSDOH in July 2020.

1,4-dioxane was detected above method detection limits in MW06-S at 0.534 µg/L below the NY-MCL. 1,4-dioxane was not detected above method detection limits in any other sample.

PFOA/PFAS compounds were detected above the NY-MCL for drinking water of 0.01 µg/L in each groundwater sample analyzed for these contaminants. Elevated PFOA/PFAS compounds include Perfluorobutanoic acid (PFBA), Perfluoropentanoic Acid (PFPeA), Perfluorobutanesulfonic Acid (PFBS), Perfluorohexanoic Acid (PFHxA), Perfluoroheptanoic Acid (PFHpA), Perfluorooctanoic Acid (PFOA), and Perfluorooctanesulfonic Acid (PFOS). The total concentration of PFAS compounds ranged from 0.0528 µg/L in MW07-I to a maximum concentration of 0.551 µg/L in MW06-S.

Figure 7 shows a summary of exceedances in emerging contaminant groundwater results.

5.4 DATA VALIDATION

DUSRs were created to confirm the compliance of methods with the protocols described in the NYSDEC ASP. DUSRs are provided in Appendix H.

5.5 DATA USE

Validated analytical data, supplied in ASP Category B Data Packages in Appendix G, have been submitted to the NYSDEC EQuIS database in an Electronic Data Deliverable package.

6. Conceptual Site Model

Results of the Offsite Investigation confirm aspects of the conceptual site model developed in the SRIR including definition of the areas of concern, potential on-site sources and considerations regarding offsite sources.

Based on the analytical results of the Offsite Investigation, CVOC contamination is present in groundwater offsite with concentrations significantly decreasing with distance from the Site. Results from the monitoring well cluster MW06, located on the western sidewalk most proximal to the Site, show significantly lowered concentrations of CVOCs than concentrations present at the Site. At MW06 the highest concentrations of CVOCs and daughter products are observed at the shallow and intermediate depths. Concentrations of CVOCs are decreased in MW07 resulting in only PCE and TCE present above AWQS with all daughter products absent.

Additionally, several petroleum related VOCs are present at concentrations above the AWQS in the MW07 well cluster. Since petroleum related VOCs are present in MW07 but not MW06 or on the Site in significant measure this indicates that there is likely an offsite source of petroleum related impacts possibly from the other historical industrial and manufacturing facilities currently and formerly operating in the area.

7. Human Health and Environmental Risk Evaluation

The results from the Offsite Investigation confirm the findings of the Human Health and Environmental Risk Assessment detailed in the SRIR submitted to NYSDEC on 25 November 2020.

8. Conclusions and Recommendations

8.1 CONCLUSIONS

Based on the analytical results of the Offsite Investigation, it appears that CVOC contamination is present offsite with concentrations significantly decreasing with distance from the Site. CVOC contamination is greater in the MW06 cluster closer to the site and appears to decrease in MW07. Additionally, petroleum related VOCs present in the MW07 well cluster indicates that there is likely an offsite source of petroleum related impacts possibly from the other historical industrial and manufacturing facilities currently and formerly operating in the area.

8.2 RECOMMENDATIONS

Based on the results of this Offsite Investigation, it has been confirmed that CVOC contamination is present offsite. In order to proceed with the redevelopment of the Site, Haley & Aldrich is evaluating the utilization of a combination of remedial techniques to prevent migration of contamination downgradient. Applicable strategies and technologies may include, but are not limited to, source removal, in-situ remediation of groundwater and soil vapor, and installation of downgradient engineering controls. Viable technologies will need to be further evaluated for protection of public health downgradient of the Site.

References

1. Supplemental Remedial Investigation Report, Prepared by Haley & Aldrich of New York, prepared for Toldos Yehudah, LLC and the New York State Department of Environmental Conservation, November 2020

2. Phase II Environmental Site Assessment, 12-18 Walworth Street, December 2007, Prepared by P.W. Grosser Consulting, Prepared for AAA Group

3. Soil Vapor Intrusion Report – 8 Walworth Street, May 2017, Prepared by Environmental Business Consultants, Prepared for the New York State Department of Environmental Conservation

4. Brownfield Cleanup Program Application. 8 Walworth Street, Brooklyn, New York, June 2017, Prepared by Toldos Yehudah, LLC & Environmental Business Consultants, Prepared for the New York State Department of Environmental Conservation

5. Remedial Investigation Report - 8 Walworth Street Site, September 2019, Prepared by Environmental Business Consultants, Prepared for the New York State Department of Environmental Conservation

6. Program Policy DER-10, “Technical Guidance for Site Investigation and Remediation,” May 2010, Prepared by New York State Department of Environmental Conservation

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TABLES

Table 1a. Offsite Investigation Volatile Organic Compound Analytical Results in Soil
8 Walworth Street, Brooklyn, NY
BCP Site C224239

LOCATION				B07 (13-15')		B07 (13-15')		B06 (13-15')		DUP-033121	
SAMPLING DATE				3/30/2021		3/31/2021		3/31/2021		3/31/2021	
LAB SAMPLE ID				L2115845-01		L2116132-03		L2116132-01		L2116132-02	
SAMPLE TYPE				SOIL		SOIL		SOIL		SOIL	
	NY-RESRR	NY-UNRES	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035											
Methylene chloride	100	0.05	mg/kg	0.0086	U	-	-	0.0046	U	0.0044	U
1,1-Dichloroethane	26	0.27	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
Chloroform	49	0.37	mg/kg	0.0026	U	-	-	0.0014	U	0.0013	U
Carbon tetrachloride	2.4	0.76	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
1,2-Dichloropropane			mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
Dibromochloromethane			mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
1,1,2-Trichloroethane			mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
Tetrachloroethene	19	1.3	mg/kg	0.00086	U	-	-	0.0028		0.003	
Chlorobenzene	100	1.1	mg/kg	0.00086	U	-	-	0.00046	U	0.00044	U
Trichlorofluoromethane			mg/kg	0.0069	U	-	-	0.0036	U	0.0035	U
1,2-Dichloroethane	3.1	0.02	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
1,1,1-Trichloroethane	100	0.68	mg/kg	0.00086	U	-	-	0.00046	U	0.00044	U
Bromodichloromethane			mg/kg	0.00086	U	-	-	0.00046	U	0.00044	U
trans-1,3-Dichloropropene			mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
cis-1,3-Dichloropropene			mg/kg	0.00086	U	-	-	0.00046	U	0.00044	U
1,3-Dichloropropene, Total			mg/kg	0.00086	U	-	-	0.00046	U	0.00044	U
1,1-Dichloropropene			mg/kg	0.00086	U	-	-	0.00046	U	0.00044	U
Bromoform			mg/kg	0.0069	U	-	-	0.0036	U	0.0035	U
1,1,2,2-Tetrachloroethane			mg/kg	0.00086	U	-	-	0.00046	U	0.00044	U
Benzene	4.8	0.06	mg/kg	0.00086	U	-	-	0.00046	U	0.00044	U
Toluene	100	0.7	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
Ethylbenzene	41	1	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
Chloromethane			mg/kg	0.0069	U	-	-	0.0036	U	0.0035	U
Bromomethane			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
Vinyl chloride	0.9	0.02	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
Chloroethane			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,1-Dichloroethene	100	0.33	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
trans-1,2-Dichloroethene	100	0.19	mg/kg	0.0026	U	-	-	0.0014	U	0.0013	U
Trichloroethene	21	0.47	mg/kg	0.00086	U	-	-	0.00031	J	0.00026	J
1,2-Dichlorobenzene	100	1.1	mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,3-Dichlorobenzene	49	2.4	mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,4-Dichlorobenzene	13	1.8	mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
Methyl tert butyl ether	100	0.93	mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
p/m-Xylene			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
o-Xylene			mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
Xylenes, Total	100	0.26	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
cis-1,2-Dichloroethene	100	0.25	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
1,2-Dichloroethene, Total			mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
Dibromomethane			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
Styrene			mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
Dichlorodifluoromethane			mg/kg	0.017	U	-	-	0.0091	U	0.0088	U
Acetone	100	0.05	mg/kg	0.017	U	-	-	0.0091	U	0.0088	U
Carbon disulfide			mg/kg	0.017	U	-	-	0.0091	U	0.0088	U
2-Butanone	100	0.12	mg/kg	0.017	U	-	-	0.0091	U	0.0088	U
Vinyl acetate			mg/kg	0.017	U	-	-	0.0091	U	0.0088	U
4-Methyl-2-pentanone			mg/kg	0.017	U	-	-	0.0091	U	0.0088	U
1,2,3-Trichloropropane			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
2-Hexanone			mg/kg	0.017	U	-	-	0.0091	U	0.0088	U
Bromochloromethane			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
2,2-Dichloropropane			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,2-Dibromoethane			mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
1,3-Dichloropropane			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,1,1,2-Tetrachloroethane			mg/kg	0.00086	U	-	-	0.00046	U	0.00044	U
Bromobenzene			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
n-Butylbenzene	100	12	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
sec-Butylbenzene	100	11	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
tert-Butylbenzene	100	5.9	mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
o-Chlorotoluene			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
p-Chlorotoluene			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,2-Dibromo-3-chloropropane			mg/kg	0.0052	U	-	-	0.0027	U	0.0026	U
Hexachlorobutadiene			mg/kg	0.0069	U	-	-	0.0036	U	0.0035	U
Isopropylbenzene			mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
p-Isopropyltoluene			mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
Naphthalene	100	12	mg/kg	0.0069	U	-	-	0.0036	U	0.0035	U
Acrylonitrile			mg/kg	0.0069	U	-	-	0.0036	U	0.0035	U
n-Propylbenzene	100	3.9	mg/kg	0.0017	U	-	-	0.00091	U	0.00088	U
1,2,3-Trichlorobenzene			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,2,4-Trichlorobenzene			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,3,5-Trimethylbenzene	52	8.4	mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,2,4-Trimethylbenzene	52	3.6	mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,4-Dioxane	13	0.1	mg/kg	0.14	U	-	-	0.073	U	0.07	U
p-Diethylbenzene			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
p-Ethyltoluene			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
1,2,4,5-Tetramethylbenzene			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
Ethyl ether			mg/kg	0.0034	U	-	-	0.0018	U	0.0018	U
trans-1,4-Dichloro-2-butene			mg/kg	0.0086	U	-	-	0.0046	U	0.0044	U

Notes:
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria
U- Not detected at the reported detection limit for the sample
J- Estimated result

Table 1b. Offsite Investigation Polychlorinated Biphenyls Analytical Results in Soil
8 Walworth Street, Brooklyn, NY
BCP Site C224239

LOCATION				B07 (13-15')		B07 (13-15')		B06 (13-15')		DUP-033121	
SAMPLING DATE				3/30/2021		3/31/2021		3/31/2021		3/31/2021	
LAB SAMPLE ID				L2115845-01		L2116132-03		L2116132-01		L2116132-02	
SAMPLE TYPE				SOIL		SOIL		SOIL		SOIL	
	NY-RESRR	NY-UNRES	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Polychlorinated Biphenyls by GC											
Aroclor 1016	1	0.1	mg/kg	0.0365	U	-	-	0.0361	U	0.0368	U
Aroclor 1221	1	0.1	mg/kg	0.0365	U	-	-	0.0361	U	0.0368	U
Aroclor 1232	1	0.1	mg/kg	0.0365	U	-	-	0.0361	U	0.0368	U
Aroclor 1242	1	0.1	mg/kg	0.0365	U	-	-	0.0361	U	0.0368	U
Aroclor 1248	1	0.1	mg/kg	0.0365	U	-	-	0.0361	U	0.0368	U
Aroclor 1254	1	0.1	mg/kg	0.0365	U	-	-	0.0361	U	0.0368	U
Aroclor 1260	1	0.1	mg/kg	0.0365	U	-	-	0.0361	U	0.0368	U
Aroclor 1262	1	0.1	mg/kg	0.0365	U	-	-	0.0361	U	0.0368	U
Aroclor 1268	1	0.1	mg/kg	0.0365	U	-	-	0.0361	U	0.0368	U
PCBs, Total	1	0.1	mg/kg	0.0365	U	-	-	0.0361	U	0.0368	U

Notes:
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria
U- Not detected at the reported detection limit for the sample
J- Estimated result

Table 1c. Offsite Investigation Metals Analytical Results in Soil
8 Walworth Street, Brooklyn, NY
BCP Site C224239

LOCATION				B07 (13-15')		B07 (13-15')		B06 (13-15')		DUP-033121	
SAMPLING DATE				3/30/2021		3/31/2021		3/31/2021		3/31/2021	
LAB SAMPLE ID				L2115845-01		L2116132-03		L2116132-01		L2116132-02	
SAMPLE TYPE				SOIL		SOIL		SOIL		SOIL	
	NY-RESRR	NY-UNRES	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Total Metals											
Aluminum, Total			mg/kg	5160		-	-	5530		5410	
Antimony, Total			mg/kg	4.29	U	-	-	4.43	U	4.2	U
Arsenic, Total	16	13	mg/kg	1.25		-	-	1.32		1.23	
Barium, Total	400	350	mg/kg	42.4		-	-	42.3		40.7	
Beryllium, Total	72	7.2	mg/kg	0.369	J	-	-	0.372	J	0.378	J
Cadmium, Total	4.3	2.5	mg/kg	0.378	J	-	-	0.363	J	0.344	J
Calcium, Total			mg/kg	620		-	-	694		704	
Chromium, Total			mg/kg	15.1		-	-	14.3		16.7	
Cobalt, Total			mg/kg	6.87		-	-	7.84		7.32	
Copper, Total	270	50	mg/kg	13.3		-	-	12.8		11.6	
Iron, Total			mg/kg	17600		-	-	19400		17900	
Lead, Total	400	63	mg/kg	7.28		-	-	5.95		5.57	
Magnesium, Total			mg/kg	1750		-	-	1820		1940	
Manganese, Total	2000	1600	mg/kg	412		-	-	385		352	
Mercury, Total	0.81	0.18	mg/kg	0.07	U	-	-	0.074	U	0.074	U
Nickel, Total	310	30	mg/kg	11.3		-	-	11.4		11.2	
Potassium, Total			mg/kg	1130		-	-	1180		1250	
Selenium, Total	180	3.9	mg/kg	1.72	U	-	-	1.77	U	1.68	U
Silver, Total	180	2	mg/kg	0.859	U	-	-	0.885	U	0.84	U
Sodium, Total			mg/kg	118	J	-	-	89.2	J	87.7	J
Thallium, Total			mg/kg	1.72	U	-	-	1.77	U	1.68	U
Vanadium, Total			mg/kg	26.2		-	-	26.3		25	
Zinc, Total	10000	109	mg/kg	29		-	-	30.9		30	
General Chemistry											
Chromium, Trivalent	180	30	mg/kg	15		-	-	14		17	
Solids, Total			%	90		87.9		90		89.8	
Chromium, Hexavalent	110	1	mg/kg	0.889	U	-	-	0.889	U	0.891	U

Notes:
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria
U- Not detected at the reported detection limit for the sample
J- Estimated result

Table 1d. Offsite Investigation Emerging Contaminants Analytical Results in Soil
8 Walworth Street, Brooklyn, NY
BCP Site C224239

LOCATION					B06 (13-15')		DUP-033121		B07 (13-15')	
SAMPLING DATE					3/31/2021		3/31/2021		3/31/2021	
LAB SAMPLE ID					L2116132-01		L2116132-02		L2116132-03	
SAMPLE TYPE					SOIL		SOIL		SOIL	
	NY-RESC	NY-RESRR	NY-UNRES	Units	Results	Qual	Results	Qual	Results	Qual
Perfluorinated Alkyl Acids by Isotope Dilution										
Perfluorobutanoic Acid (PFBA)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluoropentanoic Acid (PFPeA)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluorobutanesulfonic Acid (PFBS)				mg/kg	0.000251	U	0.00025	U	0.000266	U
Perfluorohexanoic Acid (PFHxA)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluoroheptanoic Acid (PFHpA)				mg/kg	0.000251	U	0.00025	U	0.000266	U
Perfluorohexanesulfonic Acid (PFHxS)				mg/kg	0.000251	U	0.00025	U	0.000266	U
Perfluorooctanoic Acid (PFOA)				mg/kg	0.000043	J	0.00025	U	0.000062	J
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluoroheptanesulfonic Acid (PFHpS)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluorononanoic Acid (PFNA)				mg/kg	0.000251	U	0.00025	U	0.000266	U
Perfluorooctanesulfonic Acid (PFOS)				mg/kg	0.00121		0.000478		0.000266	U
Perfluorodecanoic Acid (PFDA)				mg/kg	0.000251	U	0.00025	U	0.000266	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)				mg/kg	0.000503	U	0.0005	U	0.000532	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluoroundecanoic Acid (PFUnA)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluorodecanesulfonic Acid (PFDS)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluorooctanesulfonamide (FOSA)				mg/kg	0.000503	U	0.0005	U	0.000532	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluorododecanoic Acid (PFDoA)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluorotridecanoic Acid (PFTrDA)				mg/kg	0.000503	U	0.0005	U	0.000532	U
Perfluorotetradecanoic Acid (PFTA)				mg/kg	0.000503	U	0.0005	U	0.000532	U
PFOA/PFOS, Total				mg/kg	0.00125	J	0.000478		0.000062	J
Semivolatile Organics by GC/MS										
1,4-Dioxane	130	13	0.1	mg/kg	0.028	U	0.027	U	-	-

Notes:
NY-RESC: New York NYCRR Part 375 Commercial Criteria
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria
NY-UNRES: New York NYCRR Prat 375 New York Unrestricted Use Criteria
U- Not detected at the reported detection limit for the sample
J- Estimated result

Table 2a. Offsite Investigation Volatile Organic Compound Analytical Results in Groundwater
8 Walworth Street, Brooklyn, NY
BCP Site C224239

LOCATION			MW06-S		MW06-S		MW06-I		MW06-I		MW06-D		MW07-S	
SAMPLING DATE			4/1/2021		4/1/2021		4/1/2021		4/1/2021		4/1/2021		4/1/2021	
LAB SAMPLE ID			L2116506-01		L2116506-01 R1		L2116506-02		L2116506-02 R1		L2116506-03		L2116506-04	
SAMPLE TYPE			WATER		WATER		WATER		WATER		WATER		WATER	
	NY-AWQS	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by GC/MS														
Methylene chloride	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,1-Dichloroethane	5	ug/l	13		-	-	2.5	U	-	-	2.5	U	2.5	U
Chloroform	7	ug/l	7.8		-	-	10		-	-	8		2.5	U
Carbon tetrachloride	5	ug/l	1.2	U	-	-	0.5	U	-	-	0.5	U	0.5	U
1,2-Dichloropropane	1	ug/l	2.5	U	-	-	1	U	-	-	1	U	1	U
Dibromochloromethane	50	ug/l	1.2	U	-	-	0.5	U	-	-	0.5	U	0.5	U
1,1,2-Trichloroethane	1	ug/l	3.8	U	-	-	1.5	U	-	-	1.5	U	1.5	U
Tetrachloroethene	5	ug/l	18		-	-	210	E	210		150		7.5	
Chlorobenzene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Trichlorofluoromethane	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,2-Dichloroethane	0.6	ug/l	1.2	U	-	-	0.5	U	-	-	0.5	U	0.5	U
1,1,1-Trichloroethane	5	ug/l	9.2		-	-	2.5	U	-	-	2.5	U	2.5	U
Bromodichloromethane	50	ug/l	1.2	U	-	-	0.5	U	-	-	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	ug/l	1.2	U	-	-	0.5	U	-	-	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	ug/l	1.2	U	-	-	0.5	U	-	-	0.5	U	0.5	U
1,3-Dichloropropene, Total		ug/l	1.2	U	-	-	0.5	U	-	-	0.5	U	0.5	U
1,1-Dichloropropene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Bromoform	50	ug/l	5	U	-	-	2	U	-	-	2	U	2	U
1,1,2,2-Tetrachloroethane	5	ug/l	1.2	U	-	-	0.5	U	-	-	0.5	U	0.5	U
Benzene	1	ug/l	1.2	U	-	-	0.22	J	-	-	0.21	J	0.5	U
Toluene	5	ug/l	6.2	U	-	-	0.74	J	-	-	2.5	U	2.5	U
Ethylbenzene	5	ug/l	6.2	U	-	-	0.74	J	-	-	2.5	U	2.5	U
Chloromethane		ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Bromomethane	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Vinyl chloride	2	ug/l	210		-	-	0.44	J	-	-	0.1	J	1	U
Chloroethane	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,1-Dichloroethene	5	ug/l	7.4		-	-	0.5	U	-	-	0.5	U	0.5	U
trans-1,2-Dichloroethene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Trichloroethene	5	ug/l	140		-	-	45		-	-	21		2.8	
1,2-Dichlorobenzene	3	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,3-Dichlorobenzene	3	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,4-Dichlorobenzene	3	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Methyl tert butyl ether	10	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
p/m-Xylene	5	ug/l	2.6	J	-	-	3.2		-	-	2.4	J	2.4	J
o-Xylene	5	ug/l	6.2	U	-	-	1.8	J	-	-	1.6	J	1.6	J
Xylenes, Total		ug/l	2.6	J	-	-	5	J	-	-	4	J	4	J
cis-1,2-Dichloroethene	5	ug/l	530	E	530		10		-	-	4.5		2.5	U
1,2-Dichloroethene, Total		ug/l	530		-	-	10		-	-	4.5		2.5	U
Dibromomethane	5	ug/l	12	U	-	-	5	U	-	-	5	U	5	U
1,2,3-Trichloropropane	0.04	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Acrylonitrile	5	ug/l	12	U	-	-	5	U	-	-	5	U	5	U
Styrene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Dichlorodifluoromethane	5	ug/l	12	U	-	-	5	U	-	-	5	U	5	U
Acetone	50	ug/l	12	U	-	-	5	U	-	-	1.6	J	5	U
Carbon disulfide	60	ug/l	12	U	-	-	5	U	-	-	5	U	5	U
2-Butanone	50	ug/l	12	U	-	-	5	U	-	-	5	U	5	U
Vinyl acetate		ug/l	12	U	-	-	5	U	-	-	5	U	5	U
4-Methyl-2-pentanone		ug/l	12	U	-	-	5	U	-	-	5	U	5	U
2-Hexanone	50	ug/l	12	U	-	-	5	U	-	-	5	U	5	U
Bromochloromethane	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
2,2-Dichloropropane	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,2-Dibromoethane	0.0006	ug/l	5	U	-	-	2	U	-	-	2	U	2	U
1,3-Dichloropropane	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,1,1,2-Tetrachloroethane	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Bromobenzene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
n-Butylbenzene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
sec-Butylbenzene	5	ug/l	2.8	J	-	-	2.5	U	-	-	2.5	U	2.5	U
tert-Butylbenzene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
o-Chlorotoluene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
p-Chlorotoluene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,2-Dibromo-3-chloropropane	0.04	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Hexachlorobutadiene	0.5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Isopropylbenzene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
p-Isopropyltoluene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
Naphthalene	10	ug/l	6.2	U	-	-	1.3	J	-	-	1.2	J	2.5	U
n-Propylbenzene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,2,3-Trichlorobenzene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,2,4-Trichlorobenzene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
1,3,5-Trimethylbenzene	5	ug/l	6.2	U	-	-	0.85	J	-	-	0.71	J	2.5	U
1,2,4-Trimethylbenzene	5	ug/l	2.4	J	-	-	3.9		-	-	3		2.1	J
1,4-Dioxane		ug/l	620	U	-	-	250	U	-	-	250	U	250	U
p-Diethylbenzene		ug/l	14		-	-	0.85	J	-	-	0.7	J	2	U
p-Ethyltoluene		ug/l	5	U	-	-	2.6		-	-	2		1.3	J
1,2,4,5-Tetramethylbenzene	5	ug/l	5	U	-	-	2	U	-	-	2	U	2	U
Ethyl ether		ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U
trans-1,4-Dichloro-2-butene	5	ug/l	6.2	U	-	-	2.5	U	-	-	2.5	U	2.5	U

Notes:
Yellow highlight indicates exceedance of AWQS
NY-AWQS: New York TOGS 111 Ambient Water Quality Standarc
U- Not detected at the reported detection limit for the sample
J- Estimated result
E- Analyte exceeds rande of the caliration curve and/or linear range of the instrur

Table 2a. Offsite Investigation Volatile Organic Compound Analytical Results in Groundwater
8 Walworth Street, Brooklyn, NY
BCP Site C224239

LOCATION			MW07-I		MW07-D		DUP-04012021		DUP-04012021		FIELD BLANK		TRIP BLANK	
SAMPLING DATE			4/1/2021		3/31/2021		4/1/2021		4/1/2021		4/1/2021		4/1/2021	
LAB SAMPLE ID			L2116506-05		L2116134-01		L2116506-06		L2116506-06 R1		L2116506-07		L2116506-08	
SAMPLE TYPE			WATER		WATER		WATER		WATER		Field Blank		Trip Blank	
	NY-AWQS	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by GC/MS														
Methylene chloride	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
1,1-Dichloroethane	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Chloroform	7	ug/l	2.5	U	2.5	U	9.9		-	-	2.5	U	2.5	U
Carbon tetrachloride	5	ug/l	0.5	U	0.5	U	0.5	U	-	-	0.5	U	0.5	U
1,2-Dichloropropane	1	ug/l	1	U	1	U	1	U	-	-	1	U	1	U
Dibromochloromethane	50	ug/l	0.5	U	0.5	U	0.5	U	-	-	0.5	U	0.5	U
1,1,2-Trichloroethane	1	ug/l	1.5	U	1.5	U	1.5	U	-	-	1.5	U	1.5	U
Tetrachloroethene	5	ug/l	5.2		110		240	E	200		0.5	U	0.19	J
Chlorobenzene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Trichlorofluoromethane	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
1,2-Dichloroethane	0.6	ug/l	0.5	U	0.5	U	0.5	U	-	-	0.5	U	0.5	U
1,1,1-Trichloroethane	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Bromodichloromethane	50	ug/l	0.5	U	0.5	U	0.5	U	-	-	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	ug/l	0.5	U	0.5	U	0.5	U	-	-	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	ug/l	0.5	U	0.5	U	0.5	U	-	-	0.5	U	0.5	U
1,3-Dichloropropene, Total		ug/l	0.5	U	0.5	U	0.5	U	-	-	0.5	U	0.5	U
1,1-Dichloropropene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Bromoform	50	ug/l	2	U	2	U	2	U	-	-	2	U	2	U
1,1,2,2-Tetrachloroethane	5	ug/l	0.5	U	0.5	U	0.5	U	-	-	0.5	U	0.5	U
Benzene	1	ug/l	0.5	U	0.49	J	0.23	J	-	-	0.5	U	0.5	U
Toluene	5	ug/l	1.2	J	6.4		0.87	J	-	-	2.5	U	2.5	U
Ethylbenzene	5	ug/l	1.5	J	8		0.79	J	-	-	2.5	U	2.5	U
Chloromethane		ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Bromomethane	5	ug/l	0.76	J	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Vinyl chloride	2	ug/l	1	U	1	U	0.47	J	-	-	1	U	1	U
Chloroethane	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
1,1-Dichloroethene	5	ug/l	0.26	J	0.5	U	0.5	U	-	-	0.5	U	0.5	U
trans-1,2-Dichloroethene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Trichloroethene	5	ug/l	9.8		13		52		-	-	0.5	U	0.5	U
1,2-Dichlorobenzene	3	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
1,3-Dichlorobenzene	3	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
1,4-Dichlorobenzene	3	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Methyl tert butyl ether	10	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
p/m-Xylene	5	ug/l	6.2		35		3.4		-	-	2.5	U	2.5	U
o-Xylene	5	ug/l	3.6		20		2	J	-	-	2.5	U	2.5	U
Xylenes, Total		ug/l	9.8		55		5.4	J	-	-	2.5	U	2.5	U
cis-1,2-Dichloroethene	5	ug/l	1.8	J	3.3		12		-	-	2.5	U	2.5	U
1,2-Dichloroethene, Total		ug/l	1.8	J	3.3		12		-	-	2.5	U	2.5	U
Dibromomethane	5	ug/l	5	U	5	U	5	U	-	-	5	U	5	U
1,2,3-Trichloropropane	0.04	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Acrylonitrile	5	ug/l	5	U	5	U	5	U	-	-	5	U	5	U
Styrene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Dichlorodifluoromethane	5	ug/l	5	U	5	U	5	U	-	-	5	U	5	U
Acetone	50	ug/l	5	U	3.2	J	1.9	J	-	-	5	U	5	U
Carbon disulfide	60	ug/l	5	U	5	U	5	U	-	-	5	U	5	U
2-Butanone	50	ug/l	5	U	5	U	5	U	-	-	5	U	5	U
Vinyl acetate		ug/l	5	U	5	U	5	U	-	-	5	U	5	U
4-Methyl-2-pentanone		ug/l	5	U	5	U	5	U	-	-	5	U	5	U
2-Hexanone	50	ug/l	5	U	5	U	5	U	-	-	5	U	5	U
Bromochloromethane	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
2,2-Dichloropropane	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
1,2-Dibromoethane	0.0006	ug/l	2	U	2	U	2	U	-	-	2	U	2	U
1,3-Dichloropropane	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
1,1,1,2-Tetrachloroethane	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Bromobenzene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
n-Butylbenzene	5	ug/l	2.5	U	0.8	J	2.5	U	-	-	2.5	U	2.5	U
sec-Butylbenzene	5	ug/l	2.5	U	1	J	2.5	U	-	-	2.5	U	2.5	U
tert-Butylbenzene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
o-Chlorotoluene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
p-Chlorotoluene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
1,2-Dibromo-3-chloropropane	0.04	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Hexachlorobutadiene	0.5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Isopropylbenzene	5	ug/l	2.5	U	1.4	J	2.5	U	-	-	2.5	U	2.5	U
p-Isopropyltoluene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
Naphthalene	10	ug/l	3		15		1.4	J	-	-	2.5	U	2.5	U
n-Propylbenzene	5	ug/l	0.72	J	3.5		2.5	U	-	-	2.5	U	2.5	U
1,2,3-Trichlorobenzene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
1,2,4-Trichlorobenzene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
1,3,5-Trimethylbenzene	5	ug/l	1.5	J	7.8		0.98	J	-	-	2.5	U	2.5	U
1,2,4-Trimethylbenzene	5	ug/l	6.8		37		4		-	-	2.5	U	2.5	U
1,4-Dioxane		ug/l	250	U	250	U	250	U	-	-	250	U	250	U
p-Diethylbenzene		ug/l	1.4	J	6.9		0.87	J	-	-	2	U	2	U
p-Ethyltoluene		ug/l	4.5		24		2.6		-	-	2	U	2	U
1,2,4,5-Tetramethylbenzene	5	ug/l	0.61	J	2.8		2	U	-	-	2	U	2	U
Ethyl ether		ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U
trans-1,4-Dichloro-2-butene	5	ug/l	2.5	U	2.5	U	2.5	U	-	-	2.5	U	2.5	U

Notes:
Yellow highlight indicates exceedance of AWQS
NY-AWQS: New York TOGS 111 Ambient Water Quality Standarc
U- Not detected at the reported detection limit for the sample
J- Estimated result
E- Analyte exceeds rande of the caliration curve and/or linear rang

Table 2b. Offsite Investigation Polychlorinated Biphenyls Analytical Results in Groundwater
8 Walworth Street, Brooklyn, NY
BCP Site C224239

LOCATION			MW06-S		MW06-I		MW06-D		MW07-S		MW07-I		MW07-D		DUP-04012021		FIELD BLANK	
SAMPLING DATE			4/1/2021		4/1/2021		4/1/2021		4/1/2021		4/1/2021		3/31/2021		4/1/2021		4/1/2021	
LAB SAMPLE ID			L2116506-01		L2116506-02		L2116506-03		L2116506-04		L2116506-05		L2116134-01		L2116506-06		L2116506-07	
SAMPLE TYPE			WATER		WATER		WATER		WATER		WATER		WATER		WATER		Field Blank	
	NY-AWQS	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Polychlorinated Biphenyls by GC																		
Aroclor 1016	0.09	ug/l	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U
Aroclor 1221	0.09	ug/l	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U
Aroclor 1232	0.09	ug/l	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U
Aroclor 1242	0.09	ug/l	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U
Aroclor 1248	0.09	ug/l	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U
Aroclor 1254	0.09	ug/l	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U
Aroclor 1260	0.09	ug/l	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.07	J
Aroclor 1262	0.09	ug/l	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U
Aroclor 1268	0.09	ug/l	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U
PCBs, Total		ug/l	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.071	U	0.07	J

Notes:
Yellow highlight indicates exceedance of AWQS
NY-AWQS: New York TOGS 111 Ambient Water Quality Standards criteria
U- Not detected at the reported detection limit for the sample
J- Estimated result
E- Analyte exceeds rande of the caliration curve and/or linear range of the instrument

Table 2c.Offsite Investigation Emerging Contaminants Analytical Results in Groundwater
8 Walworth Street, Brooklyn, NY
BCP Site C224239

LOCATION			MW06-S		MW06-I		MW06-D		MW07-S		MW07-I		MW07-D		DUP-04012021		FIELD BLANK	
SAMPLING DATE			4/1/2021		4/1/2021		4/1/2021		4/1/2021		4/1/2021		3/31/2021		4/1/2021		4/1/2021	
LAB SAMPLE ID			L2116506-01		L2116506-02		L2116506-03		L2116506-04		L2116506-05		L2116134-01		L2116506-06		L2116506-07	
SAMPLE TYPE			WATER		WATER		WATER		WATER		WATER		WATER		WATER		Field Blank	
	NY-MCL	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
1,4 Dioxane by 8270D-SIM																		
1,4-Dioxane	1	ug/l	0.534		0.138	J	0.0688	J	0.139	U	0.0738	J	0.0683	J	0.138	J	0.139	U
Perfluorinated Alkyl Acids by Isotope Dilution																		
Perfluorobutanoic Acid (PFBA)	0.01	ug/l	0.00635		0.00824		0.00874		0.0131		0.0119		0.0106		0.0082		0.00175	U
Perfluoropentanoic Acid (PFPeA)	0.01	ug/l	0.0152		0.0227		0.0242		0.0387		0.0253		0.0305		0.0218		0.00175	U
Perfluorobutanesulfonic Acid (PFBS)	0.01	ug/l	0.00333		0.00411		0.0047		0.0137		0.00688		0.00431		0.00429		0.00175	U
Perfluorohexanoic Acid (PFHxA)	0.01	ug/l	0.013		0.0159		0.0184		0.0232		0.0186		0.0221		0.016		0.00175	U
Perfluoroheptanoic Acid (PFHpA)	0.01	ug/l	0.0141		0.0134		0.0143		0.0126		0.00983		0.0184		0.013		0.00175	U
Perfluorohexanesulfonic Acid (PFHxS)	0.01	ug/l	0.00155	J	0.00487		0.00525		0.00185		0.00249		0.00567		0.00497		0.00175	U
Perfluorooctanoic Acid (PFOA)	0.01	ug/l	0.0935		0.0561		0.0598		0.0489		0.0379		0.0683		0.0574		0.000218	J
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.01	ug/l	0.00179	U	0.00137	J	0.0018	U	0.00245		0.00178	U	0.00184	U	0.00153	J	0.00175	U
Perfluoroheptanesulfonic Acid (PFHpS)	0.01	ug/l	0.00259		0.00177	U	0.0018	U	0.00182	U	0.00178	U	0.00184	U	0.00183	U	0.00175	U
Perfluorononanoic Acid (PFNA)	0.01	ug/l	0.00319		0.0027		0.00281		0.00185		0.00277		0.00395		0.00252		0.00175	U
Perfluorooctanesulfonic Acid (PFOS)	0.01	ug/l	0.457		0.0168		0.0149		0.00848		0.0149		0.02		0.0173		0.000748	J
Perfluorodecanoic Acid (PFDA)	0.01	ug/l	0.00103	J	0.00177	U	0.0018	U	0.00182	U	0.000812	J	0.000909	J	0.00183	U	0.00175	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.01	ug/l	0.00179	U	0.00177	U	0.0018	U	0.00182	U	0.00178	U	0.00184	U	0.00183	U	0.00175	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA	0.01	ug/l	0.000668	J	0.00177	U	0.0018	U	0.000818	J	0.00178	U	0.00184	U	0.00183	U	0.00175	U
Perfluoroundecanoic Acid (PFUnA)	0.01	ug/l	0.000232	JF	0.00177	U	0.0018	U	0.00182	U	0.00178	U	0.00184	U	0.00183	U	0.00175	U
Perfluorodecanesulfonic Acid (PFDS)	0.01	ug/l	0.00179	U	0.00177	U	0.0018	U	0.00182	U	0.00178	U	0.00184	U	0.00183	U	0.00175	U
Perfluorooctanesulfonamide (FOSA)	0.01	ug/l	0.0176	F	0.00177	U	0.0018	U	0.00182	U	0.00178	U	0.00184	U	0.00183	U	0.00175	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.01	ug/l	0.0136	F	0.00177	U	0.0018	U	0.00178	JF	0.00178	U	0.00184	U	0.00183	U	0.00175	U
Perfluorododecanoic Acid (PFDoA)	0.01	ug/l	0.00179	U	0.00177	U	0.0018	U	0.00182	U	0.00178	U	0.00184	U	0.00183	U	0.00175	U
Perfluorotridecanoic Acid (PFTrDA)	0.01	ug/l	0.00179	U	0.00177	U	0.0018	U	0.00182	U	0.00178	U	0.00184	U	0.00183	U	0.00175	U
Perfluorotetradecanoic Acid (PFTA)	0.01	ug/l	0.00179	U	0.00177	U	0.0018	U	0.00182	U	0.00178	U	0.00184	U	0.00183	U	0.00175	U
PFOA/PFOS, Total	0.01	ug/l	0.551		0.0729		0.0747		0.0574		0.0528		0.0883		0.0747		0.000966	J

Notes:
MCL- Maximum Contaminant Level
MCL for drinking water as per July 2020 New York State Department of Health
U- Not detected at the reported detection limit for the sample
J- Estimated result
F- Ratio of quantifier ion response to qualifier ion response falls outside
of the laboratory criteria. Results are estimated maximum concentration

FIGURES

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\134860\GISMaps\2020_02\134860_002_0001_PROJECT_LOCUS.mxd — USER: hwachholz — LAST SAVED: 2/28/2020 4:33:58 PM

HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

PROJECT LOCUS

MAP SOURCE: ESRI
SITE COORDINATES: 40°41'55"N,73°57'18"W

APPROXIMATE SCALE: 1 IN = 2000 FT
FEBRUARY 2020

FIGURE 1

LEGEND

SITE BOUNDARY

GROUNDWATER FLOW DIRECTION

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

N

0 70 140

SCALE IN FEET

HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

SITE PLAN AND SURROUNDING LAND USE MAP

APRIL 2021

FIGURE 2

LEGEND

- SITE BOUNDARY
- OFFSITE MONITORING WELL CLUSTER LOCATIONS
- FORMER OFFSITE SOIL VAPOR SAMPLING LOCATIONS (INSTALLED IN NOVEMBER 2018 BY EBC)

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI
3. PROPOSED OFFSITE SOIL VAPOR, INDOOR AIR AND AMBIENT AIR ARE SUBJECT TO CHANGE BASED ON FIELD OBSERVATIONS AND ACCESSIBILITY

N

0 70 140
SCALE IN FEET

HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

OFFSITE INVESTIGATION SAMPLE MAP

APRIL 2021

FIGURE 3

LEGEND

- SITE BOUNDARY
- MONITORING WELL LOCATION
- (-1.54) GROUNDWATER ELEVATION (NAVD 88)
- -1.55 GROUNDWATER CONTOUR
- -1.55 INFERRED GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

N

0 30 60
SCALE IN FEET

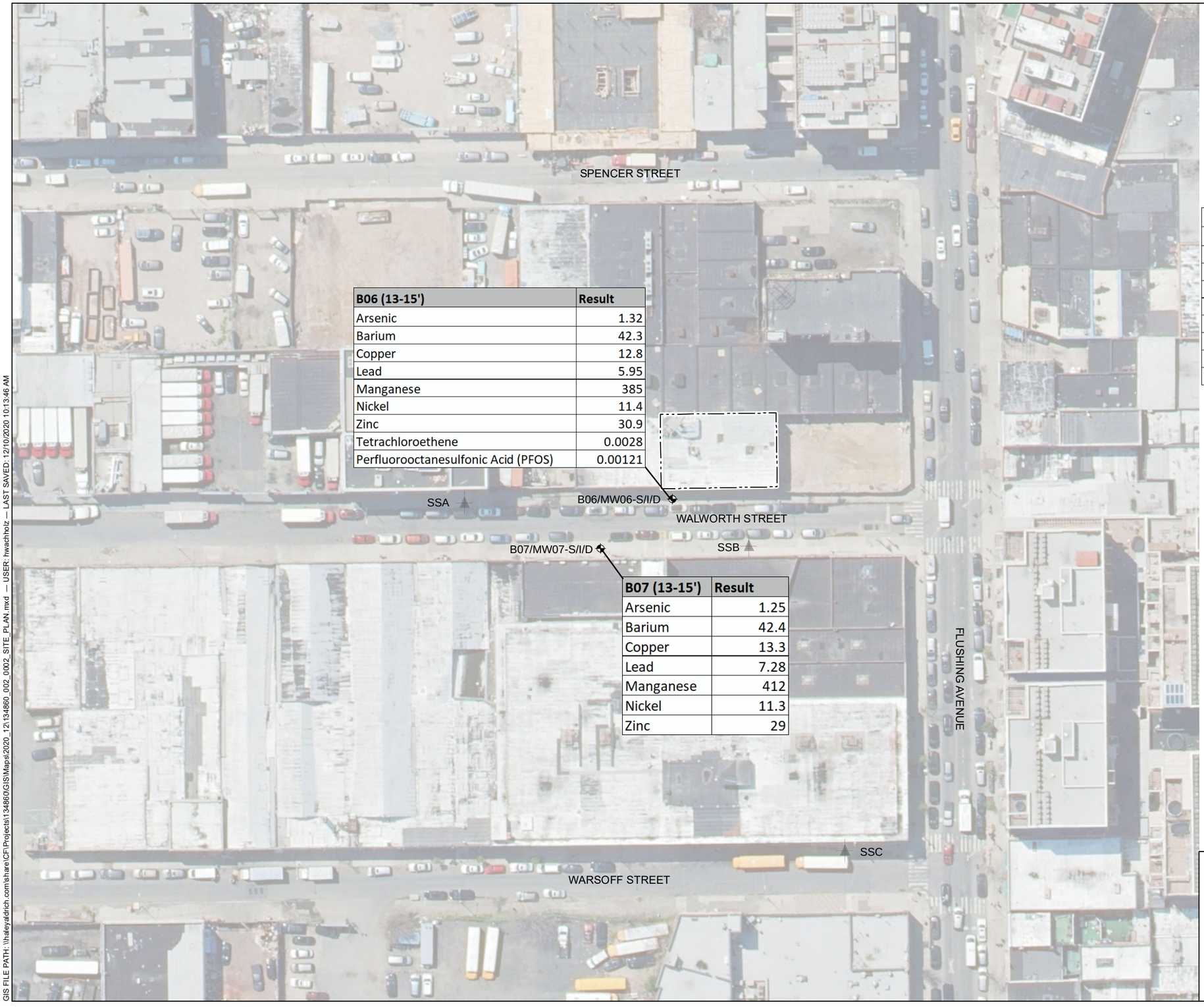
HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

GROUNDWATER CONTOUR MAP

JUNE 2021

FIGURE 4



B06 (13-15')	Result
Arsenic	1.32
Barium	42.3
Copper	12.8
Lead	5.95
Manganese	385
Nickel	11.4
Zinc	30.9
Tetrachloroethene	0.0028
Perfluorooctanesulfonic Acid (PFOS)	0.00121

B07 (13-15')	Result
Arsenic	1.25
Barium	42.4
Copper	13.3
Lead	7.28
Manganese	412
Nickel	11.3
Zinc	29

LEGEND

- SITE BOUNDARY
- OFFSITE MONITORING WELL CLUSTER LOCATIONS
- FORMER OFFSITE SOIL VAPOR SAMPLING LOCATIONS (INSTALLED IN NOVEMBER 2018 BY EBC)

NYCRR Part 375 Unrestricted and Restricted Residential SCOs			
Analyte	**Units**	**NY- ResRestricted**	**NY- Unrestricted**
Arsenic	mg/kg	16	13
Barium	mg/kg	400	350
Copper	mg/kg	270	50
Lead	mg/kg	400	63
Manganese	mg/kg	2000	1600
Nickel	mg/kg	310	30
Zinc	mg/kg	10000	109
Tetrachloroethene	mg/kg	19	1.3

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI
3. PROPOSED OFFSITE SOIL VAPOR, INDOOR AIR AND AMBIENT AIR ARE SUBJECT TO CHANGE BASED ON FIELD OBSERVATIONS AND ACCESSIBILITY

N

0 70 140

SCALE IN FEET

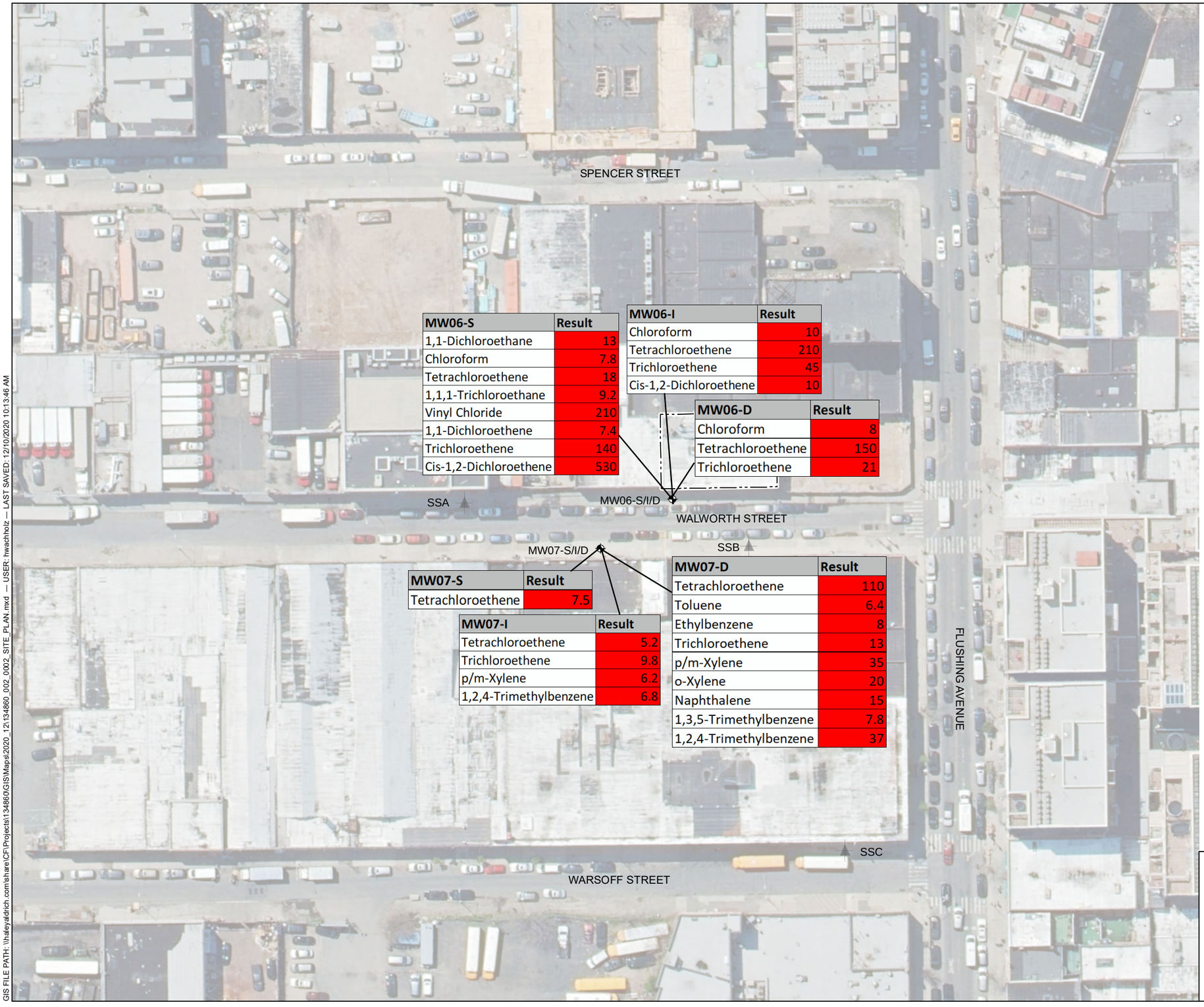
HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

MAP OF SOIL CHEMISTRY

JUNE 2021

FIGURE 5



LEGEND

- SITE BOUNDARY
- OFFSITE MONITORING WELL CLUSTER LOCATIONS
- FORMER OFFSITE SOIL VAPOR SAMPLING LOCATIONS (INSTALLED IN NOVEMBER 2018 BY EBC)

NY TOGS 111 Ambient Water Quality Standards		
Analyte	**Units**	**NY AWQS**
Chloroform	µg/L	7
Tetrachloroethene	µg/L	5
Trichloroethene	µg/L	5
Cis-1,2-Dichloroethene	µg/L	5
1,1,1-Trichloroethane	µg/L	5
Vinyl Chloride	µg/L	2
1,1-Dichloroethene	µg/L	5
p/m-Xylene	µg/L	5
o-Xylene	µg/L	5
1,2,4-Trimethylbenzene	µg/L	5
Ethylbenzene	µg/L	5
Naphthalene	µg/L	10
1,3,5-Trimethylbenzene	µg/L	5

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI
3. PROPOSED OFFSITE SOIL VAPOR, INDOOR AIR AND AMBIENT AIR ARE SUBJECT TO CHANGE BASED ON FIELD OBSERVATIONS AND ACCESSIBILITY

N

0 70 140
SCALE IN FEET

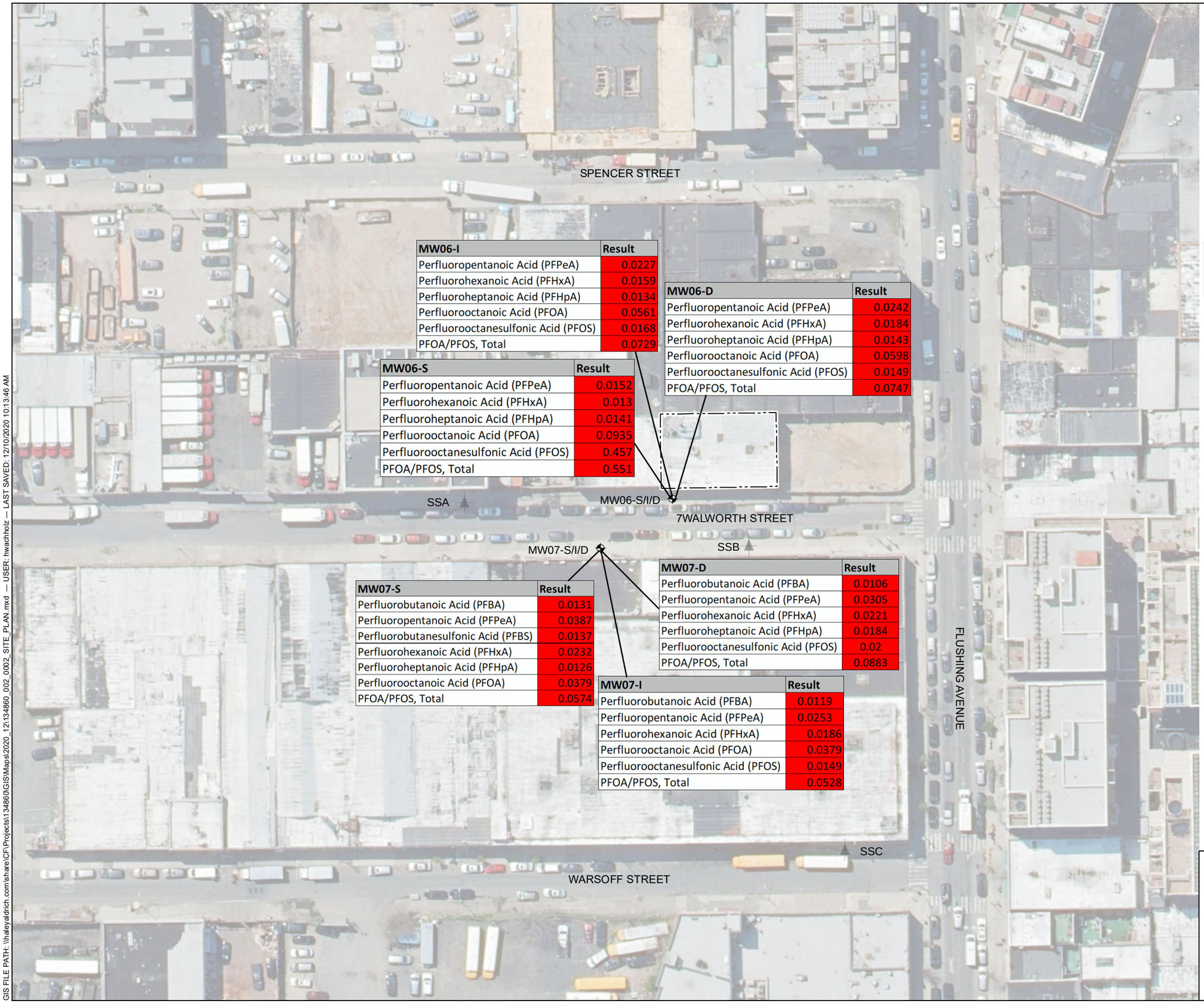
HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

MAP OF GROUNDWATER CHEMISTRY

JUNE 2021

FIGURE 6



MW06-I	Result
Perfluoropentanoic Acid (PFPeA)	0.0227
Perfluorohexanoic Acid (PFHxA)	0.0159
Perfluoroheptanoic Acid (PFHpA)	0.0134
Perfluorooctanoic Acid (PFOA)	0.0561
Perfluorooctanesulfonic Acid (PFOS)	0.0168
PFOA/PFOS, Total	0.0729

MW06-D	Result
Perfluoropentanoic Acid (PFPeA)	0.0242
Perfluorohexanoic Acid (PFHxA)	0.0184
Perfluoroheptanoic Acid (PFHpA)	0.0143
Perfluorooctanoic Acid (PFOA)	0.0598
Perfluorooctanesulfonic Acid (PFOS)	0.0149
PFOA/PFOS, Total	0.0747

MW06-S	Result
Perfluoropentanoic Acid (PFPeA)	0.0152
Perfluorohexanoic Acid (PFHxA)	0.013
Perfluoroheptanoic Acid (PFHpA)	0.0141
Perfluorooctanoic Acid (PFOA)	0.0935
Perfluorooctanesulfonic Acid (PFOS)	0.457
PFOA/PFOS, Total	0.551

MW07-S	Result
Perfluorobutanoic Acid (PFBA)	0.0131
Perfluoropentanoic Acid (PFPeA)	0.0387
Perfluorobutanesulfonic Acid (PFBS)	0.0137
Perfluorohexanoic Acid (PFHxA)	0.0232
Perfluoroheptanoic Acid (PFHpA)	0.0126
Perfluorooctanoic Acid (PFOA)	0.0379
PFOA/PFOS, Total	0.0574

MW07-D	Result
Perfluorobutanoic Acid (PFBA)	0.0106
Perfluoropentanoic Acid (PFPeA)	0.0305
Perfluorohexanoic Acid (PFHxA)	0.0221
Perfluoroheptanoic Acid (PFHpA)	0.0184
Perfluorooctanesulfonic Acid (PFOS)	0.02
PFOA/PFOS, Total	0.0883

MW07-I	Result
Perfluorobutanoic Acid (PFBA)	0.0119
Perfluoropentanoic Acid (PFPeA)	0.0253
Perfluorohexanoic Acid (PFHxA)	0.0186
Perfluorooctanoic Acid (PFOA)	0.0379
Perfluorooctanesulfonic Acid (PFOS)	0.0149
PFOA/PFOS, Total	0.0528

LEGEND

- SITE BOUNDARY
- OFFSITE MONITORING WELL CLUSTER LOCATIONS
- FORMER OFFSITE SOIL VAPOR SAMPLING LOCATIONS (INSTALLED IN NOVEMBER 2018 BY EBC)

New York Maximum Contaminant Level For Drinking Water		
Analyte	**Units**	**MCL**
PFOA/PFAS	µg/L	0.01

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI
3. PROPOSED OFFSITE SOIL VAPOR, INDOOR AIR AND AMBIENT AIR ARE SUBJECT TO CHANGE BASED ON FIELD OBSERVATIONS AND ACCESSIBILITY

N

0 70 140
SCALE IN FEET

HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

MAP OF EMERGING CONTAMINANTS IN GROUNDWATER

JUNE 2021

FIGURE 7

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\134860\GIS\Maps\2020_12\134860_002_0002_SITE_PLAN.mxd — USER: hwachholz — LAST SAVED: 12/10/2020 10:13:46 AM

APPENDIX A

Offsite Investigation Work Plan

HALEY & ALDRICH OF NEW YORK
237 W 35th Street
16th Floor
New York, NY 10123
646.518.7735

OFFSITE INVESTIGATION WORK PLAN

8 WALWORTH STREET
BROOKLYN, NY
NYSDEC SITE C224239

PREPARED FOR

TOLDOS YEHUDAH, LLC
BROOKLYN, NEW YORK

PREPARED BY:

Mari C. Conlon, P.G.
Project Manager
Haley & Aldrich of New York

REVIEWED AND APPROVED BY:

James M. Bellew
Senior Associate
Haley & Aldrich of New York

File No. 134860-002

HALEY & ALDRICH OF NEW YORK
237 W 35th Street
16th Floor
New York, NY 10123
646.518.7735

4 March 2021
File No. 134860-002

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233

Attention: Mr. Aaron Fisher

Subject: Offsite Investigation Work Plan
8 Walworth Street
Brooklyn, New York
NYSDEC Site 224239

Dear Mr. Fisher:

On behalf of Toldos Yehudah, LLC (Toldos Yehudah), Haley & Aldrich of New York (Haley & Aldrich) is submitting for the review and approval of the New York State Department of Environmental Conservation (NYSDEC) this revised Offsite Investigation Work Plan (OIWP) for properties surrounding 8 Walworth Street located in the Bedford Stuyvesant neighborhood of Brooklyn, New York (Site). This OIWP has been developed in accordance with and based on the NYSDEC (6 NYCRR) Part 375 Brownfield Cleanup Regulations dated December 2006, the "Technical Guidance for Site Investigation and Remediation" (DER-10 dated May 2010) and the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006.

Please do not hesitate to contact us if there are any questions regarding this submittal or any other aspects of the project.

Sincerely yours,
HALEY & ALDRICH OF NEW YORK

James M. Bellew
Senior Associate

Mari C. Conlon, P.G.
Project Manager

Enclosures

c: Fischel Miller, Toldos Yehudah, LLC
Heide Dudek, NYSDEC, Section Chief
Jane O'Connell, NYSDEC, RHWRE
Angela Martin, NYSDOH Project Manager
Scarlet Mclaughlin, NYSDOH, Region 2 Chief

Table of Contents

List of Figures

1. Introduction

On behalf of Toldos Yehudah, LLC (Toldos Yehudah), Haley & Aldrich of New York (Haley & Aldrich) has prepared this Offsite Investigation Work Plan (OIWP) as an addendum to the Supplemental Remedial Investigation Work Plan (SRIWP) for 8 Walworth Street, Brooklyn, New York (Site) submitted to New York State Department of Environmental Conservation (NYSDEC) in March 2020 and approved on 1 May 2020. The Site, identified as Block 1715 Lot 33 on the New York City tax map, is 3,910-square feet (sf) and is bounded by a vacant lot to the north, a warehouse to the south, Walworth Street to the east, and a vacant lot to the west.

The Site is currently in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) identified as NYSDEC Site Number 224239 with Toldos Yehudah is listed as a participant. The Site was operated by Techtronics Ecological Corporation from 1962 through the 1990s. The Site is also identified in the Resource Conservation and Recovery Act database as a Large Quantity Generator under Handler ID NYD000824334.

1.1 PURPOSE

As part of the BCP requirements, a Remedial Investigation (RI) was conducted at the Site from November 2018 through February 2019. A Remedial Investigation Report (RIR), dated 9 September 2019, was submitted to NYSDEC by Environmental Business Consultants (EBC). On 12 November 2019, NYSDEC responded to EBC's submission noting the RIR indicated the presence of elevated chlorinated volatile organic compounds (CVOCs) in soil, groundwater and soil vapor at the Site. Based on the RIR findings, NYSDEC requested additional vertical delineation of the nature and extent of CVOC contamination both on and offsite. In addition, an investigation of offsite properties was requested by NYSDEC in the RIR comments included in the 17 January 2020 response letter from the New York State Department of Health (NYSDOH), as well as comments discussed during an onsite meeting attended by Haley & Aldrich and NYSDEC on 26 February 2020. This OIWP will address the aforementioned comments by investigating offsite groundwater and soil vapor.

The proposed activities included herein will evaluate the potential for offsite groundwater and vapor migration/vapor intrusion at neighboring properties surrounding the Site.

2. Background

2.1 CURRENT LAND USE

The Site is currently improved with a vacant one-story warehouse constructed in 1982 and accessed from Walworth Street to the east.

2.2 SITE HISTORY

The Site was developed as early as 1887 with a one-story residence and shed on the south side of the property, a two-story storefront building with single story garage in the middle of the Site along Walworth Street, and a three-story residence on the north side of the Site. The surrounding vicinity was primarily developed with residences, commercial buildings and industrial/manufacturing use facilities. The Site remained largely unchanged through the early 1900s.

By 1918 the adjoining property to the west was occupied by a junk yard and developed into an indoor parking garage structure by 1935. The Site remained developed with residences until 1950 when only the two-story residential structure and sheds remained present on the south side of the property. A one-story warehouse used for chemical drum storage was erected on the north side of the Site by 1965 and the northern and southern adjoining properties were used for paint storage and mixing in the mid-1960s. By 1977 the two-story residence to the north was no long present but the chemical drum warehouse remained. In 1982, the site was redeveloped with the existing one-story warehouse building, occupied by Techtronics Ecological Corp. (Techtronics) and utilized for the mixing and storage of paints and other coatings. The adjoining property to the north was partially included in the Techtronics facility and labeled as "Techtronics A" with the 8 Walworth site reported as "Techtronics B." Techtronics ceased operations in the 1990s. The Site and neighboring properties have remained largely unchanged through the present.

Previous environmental investigations and regulatory history of the Site are detailed in the SRIWP submitted to NYSDEC in March 2020 and the Supplemental Remedial Investigation Report (SRIR) submitted to NYSDEC in November 2020.

2.3 REGIONAL LAND USE

The Site is located in a mixed use residential, commercial and light industrial area. The Site is bounded by a vacant lot to the north, a warehouse to the south, Walworth Street to the east beyond which are warehouse buildings and a vacant lot to the west. The vacant lot to the north, 480 Flushing Avenue, and the vacant lot to the west, 11 Spencer Street, are both currently enrolled in the NYSDEC BCP due to similar contaminants of concern. Eight schools or daycare facilities are located within one-quarter mile radius of the Site. The properties immediately surrounding the Site are zoned M1-2. The vacant lot to the north, 480 Flushing Avenue, and the vacant lot to the west, 11 Spencer Street, are both currently enrolled in the NYSDEC BCP due to similar contaminants of concern.

2.4 SUPPLEMENTAL REMEDIAL INVESTIGATION

Haley & Aldrich implemented the activities of the approved SRIWP in June and July 2020. Based on the results of SRI, the following conclusions have been identified:

1. Contaminants of concern for the Site are primarily CVOCs including TCE, PCE and cis-1,2,-dichloroethene which impact soil, groundwater and soil vapor.
2. There is a source area of contamination located on the northwestern portion of the site in the vicinity of MW02.
3. The origin of the CVOC contamination source is unknown but is likely attributed to former operations by Techtronics, a paints and coatings manufacturer. Additional impact to Site coming from the upgradient adjoining properties, 480 Flushing Avenue and 11 Spencer Street, is highly probable due to the direction of groundwater flow from north-northwest to south-southeast. Analytical results of the SRI also provide further evidence of the presence of comingling groundwater plumes throughout the area as noted in previous investigations for the adjoining properties.
4. The on-Site CVOC contamination has been both horizontally and vertically delineated. CVOC concentrations dissipate in groundwater with depth throughout the Site indicating contamination is highest at the groundwater interface and smear zone.
5. Offsite contamination is likely partially a result of former and current area operations including adhesive manufacturing, tannery operations, foundry operations and casting cleaning and grinding operations.

Further details of the SRI were provided in the revised SRIR submitted to NYSDEC in November 2020.

3. Offsite Investigation

This section describes the field activities to be conducted during the offsite investigation and provides the sampling scope, objectives, methods, anticipated number of samples, and sample locations. The following activities will be conducted to evaluate the potential for offsite groundwater and vapor migration/vapor intrusion at neighboring properties surrounding the Site.

3.1 CONSIDERATIONS REGARDING OFFSITE SOURCES

As detailed in the SRIR, the origin of the CVOC contamination source is unknown but is likely the historic operations by Techtronics, a paints and coatings manufacturer, contributed to the plume. While an onsite source area was identified through the RI activities, it should be noted that the surrounding area was formerly used for manufacturing which could indicate additional source areas with migrating impacts. Of note, the vacant lot to the north, 480 Flushing Avenue (Techtronics Site A), and the vacant lot to the west, 11 Spencer Street (Delta Metals), are both located upgradient from the Site and currently enrolled in the NYSDEC BCP due to similar contaminants of concern. An elevated hit of PCE at 23,000 µg/L in shallow groundwater from an offsite well (MW1607) installed to 20 feet (ft) at 11 Spencer Street indicates a possible offsite upgradient source and comingling with the 8 Walworth plume. In addition, the anomalous elevated concentrations of PCE and TCE detected in MW05-I potentially indicate another upgradient source area on the 480 Flushing Avenue property located north of the Site.

While groundwater was found to flow to the south-southeast, it is notable that properties downgradient from the site include an adhesive manufacturer (still in operation), a tannery, a foundry and a casting cleaning and grinding operation. A site plan indicating the historic operations in the area is shown as Figure 1.

3.2 OFFSITE GROUNDWATER INVESTIGATION

To evaluate the offsite groundwater impacts, Haley & Aldrich will oversee the installation of two permanent groundwater monitoring well clusters located southeast of the Site. Proposed locations are shown in Figure 2.

3.2.1 Monitoring Well Installation

Two-inch (in.) permanent monitoring wells will be installed in two well cluster locations as shown on Figure 2. Wells will be installed with a flush mount manhole cover and will be screened with 0.010-in. slotted PVC from bisecting the groundwater interface, 30 to 35 feet below grade surface (bgs), and 40 to 45 feet bgs. Annular space surrounding the screen will be filled with #0 or #00 Morie sand or equivalent placed to one foot above the screen interval. A one foot (minimum) of hydrated bentonite seal will be placed directly above the filter pack to isolate the sample interval.. Well clusters will be installed with two inches of annular space surrounding the well casing. The remainder of the borehole will be grouted and the monitoring wells completed to grade. A proposed well construction log is provided in Appendix A.

Within 24 hours of installation, the monitoring wells will be developed or pumped until the column of water in the well is free of visible sediment, and the pH, temperature, turbidity, and specific conductivity

have stabilized. Development will be completed until the water turbidity is 50 nephelometric turbidity units (NTU) or less or 10 well volumes are removed, if possible. If 50 NTUs is not achieved and stabilized within the removal of the first 10 well volumes, NTUs must be stabilized for three consecutive readings. The well casings will be surveyed within 0.01-foot accuracy by a New York State licensed surveyor into the previously used datum for the onsite wells installed during the Supplemental Remedial Investigation. Groundwater elevation of all off-site and on-site monitoring wells must be measured during a synoptic gauging event.

3.2.2 Groundwater Sampling

Groundwater samples will be collected from each location under low flow/low stress sampling procedures. Wells will be purged at 100 milliliters per minute (mL/min) to a maximum of 500 mL/min. During purging, the water level will be monitored approximately every five minutes, or as appropriate. A steady flow rate will be maintained that results in drawdown of 0.3 ft or less. The rate of pumping will not exceed the natural flow rate conditions of the well.

During the purging of the well, field indicator parameters (pH, temperature, conductivity, oxidation-reduction (redox) reaction potential (ORP), dissolved oxygen (DO), and turbidity) will be monitored and recorded approximately every five minutes. Stabilization is considered to be achieved when the final groundwater flow rate is achieved, and three consecutive readings for each parameter are within the following limits:

- pH: 0.1 pH units of the average value of the three readings;
- Temperature: 3 percent of the average value of the three readings;
- Conductivity: 0.005 milliSiemen per centimeter (mS/cm) of the average value of the three readings for conductivity <1 mS/cm and 0.01 mS/cm of the average value of the three readings for conductivity >1 mS/cm;
- ORP: 10 millivolts (mV) of the average value of the three readings;
- DO: 10 percent of the average value of the three readings; and
- Turbidity: 10 percent of the average value of the three readings, or a final value of less than 50 nephelometric turbidity units (NTU).

Upon stabilization groundwater samples will be collected into laboratory provided bottle ware and kept on ice in coolers. Samples will be sent to Alpha Analytical Laboratories of Westborough, MA, a New York State ELAP certified environmental laboratory, under proper chain of custody protocol.

3.2.3 Sample Analysis

Groundwater samples will be analyzed for the following parameters:

- TCL Volatile Organic Compounds (VOCs) using EPA method 8260;
- Polychlorinated Biphenyls (PCBs) using EPA Method 8280A;
- NYSDEC Per- and Polyfluoroalkyl Substances (PFAS) List (21 compounds) by EPA Method 537; and
- 1,4-dioxane by EPA method 8270 SIM.

3.3 OFFSITE SOIL SAMPLING

Soils will be logged continuously by a geologist or engineer using the Unified Soil Classification System. The presence of staining, odors and photo ionization detector (PID) response will be noted in soil boring logs which will be included in an Offsite Investigation Report. Soil samples will be collected at the groundwater interface and any interval(s) where visual, olfactory, and/or elevated PID measurements are observable.

3.4 OFFSITE SOIL VAPOR INTRUSION INVESTIGATION

As per the comments discussed in the 17 January 2020 response letter from the NYSDOH, Haley & Aldrich sent a formal access request via certified mail to the owners of the following properties:

- Block 1716, Lot 18
- Block 1717, Lot 26
- Block 1717, Lot 29
- Block 177, Lot 6
- Block 1717, Lot 31
- Block 1717, Lot 34

A response was received from 490 Flushing Avenue LLC, the owner of block 1717 Lots 26, 29 and 31 allowing access to the property. The property is a warehouse and manufacturing facility operated by Sure-Kol Refrigerator Company Inc. No additional responses were received. A second access request letter was submitted to the unresponsive property owners via certified mailings on 28 January 2021. A copy of the access request letter and certified mailing receipts are provided in Appendix B.

3.4.1 Previous Offsite Soil Vapor Sampling

During the Remedial Investigation conducted by EBC in 2018, three offsite soil vapor samples were collected offsite at a depth of 1 to 2 inches below the base of the existing sidewalk slab. Soil vapor sample locations for SSA, SSB and SSC are shown in Figure 2.

Total petroleum-related VOCs (BTEX compounds) were detected in two of the three off-site soil vapor samples with a maximum concentration of 36.54 µg/m^3. CVOCs were detected in all three off-site soil vapor samples with concentrations ranging from 3.60 µg/m^3 to 7.66 µg/m^3. CVOCs were significantly higher in SSB (located in the sidewalk to the east adjacent of the Site), with 1,1,1- Trichlorethane detected at 314 µg/m^3, PCE detected at 3,690 µg/m^3 and TCE detected at 1,570 µg/m^3.

3.4.2 Sample Plan

A field survey / observation and the Indoor Air Quality Questionnaire and Building Inventory form will be performed and submitted to the NYSDEC and NYSDOH prior to SVI sampling. Multiple SVI sampling locations may be required on the property to properly address potential soil vapor intrusion concerns. Final location(s) will be determined in coordination with NYSDEC and NYSDOH. Sample locations will be coordinated with property owners and operators but biased towards areas where occupants spend a majority of time (i.e. offices, operation areas, etc.). A majority of the building appears to be warehouse space with limited occupancy. Upon access to the Site, we will evaluate if an additional location should

be evaluated, however, it is noted that the historic operations of this property may also be a contributor to any potential contamination encountered.

3.4.3 Sub-Slab Vapor Sampling

Samples will be collected in accordance with the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH October 2006). A Sub-slab vapor probe will be installed to a depth of 2 in. beneath the existing building slab. The implant will be installed by drilling a ½ in. hole through the concrete slab with a handheld drill and then inserting a ¼ in. polyethylene tube. Seal integrity will be verified with a tracer gas (helium) test and one to three volumes of air will be purged from the implant prior to sample collection.

Samples will be collected in 2.7 liter Summa canisters that have been certified clean by the laboratory. Samples will be collected for a period of eight hours concurrently with an indoor air sample, as per the NYSDOH soil vapor intrusion guidance, and flow rate for both purging and sampling will not exceed 0.2 L/min. Field personnel will record Summa canister and flow controller identification numbers, sample date, sample start time, sample start vacuum, sample end time and sample end vacuum. Sample end vacuum will be between 5-8 in. mercury.

3.4.4 Indoor and Ambient Air Sampling

Indoor and ambient air samples will be collected in 2.7 liter Summa canisters that have been certified clean by the laboratory. Samples will be collected for a period of eight hours and flow rate for sampling will not exceed 0.2 L/min. Field personnel will record Summa canister and flow controller identification numbers, sample date, sample start time, sample start vacuum, sample end time and sample end vacuum. Sample end vacuum will be between 5-8 in. mercury. Summa canisters will be set at approximately 4-5 ft above grade in the breathing zone.

3.4.5 Sample Analysis

Samples will be analyzed for VOCs using USEPA Method TO-15. Samples will be sent to Alpha Analytical Laboratories of Westborough, MA, a New York State ELAP certified environmental laboratory, under proper chain of custody protocol.

4. Quality Assurance and Quality Control

Quality Assurance/Quality Control (QA/QC) procedures will be used to provide performance information with regard to accuracy, precision, sensitivity, representation, completeness, and comparability associated with the sampling and analysis for this investigation. Field QA/QC procedures will be used (1) to document that samples are representative of actual conditions at the Site and (2) identify possible cross-contamination from field activities or sample transit. Laboratory QA/QC procedures and analyses will be used to demonstrate whether analytical results have been biased either by interfering compounds in the sample matrix, or by laboratory techniques that may have introduced systematic or random errors to the analytical process.

QA/QC procedures are defined in the Quality Assurance Project Plan included in Appendix C of the SRIWP.

5. Data Use

5.1 DATA SUBMITTAL

Analytical data will be supplied in ASP Category B Data Packages. If more stringent than those suggested by the United States Environmental Protection Agency, the laboratory's in house QA/QC limits will be utilized. Validated data will be submitted to the NYSDEC EQuIS database in an electronic data deliverable (EDD) package.

5.2 DATA VALIDATION

Data packages will be sent to a qualified data validation specialist for evaluation of accuracy and precision of the analytical results. A Data Usability Summary Report (DUSR) will be created to confirm the compliance of methods with the protocols described in the NYSDEC Analytical service Protocol (ASP). DUSRs will summarize and confirm usability of the data for project related decisions. Data validation will be completed in accordance with the DUSR guidelines from NYSDEC Division of Environmental Remediation.

6. Project Team

The project team will be organized as stated in the SRIWP submitted to NYSDEC in March 2020.

7. Health and Safety

A Site-specific Health and Safety Plan (HASP) has been prepared in accordance with NYSDEC and NYSDOH guidelines and is provided as Appendix E of the SRIWP. The HASP includes a description of health and safety protocols to be followed by Haley & Aldrich field staff during implementation of the remedy, including monitoring within the work area, along with response actions should impacts be observed. The HASP has been developed in accordance with Occupational Health and Safety Administration (OSHA) 40 CFR Part 1910.120 regulatory requirements for use by Haley & Aldrich field staff that will work at the Site during planned activities. Contractors or other personnel who perform work at the Site are required to develop their own HASP and procedures of comparable or higher content for their respective personnel in accordance with relevant OSHA regulatory requirements for work at hazardous waste Sites as well as general industry as applicable based on the nature of work being performed.

8. Reporting

Daily reports will be submitted to NYSDEC and NYSDOH summarizing the Site activities completed during the investigation. Daily reports will include a Site figure, a description of Site activities, a photo log and CAMP data. Daily reports will be submitted the following morning after Site work is completed.

Following completion of the offsite investigation a summary will be provided to NYSDEC in an Offsite Investigation Report to support implementation of proposed remedial action. The report will include:

- Summary of the activities;
- Figure showing sampling locations;
- An updated groundwater contour map with data from a synoptic gauging event of all on and offsite shallow monitoring wells;
- Tables summarizing laboratory analytical results;
- Laboratory analytical data reports;
- Field sampling data sheets;
- Findings regarding the nature and extent of vapor migration and vapor intrusion offsite;
- DUSRs and confirmation of EDD submittal to the NYSDEC EQuIS database; and
- Conclusions and recommendations.

9. Schedule

The Site owner plans to implement this OIWP promptly upon approval from the NYSDEC.

Anticipated Offsite Investigation Schedule	
OIWP Submission	December 2020 (Completed)
OIWP Revised Submission	March 2021
NYSDEC Approval of OIWP	March 2021
Site Mobilization for Offsite Investigation	March 2021
Submission of Offsite Investigation Report	April-May 2021

References

1. Phase II Environmental Site Assessment, 12-18 Walworth Street, December 2007, prepared by P.W. Grosser Consulting, Prepared for AAA Group.

2. Soil Vapor Intrusion Report – 8 Walworth Street, May 2017, Prepared by Environmental Business Consultants, prepared for the New York State Department of Environmental Conservation.

3. Brownfield Cleanup Program Application. 8 Walworth Street, Brooklyn, New York, June 2017, Prepared by Toldos Yehudah, LLC & Environmental Business Consultants, prepared for the New York State Department of Environmental Conservation.

4. Remedial Investigation Report - 8 Walworth Street Site, September 2019, Prepared by Environmental Business Consultants, Prepared for the New York State Department of Environmental Conservation.

5. Supplemental Remedial Investigation Work Plan – 8 Walworth Street, March 2020, prepared by Haley & Aldrich of New York, Prepared for the New York State Department of Environmental Conservation.

6. Supplemental Remedial Investigation Report – 8 Walworth Street, November 2020, prepared by Haley & Aldrich of New York, Prepared for the New York State Department of Environmental Conservation.

7. Program Policy DER-10, "Technical Guidance for Site Investigation and Remediation," May 2010, prepared by New York State Department of Environmental Conservation.

8. "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" October 2006, prepared by New York State Department of Health.

\\haleyaldrich.com\share\CF\Projects\134860\Deliverables\2. Offsite Investigation Plan\2021-0223_8 Walworth Offsite Investigation Plan-F3.docx

FIGURES

LEGEND

SITE BOUNDARY

GROUNDWATER FLOW DIRECTION

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

N

0 70 140

SCALE IN FEET

HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

SITE PLAN AND SURROUNDING LAND USE MAP

DECEMBER 2020

FIGURE 1

LEGEND

- SITE BOUNDARY
- PROPOSED OFFSITE MONITORING WELL CLUSTER LOCATIONS
- BLOCK 1717, LOTS 26, 29, 31 (SITE ACCESS GRANTED)
- PROPOSED OFFSITE SUB-SLAB VAPOR (SS), INDOOR AIR (IA) AND AMBEINT AIR (AA) SAMPLING LOCATIONS
- FORMER OFFSITE SOIL VAPOR SAMPLING LOCATIONS (INSTALLED IN NOVEMBER 2018 BY EBC)

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI
3. PROPOSED OFFSITE SOIL VAPOR, INDOOR AIR AND AMBIENT AIR ARE SUBJECT TO CHANGE BASED ON FIELD OBSERVATIONS AND ACCESSIBILITY

N

0 70 140
SCALE IN FEET

HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

PROPOSED OFFSITE INVESTIGATION SAMPLE MAP

DECEMBER 2020

FIGURE 2

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\134860\GIS\Maps\2020_12\134860_002_0002_SITE_PLAN.mxd — USER: hwachholz — LAST SAVED: 12/10/2020 10:13:46 AM

APPENDIX A

Proposed Well Construction Log

OBSERVATION WELL INSTALLATION REPORT

HALEY ALDRICH

Well No.

Boring No.

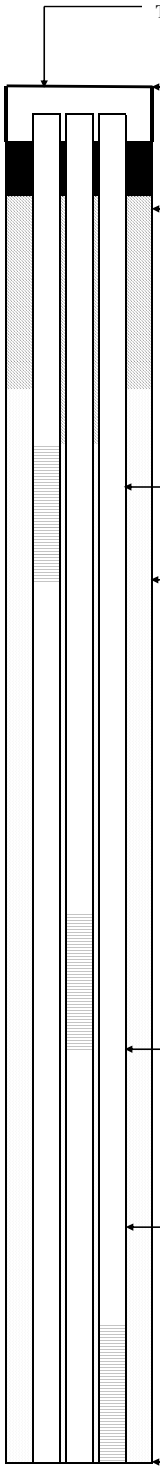
PROJECT	8 Walworth Street - Offsite Investigation	**H&A FILE NO.**	133860-002
LOCATION	8 Walworth Street, Brooklyn, NY	**PROJECT MGR.**	Mari Conlon
CLIENT		**FIELD REP.**	
CONTRACTOR		**DATE INSTALLED**	
DRILLER		**WATER LEVEL**	

Ground El. ft **Location**

El. Datum

☐ **Guard Pipe**
☐ **Roadway Box**

SOIL/ROCK CONDITIONS	**BOREHOLE BACKFILL**



Type of protective cover/lock (circle one): Manhole Cover

Ground Surface

Grout
Bentonite Seal
#00 Morie or Equivalent

Type of protective casing: Steel Guard Pipe
Inside Diameter 12.0 **in**

Type of riser pipe: Schedule 40 PVC
Inside diameter of riser pipe 2.0 **in**

Depth of bottom of well screen 17.0 **ft**

Type of screen Machine Slotted PVC
Screen gauge or size of openings 0.010 **in**
Diameter of screen 2.0 **in**

Depth of bottom of well screen 35.0 **ft**

Type of backfill around screen #0 or #00 Morie or Equivalent (to 1 ft above screen)

Depth of bottom of well screen/borehole 45.0 **ft**

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)

(Not to Scale)

COMMENTS:

APPENDIX B

Access Request Letter and Certified Mailings

XX January 2021

Haley & Aldrich of New York
237 West 35th Street, 16th Floor
New York, NY 10123

[Property Owner Address]

Re: Access to Block XX, Lot XX

To Whom it My Concern:

Haley & Aldrich of New York (Haley & Aldrich) is writing to you as a **second** attempt to request access to your property to perform a vapor intrusion study as requested by the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) in connection with ongoing investigation occurring at 8 Walworth Street, Brooklyn, NY. Please note all work will be completed at no cost to the property owner.

The 8 Walworth Street site is currently in the NYSDEC Brownfield Cleanup Program (BCP) identified as NYSDEC Site Number C224239. Based on the findings of a Remedial Investigation Report (RIR) submitted by a former environmental consultant to NYSDEC in September 2019, the NYSDOH issued an Off-Site Soil Vapor Intrusion Investigation Recommendations letter which requested a soil vapor intrusion survey be completed at several neighboring properties including yours. Additional site details including environmental and health assessment summaries can be found in the NYSDEC environmental site remediation database by entering Site ID C224239.

To complete the intrusion survey and address the request from the NYSDOH, we would need access to your building for a period of 1-2 days. Procedures to complete this survey would include sub-slab vapor sampling, indoor air sampling and compilation of a product inventory for your facility. The sub-slab vapor sampling procedure would require drilling an approximate half-inch diameter hole in the concrete slab of your building's lowest level (i.e. first floor or cellar) which would be patched to grade to replicate the remaining slab after sample collection. Indoor air sampling would require a sampling device be placed in the breathing zone (3-5 feet above ground surface) in lowest occupied level of the building. The product inventory would comprise of a list of the products and chemicals stored in or at the property which could influence sample results. Please note results of the sampling will be provided to you upon completion.

Attached is a Frequently Asked Questions list from NYSDOH and an access request response with pre-paid envelope for return. For further information, the case managers for this project include NYSDEC case manager, Aaron Fischer (Aaron.Fischer@dec.ny.gov) and NYSDOH case manager, Angela Martin (Angela.Martin@health.ny.gov).

Please contact us at the undersigned to arrange a time for access or with further questions.

Sincerely yours,
HALEY & ALDRICH OF NEW YORK

James M. Bellew
Senior Associate
(646) 277-5686
jbellew@haleyaldrich.com

Mari C. Conlon
Project Manager
(646) 277-5688
mconlon@haleyaldrich.com

Property Access Response:

Re: Access to Block XX, Lot XX

I, _____, affiliated with _____, have received the access request to conduct a Soil Vapor Intrusion Study at the above referenced property as requested by the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) in connection with ongoing investigation occurring at 8 Walworth Street, Brooklyn, NY. After consideration:

☐ Access will be provided to the property.

☐ Access will not be provided to the property.

Signature

_____

Date

_____

Please Provide Your Contact Information:

Email: _____

Day Time Phone: _____

HALEY ALDRICH

U.S. Postal Service™
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Brooklyn, NY 11205

OFFICIAL USE

Certified Mail Fee $3.60
$
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $
- Return Receipt (electronic) $
- Certified Mail Restricted Delivery $
- Adult Signature Required $
- Adult Signature Restricted Delivery $

Postage $0.55
$
Total Postage and Fees $4.15
$

Postmark Here
JAN 29 2021
01/29/2021
DOWNTOWN STATION
HOBOKEN NJ USPS
0270
07

Sent To Oriental World Rose
Street and Apt. No., or PO Box No. 17 Spencer Street
City, State, ZIP+4® Brooklyn, NY 11205

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7020 2450 0001 9486 6381

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Brooklyn, NY 11205

OFFICIAL USE

Certified Mail Fee $3.60
$
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $
- Return Receipt (electronic) $
- Certified Mail Restricted Delivery $
- Adult Signature Required $
- Adult Signature Restricted Delivery $

Postage $0.55
$
Total Postage and Fees $4.15
$

Postmark Here
JAN 29 2021
01/29/2021
DOWNTOWN STATION
HOBOKEN NJ USPS
0270
07

Sent To G.G Quality Coating
Street and Apt. No., or PO Box No. 500 Flushing Avenue
City, State, ZIP+4® Brooklyn, NY 11205

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Brooklyn, NY 11205

OFFICIAL USE

Certified Mail Fee $3.60
$
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $
- Return Receipt (electronic) $
- Certified Mail Restricted Delivery $
- Adult Signature Required $
- Adult Signature Restricted Delivery $

Postage $0.55
$
Total Postage and Fees $4.15
$

Postmark Here
JAN 29 2021
01/29/2021
DOWNTOWN STATION
HOBOKEN NJ USPS
0270
07

Sent To LFFT TIC LLC
Street and Apt. No., or PO Box No. 30 Warsoff Place
City, State, ZIP+4® Brooklyn, NY 11205

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7020 2450 0001 9486 6374

APPENDIX B

Well Construction Diagram

OBSERVATION WELL INSTALLATION REPORT

HALEY ALDRICH

Well No. SHALLOW
Boring No.

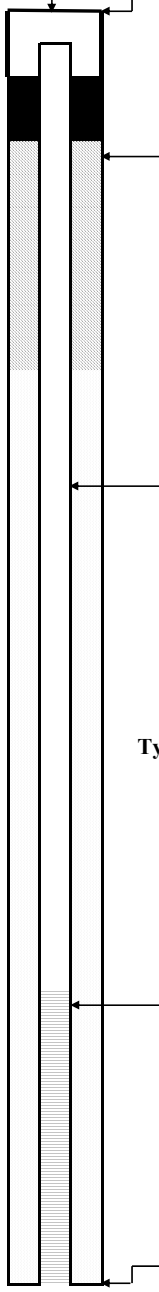
PROJECT	8 Walworth Street - Offsite Investigation	**H&A FILE NO.**	134860-002
LOCATION	8 Walworth Street, Brooklyn, NY	**PROJECT MGR.**	Mari Conlon
CLIENT	Toldos Yehudah	**FIELD REP.**	Zach Simmel
CONTRACTOR	Eastern Environmental Solutions Inc.	**DATE INSTALLED**	3/30/21-3/31/21
DRILLER		**WATER LEVEL**	

Ground El. _____ ft
El. Datum _____

Location _____

☐ **Guard Pipe**
☐ **Roadway Box**

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL



Type of protective cover/lock (circle one): Manhole Cover

Ground Surface

Grout
Bentonite Seal
#00 Morie or Equivalent

Type of protective casing: Steel Guard Pipe
Inside Diameter 12.0 **in**

Type of riser pipe: Schedule 40 PVC
Inside diameter of riser pipe 2.0 **in**

Type of screen Machine Slotted PVC
Screen gauge or size of openings 0.010 **in**
Diameter of screen 2.0 **in**

Type of backfill around screen #0 or #00 Morie or Equivalent (to 1 ft above screen)

Depth of bottom of well screen/borehole 20.0 **ft**

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)

to Scale)

COMMENTS:

OBSERVATION WELL INSTALLATION REPORT

HALEY ALDRICH

Well No. INTERMEDIATE/DEEP
Boring No.

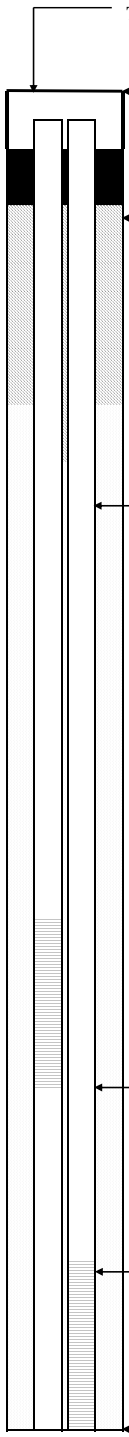
PROJECT	8 Walworth Street - Offsite Investigation	**H&A FILE NO.**	134860-002
LOCATION	8 Walworth Street, Brooklyn, NY	**PROJECT MGR.**	Mari Conlon
CLIENT	Toldos Yehudah	**FIELD REP.**	Zach Simmel
CONTRACTOR	Eastern Environmental Solutions Inc.	**DATE INSTALLED**	3/30/21-3/31/21
DRILLER		**WATER LEVEL**	

Ground El. _____ ft
El. Datum _____

Location _____

☐ **Guard Pipe**
☐ **Roadway Box**

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL



Type of protective cover/lock (circle one): Manhole Cover

Ground Surface

Grout
Bentonite Seal
#00 Morie or Equivalent

Type of protective casing: Steel Guard Pipe
Inside Diameter 12.0 **in**

Type of riser pipe: Schedule 40 PVC
Inside diameter of riser pipe 2.0 **in**

Type of screen Machine Slotted PVC
Screen gauge or size of openings 0.010 **in**
Diameter of screen 2.0 **in**

Depth of bottom of well screen 35.0 **ft**

Type of backfill around screen #0 or #00 Morie or Equivalent (to 1 ft above screen)

Depth of bottom of well screen/borehole 45.0 **ft**

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)

(Not to Scale)

COMMENTS: _____

APPENDIX C

Daily Reports

DAILY FIELD REPORT

Project	**NYSDEC Site C224239 - 8 Walworth Street Offsite Investigation**	**Report No.**	20
Location	**8 Walworth Street, Brooklyn, NY**	**Date**	**3/30/2021**
Client	**Toldos Yehuda, LLC**	**Page**	**1** of **1**
Contractor	**Eastern Environmental Solutions**	**File No.**	**134860-002**
Weather	**Mostly Sunny**	**Temperature**	**45-55°**

0645 Z.Simmel & S.Commisso of H&A on site, Eastern Environmental Solutions (Eastern) on site

0650 Health & Safety tailgate

0700 Calibrating air monitoring equipment, mobilizing drill rig and equipment to MW-07

0800 Hand clear MW-07 locations to 5 ft bgs

0900 Begin drilling soil boring at MW-07 with Geoprobe 8140LS Sonic Drill Rig

1025 Groundwater encountered at 14 ft bgs; collect B07(13-15')

1035 Inquiry made at 490 Flushing Avenue for access regarding the completing the Indoor Air Questionnaire, building inventory and future soil vapor sampling. Owner stated no access would be provided to the interior of the building and would only permit sampling in the sidewalks adjacent to the building. NYSDEC was notified via email.

1115 Complete soil logging at MW-07 and begin installation of well casing

1200 M.Conlon of H&A on site

1230 Setting MW07-I to 35 ft bgs, setting MW07-D to 45 ft bgs

1315 Finish setting MW-07-I and MW-07-D

1330 M.Conlon of H&A off site

1345 Begin installation of MW07-S

1415 Setting MW07-S to 20 ft bgs

1445 Site cleanup and preparation, breakdown air monitoring equipment

1515 All off site

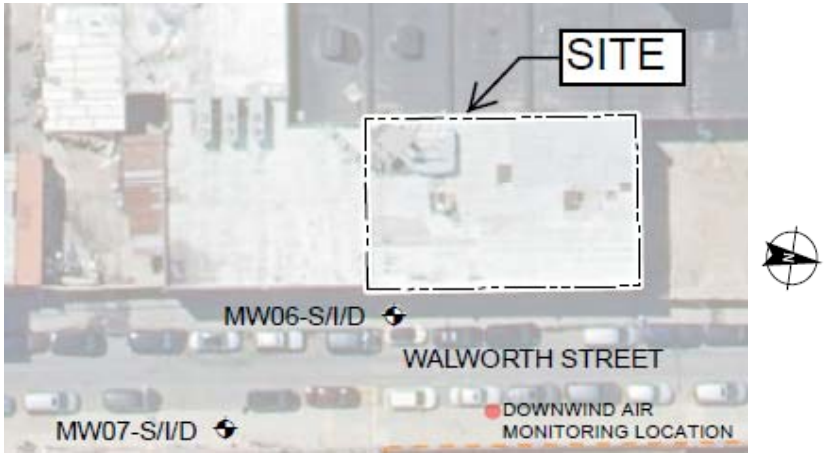
Field Representative(s)	**Time on site**
Z Simmel	8.5
S Commisso	8.5

8 Walworth Street, Brooklyn, NY
134860-002
Air Monitoring Log

Date:	3/30/2021
Personnel:	Z. Simmel
Weather:	Mostly Sunny
Humidity:	44%
Temperature:	45-55° F
Wind Direction:	N

Particulate Background:	No visible dust
PID Background (ppm):	0.0

Site Map:



	Dust Particulates	PID		Notes
Time	Visual Dust (Y/N)	PID (ppm)	Odors (Y/N)	Activities/Additional Monitoring
700	N	0.0	N	No additional particulate monitoring necessary
715	N	0.0	N	No additional particulate monitoring necessary
730	N	0.0	N	No additional particulate monitoring necessary
745	N	0.0	N	No additional particulate monitoring necessary
800	N	0.0	N	No additional particulate monitoring necessary
815	N	0.0	N	No additional particulate monitoring necessary
830	N	0.0	N	No additional particulate monitoring necessary
845	N	0.0	N	No additional particulate monitoring necessary
900	N	0.0	N	No additional particulate monitoring necessary
915	N	0.0	N	No additional particulate monitoring necessary
930	N	0.0	N	No additional particulate monitoring necessary
945	N	0.0	N	No additional particulate monitoring necessary
1000	N	0.0	N	No additional particulate monitoring necessary
1015	N	0.0	N	No additional particulate monitoring necessary
1030	N	0.0	N	No additional particulate monitoring necessary
1045	N	0.0	N	No additional particulate monitoring necessary
1100	N	0.1	N	No additional particulate monitoring necessary
1115	N	0.0	N	No additional particulate monitoring necessary

8 Walworth Street, Brooklyn, NY
134860-002
Air Monitoring Log

	Dust Particulates	PID		Notes
Time	Visual Dust (Y/N)	PID (ppm)	Odors (Y/N)	Activities/Additional Monitoring
1130	N	0.0	N	No additional particulate monitoring necessary
1145	N	0.0	N	No additional particulate monitoring necessary
1200	N	0.0	N	No additional particulate monitoring necessary
1215	N	0.0	N	No additional particulate monitoring necessary
1230	N	0.0	N	No additional particulate monitoring necessary
1245	N	0.0	N	No additional particulate monitoring necessary
1300	N	0.0	N	No additional particulate monitoring necessary
1315	N	0.0	N	No additional particulate monitoring necessary
1330	N	0.0	N	No additional particulate monitoring necessary
1345	N	0.0	N	No additional particulate monitoring necessary
1400	N	0.0	N	No additional particulate monitoring necessary
1415	N	0.0	N	No additional particulate monitoring necessary
1430	N	0.0	N	No additional particulate monitoring necessary
1445	N	0.0	N	No additional particulate monitoring necessary

LEGEND

SITE BOUNDARY

OFFSITE MONITORING WELL CLUSTER LOCATIONS

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

N

0 70 140

SCALE IN FEET

HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

OFFSITE INVESTIGATION SAMPLE MAP

MARCH 2021

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\134860\GIS\Maps\2020_12\134860_002_0002_SITE_PLAN.mxd — USER: hwachholz — LAST SAVED: 12/10/2020 10:13:46 AM

8 Walworth Street
Brooklyn, NY
File No. 134860-002
Date Photographs Taken: 30 March 2021

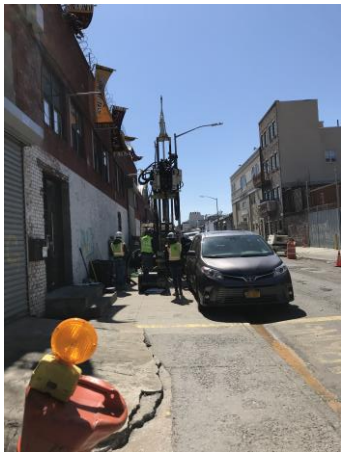


Photo 1: View of well installation at MW07.

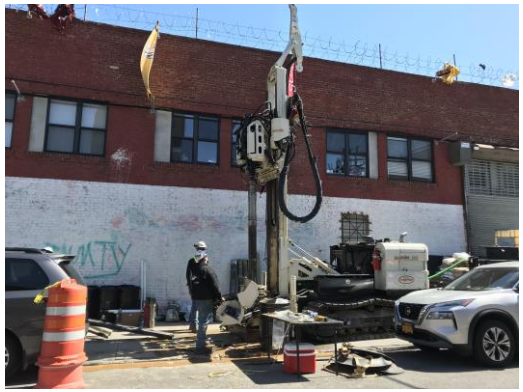


Photo 2: View of Geoprobe 8140LS Sonic Drill Rig.

Photo 3: View of air monitoring.

Photo 4: View of setting MW07.

DAILY FIELD REPORT

Project	**NYSDEC Site C224239 - 8 Walworth Street Offsite Investigation**	**Report No.**	21
Location	**8 Walworth Street, Brooklyn, NY**	**Date**	**3/31/2021**
Client	**Toldos Yehuda, LLC**	**Page**	**1** of **1**
Contractor	**Eastern Environmental Solutions**	**File No.**	**134860-002**
Weather	**Partly Cloudy**	**Temperature**	**52-60°**

0645 Z.Simmel & S.Commisso of H&A on site, Eastern Environmental Solutions (Eastern) on site

0645 Calibrating air monitoring equipment, mobilizing drill rig

0730 Begin well development at MW07

0800 Hand clear MW06 locations to 5 ft bgs

0830 Begin drilling soil boring at MW06 with Geoprobe 8140LS Sonic Drill Rig

0900 Informed of bottleware error for PFAS in sample B07(13-15') by Alpha Laboratories; decision made to remobilize and recollect sample into appropriate bottleware at end of day

0915 Groundwater encountered at 14 ft bgs; collect B06(13-15') and field duplicate

1000 Complete well development at MW07

1100 Complete soil logging at MW06 and begin installation of well casing; begin low flow sampling at MW07-D

1115 Setting MW06-I to 35 ft bgs, setting MW06-D to 45 ft bgs

1130 Begin installation of MW06-S

1240 Collect MW07-D, MW07-D(MS) and MW07-D(MSD)

1300 Setting MW06-S to 20 ft bgs

1315 Begin well development at MW06

1330 Remobilize to B07 to collect B07(13-15') for PFAS into proper bottleware

1400 Collect B07(13-15') for PFAS

1415 Site cleanup, demobilize rig and install manhole covers

1500 Eastern off site

1530 Complete well development at MW06

1545 H&A off site

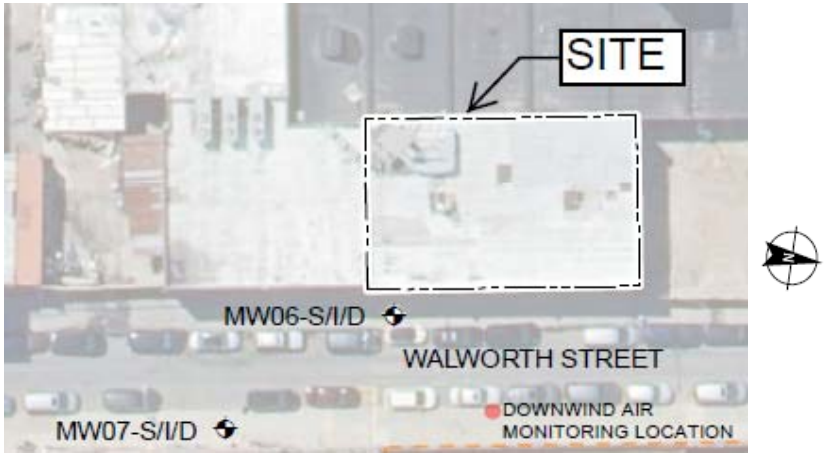
Field Representative(s)	**Time on site**
Z Simmel	9
S Commisso	9

8 Walworth Street, Brooklyn, NY
134860-002
Air Monitoring Log

Date:	3/31/2021
Personnel:	Z. Simmel
Weather:	Partly Cloudy
Humidity:	72%
Temperature:	52-60° F
Wind Direction:	NE

Particulate Background:	No visible dust
PID Background (ppm):	0.0

Site Map:



	Dust Particulates	PID		Notes
Time	Visual Dust (Y/N)	PID (ppm)	Odors (Y/N)	Activities/Additional Monitoring
645	N	0.0	N	No additional particulate monitoring necessary
700	N	0.0	N	No additional particulate monitoring necessary
715	N	0.0	N	No additional particulate monitoring necessary
730	N	0.0	N	No additional particulate monitoring necessary
745	N	0.0	N	No additional particulate monitoring necessary
800	N	0.0	N	No additional particulate monitoring necessary
815	N	0.0	N	No additional particulate monitoring necessary
830	N	0.0	N	No additional particulate monitoring necessary
845	N	0.0	N	No additional particulate monitoring necessary
900	N	0.0	N	No additional particulate monitoring necessary
915	N	0.0	N	No additional particulate monitoring necessary
930	N	0.0	N	No additional particulate monitoring necessary
945	N	0.0	N	No additional particulate monitoring necessary
1000	N	0.0	N	No additional particulate monitoring necessary
1015	N	0.0	N	No additional particulate monitoring necessary
1030	N	0.0	N	No additional particulate monitoring necessary
1045	N	0.1	N	No additional particulate monitoring necessary
1100	N	0.0	N	No additional particulate monitoring necessary

8 Walworth Street, Brooklyn, NY
134860-002
Air Monitoring Log

	Dust Particulates	PID		Notes
Time	Visual Dust (Y/N)	PID (ppm)	Odors (Y/N)	Activities/Additional Monitoring
1115	N	0.0	N	No additional particulate monitoring necessary
1130	N	0.0	N	No additional particulate monitoring necessary
1145	N	0.0	N	No additional particulate monitoring necessary
1200	N	0.0	N	No additional particulate monitoring necessary
1215	N	0.0	N	No additional particulate monitoring necessary
1230	N	0.0	N	No additional particulate monitoring necessary
1245	N	0.0	N	No additional particulate monitoring necessary
1300	N	0.0	N	No additional particulate monitoring necessary
1315	N	0.0	N	No additional particulate monitoring necessary
1330	N	0.0	N	No additional particulate monitoring necessary
1345	N	0.0	N	No additional particulate monitoring necessary
1400	N	0.0	N	No additional particulate monitoring necessary
1415	N	0.0	N	No additional particulate monitoring necessary

LEGEND

SITE BOUNDARY

OFFSITE MONITORING WELL CLUSTER LOCATIONS

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

N

0 70 140

SCALE IN FEET

HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

OFFSITE INVESTIGATION SAMPLE MAP

MARCH 2021

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\134860\GIS\Maps\2020_12\134860_002_0002_SITE_PLAN.mxd — USER: hwachholz — LAST SAVED: 12/10/2020 10:13:46 AM

8 Walworth Street
Brooklyn, NY
File No. 134860-002
Date Photographs Taken: 31 March 2021

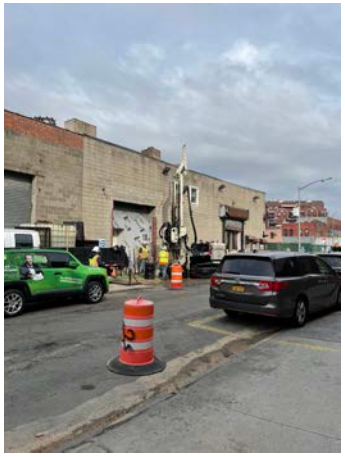


Photo 1: View of well installation at MW06.

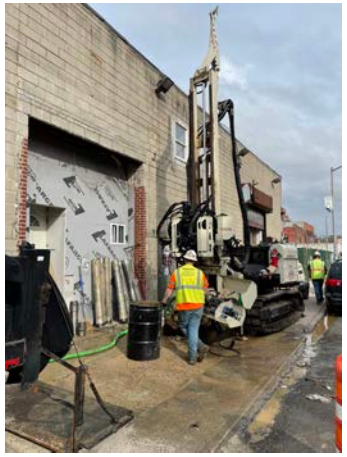


Photo 2: Alternate view of well installation at MW06.

Photo 3: View of MW06 well cluster.

DAILY FIELD REPORT

Project	NYSDEC Site C224239 - 8 Walworth Street Offsite Investigation	**Report No.**	22
Location	8 Walworth Street, Brooklyn, NY	**Date**	4/1/2021
Client	Toldos Yehuda, LLC	**Page**	1 of 1
Contractor	Eastern Environmental Solutions	**File No.**	134860-002
Weather	Cloudy, rain	**Temperature**	45-50°

0800 Z.Simmel & S.Commisso of H&A on site
0820 Begin setting up low flow sampling equipment
0925 Begin low flow sampling at MW06-D
1010 Collect sample at MW06-D
1055 Begin low flow sampling at MW06-I
1140 Collect sample at MW06-I
1215 Begin low flow sampling at MW06-S
1250 Collect sample at MW06-S
1315 Begin low flow sampling at MW07-I
1315 Collect sample at MW07-I
1425 Begin low flow sampling at MW06-S
1455 Collect sample at MW06-S
1500 Collect field blank
1530 Site preparation and cleanup, drum purge water
1600 S.Commisso offsite
1630 Relinquish samples to Alpha Analytical
1630 Z.Simmel offsite

Field Representative(s)	**Time on site**
Z Simmel	8.5
S Commisso	8

LEGEND

SITE BOUNDARY

OFFSITE MONITORING WELL CLUSTER LOCATIONS

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

N

0 70 140

SCALE IN FEET

HALEY ALDRICH

8 WALWORTH STREET
BROOKLYN, NEW YORK

OFFSITE INVESTIGATION SAMPLE MAP

MARCH 2021

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\134860\GIS\Maps\2020_12\134860_002_0002_SITE_PLAN.mxd — USER: hwachholz — LAST SAVED: 12/10/2020 10:13:46 AM

8 Walworth Street
Brooklyn, NY
File No. 134860-002
Date Photographs Taken: 1 April 2021

Photo 1: View of low flow sampling set up.

Photo 2: View of drum storage area.

APPENDIX D

Well Development Log

HALEY ALDRICH

WELL DEVELOPMENT LOG

Well No. MW06-S

Comments Whale pump

PROJECT	8 Walworth Street Offsite Investigation	**DEVELOPMENT DATE**	3/31/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**DEVELOPMENT START**	1330
CLIENT	Toldos Yehudah LLC	**DEVELOPMENT END**	1400
H&A FILE NO.	134860-002	**WELL DEPTH (FT)**	20
PROJECT MANAGER	Mari Conlon	**STATIC WATER LEVEL (FT)**	14.41
FIELD REP.	Zach Simmel	**WATER COLUMN HEIGHT (FT)**	5.59
DATE INSTALLED	3/31/2021	**WELL VOLUME (GAL)**	0.911
DRILLER	Eastern Environmental Solutions, Inc.	**TOTAL VOLUME PURGED (GAL)**	6

Time	Time Elapsed (min)	Volume (gal)	Color	
1335	5	0.75	Turbid/silty	
1340	10	1	Turbid/silty	
1345	15	1	Turbid/silty	
1350	20	1	Cloudy	
1355	25	1	Semi-Clear	
1400	30	1	Clear	Turbidity <50 NTU

HALEY ALDRICH

WELL DEVELOPMENT LOG

Well No. MW06-I

Comments Whale pump

PROJECT	8 Walworth Street Offsite Investigation	**DEVELOPMENT DATE**	3/31/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**DEVELOPMENT START**	1510
CLIENT	Toldos Yehudah LLC	**DEVELOPMENT END**	1530
H&A FILE NO.	134860-002	**WELL DEPTH (FT)**	35
PROJECT MANAGER	Mari Conlon	**STATIC WATER LEVEL (FT)**	14.34
FIELD REP.	Zach Simmel	**WATER COLUMN HEIGHT (FT)**	20.66
DATE INSTALLED	3/31/2021	**WELL VOLUME (GAL)**	3.368
DRILLER	Eastern Environmental Solutions, Inc.	**TOTAL VOLUME PURGED (GAL)**	40

Time	Time Elapsed (min)	Volume (gal)	Color	Comments
1515	5	10	Light brown	
1520	10	10	Light brown	
1525	15	10	Semi-clear	
1530	20	10	Semi-clear	Over 10 well volumes purged

HALEY ALDRICH

WELL DEVELOPMENT LOG

Well No. MW06-D

Comments Whale pump

PROJECT	8 Walworth Street Offsite Investigation	**DEVELOPMENT DATE**	3/31/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**DEVELOPMENT START**	1440
CLIENT	Toldos Yehudah LLC	**DEVELOPMENT END**	1510
H&A FILE NO.	134860-002	**WELL DEPTH (FT)**	45
PROJECT MANAGER	Mari Conlon	**STATIC WATER LEVEL (FT)**	14.34
FIELD REP.	Zach Simmel	**WATER COLUMN HEIGHT (FT)**	30.66
DATE INSTALLED	3/31/2021	**WELL VOLUME (GAL)**	4.998
DRILLER	Eastern Environmental Solutions, Inc.	**TOTAL VOLUME PURGED (GAL)**	60

Time	Time Elapsed (min)	Volume (gal)	Color	Comments
1445	5	10	Silty/light brown	
1450	10	10	Light brown	
1455	15	10	Cloudy	
1500	20	10	Cloudy	
1505	25	10	Semi-clear	
1510	30	10	Clear	Over 10 well volumes purged

HALEY ALDRICH

WELL DEVELOPMENT LOG

Well No. MW07-S

Comments Whale pump

PROJECT	8 Walworth Street Offsite Investigation	**DEVELOPMENT DATE**	4/1/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**DEVELOPMENT START**	1420
CLIENT	Toldos Yehudah LLC	**DEVELOPMENT END**	1450
H&A FILE NO.	134860-002	**WELL DEPTH (FT)**	20
PROJECT MANAGER	Mari Conlon	**STATIC WATER LEVEL (FT)**	15
FIELD REP.	Zach Simmel	**WATER COLUMN HEIGHT (FT)**	5
DATE INSTALLED	3/30/2021	**WELL VOLUME (GAL)**	0.815
DRILLER	Eastern Environmental Solutions, Inc.	**TOTAL VOLUME PURGED (GAL)**	5.5

Time	Time Elapsed (min)	Volume (gal)	Color	Comments
1425	5	0.5	silty/light brown	
1430	10	1	silty/light brown	
1435	15	1	cloudy	
1440	20	1	cloudy	
1445	25	1	semi-clear	
1450	30	1	clear	Turbidity <50 NTU

HALEY ALDRICH

WELL DEVELOPMENT LOG

Well No. MW07-I

Comments Whale pump

PROJECT	8 Walworth Street Offsite Investigation	**DEVELOPMENT DATE**	3/31/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**DEVELOPMENT START**	0830
CLIENT	Toldos Yehudah LLC	**DEVELOPMENT END**	0855
H&A FILE NO.	134860-002	**WELL DEPTH (FT)**	35
PROJECT MANAGER	Mari Conlon	**STATIC WATER LEVEL (FT)**	14.8
FIELD REP.	Zach Simmel	**WATER COLUMN HEIGHT (FT)**	20.2
DATE INSTALLED	3/30/2021	**WELL VOLUME (GAL)**	3.293
DRILLER	Eastern Environmental Solutions, Inc.	**TOTAL VOLUME PURGED (GAL)**	45

Time	Time Elapsed (min)	Volume (gal)	Color	Comments
0835	5	10	Turbid/silty	
0840	10	10	Turbid/silty	
0845	15	10	Semi-clear	
0850	20	10	Semi-clear	
0855	25	5	Clear	Over 10 well volumes purged

HALEY ALDRICH

WELL DEVELOPMENT LOG

Well No. MW07-D

Comments Whale pump

PROJECT	8 Walworth Street Offsite Investigation	**DEVELOPMENT DATE**	3/31/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**DEVELOPMENT START**	0750
CLIENT	Toldos Yehudah LLC	**DEVELOPMENT END**	0820
H&A FILE NO.	134860-002	**WELL DEPTH (FT)**	45
PROJECT MANAGER	Mari Conlon	**STATIC WATER LEVEL (FT)**	14.80
FIELD REP.	Zach Simmel	**WATER COLUMN HEIGHT (FT)**	30.2
DATE INSTALLED	3/30/2021	**WELL VOLUME (GAL)**	4.923
DRILLER	Eastern Environmental Solutions, Inc.	**TOTAL VOLUME PURGED (GAL)**	55

Time	Time Elapsed (min)	Volume (gal)	Color	Comments
0755	5	10	Turbid	
0800	10	10	Semi-clear	
0805	15	10	Semi-clear	
0810	20	10	Semi-clear	
0815	25	10	Clear	
0820	30	5	Clear	Over 10 well volumes purged

APPENDIX E

Synoptic Monitoring Well Gauging Log

HALEY ALDRICH

Synoptic Monitoring Well Gauging Log

PROJECT	8 Walworth Street Environmental Services
LOCATION	8 Walworth Street, Brooklyn, NY
CLIENT	Toldos Yehudah, LLC
H&A FILE NO.	134860-002
PROJECT MANAGER	Mari Conlon
FIELD REP.	M. Knapik
GAUGING DATE	5/14/2021
WEATHER	66°F, Sunny

MONITORING WELL ID	TIME	DEPTH TO WATER (FT BELOW TOC)	TOP OF CASING (FT)	GROUNDWATER ELEVATION (FT)
MW-01(S)	7:10	15.58	13.95	-1.63
MW-01(I)	7:12	15.55	13.99	-1.56
MW-02(S)	7:18	15.68	14.07	-1.61
MW-02(I)	7:20	15.63	14.05	-1.58
MW-02(D)	7:21	15.62	14.04	-1.58
MW-03(S)	7:25	15.51	13.97	-1.54
MW-03(I)	7:27	15.68	14.05	-1.63
MW-03(D)	7:29	15.50	14.04	-1.46
MW-04(S)	7:37	15.69	14.07	-1.62
MW-04(I)	7:38	15.67	14.08	-1.59
MW-04(D)	7:40	15.60	14.05	-1.55
MW-05(S)	7:44	15.60	14.06	-1.54
MW-05(I)	7:47	15.42	14.04	-1.38
MW-05(D)	7:48	15.64	14.07	-1.57
MW-06(S)	8:50	15.08	13.30	-1.78
MW-06(I)	8:51	14.92	13.20	-1.72
MW-06(D)	8:52	15.01	13.26	-1.75
MW-07(S)	9:05	15.11	13.32	-1.79
MW-07(I)	9:06	15.19	13.45	-1.74
MW-07(D)	9:07	15.15	13.43	-1.72

Comments:

1. Monitoring wells MW-01 through MW-05 were surveyed by NY Land Surveyors on 23 July 2020.
2. Monitoring wells MW-06 and MW-07 were surveyed by NY Land Surveyors on 14 May 2021.
3. Wells were gauged on 14 May 2021
4. Elevation refers to the North American Vertical Datum of 1988 (NAVD88).
5. All dimensions are in US survey feet.

APPENDIX F

Groundwater Sampling Logs

HALEY ALDRICH

LOW FLOW SAMPLING PURGE LOG

Well No. MW06-S

Comments

PROJECT	8 Walworth Street Offsite Investigation	**DATE SAMPLED:**	4/1/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**START TIME:**	1210
CLIENT	Toldos Yehudah LLC	**SAMPLE TIME:**	1250
H&A FILE NO.	134860-002	**PUMP:**	Bladder
PROJECT MANAGER	Mari Conlon	**WELL DEPTH (FT)**	20
FIELD REP.	Zach Simmel	**STATIC WATER LEVEL (FT)**	14.48
DATE INSTALLED	3/31/2021	**WATER COLUMN HEIGHT (FT)**	5.52
DRILLER	Eastern Environmental Solutions, Inc.	**WELL VOLUME (GAL)**	0.900

Time (24 Hr)	Depth to Water (ft)	Purge Rate (mL/min)	Cumulative Purge Volumge (gal)	Temperature (degrees Celsius)	pH	Conductivity (µs/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mv)	Comments
1215	14.49	200	0.26	10.8	7.06	0.69	2.92	259	-75	
1220	14.50	200	0.52	11.0	6.99	0.64	2.30	51.1	-85	
1225	14.50	200	0.78	11.02	6.97	0.623	2.16	21.7	-88	
1230	14.50	200	1.04	11.03	6.96	0.611	1.91	14.4	-90	
1235	14.50	200	1.3	11.06	6.97	0.595	1.65	15.2	-94	
1240	14.52	200	1.56	11.07	6.96	0.59	1.42	9.4	-96	
1245	14.52	200	1.82	11.09	6.96	0.583	1.39	6.8	-96	
1250	14.52	200	2.08	11.13	6.96	0.584	1.32	9.1	-99	

LOW FLOW SAMPLING PURGE LOG

Well No. MW06-I

Comments

PROJECT	8 Walworth Street Offsite Investigation	**DATE SAMPLED:**	4/1/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**START TIME:**	1050
CLIENT	Toldos Yehudah LLC	**SAMPLE TIME:**	1140
H&A FILE NO.	134860-002	**PUMP:**	Bladder
PROJECT MANAGER	Mari Conlon	**WELL DEPTH (FT)**	35
FIELD REP.	Zach Simmel	**STATIC WATER LEVEL (FT)**	14.34
DATE INSTALLED	3/31/2021	**WATER COLUMN HEIGHT (FT)**	20.66
DRILLER	Eastern Environmental Solutions, Inc.	**WELL VOLUME (GAL)**	3.368

Time (24 Hr)	Depth to Water (ft)	Purge Rate (mL/min)	Cumulative Purge Volumge (gal)	Temperature (degrees Celsius)	pH	Conductivity (µs/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mv)	Comments
1055	14.34	500	0.66	12.76	7.76	0.86	4.14	300	-130	
1100	14.34	500	1.32	13.24	7.72	0.90	3.28	240	-132	
1105	14.34	500	1.98	13.23	7.61	0.929	2.79	200	-143	
1110	14.34	500	2.64	13.31	7.51	0.974	2.26	133	-148	
1115	14.34	500	3.3	13.34	7.49	0.993	1.90	110	-155	
1120	14.32	500	3.96	13.34	7.47	1.01	1.64	80.0	-161	
1125	14.32	500	4.62	13.36	7.45	1.04	1.45	66.2	-163	
1130	14.32	500	5.28	13.39	7.43	1.06	1.30	57.3	-168	
1135	14.32	500	5.94	13.36	7.46	1.04	1.17	52.3	-175	

HALEY ALDRICH

LOW FLOW SAMPLING PURGE LOG

Well No. MW06-D

Comments

PROJECT	8 Walworth Street Offsite Investigation	**DATE SAMPLED:**	4/1/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**START TIME:**	0920
CLIENT	Toldos Yehudah LLC	**SAMPLE TIME:**	1010
H&A FILE NO.	134860-002	**PUMP:**	Bladder
PROJECT MANAGER	Mari Conlon	**WELL DEPTH (FT)**	45
FIELD REP.	Zach Simmel	**STATIC WATER LEVEL (FT)**	14.41
DATE INSTALLED	3/31/2021	**WATER COLUMN HEIGHT (FT)**	30.59
DRILLER	Eastern Environmental Solutions, Inc.	**WELL VOLUME (GAL)**	4.986

Time (24 Hr)	Depth to Water (ft)	Purge Rate (mL/min)	Cumulative Purge Volumge (gal)	Temperature (degrees Celsius)	pH	Conductivity (µs/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mv)	Comments
0925	14.25	400	0.52	12.26	7.36	1.21	4.10	416	-124	
0930	14.40	400	1.04	12.44	7.36	1.20	3.35	218	-128	
0935	14.20	400	1.56	12.5	7.37	1.20	3.13	192	-125	
0940	14.40	400	2.08	12.58	7.36	1.21	2.74	101	-128	
0945	14.42	400	2.6	12.55	7.41	1.20	2.76	112	-121	
0950	14.40	400	3.12	12.56	7.36	1.20	2.58	73.0	-122	
0955	14.41	400	3.64	12.59	7.38	1.19	2.80	118	-111	
1000	14.41	400	4.16	12.54	7.42	1.16	3.20	127	-95	
1005	14.41	400	4.68	12.54	7.40	1.17	3.20	130	-93	

LOW FLOW SAMPLING PURGE LOG

Well No. MW07-S

Comments

PROJECT	8 Walworth Street Offsite Investigation	**DATE SAMPLED:**	4/1/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**START TIME:**	1420
CLIENT	Toldos Yehudah LLC	**SAMPLE TIME:**	1455
H&A FILE NO.	134860-002	**PUMP:**	Bladder
PROJECT MANAGER	Mari Conlon	**WELL DEPTH (FT)**	20
FIELD REP.	Zach Simmel	**STATIC WATER LEVEL (FT)**	14.58
DATE INSTALLED	3/30/2021	**WATER COLUMN HEIGHT (FT)**	5.42
DRILLER	Eastern Environmental Solutions, Inc.	**WELL VOLUME (GAL)**	0.883

Time (24 Hr)	Depth to Water (ft)	Purge Rate (mL/min)	Cumulative Purge Volumge (gal)	Temperature (degrees Celsius)	pH	Conductivity (µs/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mv)	Comments
1425	17.36	500	0.66	12.66	7.04	5.28	3.57	2.4	-1	
1430	17.40	500	1.32	12.66	7.1	2.96	4.07	38.1	-3	
1435	17.65	500	1.98	12.71	7.11	2.21	3.87	36.2	-3	
1440	17.77	500	2.64	12.74	7.06	1.99	3.41	31.6	-4	
1445	17.95	500	3.3	12.80	7.03	1.96	3.03	32.3	-7	
1450	18.06	500	3.96	12.90	7.01	1.94	2.81	31.2	-8	

LOW FLOW SAMPLING PURGE LOG

Well No. MW07-I

Comments

PROJECT	8 Walworth Street Offsite Investigation	**DATE SAMPLED:**	4/1/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**START TIME:**	1310
CLIENT	Toldos Yehudah LLC	**SAMPLE TIME:**	1355
H&A FILE NO.	134860-002	**PUMP:**	Bladder
PROJECT MANAGER	Mari Conlon	**WELL DEPTH (FT)**	35
FIELD REP.	Zach Simmel	**STATIC WATER LEVEL (FT)**	13.93
DATE INSTALLED	3/30/2021	**WATER COLUMN HEIGHT (FT)**	21.07
DRILLER	Eastern Environmental Solutions, Inc.	**WELL VOLUME (GAL)**	3.434

Time (24 Hr)	Depth to Water (ft)	Purge Rate (mL/min)	Cumulative Purge Volumge (gal)	Temperature (degrees Celsius)	pH	Conductivity (µs/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mv)	Comments
1315	14.65	500	0.66	13.66	6.94	5.810	2.70	18.5	23	
1320	14.61	500	1.32	13.81	6.91	5.860	2.48	19.5	24	
1325	14.61	500	1.98	13.89	6.88	5.96	1.96	29.2	21	
1330	14.60	500	2.64	13.95	6.86	5.97	1.67	22.4	21	
1335	14.60	500	3.3	13.97	6.90	5.98	1.40	9.3	17	
1340	14.60	500	3.96	13.96	6.88	5.98	1.28	6.2	15	
1345	14.60	500	4.62	13.95	6.89	5.98	1.12	3.4	13	
1350	14.60	500	5.28	13.95	6.87	5.99	0.96	2.1	8	

LOW FLOW SAMPLING PURGE LOG

Well No. MW07-D

Comments

PROJECT	8 Walworth Street Offsite Investigation	**DATE SAMPLED:**	3/31/2021
LOCATION	8 Walworth Street, Brooklyn, NY	**START TIME:**	1200
CLIENT	Toldos Yehudah LLC	**SAMPLE TIME:**	1240
H&A FILE NO.	134860-002	**PUMP:**	Bladder
PROJECT MANAGER	Mari Conlon	**WELL DEPTH (FT)**	45
FIELD REP.	Zach Simmel	**STATIC WATER LEVEL (FT)**	14.53
DATE INSTALLED	3/30/2021	**WATER COLUMN HEIGHT (FT)**	30.47
DRILLER	Eastern Environmental Solutions, Inc.	**WELL VOLUME (GAL)**	4.967

Time (24 Hr)	Depth to Water (ft)	Purge Rate (mL/min)	Cumulative Purge Volumge (gal)	Temperature (degrees Celsius)	pH	Conductivity (µs/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mv)	Comments
1205	14.58	500	0.66	14.74	6.5	1.03	3.55	14.3	6	
1210	14.58	500	1.32	14.62	7.02	1.07	2.59	11.3	-22	
1215	14.58	500	1.98	14.57	7.16	1.08	2.34	9.2	-29	
1220	14.54	500	2.64	14.53	7.17	1.09	2.09	8.8	-39	
1225	14.54	500	3.3	14.50	7.20	1.10	1.96	8.2	-46	
1230	14.54	500	3.96	14.48	7.23	1.10	1.85	6.8	-50	
1235	14.54	500	4.62	14.47	7.25	1.10	1.71	3.3	-54	
1240	14.55	500	5.28	14.45	7.26	1.10	1.60	2.9	-61	

APPENDIX G

Analytical Laboratory Reports

(SHAREFILE)

APPENDIX H

Data Usability Summary Reports

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

Data Usability Summary Report

Project Name: 8 Walworth Street

Project Description: Groundwater Samples

Sample Date(s): 31 March through 1 April 2021

Analytical Laboratory: Alpha Analytical, LLC – Westborough, MA

Validation Performed by: Santa McKenna

Validation Reviewed by: Katherine Miller

Validation Date: 2 June 2021

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the samples described above. The analytical results for Sample Delivery Group(s) (SDG) listed below were reviewed to determine the data's usability:

1. Sample Delivery Group Number L2116134 (Alpha)
2. Sample Delivery Group Number L2116506 (Alpha)
3. Precision and Accuracy

This data validation and usability assessment was performed per the guidance and requirements established by the U.S. Environmental Protection Agency's (USEPA) *National Functional Guidelines (NFG) for Organic Data Review* and *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under New York State Department of Environmental Conservation (NYSDEC)'s Part 375 Remedial Programs* and the project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section). Written in 2020, the QAPP referenced the NFG written at the time. Data in this report has been reviewed against the most recent NFG.

Data reported in this sampling event were reported to the laboratory method detection limit (MDL). Results found between the MDL and RL are flagged "J" as estimated.

Sample data were qualified in accordance with laboratory's standard operating procedures (SOP). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

For more detailed quality control (QC) information see Explanations section.

1. Sample Delivery Group Number L2116134 (Alpha)

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number L2116134, dated 8 April 2021. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the COC.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
MW07-D	N	L2116134-01	3/31/2021	GW	A, B, C, D

Method Holding Time			
A.	Volatile Organic Compounds	EPA 8260C	14 days preserved: 7 days unreserved
B.	Polychlorinated Biphenyls	EPA 8082A	7 days extraction; 40 days analysis
C.	1,4-Dioxane	EPA 8270D SIM	7 days extraction; 40 days analysis
D.	Per- and Polyfluoroalkyl Substances (PFAS)	Alpha 134,LCMSMS-ID	14 days extraction; 28 days analysis**

 # days/# days notation indicates the holding time is # days for extraction and then an additional 3 days for analysis.

****Holding time specified by NYSDEC.***

1.2 CASE NARRATIVE

The laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since these additional quality control issues were not required as per the QAPP, these quality control issues were not reviewed.

1.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

Cooler temperature on arrival to the laboratory was: 4.5 degrees Celsius.

1.4 REPORTING LIMITS AND SAMPLE DILUTIONS

No dilutions were performed for the analysis of the samples in this report.

1.5 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified QC limits.

1.6 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS) analyses exhibited recoveries and RPDs within the specified limits with the following exceptions:

Sample Type	Method	Batch ID	Analyte	%R	Qualifier	Affected Samples
LCS	Alpha 134,LCMSMS-ID	WG1481987-2	Perfluorononanoic acid (PFNA)	132%	J/UJ	L2116134-01
			N-methyl Perfluorooctanesulfonamido acetic Acid (NMeFOSAA)	135%	J/UJ	
			Perfluorotridecanoic Acid (PFTrDA)	133%	J/UJ	

1.7 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) below were used for matrix spike/matrix spike duplicate (MS/MSD):

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
WG1482442-6/7 MS/MSD	L2116134-01	EPA 8260C, EPA 8260C, EPA 8270D SIM, Alpha 134,LCMSMS-ID

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits with the following exceptions:

Sample Type	Method	Parent Sample Number	Analyte	%R/RPD	Qualifier	Affected Samples
MSD	EPA 8260C	L2116134-01	Tetrachloroethene	0%	J	L2116134-01
			o-Chlorotoluene	140%	None	None, sample is ND
MS/MSD	Alpha 134,LCMSMS-ID		Perfluorononanoic acid (PFNA)	136%	J/UJ	L2116134-01
			N-methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	134%	J/UJ	
			Perfluoroundecanoic acid (PFUnA)	136%	J/UJ	

1.8 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

1.9 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. No client samples were used for laboratory duplicate analysis in this SDG.

No field duplicates were collected in this data set.

1.10 PFAS SAMPLE PREPARATION

Refer to section E 1.14. The reviewer confirmed solid phase extraction (SPE) was used for sample preparation. No data qualification required.

1.11 PFAS IDENTIFICATION

Refer to section E 1.15. Ion ratios were reviewed and were within the laboratory specified limits.

The laboratory's SOP was reviewed and the reviewer confirmed that, when applicable, the laboratory's procedure is to sum the branched and linear peaks.

1.12 EXTRACTION INTERNAL STANDARDS

Refer to section E 1.16. Recoveries were reviewed and found to be within the limits of 50 to 150 percent of the ICAL midpoint standard/ initial CCV, with the following exceptions:

Sample ID	Lab ID or Batch ID	Standard Name	%Recovery	Qualifier	Affected Samples
MW07-D	MW07-D	M8FOSA	23%	J/UJ FOSA	MW07-D

1.13 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable as no data was rejected. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
L2116134-01	Tetrachloroethene	110	110 J	MSD %R low
	Perfluorononanoic acid (PFNA)	3.95	3.95 J	MS and LCS %R high
	N-methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND UJ	MS and LCS %R high
	Perfluorotridecanoic Acid (PFTrDA)	ND	ND UJ	LCS %R high
	Perfluoroundecanoic acid (PFUnA)	ND	ND UJ	MS %R high
	Perfluorooctane Sulfonamide (FOSA)	ND	ND UJ	Extracted internal standard %R low

2. Sample Delivery Group Number L2116506 (Alpha)

2.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number L2116506, dated 15 April 2021 Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- L2116506-03R: The sample was re-analyzed due to QC failures in the original analysis. The results of the re-analysis are reported.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
MW06-S	N	L2116506-01	4/1/2021	GW	A, B, C, D
MW06-I	N	L2116506-02	4/1/2021	GW	A, B, C, D
MW06-D	N	L2116506-03	4/1/2021	GW	A, B, C, D
MW07-S	N	L2116506-04	4/1/2021	GW	A, B, C, D
MW07-I	N	L2116506-05	4/1/2021	GW	A, B, C, D
DUP-04012021	FD	L2116506-06	4/1/2021	GW	A, B, C, D
FIELD BLANK	FB	L2116506-07	4/1/2021	WQ	A, B, C, D
TRIP BLANK	TB	L2116506-08	4/1/2021	WQ	A

Method Holding Time			
A.	Volatile Organic Compounds	EPA 8260C	14 days preserved: 7 days unreserved
B.	Polychlorinated Biphenyls	EPA 8082A	7 days extraction; 40 days analysis
C.	1,4-Dioxane	EPA 8270D SIM	7 days extraction; 40 days analysis
D.	Per- and Polyfluoroalkyl Substances (PFAS)	Alpha 134,LCMSMS-ID	14 days extraction; 28 days analysis**

 # days/# days notation indicates the holding time is # days for extraction and then an additional 3 days for analysis.

****Holding time specified by NYSDEC.***

2.2 CASE NARRATIVE

The laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since these additional quality control issues were not required as per the QAPP these quality control issues were not reviewed.

2.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

Cooler temperature on arrival to the laboratory was: 3.6 degrees Celsius.

2.4 REPORTING LIMITS AND SAMPLE DILUTIONS

All dilutions were reviewed and found to be justified.

In cases when multiple dilutions were reported per sample, the reviewer chose the lowest dilution with results still within the calibration range and rejected the alternative result.

2.5 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified QC limits.

2.6 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses exhibited recoveries and RPDs within the specified limits.

2.7 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) below were used for matrix spike/matrix spike duplicate (MS/MSD):

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
WG1482761-3	L2116506-01	Alpha 134,LCMSMS-ID

The MS recoveries were within the specified limits.

2.8 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration (µg/L)	Qualifier	Affected Samples
Method Blank	1482160-1	Aroclor 1260	0.064 J	RL U	L2116506-07

The analysis of the blank samples for field quality control was free of target compounds, with the following exceptions:

Blank Type	Date of Blank	Analyte Detected in Blank	Concentration (µg/L)	Qualifier	Affected Samples
Trip Blank	4/1/2021	Tetrachloroethene	0.19 J	RL U	L2116506-01 through 06
Field Blank	4/1/2021	Aroclor 1260	0.071 J	NA	None, samples ND
		Perfluorooctanoic acid (PFOA)	0.218 J	NA	None, samples are >10x blank result
		Perfluorooctane sulfonate (PFOS)	0.748 J	J+	L2116506-02 through 06 (None L2116506-01; sample is >10x blank result)

2.9 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The following sample(s) were used for laboratory duplicate analysis and the RPDs were all below 30 percent (or the absolute difference rule was satisfied if detects were less than 2x the RL)

Lab Sample Number	Laboratory Duplicate Sample Client ID	Method(s)
WG1482761-4	L2116506-02	Alpha 134,LCMSMS-ID

The following sample(s) were used for field duplicate analysis. RPDs were all below 35 percent for water (or the absolute difference rule was satisfied if detects were less than 5x the RL).

Primary Sample ID	Duplicate Sample ID	Method(s)
MW06-I	DUP-04012021	EPA 8260C, EPA 8260C, EPA 8270D SIM, Alpha 134,LCMSMS-ID

2.10 PFAS SAMPLE PREPARATION

Refer to section E 1.14. The reviewer confirmed solid phase extraction (SPE) was used for sample preparation. No data qualification required.

2.11 PFAS IDENTIFICATION

Refer to section E 1.15. Ion ratios were reviewed and were within the laboratory specified limits with the following exceptions:

Sample ID	Analyte	Qualifier	Affected Samples
L2116506-01	N-ethyl perfluorooctanesulfonamido acetic acid (NEtFOSAA)	J NEtFOSAA	L2116506-01
	Perfluorooctane sulfonamide (FOSA)	J FOSA	L2116506-01
	Perfluoroundecanoic acid (PFUnA)	J PFUnA	L2116506-01
L2116506-04	N-ethyl perfluorooctanesulfonamido acetic acid (NEtFOSAA)	J NEtFOSAA	L2116506-04

The laboratory's SOP was reviewed and the reviewer confirmed that, when applicable, the laboratory's procedure is to sum the branched and linear peaks.

2.12 EXTRACTION INTERNAL STANDARDS

Refer to section E 1.16. Recoveries were reviewed and found to be within the limits of 50 to 150 percent of the ICAL midpoint standard/ initial CCV, with the following exceptions:

Sample ID	Lab ID or Batch ID	Standard Name	%Recovery	Qualifier	Affected Samples
MW06-S	L2116506-01	M2-6:2FTS	211%	J/UJ 6:2 FTS	L2116506-01
		M2-8:2 FTS	188%	J/UJ 8:2 FTS	
		M8FOSA	14%	J/UJ FOSA	
MW06-1	L2116506-02	M2-6:2FTS	168%	J/UJ 6:2 FTS	L2116506-02
		M2-8:2 FTS	167%	J/UJ 8:2 FTS	
		D3-NMeFOSAA	48%	J/UJ NMeFOSAA	
MW06-D	L2116506-03R	M2-6:2FTS	166%	J/UJ 6:2 FTS	L2116506-03R
		M2-8:2 FTS	180%	J/UJ 8:2 FTS	
MW07-S	L2116506-04	M2-6:2FTS	217%	J/UJ 6:2 FTS	L2116506-04
		M2-8:2 FTS	221%	J/UJ 8:2 FTS	
		D3-NMeFOSAA	44%	J/UJ NMeFOSAA	
MW07-I	L2116506-05	M2-6:2FTS	184%	J/UJ 6:2 FTS	L2116506-05
		M2-8:2 FTS	192%	J/UJ 8:2 FTS	
		M8FOSA	10%	J/UJ FOSA	
DUP-04012021	L2116506-06	M2-6:2FTS	204%	J/UJ 6:2 FTS	L2116506-06
		M2-8:2 FTS	208%	J/UJ 8:2 FTS	
		M8FOSA	21%	J/UJ FOSA	

2.13 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
MW06-S	Tetrachloroethene	18	1.2 U	Field Blank Detection
MW06-I		210	0.5 U	
MW06-D		150	0.5 U	
MW07-S		7.5	0.5 U	
MW07-I		5.2	0.5 U	
DUP-04012021		240	0.5 U	
MW06-1		16.8	16.8 J+	

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
MW06-D	Perfluorooctane sulfonate (PFOS)	14.9	14.9 J+	
MW07-S		8.48	8.48 J+	
MW07-I		14.9	14.9 J+	
DUP-04012021		17.3	17.3 J+	
FIELD BLANK	Aroclor 1260	0.16 J	0.071 U	Method Blank detection
MW06-S	N-ethyl perfluorooctanesulfonamido acetic acid (NEtFOSAA)	13.6 F	13.6 J	Ion ratio not within specified limits
	Perfluorooctane sulfonamide (FOSA)	17.6 F	17.6 J	
	Perfluoroundecanoic acid (PFUnA)	0.232 JF	0.232 J	
MW07-S	N-ethyl perfluorooctanesulfonamido acetic acid (NEtFOSAA)	1.78 JF	1.78 J	
MW06-S	6:2 FTS	ND U	ND UJ	Extracted internal standard recovery not within specified limits
	8:2 FTS	ND U	ND UJ	
	FOSA	17.6 F	17.6 J	
MW06-1	6:2 FTS	1.37 J	1.37 J	
	8:2 FTS	ND U	ND UJ	
	NMeFOSAA	ND U	ND UJ	
MW06-D	6:2 FTS	ND U	ND UJ	
	8:2 FTS	ND U	ND UJ	
MW07-S	6:2 FTS	2.45	2.45 J	
	8:2 FTS	ND U	ND UJ	
	NMeFOSAA	ND U	ND UJ	
MW07-I	6:2 FTS	ND U	ND UJ	
	8:2 FTS	ND U	ND UJ	
	FOSA	ND U	ND UJ	
DUP-04012021	6:2 FTS	1.53 J	1.53 J	
	8:2 FTS	ND U	ND UJ	
	FOSA	ND U	ND UJ	

3. Precision and Accuracy

Refer to section E 1.7. Some measurement of analytical accuracy and precision was reported for each method with the site samples.

Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.2 Surrogate Recovery Compliance
  - Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to sample preparation to determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds.
- E 1.3 Laboratory Control Samples
  - The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
  - Field blanks are prepared to identify contamination that may have been introduced during field activity. Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. Trip blanks are prepared when volatile analysis is requested to identify contamination that may have been introduced during transport.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
  - The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the relative percent difference (%RPD) found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.
  - Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the percent recovery (%Rec) of certain spiked compounds. This can be assessed using LCS, BS, MS, and/or surrogate recoveries.

- E 1.14 PFAS Sample Preparation
  - Analysis of PFAS requires specific sample preparation. Aqueous samples must be prepared using Solid Phase Extraction (SPE), unless samples are known to contain high PFAS concentrations or the samples are injected directly into the LC/MS/MS instrument. Samples with > 1% solids may require centrifugation prior to SPE. The entire sample plus bottle rinsate must be extracted using SPE. If high PFAS concentrations are known, the samples may alternately be prepared using serial dilution performed in duplicate. If prepared by serial dilution, there must be documented project approval for this deviation.
- E 1.15 PFAS Identification
  - Identification of PFAS requires dual confirmation. The chemical derivation of the ion transitions must be documented. A minimum of two ion transitions per analyte are required (except for PFBA and PFPeA). Ratios of the quantitation ion to the confirmation ion should be calculated for samples and be within 50-150% of the ratios of the quantitation ion to the confirmation ion for standards.
  - Identification of PFAS requires the proper assessment of branched and linear peaks. Standards for both isomers are not currently available for every PFAS compound, resulting in the common error of quantifying the area of only the branched or the linear isomers, which results in erroneous concentrations.
- E 1.16 Extraction Internal Standards
  - Analysis of PFAS by isotope dilution includes the use of internal standards, which are stable isotope analogs of the PFAS compounds of interest added to each sample prior to extraction of the sample matrix. Matrix interferences that affect the quantification of the internal standard will affect the calculated target compound concentrations.

Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg microgram per kilogram
  - µg/L microgram per liter
  - µg/m3 microgram per cubic meter
  - mg/kg milligram per kilogram
  - mg/L milligram per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - WQ Water Quality control matrix
- Table Footnotes
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Abbreviations
  - %D Percent Difference
  - %R Percent Recovery
  - %RSD Percent Relative Standard Deviation
  - Abs Diff Absolute Difference
  - VOC Volatile Organic Compounds
  - SVOC Semi-Volatile Organic Compounds
  - BPJ Best Professional Judgement
  - CCB Continuing Calibration Blank
  - CCV Continuing Calibration Verification
  - CCVL Continuing Calibration Verification Low
  - COC Chain of Custody
  - CRI Collision Reaction Interface
  - DUSR Data Usability Summary Report
  - EMPC Estimated Maximum Possible Concentration
  - GC Gas Chromatograph

- GPC Gel Permeation Chromatography
- ICAL Initial Calibration
- ICB Initial Calibration Blank
- ICP/MS Inductively Coupled Plasma/ Mass Spectrometry
- ICV Initial Calibration Verification
- ICVL Initial Calibration Verification Low
- IPA Isopropyl Alcohol
- LCS/LCSD Laboratory Control Sample/Laboratory Control Sample Duplicate
- MDL Laboratory Method Detection Limit
- MS/MSD Matrix Spike/Matrix Spike Duplicate
- ND Non-Detect
- NFG National Functional Guidelines
- GC/MS Gas Chromatography/Mass Spectrometry
- BS Blank Spike
- TIC Tentatively Identified Compound
- PCB Polychlorinated Biphenyl
- PDS Post Digestion Spike
- PEM Performance Evaluation Mixture
- PFAS Per- and Polyfluoroalkyl Substances
- QAPP Quality Assurance Project Plan
- QC Quality Control
- RL Laboratory Reporting Limit
- RPD Relative Percent Difference
- TPU Total Propagated Uncertainty
- RT Retention Time
- RRF Relative Response Factors
- SDG Sample Delivery Group
- SOP Laboratory Standard Operating Procedures
- SPE Solid Phase Extraction
- USEPA U.S. Environmental Protection Agency

Qualifiers

The qualifiers below are from the USEPA National Functional Guidelines and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:
  - U The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".
  - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
  - E The compound was quantitated above the calibration range.
  - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.
  - NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.
  - R The sample results were rejected as unusable; the compound may or may not be present in the sample.
  - S Result is suspect. See DUSR for details.

References

1. United States Environmental Protection Agency, 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January.

2. United States Environmental Protection Agency, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

3. Haley & Aldrich, Inc, 2020. Quality Assurance Project Plan, 8 Walworth Street, Brooklyn, New York. New York State Department of Environmental Conservation. March.

4. New York State Department of Environmental Conservation (NYSDEC). Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances Under NYSDEC's Part 375 Remedial Programs, 2021. January.

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Data Usability Summary Report

Project Name: 8 Walworth Street

Project Description: Soil Samples

Sample Date(s): 30 and 31 March 2021

Analytical Laboratory: Alpha Analytical, LLC – Westborough, MA

Validation Performed by: Santa McKenna and Sarah Mass

Validation Reviewed by: Katherine Miller

Validation Date: 2 June 2021

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the samples described above. The analytical results for Sample Delivery Group(s) (SDG) listed below were reviewed to determine the data's usability:

1. Sample Delivery Group Number L2115845 (Alpha)
3. Precision and Accuracy

This data validation and usability assessment was performed per the guidance and requirements established by the U.S. Environmental Protection Agency's (USEPA) *National Functional Guidelines (NFG) for Inorganic Data Review* and *National Functional Guidelines (NFG) for Organic Data Review* and *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under New York State Department of Environmental Conservation (NYSDEC)'s Part 375 Remedial Programs* and the project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section). Written in 2020, the QAPP referenced the NFG written at the time. Data in this report has been reviewed against the most recent NFG.

Data reported in this sampling event were reported to the laboratory method detection limit (MDL). Results found between the MDL and RL are flagged "J" as estimated.

Sample data were qualified in accordance with laboratory's standard operating procedures (SOP). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and therefore usable; any exceptions are noted in the following pages.

For more detailed quality control (QC) information see Explanations section.

1. Sample Delivery Group Number L2115845 (Alpha)

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number L2115845, dated 6 April 2021. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the COC. Issues noted with sample management are listed below:

- L2115845-01: The sample was received in an inappropriate container for the PFAS analysis. The analysis was cancelled at the client's request.

Analyses were performed on the following samples:

Sample ID	*Sample Type*	*Lab ID*	*Sample Collection Date*	*Matrix*	*Methods*
B07 (13-15')	N	L2115845-01	3/31/2021	SO	A, B, C, D, E

Method Holding Time			
A.	Volatile Organic Compounds	EPA 8260C	14 days
B.	Polychlorinated Biphenyls	EPA 8082A	14 days
C.	Total Analyte Metals	EPA 6010D	180 days
D.	Hexavalent Chromium	EPA 7196A	180 days
E.	1,4-Dioxane	EPA 8270D SIM	14 days

1.2 CASE NARRATIVE

The laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since these additional quality control issues were not required as per the QAPP.

1.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

Cooler temperature on arrival to the laboratory was: 5.4 degrees Celsius.

1.4 REPORTING LIMITS AND SAMPLE DILUTIONS

All dilutions were reviewed and found to be justified. Dilutions were required to bring calibration of target analytes within calibration range, matrix interference, or foaming at the time of purging.

1.5 REPORTING BASIS (WET/DRY)

Refer to section E 1.1. Per the QAPP requirements, data in this SDG were reported on a wet/dry weight basis.

Percent solid results were reviewed and found to be within limits.

1.6 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified QC limits.

1.7 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses exhibited recoveries and RPDs within the specified limits.

1.8 MATRIX SPIKE SAMPLES

Refer to section E 1.4. No client samples were used for matrix spike/matrix spike duplicate (MS/MSD) analysis in this SDG.

1.9 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in	Concentration (mg/kg)	Qualifier	Affected Samples
Method Blank	WG1481841-5	Bromomethane	1.7 J	NA	None, sample is ND
	WG1480840-1	Antimony	0.240 J		
	WG1480840-1	Iron	0.436 J	RL U	L2115845-01
		Sodium	7.69 J		

1.10 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. No client samples were used for laboratory duplicate analysis in this SDG.

No field duplicates were collected in this data set.

1.11 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
L2115845-01	Iron	17600	4.29 U	Method Blank Detection
L2115845-01	Sodium	118 J	172 U	Method Blank Detection

2. Sample Delivery Group Number L2116132 (Alpha)

2.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 2116132, dated 14 4 2021. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the COC.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
B06 (13-15')	N	L2116132-01	3/31/2021	SO	A, B, C, D, E, F
DUP-033121	FD	L2116132-02	3/31/2021	SO	A, B, C, D, E, F
B07 (13-15')	N	L2116132-03	3/31/2021	SO	F

Method Holding Time			
A.	Volatile Organic Compounds	EPA 8260C	14 days
B.	Polychlorinated Biphenyls	EPA 8082A	14 days
N C.	Total Analyte Metals	EPA 6010D	180 days
D.	Hexavalent Chromium	EPA 7196A	180 days
E.	1,4-Dioxane	EPA 8270D SIM	14 days
F.	Per- and Polyfluoroalkyl Substances (PFAS)	Alpha 134,LCMSMS-ID	14 days extraction; 40 days analysis**

 # days/# days notation indicates the holding time is # days for extraction and then an additional 3 days for analysis.

****Holding time specified by NYSDEC.***

2.2 CASE NARRATIVE

The laboratory report case narrative lists various additional quality control issues such as internal standard exceedances and initial calibration verification (ICV) and/or continuing calibration verification (CCV) exceedances. Since these additional quality control issues were not required as per the QAPP

2.3 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

Cooler temperature on arrival to the laboratory was: 4.5 degrees Celsius.

2.4 REPORTING LIMITS AND SAMPLE DILUTIONS

All dilutions were reviewed and found to be justified. Dilutions were required to bring calibration of target analytes within calibration range, matrix interference, or foaming at the time of purging.

2.5 REPORTING BASIS (WET/DRY)

Refer to section E 1.1. Per the QAPP requirements, data in this SDG were reported on a dry weight basis.

Percent solid results were reviewed and found to be within limits.

2.6 SURROGATE RECOVERY COMPLIANCE

Refer to section E 1.2. The percent recovery (%R) for each surrogate compound added to each project sample were determined to be within the laboratory specified QC limits.

2.7 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses exhibited recoveries and RPDs within the specified limits with the following exceptions:

Sample Type	Method	Batch ID	Analyte	%Recovery	Qualifier	Affected Samples
LCS/LCSD	8260C	WG1482398-3/4	Bromomethane	169%/154%	NA	None samples are ND

2.8 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) below were used for matrix spike/matrix spike duplicate (MS/MSD):

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
L2116132-02	DUP-033121	EPA 7196A

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits.

2.9 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

2.10 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. No client samples were used for laboratory duplicate analysis in this SDG.

The following sample(s) were used for field duplicate analysis. For PFAS, RPDs were all below 30% (or the absolute difference rule was satisfied if detects were less than 2x the RL). For other methods, RPDs

were all below 50 percent for soil (or the absolute difference rule was satisfied if detects were less than 5x the RL).

Primary Sample ID	Duplicate Sample ID	Method(s)
L2116132-01	L2116132-02	Alpha 134,LCMSMS-ID, EPA 8260C, EPA 8082A, EPA 6010D, EPA 7196A, EPA 8270D SIM

Field Duplicate RPD Calculations:

Method(s): Alpha 134,LCMSMS-ID				
Analyte (ng/g)	**Primary Sample ID** L2116132-01	**Duplicate Sample ID** L2116132-02	**% RPD**	**Qualification**
Perfluorooctane sulfonate (PFOS)	1.21	0.478	NA	J/UJ, Abs Diff > RL
Perfluorooctanoic acid (PFOA)	0.043	0.25 U	NA	None, Abs. Diff. < RL

2.11 CONFIRMATION COLUMN REVIEW

Refer to section E 1.8. All samples were non-detect (ND) for tributyl phosphate; therefore, a confirmation curve was not performed.

2.12 PESTICIDE/POLYCHLORINATED BIPHENYLS CLEANUP PROCEDURE CHECKS

Refer to section E 1.10. Recoveries were reviewed and found to be within limits.

2.13 PFAS SAMPLE PREPARATION

Refer to section E 1.14. The reviewer confirmed solid phase extraction (SPE) was used for sample preparation. No data qualification required.

Solid samples must be homogenized thoroughly prior to subsampling. The reviewer confirmed all solid samples were homogenized by the laboratory.

2.14 PFAS IDENTIFICATION

Refer to section E 1.15. Ion ratios were reviewed and were within the limits of 50 to 150 percent and the signal to noise ratios were ≥ 3 for all ions used for quantitation, with the following exceptions:

Sample ID	Analyte	Qualifier	Reason	Affected Samples
L2116132-01	L-perfluorooctanoic acid (L-PFOA)	J PFOA	Ion ratio	L2116132-01

Peaks were reviewed and the reviewer confirmed that, when applicable, the laboratory summed the branched and linear peaks.

2.15 EXTRACTION INTERNAL STANDARDS

Refer to section E 1.16. Recoveries were reviewed and found to be within the limits of 50 to 150 percent of the ICAL midpoint standard/ initial CCV, with the following exceptions:

Sample ID	Lab ID or Batch ID	Standard Name	%Recovery	Qualifier	Affected Samples
B06 (13-15')	L2116132-01	D2-NMeFOSAA	**12%**	**J/UJ NMeFOSAA**	L2116132-01
		D5-NEtFOSAA	**25%**	**J/UJ NEtFOSAA**	
DUP-033121	L2116132-02	D2-NMeFOSAA	**16%**	**J/UJ NMeFOSAA**	L2116132-02
		D5-NEtFOSAA	**22%**	**J/UJ NEtFOSAA**	
B07 (13-15')	L2116132-03	D2-NMeFOSAA	**48%**	**J/UJ NMeFOSAA**	L2116132-03
		D5-NEtFOSAA	**48%**	**J/UJ NEtFOSAA**	

2.16 GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECKS

Refer to section E 1.17. Ion abundance criteria were within the specified limits.

2.17 CALIBRATION BLANKS

Refer to section E 1.18. Calibration blanks had no detections.

2.18 INTERFERENCE CHECK SAMPLES AND INDUCTIVELY COUPLED PLASMA/MASS SPECTROMETRY TUNE

Refer to section E 1.19. Percent recoveries were within the specified limits.

The tune check was reviewed, and the resolution of the mass calibration was within 0.1 unified atomic mass unit (u) and the Percent Relative Standard Deviation (%RSD) less than 5 percent.

The CRI, when used, verifies the reporting limit for each analyte with control limits of 70 to 130 percent, or 50 to 150 percent. The CRI and/or the RL standard checks were within limits.

2.19 INITIAL CALIBRATION

Refer to section E 1.20. Proper concentrations for standards were used for the instruments and Relative Response Factors (RRF) and Percent Relative Standard Deviation (%RSD) were within the specified limits.

The initial calibration curves were reviewed for all reported parameters and were found to be within limits.

2.20 INITIAL AND CONTINUING CALIBRATION VERIFICATION

Refer to section E 1.21. RRFs and the Percent Difference (%D) were reported and were within the specified limits with the following exceptions:

Type	Instrument	Date	Time	Analyte	%D/RRF	Action
ICV	VOA111	4/2/2021	09:10	Chloroethane	-36.6%	Qualify data UJ

Percent Recovery (%R) were reviewed and were found to be within limits.

2.21 INTERNAL STANDARDS

Refer to section E 1.22. Area response and retention time [organics] or percent relative intensity were reviewed and found to be within the specified limits.

2.22 TARGET ANALYTE IDENTIFICATION

A review of the sample chromatographs and retention times for all organic compounds indicated no problems with target compound identification.

2.23 SAMPLE RESULT VERIFICATION

A portion of the sample result(s) were tracked through the relevant sample preparation steps, raw data outputs, transcriptions, conversions and/or calculations and have been confirmed to be accurate and representative of the site.

2.24 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable as no data was rejected. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
L2116132-01	Chloroethane	3.6 U	3.6 UJ	Calibration verification outside Limits
L2116132-02		3.5 U	3.5 UJ	
L2116132-01	Perfluorooctane sulfonate (PFOS)	1.21	1.21 J	Field Duplicate calculations
	Perfluorooctanoic acid (PFOA)	0.043 J	0.043 J	Ion ratio outside of acceptance limits
L2116132-01	N-methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	ND U	ND UJ	Extracted internal standards, ICAL, and ICV outside of acceptance limits
L2116132-02		ND U	ND UJ	
L2116132-03		ND U	ND UJ	
L2116132-01	N-ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	ND U	ND UJ	Extracted internal standards and ICV outside of acceptance limits
L2116132-02		ND U	ND UJ	
L2116132-03		ND U	ND UJ	

3. Precision and Accuracy

Refer to section E 1.7. Some measurement of analytical accuracy and precision was reported for each method with the site samples.

Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.1 Reporting Basis (Wet/Dry)
  - Soil samples can be reported on either a wet (as received) or dry weight basis. Dry weight data indicate calculations were made to compensate for the moisture content of the soil sample.
  - Percent (%) solids should be appropriately considered when evaluating analytical results for non-aqueous samples. Sediments with high moisture content may or may not be successfully analyzed by routine analytical methods. Samples should have ≥ 30% solids to be appropriately quantified.
- E 1.2 Surrogate Recovery Compliance
  - Surrogates, also known as system monitoring compounds, are compounds added to each sample prior to sample preparation to determining the efficiency of the extraction procedure by evaluating the percent recovery (%R) of the compounds.
- E 1.3 Laboratory Control Samples
  - The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
  - Analysis of PFAS compliant with QSM 5.3 Table B-15 requires instrument blanks that are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess contamination that could occur in the LC/MS/MS instrument.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
  - The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the relative percent difference (%RPD) found between a primary and a duplicate sample. This can be an LCS/LCSD pair,

a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.

  - Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the percent recovery (%Rec) of certain spiked compounds. This can be assessed using LCS, BS, MS, and/or surrogate recoveries.

- E 1.8 Confirmation Column Review
  - When analyzing for pesticides and polychlorinated biphenyls (PCB), compound identification based on single-column analysis should be confirmed on a second column or supported by at least one other qualitative technique. When confirmed on a second column, the relative percent difference (RPD) should not exceed 40%.
- E 1.10 Pesticide/Polychlorinated Biphenyls Cleanup Procedure Checks
  - Analyzing for pesticides or PCBs often requires cleanup procedures be performed on the samples. Florisil cartridges use polarity to isolate pesticides and PCBs from the sample matrix. The performance of each lot of cartridges must be evaluated every 6 months. The performance check solution must contain 2,4,5-Trichlorophenol and the mid-point concentration of INDA or INDC. The %R for the target analytes and surrogates must be between 80 and 120% and <5% for 2,4,5-Trichlorophenol.
  - Gel Permeation Chromatography (GPC) cleanup is used for the cleanup of non-aqueous sample extracts and for aqueous sample extracts that contain high molecular weight components that interfere with the analysis of the target analytes. The retention time (RT) shift for bis(2-ethylhexyl) phthalate and perylene must be < 5% and the %R for each target analytes in the GPC calibration verification must be within 80 to 120%.
  - Pesticide/Aroclor sulfur cleanup procedures remove elemental sulfur from sample extracts prior to analysis. If not removed, sulfur may cause a rise in the chromatographic baseline, preventing accurate analyte identification and quantitation.
- E 1.11 Pesticide Gas Chromatograph performance Check
  - Analyzing for pesticides on a Gas Chromatograph (GC)/Electron Capture Detector instrument requires performance checks to ensure adequate resolution and instrument sensitivity. Two performance checks are required: the resolution check mixture and the performance evaluation mixture.
    - The resolution check mixture (RESC) is analyzed at the beginning of every initial calibration sequence on each GC column. If Individual Standard Mixture C (INDC) is used, the resolution between two adjacent peaks must be ≥80.0% for all analytes on the primary column and ≥ 50.0% for the confirmation column. If Individual Standard Mixture A and B (INDA/INDB) are used, the resolution must be ≥ 60.0%.
    - The performance evaluation mixture (PEM) is analyzed at the beginning and at the end of the ICAL sequence. The resolution between any two adjacent peaks must be:
      - ≥ 90% on each GC column when using INDA/INDB
      - ≥ 80% for the primary and ≥ 50% for the secondary column when using INDC

The percent breakdown is the amount of decomposition that 4,4-DDT and Endrin undergo when analyzed on the GC column and cannot exceed 20% individually or 30% combined.

- E 1.14 PFAS Sample Preparation
  - Analysis of PFAS requires specific sample preparation. Aqueous samples must be prepared using Solid Phase Extraction (SPE), unless samples are known to contain high PFAS concentrations or the samples are injected directly into the LC/MS/MS instrument. Samples with > 1% solids may require centrifugation prior to SPE. The entire sample plus bottle rinsate must be extracted using SPE. If high PFAS concentrations are known, the samples may alternately be prepared using serial dilution performed in duplicate. If prepared by serial dilution, there must be documented project approval for this deviation.
- E 1.15 PFAS Identification
  - Identification of PFAS requires dual confirmation. The chemical derivation of the ion transitions must be documented. A minimum of two ion transitions per analyte are required (except for PFBA and PFPeA). Ratios of the quantitation ion to the confirmation ion should be calculated for samples and be within 50-150% of the ratios of the quantitation ion to the confirmation ion for standards.
  - Identification of PFAS also requires the proper assessment of branched and linear peaks. Standards for both isomers are not currently available for every PFAS compound, resulting in the common error of quantifying the area of only the branched or the linear isomers, which results in erroneous concentrations.
- E 1.16 Extraction Internal Standards
  - Analysis of PFAS by isotope dilution includes the use of internal standards, which are stable isotope analogs of the PFAS compounds of interest added to each sample prior to extraction of the sample matrix. Matrix interferences that affect the quantification of the internal standard will affect the calculated target compound concentrations.
- E 1.17 Gas Chromatograph/Mass Spectrometer Instrument Performance Checks
  - When analyzing organic compounds, the instrument performance check solution known as Bromofluorobenzene for volatiles or Decafluorotriphenylphosphine for semi-volatiles is run every 12 hours to ensure adequate mass resolution, identification, and sensitivity, and to document this level of performance prior to analyzing any sequence of standards or samples.
- E 1.18 Calibration Blanks
  - Calibration blanks help determine the validity of the analytical results by determining the presence and magnitude of contamination resulting from laboratory activities or baseline drift during analysis. Initial Calibration Blanks are analyzed after the standards and prior to the Initial Calibration Verification (ICV) sample. Continuing Calibration Blanks (CCB) are analyzed immediately after every Continuing Calibration Verification (CCV) sample.
- E 1.19 Interference Check Samples and Inductively Coupled Plasma/Mass Spectrometry Tune
  - Inorganic analysis requires an interference check sample be run to determine the validity of the analytical results based on the instrument's ability to overcome interferences typical of those found in samples. Percent recoveries of the interferents or analytes must be between 80 and 120%.

- Inorganic analysis performed by a mass spectrometer also requires an Inductively Coupled Plasma/Mass Spectrometry (ICP/MS) tune check that serves as an initial demonstration of instrument stability and precision.
- The Contract Laboratory Program no longer requires the Contract Required Quantitation Limit Check Standard (CRI) for inorganic analysis, which is run after calibrations, though some laboratories still provide the CRI as well as the required RL standard check.

- E 1.20 Initial Calibration
  - Organic methods require an initial calibration to ensure the instrument is capable of producing acceptable qualitative and quantitative data. Standards of varying concentrations are run to create a calibration curve, which is then used to ensure the validity of compound quantitation.
  - Inorganic methods require an Initial Calibration to ensure the instrument is capable of producing acceptable qualitative and quantitative data. Instruments should be calibrated each time the instrument is set up and after CCV failure. A blank and at least five standards of varying concentrations should be run to create a calibration curve. At least one of these must be at or below the RL but above the method detection limit (MDL).
  - The curve must have a correlation coefficient of ≥0.995 and the calculated percent differences (%D) for all non-zero standards must be within ±30% of the true value.
  - For PFAS analysis in compliance with NYSDEC Part 375, the initial calibration should contain a minimum of five standards for linear fit and six standards for quadratic fit. The relative standard deviation (RSD) for a quadratic fit calibration should be less than 20% and the R2 value should be greater than 0.990 for a linear fit calibration. The low-level calibration standards should be within 50-150% of the true value and the mid-level calibration standards should be within 70-130% of the true value.

- E 1.21 Initial and Continuing Calibration Verification
  - Organic methods require an additional ICV and CCV to ensure that the instrument continues to meet the sensitivity and linearity criteria to produce acceptable qualitative and quantitative data throughout each analytical sequence. CCVs must be run at the beginning and end of every 12-hour period of operation.
  - Inorganic methods require an ICV and CCV to ensure that the instrument continues to meet the sensitivity and linearity criteria to produce acceptable qualitative and quantitative data throughout each analytical sequence. Initial calibrations must be run each time the instrument is set up and after each CCV failure. ICVs are analyzed immediately after initial calibration to verify ICAL accuracy, and CCVs are analyzed every two hours during an analytical sequence. %R is reported and must be within the specified limits (90 to 110%).

- E 1.22 Internal Standards
  - Internal standards are compounds added to each sample by the laboratory prior to volatile [OR] metals sample analysis to ensure that instrument sensitivity and response are stable during each analysis.
  - Internal standards are compounds added to each sample by the laboratory prior to metals sample analysis to ensure that instrument sensitivity and response are stable during each analysis. Yttrium (89) is the only internal standard used for the atomic emission spectrometry metals analysis performed by method USEPA 200.7 [OR] USEPA 6010. The lab uses a single internal standard to make sure they are getting good intake of the sample into the instrument. Corrections are not made to any of the elements' responses based on this standard.

- E 1.23 Serial Dilutions
  - Inorganic analysis requires a serial dilution analysis, which determines whether significant physical or chemical interferences exists because of the sample matrix. If the original sample concentration is greater than 50x the MDL, the %D must be ≤ 10%.

Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg microgram per kilogram
  - µg/L microgram per liter
  - µg/m3 microgram per cubic meter
  - mg/kg milligram per kilogram
  - mg/L milligram per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - WQ Water Quality control matrix
- Table Footnotes
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Abbreviations
  - %D Percent Difference
  - %R Percent Recovery
  - %RSD Percent Relative Standard Deviation
  - Abs Diff Absolute Difference
  - VOC Volatile Organic Compounds
  - SVOC Semi-Volatile Organic Compounds
  - BPJ Best Professional Judgement
  - CCB Continuing Calibration Blank
  - CCV Continuing Calibration Verification
  - CCVL Continuing Calibration Verification Low
  - COC Chain of Custody
  - CRI Collision Reaction Interface
  - DUSR Data Usability Summary Report
  - EMPC Estimated Maximum Possible Concentration
  - GC Gas Chromatograph

- GPC Gel Permeation Chromatography
- ICAL Initial Calibration
- ICB Initial Calibration Blank
- ICP/MS Inductively Coupled Plasma/ Mass Spectrometry
- ICV Initial Calibration Verification
- ICVL Initial Calibration Verification Low
- IPA Isopropyl Alcohol
- LCS/LCSD Laboratory Control Sample/Laboratory Control Sample Duplicate
- MDL Laboratory Method Detection Limit
- MS/MSD Matrix Spike/Matrix Spike Duplicate
- ND Non-Detect
- NFG National Functional Guidelines
- GC/MS Gas Chromatography/Mass Spectrometry
- BS Blank Spike
- TIC Tentatively Identified Compound
- PCB Polychlorinated Biphenyl
- PDS Post Digestion Spike
- PEM Performance Evaluation Mixture
- PFAS Per- and Polyfluoroalkyl Substances
- QAPP Quality Assurance Project Plan
- QC Quality Control
- RL Laboratory Reporting Limit
- RPD Relative Percent Difference
- TPU Total Propagated Uncertainty
- RT Retention Time
- RRF Relative Response Factors
- SDG Sample Delivery Group
- SOP Laboratory Standard Operating Procedures
- SPE Solid Phase Extraction
- USEPA U.S. Environmental Protection Agency

Qualifiers

The qualifiers below are from the USEPA National Functional Guidelines and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:
  - U The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".
  - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
  - E The compound was quantitated above the calibration range.
  - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.
  - NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.
  - R The sample results were rejected as unusable; the compound may or may not be present in the sample.
  - S Result is suspect. See DUSR for details.

References

1. United States Environmental Protection Agency, 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. January.

2. United States Environmental Protection Agency, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

3. Haley & Aldrich, Inc, 2020. Quality Assurance Project Plan, 8 Walworth Street, Brooklyn, New York. New York State Department of Environmental Conservation. March.

4. New York State Department of Environmental Conservation (NYSDEC). Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances Under NYSDEC's Part 375 Remedial Programs, 2021. January.

APPENDIX I

Soil Boring Logs

HALEY ALDRICH

TEST BORING REPORT

BORING NO. B06

Page 1 of 1

PROJECT	8 Walworth Street Offsite Investigation	**H&A FILE NO.**	134860-002
LOCATION	8 Walworth Street, Brooklyn, NY	**PROJECT MGR.**	Mari Conlon
CLIENT	Toldos Yehudah, LLC	**FIELD REP.**	Zach Simmel/Sarah Commisso
CONTRACTOR	Eastern Environmental Solutions	**DATE STARTED**	3/31/2021
DRILLER	P. Slavin	**DATE FINISHED**	3/31/2021

Elevation ft. **Datum** NAVD-88 **Boring Location** Sidewalk outside 8 Walworth Street

Item	Casing	Sampler	Core Barrel
Type	-		
Inside Diameter (in.)			
Hammer Weight (lb.)	-		
Hammer Fall (in.)	-		

Rig Make & Model 8140LS

- ☐ Truck ☐ Tripod ☐ Cat-Head
- ☐ ATV ☑ Geoprobe ☐ Winch
- ☐ Track ☐ Air Track ☐ Roller Bit
- ☐ Skid ☐ _____ ☐ Cutting Head

Hammer Type: ☐ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance — Type Method Depth: Sonic

Drilling Notes:

Depth (ft.)	Recovery (ft.)	Sample ID	Sample Depth (ft)	Visual-Manual Identification & Description	PID (ppm)
0					
	3.5			**0-4" Concrete**	0.0
				4"-5' Loose brown silty SAND, no odor	0.0
					0.0
					0.0
5					0.0
	3			**5-10' Loose brown silty SAND, trace gravel, no odor, moist**	0.0
					0.0
					0.0
					0.0
10					0.0
	3.5	B06 (13-15') DUP-03312021	13-15	**10-15' dense brown silty SAND, trace gravel, no odor, moist**	0.0
					0.0
					0.0
					0.0
15				**Note: Groundwater at 15'**	0.0
	4			**15-20' Gray-brown well graded SAND with gravel, cobbles present, mps 3 1/2 in, no odor, wet**	0.0
					0.0
					0.0
					0.0
20					0.0
	4			**20-35' Brown well graded SAND with gravel, mps 1 1/2 in, no odor, wet**	0.0
					0.0
					0.0
					0.0
25					0.0
	4.5				0.0
					0.0
					0.0
30					0.1
	4				0.0
					0.0
					0.0
					0.0
35					0.0
	3.5			**35-45' Brown well graded SAND with gravel, mps 3 1/2 in, no odor, wet**	0.0
					0.0
					0.0
					0.0
40					0.0
	4				0.0
					0.0
					0.0
45				**B06 installed to 45 ft**	0.0

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Boring	Water
3/31/2021			45 ft	15

Sample ID

- **O** Open End Rod
- **T** Thin Wall Tube
- **U** Undisturbed Sample
- **S** Split Spoon Sample
- **G** Geoprobe

Summary

Overburden (Linear ft.)	45
Rock Cored (Linear ft.)	0
Number of Samples	2

BORING NO. B06

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil descriptions based on a modified Unified Soil Classification System method of visual-manual identification as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

BORING NO. B07

Page 1 of 1

PROJECT	8 Walworth Street Offsite Investigation	**H&A FILE NO.**	134860-002
LOCATION	8 Walworth Street, Brooklyn, NY	**PROJECT MGR.**	Mari Conlon
CLIENT	Toldos Yehudah, LLC	**FIELD REP.**	Zach Simmel/Sarah Commisso
CONTRACTOR	Eastern Environmental Solutions	**DATE STARTED**	3/30/2021
DRILLER	P. Slavin	**DATE FINISHED**	3/30/2021

Elevation ft. **Datum** NAVD-88 **Boring Location** Sidewalk outside 19 Walworth Street

Item	Casing	Sampler	Core Barrel
Type	-		
Inside Diameter (in.)			
Hammer Weight (lb.)	-		
Hammer Fall (in.)	-		

Rig Make & Model 8140LS

- ☒ Truck ☒ Tripod ☐ Cat-Head
- ☐ ATV ☒ Geoprobe ☐ Winch
- ☐ Track ☐ Air Track ☐ Roller Bit
- ☐ Skid ☐ _____ ☐ Cutting Head

Hammer Type: ☐ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☒ None

Casing Advance — **Type Method Depth**: Sonic

Drilling Notes:

Depth (ft.)	Recovery (ft.)	Sample ID	Sample Depth (ft)	Visual-Manual Identification & Description	PID (ppm)
0					
	3			0-4" Concrete	0.0
				4"-5' Loose brown silty SAND with trace gravel, no odor, dry, FILL	0.0
					0.0
					0.0
5					0.0
	4			5-10' Loose brown fine to medium SAND with silt, no odor, dry	0.0
					0.0
					0.0
					0.0
10					0.0
	4	B07 (13-15')	13-15	10-14' Medium dense brown silty SAND with trace clay and gravel, mps 1 in, no odor, moist	0.3
					0.0
					0.7
				14-15' Large cobbles present	0.0
15				Note: Groundwater at 15'	0.0
	4.5			15-20' Medium dense brown silty SAND with gravel, mps 1 in, no odor, wet	0.0
					0.0
					0.0
					0.0
20					0.0
	4			20-25' Gray-brown poorly graded GRAVEL with cobbles, mps 3 1/2 in, no odor, wet	0.0
					0.0
					0.0
					0.0
25					0.0
	4			25-30' Brown well graded SAND with gravel, mps 1 1/2 in, no odor, wet	0.0
					0.0
					0.0
					0.0
30					0.0
	4.5			30-35' Brown well graded SAND with gravel, mps 1 in, no odor, wet	0.0
					0.0
					0.0
					0.0
35					0.0
	4			35-40' Brown well graded SAND with gravel, mps 3 in, no odor, wet	0.0
					0.0
					0.0
					0.0
40					0.0
	4			40-45' Brown poorly graded GRAVEL with sand and cobbles, mps 3 1/2 in, no odor, w	0.0
					0.0
					0.0
					0.0
45				B07 installed to 45 ft	0.0

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Boring	Water
3/30/2021			45 ft	15

Sample ID

- **O** Open End Rod
- **T** Thin Wall Tube
- **U** Undisturbed Sample
- **S** Split Spoon Sample
- **G** Geoprobe

Summary

Overburden (Linear ft.)	45
Rock Cored (Linear ft.)	0
Number of Samples	2

BORING NO. B07

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil descriptions based on a modified Unified Soil Classification System method of visual-manual identification as practiced by Haley & Aldrich, Inc.