Remedial Investigation Report

Joey’s Cleaners
1226-1246 East Gun Hill Road
Bronx New York
NYSDEC BCP Site No. C203076

Submitted to:
New York State Department of Environmental Conservation
Region 2
47-40 21st Street
Long Island City, NY 11101

On Behalf of:
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B:\StaffData\2700 Huntington Station NY\Environmental Projects\Riverdale Equities, LTD\Joey's Cleaners BCP 1244 East Gun Hill Road, Bronx\RIR\RIR2023 Resubmittal\RIR_Joey's Cleaners Bronx NY_2023_Resubmittal_2023.06.29.docx
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### MEASUREMENTS

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<tr>
<td>ft.</td>
<td>feet</td>
</tr>
<tr>
<td>ft. bgs</td>
<td>feet below grade surface</td>
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<tr>
<td>L/min</td>
<td>liter per minute</td>
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<tr>
<td>mg/Kg</td>
<td>milligrams per kilogram</td>
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<td>ng/L</td>
<td>nanograms per liter</td>
</tr>
<tr>
<td>ppb</td>
<td>parts-per-billion</td>
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<tr>
<td>ppm</td>
<td>parts-per-million</td>
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<tr>
<td>µg/L</td>
<td>micrograms per liter</td>
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<tr>
<td>µg/m³</td>
<td>micrograms per cubic meter</td>
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Certification

I, Nicholas J. Recchia, P.G. certify that I am currently a Qualified Environmental Professional, as defined in 6 NYCRR Part 375 and that this Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved plan and any DER-approved modifications.

Nicholas J. Recchia
Qualified Environmental Professional
June 29, 2023

Signature
Executive Summary

This Remedial Investigation Report (RIR) provides background information on the Joey’s Cleaners Site, located at 1226-1246 East Gun Hill Road, in the Williamsbridge section of the Bronx, New York (the Site); describes the methods utilized during the investigation and the physical characteristics of the Site; defines the nature, magnitude, and extent of contamination encountered; assesses the fate, transport, and potential exposure of the identified contamination. Additionally, the RIR provides information for establishment of remedial action objectives, evaluation of remedial action alternatives, and selection of a remedy pursuant to Rules of the City of New York (RCNY) §43-1407 (f). The Remedial Investigation (RI) and Supplemental Remedial Investigations (SRIs) described in this document is consistent with applicable guidance.

The Site was accepted into the New York State Brownfield Cleanup Program (NYSBCP) on July 13, 2017. The Participant, 1226 East Gun Hill LLC., entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on July 24, 2017, and was assigned NYSBCP Site No. C203076.

Site Location and Description

The Site is located at 1226-1246 East Gun Hill Road, Bronx, New York. The subject property includes one irregular-shaped parcel, identified by the New York City (NYC) Finance Department as Block 4618 and Lot 25, totaling an area approximately 20,875 square ft. (0.479 acres) in size.

The Site is currently an active commercially zoned building (R5 with a C1-2 overlay). Commercial and residential uses are present in adjacent buildings including a Gulf gas station on the north side of East Gun Hill Road, Emmaus Bible Chapel on the east side of Throop Avenue, residential dwellings adjoining the south, and a McDonalds restaurant and residential dwellings across Pearsall Avenue to the west. A site location map is included as Figure 1.

Background

A Phase I Environmental Site Assessment (ESA) was completed in October 2014 by EBI Consulting. According to the Phase I findings, the Site was constructed circa 1951 for commercial purposes. The Site is currently occupied by 11 commercial tenants including a deli/grocery, Colwell’s Driving School, Kreative Minds Barber Shop/Beauty Salon, Mandarin Wok Chinese Restaurant, Wright Insurance Agency, Fellowship Tabernacle, Polli Trading Inc., Digital Printing and Signs, Metro Discount 99 Cent Store,
Joey’s Cleaners, and Covenant Elevation Christian Center Overcomer’s House. During the initial GEI investigation, the tenant space currently occupied by Colwell’s Driving School was occupied by Metro PCS. This tenant space was occupied by Value Tax during the 2021 investigation. The tenant space currently occupied by Polli Trading Inc. was occupied by K&P Jerk & Catering during the initial GEI investigation. Figure 2 shows the property boundary, store, and tenant space locations. Historical records indicate that Joey’s Cleaners has operated at the subject property since at least 1996. Surrounding property usage has included varying commercial occupants to the north, east, and west, and residential dwellings to the south. According to Sanborn Fire Insurance maps from 1950 through 1989, no specific information is shown indicating any manufacturing or industrial usage on-site. Each tenant space has a basement. A full inspection of the building was conducted prior to RI.

Findings Summary

The summary of findings is based on GEI Consultants, Inc., P.C.’s (GEI) 2019 RI, 2021 SRI, and 2022 SRI, as well as information gathered from previous investigations conducted at the project site.

Soil

2019 Remedial Investigation

Volatile organic compound (VOC) exceedances were detected in two of the 11 soil borings completed; tetrachloroethene (PCE) a contaminant of concern (COC) for the site was detected in one boring located behind the Joey’s Cleaners tenant space. Semi-volatile organic compound (SVOC) exceedances were limited to polycyclic aromatic hydrocarbons (PAHs) which were detected in six of the 11 soil borings. Pesticides were detected above the NYSDEC part 375.6.8 Unrestricted Use Soil Cleanup Objectives (UUSCOs) in eight of the 11 soil borings, with the concentration of alpha-BHC and beta-BHC also exceeding the Protection of Groundwater Soil Cleanup Objectives (PGWSCOs) in soil boring SB-1. Metals were detected above the UUSCOs and/or the Restricted Residential Use Soil Cleanup Objectives (RRUSCOs) in each of the 11 soil borings. Additionally, metals were detected above PGWSCOs in five of the 11 soil borings, and above NYSDEC Commercial Use Soil Cleanup Objectives (CUSCOs) in two of the 11 soil borings. Polychlorinated biphenyls (PCBs) were not detected in any of the samples collected. Soil sample locations are shown on Figure 3. A summary of soil sample results and regulatory exceedances are summarized on Figures 4 and 5.

2021 Supplemental Remedial Investigation

Soil samples collected during the 2021 SRI were analyzed for VOCs and Per- and Polyfluoroalkyl Substances (PFAS) only. The results of the soil samples collected from the
yard behind the Joey’s Cleaners building contained low levels of PCE below UUSCOs and PGWSCOs. There were no other VOC exceedances of the UUSCOs in any of the soil samples collected during the 2021 SRI. The soil samples collected from the sidewalk along Throop Avenue did not contain detectable levels of VOCs. PFAS were detected in soil samples collected from the yard behind the Joey’s Cleaners tenant space, however, these detections were below the residential guidance values identified in the NYSDEC November 2022 Sampling, Analysis, and Assessment of PFAS Guidelines.

2022 Supplemental Remedial Investigation

Soil samples collected during the 2022 SRI were analyzed for Chlorinated VOCs (CVOCs) and PFAS. There were no CVOC exceedances of UUSCOs or PGWSCOs in any soil samples collected during the 2022 SRI. Soil samples results from the yard behind the Joey’s Cleaners building, the basement of the Joey’s Cleaners tenant space, and the 99-cent store basement contained low level detections of PCE below UUSCOs and PGWSCOs but above laboratory detection limits.

Previous Investigations

In December 2012, March 2013, and August 2013, Taylord Environment, Inc. (TEI) conducted soil borings in the basement of Joey’s Cleaners, adjacent tenant spaces, and rear yard. Analytical results confirmed the presence of PCE in borings B-7 (March 2013, 1.5 milligrams per kilograms [mg/Kg]), SB-1 and SB-2 (December 2012, 5.1 mg/Kg and 4.5 mg/Kg, respectively), and B-10 (August 2013, 11 mg/Kg). The detected concentrations are above the NYSDEC Part 375 UUSCO and PGWSCO of 1.3 mg/Kg. These samples were collected in the basement near the southern end of Joey’s Cleaners closest to the dry-cleaning equipment, with the exception of the sample collected from B-7, which was collected from near the center of the Joey’s Cleaners’ basement. The sample from TEI soil boring B-7 was collected from 1 to 3 ft. below basement grade. The sample from TEI soil boring B-10 was collected from 18 inches below basement grade. It is not known what depth samples were collected in TEI borings SB-1 and SB-2. Copies of available previous reports are included in Appendix A. However, the validity of this data cannot be confirmed as it is unknown if field quality assurance/quality control (QA/QC) procedures were completed, the sample collection locations were estimated, and a third-party data validator did not confirm the usability of the data. TEI sample locations are shown on Figure 3. Soil exceedances and detections are summarized on Figures 4 and 5.

Groundwater

2019 Remedial Investigation

A total of eight monitoring wells (IMW-1, and MW-1 through MW-7), located throughout the Site were sampled during the initial implementation of the RI. VOC exceedances of the
New York State Title 6 (New York Codes, Rules and Regulations (NYCRR) Part 703.5 Class GA Ambient Water Quality Standards and Guidance Values (AWQS) were primarily limited to CVOCs including PCE, trichloroethene (TCE) and vinyl chloride. Exceedances of COCs, PCE, and TCE were observed in three monitoring wells and one monitoring well respectively. These include the monitoring well in the basement of Joey’s Cleaners and two downgradient monitoring wells.

Benzene also exceeded the AWQS in an upgradient well. A Gulf gas station is located northeast of the project site across Gun Hill Road. There are no known or suspected sources of benzene on-Site.

SVOC detections were limited to PAHs in monitoring well MW-6. MW-6 is located near SB-4, where the highest concentrations of PAHs were detected in soil.

Metals exceedances were generally found throughout the Site and were likely related to urban fill soil or road salt application and are not COCs for this Site.

No pesticides or PCBs were detected at levels above NYSDEC AWQS.

The emerging contaminant 1,4-dioxane was analyzed for utilizing Selective Ion Monitoring (SIM) in two monitoring wells including the interior monitoring well IMW-1 within the Joey’s Cleaners tenant space and the upgradient monitoring well MW-7. Additionally, the emerging contaminants PFAS compounds were sampled in the groundwater in the monitoring well IMW-1. The NYSDEC issued its most recent guidance on PFAS in groundwater in November 2022. According to the NYSDEC guidance, further assessment of groundwater may be warranted if Per-Fluorooctanoic Acid (PFOA) or Per-Fluorooctanesulfonic Acid (PFOS) is detected at a concentration above 10 ng/L and it is attributable to the Site. In IMW-1, PFOS was detected at 25.8 ng/L and PFOA was detected at 31.9 ng/L.

In July 2020, groundwater samples were collected from the remaining monitoring wells and analyzed for emerging contaminants. Analytical results indicate that 1,4-dioxane was not detected in any of the on-Site monitoring wells. However, detections were noted for PFAS compounds. Detections of individual PFOS and PFOA were found above 10 ng/L in all seven on-Site monitoring wells which were included as part of this groundwater sampling event. The maximum detection of PFOS was 173 ng/L in MW-5. This monitoring well was the source of the duplicate sample MW-X, which displayed a detection of PFOS at 203 ng/L. The maximum detection of PFOA was 6,010 ng/L in downgradient monitoring well MW-4.

No historical on- or off-site sources were identified for 1,4-dioxane, or PFAS. Monitoring well locations are shown on Figure 3 and groundwater exceedances and detections are summarized on Figures 6 and 7.
2021 Supplemental Remedial Investigation

Five additional monitoring wells (MW-9 through MW-13) were installed and sampled during the 2021 SRI. The monitoring well farthest upgradient of the newly installed wells, MW-9, had a detection of benzene at 100 ug/L. This well is side gradient in relation to the Joey’s Cleaners tenant space. As previously discussed, this is likely the result of the NYSDEC spill incident at the Gulf Station upgradient of this location. Exceedances of AWQS for the COCs for the Site were noted in one additional on-Site monitoring well and one monitoring well closest to the Site along Throop Avenue. However, the two monitoring wells further south along Throop Avenue did not identify VOC exceedances above AWQS.

Groundwater samples collected from all five additional monitoring wells displayed detections of both PFOS and PFOA above 10 ng/L. The maximum detection of PFOS was 58.4 ng/L in monitoring well MW-10. The maximum detection of PFOA was 75.8 ng/L in monitoring well MW-10.

2022 Supplemental Remedial Investigation

Two additional monitoring wells (MW-14 and MW-15) were installed and sampled as part of the 2022 SRI. Both monitoring wells are located in the sidewalk on the east side of Throop Avenue. These additional monitoring wells are hydraulically side gradient in relation to the Joey’s Cleaners tenant space.

Bedrock was encountered at 7 ft. at the MW-14 location. During the initial installation of MW-15, bedrock was encountered at 9 ft. with no evidence of saturated conditions, or the presence of groundwater observed in the borehole. As a result, the well location was offset approximately 50 ft. south to its present location where groundwater and bedrock were encountered at 10 and 11 ft., respectively. Following installation, the groundwater thickness in each well was less than 1 foot. After multiple attempts MW-14 was repeatedly unable to produce enough volume to collect a groundwater sample for PFAS; however, PFAS was able to be analyzed in groundwater collected from MW-15. PFOS and PFOA were detected in this monitoring well at 43.8 ng/L and 37.5 ng/L, respectively (above the NYSDEC November 2022 guidance value of 10 ng/L). The samples from the monitoring wells did not contain CVOC exceedances of the AWQS.

Previous Investigations

In April 2013, August 2013, and March 2014, TEI collected groundwater from the Site and analytical data confirmed the presence of CVOCs, including PCE and its breakdown products above NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Class GA Standards. PCE was found at a maximum detection of 580 parts per billion (ppb) in March 2014. Additionally, cis-1,2-Dichloroethylene (cis-1,2 DCE) was found at a maximum detection of 460 ppb (August 2013) and TCE was found at a maximum detection of 75 ppb
(August 2013). These detections were found in the rear yard downgradient from the Joey’s Cleaners tenant space. However, the validity of this data cannot be confirmed as it is unknown if field QA/QC procedures were completed, the sample collection locations were estimated, and a third-party data validator did not confirm the usability of the data. Groundwater exceedances and detections are summarized on Figures 6 and 7.

**Soil Vapor, Indoor Air, and Outdoor Air**

**2019 Remedial Investigation**

A total of 11 soil vapor samples, 11 indoor air samples, and one outdoor air sample were collected during the implementation of this RI. Indoor air concentrations were compared to the New York State Department of Health (NYSDOH) Air Guideline Values (AGVs) of 60 micrograms per cubic meter (µg/m³) for methylene chloride, 30 µg/m³ for PCE, and 2 µg/m³ for TCE. Detections above the AGVs were limited to PCE in four indoor air samples and methylene chloride in one sample. The PCE detections above the AGVs were from samples collected in the basements of the Joey’s Cleaners space, the Covenant Elevation Christian Center, the 99 Cent Store, and the Wright Insurance Agency. Methylene chloride was detected above the AGV in the basement of the Wright Insurance Agency. The maximum concentrations for CVOCs in soil vapor were detected in the southern portion of the Joey’s Cleaners space.

A comparison of the soil vapor and indoor air concentrations to the Matrices provided by the NYSDOH in the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006 (updated in May 2017) was conducted for each of the five tenant spaces in which a sub-slab vapor sample and an indoor air sample were collected. The results of the evaluation are as follows:

- **Joey’s Cleaners tenant space**: mitigation for PCE, TCE, and cis-1,2-DCE. Additionally, based upon the detections of methylene chloride, the NYSDOH recommends identifying any potential sources and resample or for mitigation to be performed.

- **Covenant Elevation Christian Center**: identify any potential sources and resample or for mitigation to be performed due to elevated detections of PCE. Continued monitoring including sub-slab vapor, basement air and outdoor air sampling is recommended based on the TCE concentrations.

- **99 Cent Store**: identify any potential sources and resample or for mitigation to be performed based upon detections of PCE and methylene chloride.

- **Fellowship Tabernacle**: No further action
• Colwell’s Driving School (former Value Tax and Metro PCS): No further action.

In the other spaces where only indoor air samples were collected, exceedances of the AGVs were limited to the Wright Insurance Agency for PCE and methylene chloride. Although no soil vapor sample was collected from the Wright Insurance Agency, based upon the indoor air concentration of PCE, the NYSDOH matrices recommend identifying sources and resample or to mitigate.

CVOCs were detected in each of the four soil vapor samples collected outside of the building footprint; however, they were relatively low excluding one detection of PCE in a sample collected near the rear of the Joey’s Cleaners.

Petroleum-related VOCs were detected at relatively low levels throughout the Site in soil vapor, indoor air, and outdoor air.

2019 Supplemental Remedial Investigation

A comparison of the soil vapor and indoor air concentrations to the Matrices provided by the NYSDOH in the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006 (updated in May 2017) was conducted for a neighboring residential property, utilizing samples 3229-SV1, 3229-IA1, and 3229-OA1. The results of the evaluation indicate that no further action is necessary.

A comparison of the soil vapor and indoor air concentrations to the Matrices provided by the NYSDOH in the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006 (updated in May 2017) was conducted for the basement of the Wright Insurance Agency, utilizing samples 21-SV1, 21-SV2, 21-IA-BASEMENT, and 21-OA1. The results of the evaluation indicate that monitoring is necessary in connection with the concentrations of TCE detected. Additionally, in connection with the concentrations of PCE detected, the evaluation indicates that identifying source(s) and resampling or mitigation is necessary. It should be noted that this basement space is not occupied and solely used for storage.

In the first floors of the tenant spaces, exceedances of the AGVs were limited to PCE concentrations found in the Covenant Elevation Christian Center space, Joey’s Cleaners space, the Digital Printing and Signs space, and the Fellowship Tabernacle space.

All air sample locations are shown on Figure 3 and detections are summarized on Figures 8 through 13.
2022 Supplemental Remedial Investigation

No soil vapor, indoor air, or outdoor air samples were collected as part of the 2022 SRI.

Previous Investigations

According to a Laboratory Report prepared by Phoenix Environmental Laboratories, Inc., TEI collected two ambient air samples from the Site in October 2014. Both samples were collected in 6-liter SUMMA® canisters. One ambient air sample was collected from 1238 East Gun Hill Road, the tenant space that borders Joey’s Cleaners on the west side. The other sample was collected from 1246 East Gun Hill Road, the tenant space that borders Joey’s Cleaners on the east side. It is not known where in tenant space these samples were collected from. No comparison to the NYSDOH May 2017 Matrices was able to be conducted as no soil vapor samples were collected. However, CVOCs such as PCE, TCE, Carbon Tetrachloride, and Methylene Chloride were detected. Maximum detections of TCE and Carbon Tetrachloride were 32.1 µg/m³ and 0.692 µg/m³, respectively, and were found in the 1238 East Gun Hill Road tenant space. Maximum detections of PCE and Methylene Chloride were 501 µg/m³ and 7.43 µg/m³, respectively, and were found in the 1246 East Gun Hill Road tenant space. No associated TEI report or map showing sample locations was provided to GEI. The scientific validity of this data cannot be confirmed as it is unknown if QA/QC procedures were completed, the sample locations were estimated, and a third-party data validator did not confirm the usability of the data.

Conclusions

The soil impacts include compounds that are commonly found in urban fill. However, PCE was also detected in soil up to a maximum concentration of 11 mg/Kg. Detections of COCs in soil above regulatory standards (UUSCOs) were found in samples taken from behind the Joey’s Cleaners space, samples collected in the rear of the Joey’s Cleaners space, and from the center of the Joey’s Cleaners tenant space. No detections of COCs above UUSCOs or PFAS above NYSDEC Guidance Values for Residential use (November 2022) were detected in soil samples collected from off-Site.

The primary groundwater impacts at the Site included the COCs, PCE, TCE, and vinyl chloride. The monitoring wells with COC exceedances were located behind and generally downgradient of the Joey’s Cleaners space, and as such, it is highly probable that residual groundwater contaminants are due to the historic use of the Site as a dry-cleaner. Groundwater exceedances of NYSDEC Sampling, Analysis, and Assessment of PFAS (November 2022) were found in all monitoring wells at the Site. However, the highest concentrations were located behind and downgradient of the Joey’s Cleaners tenant space. Groundwater contamination is fully delineated at the Site as two of the monitoring wells furthest downgradient along Throop Avenue did not display elevated concentrations of COCs or PFAS. Additionally, monitoring wells located on the east side of Throop Avenue,
hydraulically side-gradient of the Site, did not display elevated concentrations of COCs or PFAS. Benzene, a petroleum-related VOC, was also detected above AWQS in upgradient groundwater monitoring well MW-6 and side gradient groundwater monitoring well MW-9. It is possible that these exceedances are result of contamination migrating to the Site from the upgradient gas station, as a slight petroleum odor was detected in the samples. There are no known or suspected sources of petroleum-contamination on-Site. Exceedances of PAHs were also identified at this location; however, it is likely these are related to fill material in the area.

The primary impacts to soil vapor and indoor air are CVOCs including PCE, TCE, and cis-1,2-DCE. Consistent with soil and groundwater contamination sources, soil vapor and indoor air concentrations are likely related to the dry-cleaning facilities that historically operated on-Site within the Joey’s Cleaners tenant space. PCE was detected above its NYSDOH AGV in four basements of tenant spaces and four first-floors of tenant spaces. Methylene chloride was detected above its NYSDOH AGV in one basement space.

Due to levels of CVOCs in soil vapor and indoor air, the NYSDOH Matrices recommend mitigation in the basement of Joey’s Cleaners tenant space. Additionally, the Matrices recommend identifying sources and resample or mitigation in the basements of Covenant Elevation Christian Center, 99 Cent Store, Wright Insurance Agency, and no further action for the basements of Fellowship Tabernacle, Colwell’s Driving School (former Value Tax and Metro PCS) or a neighboring residential home.

Based upon the soil vapor intrusion assessment conducted at a neighboring residential home, soil vapor impacts have not migrated off-Site as the matrices indicated that no further action is required for this property.

Regarding the potential for exposure, people may come in contact with contaminants in soil if they dig in the landscaped rear yard or below the asphalt surface within the building footprint. Based on the results of the investigation, soil vapor intrusion may be occurring in several of the tenant spaces. However, it is not clear if current dry-cleaning operations inside Joey’s Cleaners are impacting the indoor air quality. The impacts present in indoor air represent a complete exposure pathway. There is no potential exposure to groundwater under current conditions.

Recommendations

Based on the results of this investigation, GEI recommends conducting an Interim Remedial Measure (IRM) to address the complete exposure pathway to impacts in indoor air in the tenant spaces with exceedances of AGVs. An IRM Work Plan was submitted and approved by NYSDEC. The IRM was completed on June 7, 2023, and post IRM Operations, Maintenance, and Monitoring is currently ongoing. The remaining soil and groundwater
impacts will be addressed in the Remedial Action Work Plan (RAWP) that includes a remedial alternatives analysis to evaluate remedial options and costs of remediating contaminated media at the Site to prevent potential exposure pathways from becoming complete. The investigations conducted provided sufficient characterization of impacts to design an effective remedy.
1. Introduction

GEI has prepared this RIR on behalf of 1226 East Gun Hill LLC, (Participant) for the property known as the Joey’s Cleaners Site. The Site is located at 1226-1246 East Gun Hill Road, in the Williamsbridge section of the Bronx, New York which occupies Block 4618 and Lot 25, on the NYC Tax Map. The Site was accepted into the NYSBCP on May 2, 2017, as BCP Site #C203076. The Participant, 1226 East Gun Hill LLC, entered into a BCA with the NYSDEC on July 24, 2017, and was assigned NYSBCP Site No. C203076.

GEI conducted the RI activities from January to May 2019. An additional round of groundwater sampling was conducted in July 2020. GEI conducted the 2021 SRI activities from January to March 2021. GEI conducted the 2022 SRI activities from May to June 2022.

1.1 Purpose

The purpose of the RI and SRIs was to obtain analytical data to evaluate and define the nature, extent, and magnitude of impacts at the Site. The data generated during the field investigation were used to determine what risks, if any, the on-site impacts present to public health and to the environment. Additionally, the RI and SRIs were designed to provide data needed to perform a remedial alternatives analysis for the Site. The alternatives analysis is to be included in the RAWP, which will be submitted under separate cover.

1.2 Report Organization

This report presents the findings of the 2019 RI, 2021 SRI and 2022 SRI and is organized as follows:

- Certification
- Executive Summary
- Introduction
- Site Description and History
- Methods of Investigation
- Nature and Extent of Contamination
- Qualitative Human Health Exposure Assessment
- Fish and Wildlife Impact Analysis
- Conceptual Site Model
- Summary, Conclusions and Recommendations
1.3 Project Organization

The Qualified Environmental Professional (QEP) responsible for preparation of this report is Nicholas J. Recchia, P.G.

1.4 Health and Safety

All work described in this report was performed in full compliance with applicable laws and regulations, including Site and Occupational Safety and Health Administration (OSHA) worker safety requirements and Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements. The work described in this report was also performed in accordance with the Site-specific Health and Safety Plan (HASP) dated October 2017 which is included as an appendix of the NYSDEC-approved Remedial Investigation Work Plan (RIWP).
2. Site Description and History

2.1 Site Location and Description

The Site is located in the Williamsbridge Section of the Bronx, New York and is identified as Block 4618 and Lot 25 on the NYC Department of Finance Tax Map. United States Geological Survey (USGS) topographical quadrangle map (Figure 1) shows the Site location.

The 0.479-acre Site is currently an active commercially zoned one-story building (R5 with a C1-2 overlay). The Site is currently occupied by 11 commercial tenants including a deli/grocery, Colwell’s Driving School, Kreative Minds Barber Shop/Beauty Salon, Mandarin Wok Chinese Restaurant, Wright Insurance Agency, Fellowship Tabernacle, Polli Trading, Inc., Digital Printing and Signs, Metro Discount 99 Cent Store, Joey’s Cleaners, and Covenant Elevation Christian Center Overcomer’s House. Please refer to Figure 2, Property Boundary and Store Locations, for a layout of tenant spaces. During the initial 2019 GEI RI, the tenant space currently occupied by Colwell’s Driving School was occupied by Metro PCS. This tenant space was occupied by Value Tax during the 2021 investigation. The tenant space currently occupied by Polli Trading Inc. was occupied by K&P Jerk & Catering during the initial GEI investigation.

2.2 Description of Surrounding Property

The Site is located within a primarily mixed-use, commercial, and residential area of the Bronx, New York. The Site is bounded on the north by East Gun Hill Road beyond which is Gun Post Lanes Bowling Alley, a parking lot and Gulf gas station, Emmaus Bible Chapel on the east side of Throop Avenue, residential dwellings adjoining the south, and a McDonalds restaurant and residential dwellings across Pearsall Avenue to the west.

2.3 Site History

The Site was previously undeveloped until the existing building was constructed circa 1951. The building on Site has remained unchanged since its construction. From 1951 to present, the building on Site has been occupied by various commercial tenants. Historical records indicate that Joey’s Cleaners has operated at the subject property since at least 1996.

2.4 Previous Report Findings

Based upon investigations conducted to date, the primary COC is PCE. As previously discussed, a Phase I ESA was conducted by EBI Consulting on October 2, 2014. Three subsurface studies were subsequently conducted by TEI to investigate the conditions of the on-site groundwater and
soil. However, the validity of this data cannot be confirmed as it is unknown if field QA/QC procedures were completed, the sample locations were estimated, and a third-party data validator did not confirm the usability of the data. Copies of available previous reports are located in Appendix A of this report.

2.4.1 Soil

In December 2012, March 2013, and August 2013, TEI conducted soil borings in the basement of Joey’s Cleaners, adjacent tenant spaces, and rear yard. Analytical results confirmed the presence of PCE in borings B-7 (March 2013, 1.5 mg/Kg), SB-1 and SB-2 (December 2012, 5.1 mg/Kg and 4.5 mg/Kg, respectively), and B-10 (August 2013, 11 mg/Kg). The detected concentrations are above the NYSDEC Part 375 UUSCO and PGWSCOs of 1.3 mg/Kg. However, these concentrations were below NYSDEC Part 375 RRSCOs and CUSCOs. These samples were collected near the southern end of Joey’s Cleaners closest to the dry-cleaning equipment, with the exception of B-7, which was collected from near the center of the Joey’s Cleaners basement. The soil sample from TEI soil boring B-7 was collected from 1 to 3 ft. below basement grade. The soil sample from TEI soil boring B-10 was collected from 18 inches below basement grade. In TEI borings SB-1 and SB-2, the depth of the sample collections is not known. Soil sample locations are shown on Figure 3. Soil exceedances and detections are summarized on Figures 4 and 5.

2.4.2 Groundwater

In April 2013, August 2013, and March 2014, TEI collected groundwater from the Site and analytical data confirmed the presence of CVOCs, including PCE and its breakdown products above NYSDEC TOGS 1.1.1 Class GA Standards. PCE was found at a maximum detection of 580 ppb in March 2014. Additionally, cis-1,2 DCE was found at a maximum detection of 460 ppb (August 2013), TCE was found at a maximum detection of 75 ppb (August 2013), and vinyl chloride was found at a maximum detection of 18 ppb (August 2013). All of the maximum detections were found in the rear yard downgradient from the Joey’s Cleaners tenant space. Groundwater sample locations are shown on Figure 3. Groundwater exceedances and detections are summarized on Figures 6 and 7.

2.4.3 Ambient Air

According to a laboratory report prepared by Phoenix Environmental Laboratories, Inc., TEI collected two ambient air samples from the Site in October 2014. Both samples were collected in 6-liter SUMMA® canisters. The ambient air samples were collected from 1238 and 1246 East Gun Hill Road, tenant spaces that borders Joey’s Cleaners on the west side and east sides, respectively. It is not known where in tenant space these samples were collected since no prior report with this information was provided to GEI. No comparison to the NYSDOH May 2017 Matrices was able to be conducted as no soil vapor samples were collected. However,
CVOCs such as PCE, TCE, Carbon Tetrachloride, and Methylene Chloride were detected. The maximum detections of TCE and Carbon Tetrachloride were 32.1 µg/m³ and 0.692 µg/m³, respectively, and were found in the 1238 East Gun Hill Road tenant space. Maximum detections of PCE and Methylene Chloride were 501 µg/m³ and 7.43 µg/m³, respectively, and were found in the 1246 East Gun Hill Road tenant space. The validity of this data cannot be confirmed as it is unknown if field QA/QC procedures were completed, the sample locations were estimated, and a third-party data validator did not confirm the usability of the data.
3. Methods of Investigation

3.1 Field Investigation

The objective of the investigation was to define the nature, extent, and degree of contaminants at
the Site. To accomplish these goals, the following Scope of Work was conducted:

1. Conducted a Site Inspection.
2. Conducted a private Utility Mark-out utilizing ground-penetrating radar (GPR).
3. Advanced 23 soil borings and collected 37 samples for laboratory analysis to evaluate
   soil quality.
4. Installation of 15 permanent groundwater monitoring wells and the collection of
   22 groundwater samples for chemical analysis to evaluate groundwater quality.
5. Installation of 14 soil vapor probes, and the collection of 14 soil vapor samples,
   24 indoor air samples and five outdoor air samples.
6. The permanent groundwater monitoring wells were surveyed by a New York
   State-licensed surveyor following sampling activities.

Prior to any intrusive work, a public Utility Mark-out was conducted. The locations of the soil
borings, groundwater monitoring wells, and soil vapor points are shown on Figure 3. A photo
log detailing the implementation of the RI and SRI activities is included as Appendix B.

3.1.1 Site inspection and Utility Mark-Outs

Prior to intrusive work, a visual Site inspection was completed to identify Site conditions. The
results of the inspection are presented in the pertinent sections throughout the report. Prior to
any intrusive work, 811 was notified and a public utility mark-out was conducted. Additionally,
a ground penetrating radar was utilized to clear the sidewalk well locations of potential utilities.

3.1.2 Soil Boring Installation and Sampling

2019 Remedial Investigation

As part of the NYSDEC-approved July 2018 RIWP, a total of 11 soil borings (SB-1 through
SB-11) were advanced by Tri State Drilling Technologies, Inc. (TSDT), under GEI’s oversight,
in March 2019 using hand augers and a Geoprobe® Direct-Push drilling unit. Five soil borings
were advanced to 6 ft. below the basement slab, two borings to 5 ft. below the basement slab,
three borings to 12 ft. below grade surface (bgs), and one boring to 16 ft. bgs. Soil samples were
collected continuously and inspected for impacts (e.g., staining and odor) and screened for the
presence of VOCs using a photoionization detector (PID). Sample locations are shown on Figure 3. Boring logs are included as Appendix C.

Interior soil samples were obtained using hand augers. Exterior soil cores were obtained by direct push drilling techniques using a stainless steel, 4-foot macro-core sampler with a dedicated internal acetate liner. All soil cores were field screened using a PID with an 11.7 eV lamp, which measures relative concentrations of VOCs in the soil. The PID was calibrated at the beginning of each field day with 100 parts per million (ppm) isobutylene calibration gas.

2021 Supplemental Remedial Investigation

As part of the NYSDEC-approved December 2020 SRIWP, a total of six soil borings (21-B1 through 21-B6) were advanced by AARCO Environmental Services, Corp. (AARCO), under GEI’s oversight, in January and February 2021. Three soil borings (21-B4, 21-B5, 21-B6) were conducted in the sidewalk along Throop Avenue and advanced to 20 ft. below sidewalk grade. Two soil borings were conducted in the rear yard slightly south of the Joey’s Cleaners tenant space and advanced to 20 ft. below surface grade (21-B1 and 21-B2). One boring was conducted within the Joey’s Cleaners basement and advanced to 5 ft. below the basement slab (21-B3). Soil samples were collected continuously and inspected for impacts (e.g., staining and odor) and screened for the presence of VOCs using a PID. Sample locations are shown on Figure 3. Boring logs are included as Appendix C.

Interior soil samples were obtained using hand augers. Exterior soil cores were obtained by a Geoprobe® Direct-Push drilling unit using a stainless steel, 5-foot macro-core sampler with a dedicated internal acetate liner. The PID was calibrated at the beginning of each field day with 100 ppm isobutylene calibration gas.

2022 Supplemental Remedial Investigation

As part of the NYSDEC-approved March 2022 SRIWP, a total of six soil borings (22-B1 through 22-B6) were advanced by AARCO in May 2022 under GEI’s oversight.

- One soil boring was conducted on the east side of the sidewalk along Throop Avenue and advanced to 9 ft. below sidewalk grade.
- One soil boring was conducted in the rear yard slightly south of the Joey’s Cleaners tenant space and advanced to 15 ft. below sidewalk grade.
- Two soil borings were conducted in the basement of the 99 Cent store and advanced to 5 ft. and 4 ft. below basement grade.
- Two soil borings were conducted in the basement of the Joey’s Cleaners tenant space and advanced to 2 ft. and 4.5 ft. below basement grade.
Soil samples were collected continuously and inspected for impacts (e.g., staining and odor) and screened for the presence of VOCs using a PID. Sample locations are shown on Figure 3. Boring logs are included as Appendix C.

Interior soil samples were obtained using hand augers. Hand augers were properly decontaminated between each sample as per the Quality Assurance Project Plan, included as appendix to the NYSDEC-approved RIWP. Exterior soil cores were obtained by a Geoprobe® Direct-Push drilling unit using a stainless steel, 5-foot macro-core sampler with a dedicated internal acetate liner. The PID was calibrated at the beginning of each field day with 100 ppm isobutylene calibration gas.

3.1.3 **Groundwater Monitoring Well Installation, Development, and Sampling**

**2019 Remedial Investigation**

As part of the NYSDEC-approved July 2018 RIWP, GEI installed seven groundwater monitoring wells as part of the RI. One existing monitoring well (IMW-1) was present in the basement from prior investigations and was included in the sampling. As per the NYSDEC-approved RIWP, cluster monitoring wells were planned for installation in three locations across the Site consisting of three distinct monitoring wells. The cluster monitoring wells were planned to be screened at a shallow interval (10 to 20 ft. bgs), an intermediate interval (25 to 35 ft. bgs) and a deep interval (40 to 50 ft. bgs). The monitoring wells were installed using 4-1/4-inch ID hollow stemmed augers. Shallow bedrock was encountered within the Site at depths ranging from 10 to 18 ft. bgs, therefore, the deeper monitoring wells were not installed. Groundwater is found resting perched on top of the bedrock surface in a weathered permeable bedrock zone which exists on the bedrock surface. The hollow stemmed augers were able to penetrate the weathered bedrock and into the top of the more competent and impermeable bedrock which exists below. Each monitoring well was installed through the weathered bedrock into the top portion of the competent bedrock. The bedrock is described as the Ravenswood Granodiorite according to Bedrock and Engineering Geologic Maps of Bronx County, United States Geologic Survey (USGS), Charles A. Baskerville, 1992. The water bearing capacity and transmissivity is thus described as minimal, decreasing with depth in competent rock, no known bedrock aquifer exists. The monitoring wells were installed in such a manner that the groundwater monitoring wells screen the entire groundwater column and adequately represent groundwater quality found underlying the site. The data collected from the monitoring wells that were installed and sampled is sufficient to characterize the groundwater quality vertically and horizontally in order for a cleanup remedy to be developed. A groundwater contour map depicting shallow groundwater flow beneath the Site is included as Figure 14. Figures 15 and 16 provide the geologic cross sections and monitoring well construction descriptions.
Below is a summary of the installed groundwater monitoring wells and screened intervals completed during the RI:

<table>
<thead>
<tr>
<th>Monitoring Well Identification</th>
<th>Screened Interval (ft. bgs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMW-1</td>
<td>2.5 to 7.5</td>
</tr>
<tr>
<td>MW-1</td>
<td>5 to 15</td>
</tr>
<tr>
<td>MW-2</td>
<td>4 to 14</td>
</tr>
<tr>
<td>MW-3</td>
<td>5 to 10</td>
</tr>
<tr>
<td>MW-4</td>
<td>8 to 18</td>
</tr>
<tr>
<td>MW-5</td>
<td>8 to 18</td>
</tr>
<tr>
<td>MW-6</td>
<td>7.5 to 17.5</td>
</tr>
<tr>
<td>MW-7</td>
<td>8 to 18</td>
</tr>
</tbody>
</table>

The exterior monitoring wells (MW-1 through MW-7) were constructed of two-inch diameter schedule 40 polyvinyl chloride (PVC) piping with 10 ft. of 0.010-inch slotted screen. The interior monitoring well (IMW-1) within the Joey’s Cleaners tenant space is constructed of one-inch schedule 40 PVC with 5 ft. of screen. The exterior monitoring wells are completed with a J-plug and vault cover flush to the surface. The interior monitoring well is completed with a J-plug and 2-inch stickup.

The monitoring wells were developed to remove fine soil particles that may have been trapped in the monitoring wells’ sand pack and screen, and to set the sand pack so that it will function properly and create good hydraulic communication between the well and the formation. Well development was performed using a submersible pump which was used to purge a minimum of three well volumes into 55-gallon drums. It should be noted that some wells ran dry prior to three-well volumes but were allowed to recharge several times prior to completion.

Groundwater sampling was completed utilizing the United State Environmental Protection Agency’s (USEPA’s) low-flow (minimal drawdown) procedures with dedicated and decontaminated sampling equipment. Prior to collecting the groundwater samples, the depth to groundwater and the total well depth was measured at each of the groundwater monitoring wells using a multi-parameter interface probe attached to a measuring tape accurate to 0.01 foot. Field parameters (e.g., turbidity, pH, oxidation-reduction potential, and dissolved oxygen) were measured during completion of the groundwater sampling event. No free phase product was detected in any of the groundwater monitoring wells during installation, purging, or sampling. It should be noted that some of the monitoring wells were unable to produce enough groundwater volume for field parameters to be readily measured using the Horiba water quality multi meter.

The 2019 sampling event also included the sampling for emerging contaminants PFAS in monitoring well IMW-1 and 1,4-Dioxane utilizing SIM to analyze for 1,4-dioxane in monitoring well IMW-1 and monitoring well MW-7. GEI returned to the Site to collect groundwater samples from the remaining monitoring wells in July 2020.
These wells were gauged, measured, and surveyed by a NYS Licensed Surveyor following this sampling event. The survey occurred on May 7, 2019.

**2021 Supplemental Remedial Investigation**

As part of the December 2020 NYSDEC-approved SRIWP, GEI installed five groundwater monitoring wells to 20 ft bgs as part of the SRI. The monitoring wells were installed in a similar manner as the previously installed monitoring wells. The newly installed monitoring wells (MW-9 through MW-13) were constructed of 2-inch diameter schedule 40 PVC piping with 10 ft. of 0.010-inch slotted screen. The screened depth is 10 to 20 ft. bgs. Four of the monitoring wells (MW-9, MW-11, MW-12 and MW-13) are located in the sidewalk along Throop Avenue and one monitoring well (MW-10) was installed in the rear yard behind the Joey’s Cleaners tenant space. The monitoring wells are completed with a J-plug and vault cover flush to the surface.

The monitoring wells were developed to remove fine soil particles that may have been trapped in the monitoring wells’ sand pack and screen, and to set the sand pack so that it will function properly and create good hydraulic communication between the well and the formation. Well development was performed using a submersible pump which was used to purge a minimum of three well volumes. It should be noted that some wells ran dry prior to three-well volumes but were allowed to recharge several times prior to completion. Due to the lack of available volume for low-flow sampling, groundwater samples were collected from these wells utilizing a dedicated bailer.

These wells were gauged, measured, and surveyed by a NYS Licensed Surveyor following this sampling event. The survey occurred on March 29, 2021. One additional previously existing groundwater monitoring well located in the sidewalk in the northeastern corner of the Site (MW-8) was surveyed as part of this SRI. As discussed in Section 4, the gauging results were used to generate a groundwater contour map (Figure 14).

All monitoring well locations are shown on Figure 3 and well construction details are included in Appendix C.

**2022 Supplemental Remedial Investigation**

As part of the March 2022 NYSDEC-approved SRIWP, GEI installed two additional groundwater monitoring well in the sidewalk along the east side of Throop Avenue. The monitoring wells were installed in a similar manner as the previously installed monitoring wells. The newly installed monitoring wells (MW-14 and MW-15) were constructed of two-inch diameter schedule 40 PVC piping with 0.020-inch slotted screen. The screened zones of MW-14 and MW-15 are 0.5 to 7 ft. below sidewalk and 1 to 11 ft. below sidewalk grade, respectively. The monitoring wells are completed with a J-plug and vault cover flush to the surface.
Each monitoring well was installed through the weathered bedrock into the top portion of the competent bedrock. Competent bedrock was encountered at 7 ft. and 11 ft. at MW-14 and MW-15, respectively. During the initial installation of MW-15, bedrock was encountered at 9 ft. with no evidence of saturated conditions, or the presence of groundwater observed in the borehole. As a result, the well location was offset approximately 50 ft. south to its present location where groundwater and bedrock were encountered at 10 and 11 ft., respectively. Because of the limited volume for purging and development, groundwater samples were collected from these wells utilizing a dedicated bailer. These wells were gauged, measured, and surveyed by a NYS Licensed Surveyor following this sampling event. The survey occurred on June 7, 2022.

3.1.4 Soil Vapor Point Installation and Soil Vapor, Indoor and Outdoor Air Sampling

2019 Remedial Investigation

A total of seven sub-slab soil vapor probes (SV-1 through SV-7) were installed within the footprint of the Site building. A total of four soil vapor probes were installed outside the footprint of the site buildings. Sample locations are shown on Figure 3.

The interior sub-slab soil vapor probes were installed using 1/2-inch diameter steel drill bit advanced using a handheld Bosch™ Hammer Drill. The exterior soil vapor probes were installed using 1/2-inch diameter steel drill rod advanced using a Geoprobe 54LT drill rig. Once driven to depth, rods were removed leaving only the tip and the tubing.

All of the vapor probes consisted of a prefabricated 2- to 3-inch perforated steel vapor probe tip attached to 3/16-inch diameter low-density polyethylene (LDPE) plastic riser tubing. The vapor probe borehole was backfilled with #2 morie well-grade sand. A surface seal was placed using an impermeable clay seal installed around the surface of the probe-hole annulus from surface grade level.

The interior sub-slab vapor implants were set at 6-inches below the basement slab. The exterior soil vapor implants were set at various depths contingent on the depth to groundwater at the location. The exterior implant depths are shown below:

<table>
<thead>
<tr>
<th>Soil Vapor Point</th>
<th>Depth (ft. bgs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV-8</td>
<td>8.0</td>
</tr>
<tr>
<td>SV-9</td>
<td>5.5</td>
</tr>
<tr>
<td>SV-10</td>
<td>5.0</td>
</tr>
<tr>
<td>SV-11</td>
<td>6.0</td>
</tr>
</tbody>
</table>

The vapor well was purged using a hand pump after installation.
A total of 11 soil vapor samples were collected from the 11 installed soil vapor probes. Additionally, a total of 11 indoor air samples (IA-1 through IA-11) and one outdoor air sample (OA-1) were collected concurrently with the sub-slab soil vapor samples. Each indoor air sample was collected from the basement of a separate tenant space.

**2021 SRI**

A soil vapor intrusion assessment was conducted for the basement beneath the Wright Insurance Agency tenant space. Two sub-slab soil vapor probes (21-SV1 and 21-SV2) were installed in the Wright Insurance Agency basement along with one indoor air sample (21-IA-BASEMENT) and one outdoor air sample (21-OA1). Sample locations are shown on Figure 3. The interior sub-slab soil vapor probes were installed using 1/2-inch diameter steel drill bit advanced using a handheld Bosch™ Hammer Drill. The interior sub-slab vapor implants were set at 6-inches below the basement slab.

A soil vapor intrusion investigation was conducted in a similar manner for a neighboring residential home. One sub-slab soil vapor probe (3229-SV1) was installed through the ground floor of the residence. One indoor air sample was collected from the ground floor space (3229-IA1) and one outdoor air sample collected from the driveway (3229-OA1).

Finally, indoor air samples were collected from the first floor of each tenant space within the 1226-1246 East Gun Hill Road Site (21-IA1 through 21-IA11). Each sampling event contained a corresponding outdoor air sample for comparison purposes (21-OA1, associated with each date).

All samples were collected in 6-liter SUMMA canisters which were certified clean by the laboratory and analyzed by using USEPA Method TO-15. Flow rate of both purging and sampling did not exceed 0.2 liters per minute (L/min). Samples were collected over a period of approximately 2 hours. Pertinent information including sample identification, date and time of sample collection, sampling depth, identity of samplers, sampling methods and devices, vacuum of canisters before and after the samples are collected, and chain-of-custody protocols were recorded in the project field book.

As part of the vapor intrusion evaluation, a tracer gas was used in accordance with NYSDOH protocols to serve as a QA/QC device to verify the integrity of the soil vapor probe seal. Helium was used as the tracer gas and an inverted bucket served to keep it in contact with the probe during testing. A portable monitoring device was used to analyze a sample of soil vapor for the tracer prior to sampling. Helium readings were below the required 10% indicating that the probe seals remained intact.

**2022 SRI**

No soil vapor, indoor air, or outdoor air samples were collected as part of the 2022 SRI.
3.2 CAMP Summary

In accordance with NYSDEC and NYSDOH requirements, a Community Air Monitoring Program (CAMP) was implemented at the Site during intrusive drilling activities. The objective of the CAMP was to provide a measure of protection for the downwind community (i.e., off-site receptors, including residences and businesses and on-site workers not involved with Site RIWP activities) from potential airborne contaminant releases as a direct result of intrusive RIWP activities. Air monitoring stations were placed upwind and downwind of each intrusive work area (i.e., soil boring, soil vapor probe, and monitoring well locations). VOCs and respirable particulates (PM-10) were monitored at the upwind and downwind stations on a continuous basis during intrusive outdoor work. In addition, to the fixed stations, VOCs and particulates were monitored in the work zone using handheld equipment. VOCs and particulates were also monitored around the perimeter of the work zone on a regular basis (hourly) by the GEI air monitoring personnel. On March 14, 2019, only work zone CAMP was conducted because minimal intrusive work was completed.

Two CAMP exceedances were noted. On March 14, 2019, a high of 11.5 ppm was recorded in the work zone on the PID instrument. Additionally, on March 26, 2019, the downwind PID recorded a high of 13.3 ppm. However, both of these exceedances were due to the Geoprobe drill rig engine idling in close proximity of the CAMP station and were not related to the subsurface activity. No other exceedances were recorded. No exceedances were noted during the 2021 SRI or 2022 SRI. The CAMP results are provided in Appendix D.

3.3 Laboratory Analysis

TestAmerica, of Edison, New Jersey, a NYSDOH Environmental Laboratory Accreditation Program (ELAP)-certified laboratory, conducted the chemical analysis for the soil and groundwater sampling collected during the 2019 RI, 2021 SRI and 2022 SRI at their Edison, New Jersey laboratory. Air samples and PFAS groundwater samples were analyzed at the TestAmerica laboratory located in South Burlington, Vermont. All samples were properly transported under chain-of-custody procedures. Laboratory Category B Reports are included asAppendices E and F.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Assurance Officer</td>
<td>The chemical analytical quality assurance is directed by Lori Arnold, Jannel Franklin, Melissa Haas and Elizabeth Nye</td>
</tr>
<tr>
<td>Chemical Analytical Laboratory</td>
<td>Test America Laboratories, Inc.</td>
</tr>
<tr>
<td>Factor</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
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</tr>
<tr>
<td>Chemical Analytical Methods</td>
<td>Soil analytical methods:</td>
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<tr>
<td></td>
<td>• VOCs by USEPA Method 8260C</td>
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<tr>
<td></td>
<td>• SVOCs by USEPA Method 8270D</td>
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<tr>
<td></td>
<td>• Target Analyte List (TAL) Metals by USEPA Method 6010D and Mercury by USEPA Method 7471B</td>
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<td></td>
<td>• Pesticides by USEPA Method 8081B</td>
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<td></td>
<td>• PCBs by USEPA Method 8082A.</td>
</tr>
<tr>
<td></td>
<td>• PFAS NY 21 Standard List by USEPA Method 537.1**</td>
</tr>
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<td></td>
<td>Groundwater analytical methods:</td>
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<tr>
<td></td>
<td>• VOCs using USEPA Method 8260C</td>
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<tr>
<td></td>
<td>• PFAS (NY 21 Standard List) using a modified USEPA Method 537.1**;</td>
</tr>
<tr>
<td></td>
<td>• 1,4-dioxane using a modified USEPA Method 8270 (with SIM to be used during analysis)</td>
</tr>
<tr>
<td></td>
<td>• SVOCs using USEPA Method 8270D</td>
</tr>
<tr>
<td></td>
<td>• TAL metals (including mercury) via USEPA Method 6010D and Method 7473</td>
</tr>
<tr>
<td></td>
<td>• Pesticides via USEPA Method 8081B</td>
</tr>
<tr>
<td></td>
<td>• PCBs via USEPA Method 8082.</td>
</tr>
<tr>
<td></td>
<td>Soil Vapor, Indoor Air, Outdoor Air analytical methods:</td>
</tr>
<tr>
<td></td>
<td>• VOCs by TO-15 VOC parameters.</td>
</tr>
</tbody>
</table>

*During the 2022 SRI, only CVOCs were reported.
**At the time of sample collection and laboratory analysis, USEPA Method 537.1 was the most advanced analytical method.

### 3.4 Quality Assurance/Quality Control (QA/QC) Sampling

QA/QC procedures were used to provide performance information with regard to accuracy, precision, sensitivity, representation, completeness, and comparability associated with the sampling and analyses for this investigation. Field QA/QC procedures were used, (1) to document that samples are representative of actual conditions at the Site and (2) to identify possible cross-contamination from field activities or sample transit. Laboratory QA/QC procedures and analyses were 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.

### 3.5 Data Validation

Data validation for the project was conducted by third-party Environmental Data Services, Inc. (EDS) of Virginia Beach, Virginia. The validation was performed to assess compliance with the analytical method protocols described in the NYSDEC Analytical Services Protocol (ASP). Laboratory data to be validated was provided as a Category B deliverable and EDS prepared a
data usability summary report (DUSR) for the samples. The DUSRs are provided in Appendix H. The NYSDEC Electric Data Deliverables (EDDs) for all data were submitted to NYSDEC.

In summary, the analytical results from the GEI Investigations are valid to use for Site contamination documentation and evaluation, either as reported or with minor qualifications, except for 8 of the 21 PFAS (Perfluorodecanoic acid, Perfluorotetradecanoic acid, NEtFOSAA, NMeFOSAA, Perfluorododecanesulfonic acid, Perfluoroundecanoic acid, Perfluorododecanoic acid, 8:2 Fluorotelomer sulfonic acid) analytes from one groundwater sample collected in May 2022.

The following qualifiers were added by the data validator:

- **UJ**: The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
- **NJ**: The analysis has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the samples.
- **U**: The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
- **J**: The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- **R**: The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the samples.
4. Nature and Extent of Contamination

Soil, groundwater, and soil vapor samples were collected during this investigation to determine the nature, magnitude, and extent of contamination occurring in various media at the Site.

The data collected during the RI is compared with the Standards, Criteria and Guidance values (SCGs) applicable to each medium sampled, and include:

- **Soil**: NYSDEC’s Title 6NYCRR Part 375 Environmental Remediation Programs: Part 375-6.8: Soil Cleanup Objectives for Unrestricted Use, Restricted Residential Use.

- **Groundwater**: New York State 6NYCRR Part 703.5 Class GA AWQS.

- **Soil Vapor, Indoor Air, Outdoor Air**: NYSDOH Soil Vapor/Indoor Air Matrices, May 2017.

- **PFAS; Soil and Groundwater**: Sampling, Analysis, and Assessment of PFAS, NYSDEC, November 2022

The analytical data is presented in Tables 1 through 10 and summarized on Figures 4 through 13 for soil, groundwater, soil vapor and indoor/outdoor air concentrations and is compared to the applicable SCGs, where appropriate. Data collected during the 2019 RI, 2021 SRI and 2022 SRI, as well as from previous investigations are included.

4.1 Description of Local Geologic and Hydrogeological Conditions

4.1.1 Site Soil/Stratigraphy

Based on the observations completed during GEI’s RI, the subsurface conditions consist of historic fill soils, glacial outwash sand deposits, and bedrock. Excluding the minor fill layer consisting of soils mixed with construction debris located to approximately 2 ft., beneath the building footprint and 5 ft. below grade outside of the building footprint, the subsurface conditions encountered generally consisted of fine to medium sand and silt with varying percentages of gravel. Weathered bedrock was encountered at the Site at depths varying from approximately 5 ft. beneath the building basement floor slab (or approximately 13 ft. bgs to 18 ft. bgs found in areas outside the building footprint. Boring logs are included in Appendix C. Geological cross sections are shown as Figures 14 and 15.
4.1.2 Aquifer Characteristics

Based upon regional topography, groundwater is anticipated to flow in a southerly direction. The depth to groundwater was measured in on-Site monitoring wells at depths varying from approximately 5 ft. below the building footprint to 12 ft. bgs outside the building footprint.

4.1.3 Groundwater Flow Direction

A groundwater contour map showing Site-specific groundwater elevations and the estimated groundwater flow direction is provided as Figure 13. Based on the Site-specific groundwater depths and the elevation survey, groundwater flows beneath the Site in a south-southeasterly direction. Gauging of these monitoring wells was completed in June 2022 following completion of the 2022 SRI sampling activities on-Site. There is one additional previously existing groundwater monitoring well located in the sidewalk in the northeastern corner of the Site (labeled as MW-8). This monitoring well was surveyed and gauged for groundwater elevation as part of GEI’s groundwater investigations but was not sampled for chemical constituents.

4.1.4 Surface Water Bodies

No surface water bodies are located within one-half mile of the Site according to the USGS 7 ½ minute topographic map.

4.2 GEI Soil Investigation

2019 Remedial Investigation

Other than the fill material noted, and an elevated PID reading detected at GEI boring SB-10, no evidence of impacts (visual, olfactory or PID readings above background) was noted in the borings.

A total of 23 soil samples were collected during the implementation of the 2019 GEI RI at 11 boring locations throughout the Site. The results are summarized below:

VOC exceedances were detected in two of the 11 soil borings completed; PCE a COC for the Site was detected in one boring (1.5 mg/Kg) located behind the Joey’s Cleaners tenant space (SB-10 at 8 to 10 ft. bgs.). The other VOC exceedance was acetone (maximum concentration of 0.082 mg/Kg at GEI boring SB-8 at 9 to 11 ft. bgs).

SVOC exceedances were limited to PAHs which detected in six of the 11 soil borings. Maximum detections were all observed in GEI boring SB-4 at 0 to 2 ft. below the building footprint including benzo(a)anthracene (maximum 35 mg/Kg); benzo(a)pyrene (maximum 30 mg/Kg), benzo(b)fluoranthene (maximum 32 mg/Kg); benzo(k)fluoranthene (maximum of 11 mg/Kg); chrysene (maximum 33 mg/Kg); dibenzo(a,h)anthracene (maximum 4.7 mg/Kg);
Indeno(1,2,3-cd)pyrene (maximum of 18 mg/Kg) were detected above UUSCOs and RRSCOs. The detections in the remaining borings with exceedances were generally an order-of-magnitude lower than those in sample SB-4 (0 to 2 ft).

Pesticides were detected above the UUSCOs in eight of the 11 GEI soil borings. The exceedances included 4,4'-DDD (maximum of 0.0061 mg/Kg in SB-8 [0 to 2 ft. bgs]), 4,4'-DDE (maximum 0.015 mg/Kg in SB-5 [2.5 to 4.5 ft. below the building footprint]), 4,4-DDT (maximum of 0.026 mg/Kg in SB-9 at 0 to 2 ft. bgs, alpha-BHC and beta-BHC [0.090 mg/Kg and 0.13 mg/Kg, respectively in SB-1 at 0 to 2 ft. below the building footprint]). The concentrations of alpha-BHC and beta-BHC also exceeded PGWSCOs. None of the detections exceeded their respective RRSCOs or CUSCOs.

PCBs were not detected in any of the samples collected.

Metals were detected above the UUSCOs and/or the RRSCOs in each of the 11 GEI soil borings. Metals exceedances of the UUSCOs included copper (maximum 87.8 mg/Kg in GEI boring SB-4 at 3 to 5 ft. below the building footprint), nickel (31.9 mg/Kg in SB-7 at 3 to 5 ft. below the building footprint) and zinc (maximum of 239 mg/Kg in SB-4 at 3 to 5 ft. below the building footprint). Lead (maximum 839 mg/Kg in GEI boring SB-4 at 3 to 5 ft. below the building footprint) and mercury (maximum 3.2 mg/Kg in GEI boring SB-4 at 3 to 5 ft. below the building footprint) also exceeded the UUSCOs and the RRSCOs in several samples. Two detections of lead and seven detections of mercury (each including one duplicate) exceeded the RRSCOs. Additionally, metals were detected above PGWSCO in five of the 11 soil borings, and above NYSDEC CUSCOs in two of the 11 soil borings.

2021 Supplemental Remedial Investigation

The 2021 SRI was conducted in a similar manner as the 2019 RI and implemented as part of the December 2020 NYSDEC-approved SRIWP. A total of three soil samples were collected from three on-Site soil borings and analyzed for VOCs and PFAS. An additional three off-Site soil samples were collected from three off-Site soil borings and analyzed for VOCs. No exceedances UUSCOs or PGWSCO by VOCs or NYSDEC Guidance Values for Residential use (November 2022) by PFAS were observed during the 2021 SRI. Additionally, no elevated PID readings were observed during the 2021 SRI.

All soil sample locations are shown on Figure 3. Soil detections and exceedances are summarized on Figures 4 and 5. Boring logs for all GEI soil borings are included in Appendix C.

2022 Supplemental Remedial Investigation

The 2022 SRI was conducted in a similar manner as the 2019 RI and 2021 SRI and implemented in accordance with March 2022 NYSDEC-approved SRIWP. A total of eight soil samples were
collected from five on-Site soil borings (22-B2 through 22-B6) and analyzed for CVOCs and nine soil samples were analyzed for PFAS. The NYSDEC-approved March 2022 SRIWP included the collection of two soil samples from interior soil borings 22-B5 and 22-B6. However, refusal was encountered at approximately 2 ft. below basement grade. In boring 22-B6, there was insufficient volume to collect soil samples for both CVOCs and PFAS, so only a PFAS sample was collected for laboratory analysis. One soil sample was collected from one off-Site boring (22-B1) and analyzed for CVOCs. No VOC exceedances of UUSCOs or PGWSCOs by VOCs or NYSDEC Guidance Values for Residential Use (November 2022) by PFAS were observed in the samples collected during the 2022 SRI. Additionally, no visual, olfactory or PID readings above background were observed during the 2022 SRI.

4.3 GEI Groundwater Investigation

2019 Remedial Investigation

A total of eight groundwater samples, not including QA/QC samples were collected during implementation of this RI from eight groundwater monitoring wells located throughout the Site. Exceedances of AWQS were observed in VOCs, SVOCs, and metals as noted below.

VOC exceedances were primarily limited to CVOCs including PCE, TCE and vinyl chloride. Benzene exceeded the AWQS in MW-6, which is the most upgradient well on-Site. A Gulf gas station is located northeast of the project site across Gun Hill Road. This property is located upgradient of the Site and NYSDEC Spill Number 9708846 has been assigned to this property. This spill number is currently open. It is possible that this exceedance is a result of petroleum contamination migrating to the Site from the upgradient gas station. This exceedance could also be the result of fill material placed on the Site. There are no known or suspected sources of benzene on-Site.

PCE and TCE were identified as COCs for the Site based on the historic use of the Site and recognized environmental conditions (RECs) identified in the Phase I ESA report. TCE was detected in three groundwater monitoring wells, but only exceeded the NYSDEC AWQS in MW-5 (concentration of 22 µg/L). PCE was detected at four monitoring wells with exceedances observed at three locations. The highest detections of PCE were identified in downgradient monitoring wells MW-4 and MW-5 with concentrations of 97 µg/L, and 66 µg/L, respectively. SVOC detections were limited to PAHs in monitoring well MW-6. Exceedances included benzo[a]anthracene (2.0 µg/L), benzo[a]pyrene (2.1 µg/L), benzo[b]fluoranthene (2.5 µg/L), benzo(k)fluoranthe (1.2 µg/L), chrysene (2.4 µg/L) and indeno[1,2,3-cd]pyrene (1.8 µg/L). MW-6 is located in the vicinity of SB-4, where the highest concentrations of PAHs were detected in soil.

Total metals exceedances of aluminum (maximum 31,200 µg/L in the duplicate sample from MW-3), antimony (maximum of 3.6 µg/L in MW-3) cadmium (6.3 µg/L in MW-4) chromium
(maximum of 91.4 µg/L in MW-2), iron (maximum 49,100 µg/L in the duplicate sample from MW-3), lead (maximum of 466 µg/L in MW-3), magnesium (maximum 61,000 µg/L in MW-1), manganese (maximum 29,300 µg/L in MW-1), nickel (111 µg/L in MW-4), sodium (maximum 659,000 µg/L in MW-1), and thallium (maximum of 0.64 µg/L in MW-3). These metals are common in urban fill soil areas or related to road salt application and are not COCs for this Site.

No pesticides or PCBs were detected at levels above NYSDEC AWQS.

The emerging contaminant 1,4-dioxane was analyzed for utilizing SIM in two monitoring wells including the interior monitoring well IMW-1 within the Joey’s Cleaners tenant space and the upgradient monitoring well MW-7. Additionally, the emerging contaminants PFAS compounds were sampled in the groundwater in the monitoring well IMW-1. The NYSDEC issued its most recent guidance on PFAS in groundwater in November 2022. According to the NYSDEC guidance, further assessment of groundwater may be warranted if PFOA or PFOS is detected at a concentration above 10 ng/L and it is attributable to the Site. In IMW-1, PFOS was detected at 25.8 ng/L and PFOA was detected at 31.9 ng/L.

In July 2020, groundwater samples were collected from the remaining monitoring wells and analyzed for emerging contaminants. Analytical results indicate that 1,4-dioxane was not detected in any of the on-Site monitoring wells. However, detections were noted for PFAS compounds. Detections of individual PFOS and PFOA were found above 10 ng/L in all seven on-Site monitoring wells which were included as part of this groundwater sampling event. The maximum detection of PFOS was 173 ng/L in MW-5. This monitoring well was the source of the duplicate sample MW-X, which displayed a detection of PFOS at 203 ng/L. The maximum detection of PFOA was 6,010 ng/L in downgradient monitoring well MW-4.

No historical on- or off-site sources were identified for 1,4-dioxane or PFAS.

2021 Supplemental Remedial Investigation

A total of five groundwater samples, not including QA/QC samples were collected during implementation of this SRI from five groundwater monitoring wells. Groundwater samples were analyzed for VOCs and PFAS. One groundwater monitoring well was installed side-gradient of the Site in the sidewalk along Throop Avenue (MW-9). One groundwater monitoring well was installed in the rear yard of the Site (MW-10). The remaining monitoring wells were installed downgradient of the Site in the sidewalk along Throop Avenue (MW-11 through MW-13, with MW-13 being the furthest downgradient). Exceedances of AWQS were observed in VOCs as noted below.

VOC exceedances were primarily limited to CVOCs including PCE, TCE and vinyl chloride. Benzene exceeded the AWQS in MW-9, which is side gradient of the Joey’s Cleaners tenant space. This monitoring well did not contain exceedances of other VOCs. As previously discussed, this exceedance may be in connection with the open NYSDEC Spill incident located
at the upgradient gasoline station. This exceedance could also be the result of fill material placed on the Site. There are no known or suspected sources of benzene on-Site.

PCE and TCE were identified as COCs for the Site based on the historic use of the Site and RECs identified in the Phase I ESA report. TCE was detected in three groundwater monitoring wells, but only exceeded the NYSDEC AWQS in MW-10 and MW-11 (concentration of 14 µg/L and 5.3 µg/L, respectively). PCE was detected in all five monitoring wells with exceedances observed in MW-10 and MW11 (concentration of 110 µg/L and 54 µg/L, respectively). Vinyl chloride was detected in two monitoring wells (MW-10 and MW-11) but only exceeded the AWQS in MW-10 (2.4 µg/L). MW-10 and MW-11 are the closest downgradient wells to the Site installed during the SRI.

Groundwater samples collected from all five additional monitoring wells displayed detections of both PFOS and PFOA above 10 ng/L. The maximum detection of PFOS was 58.4 ng/L in monitoring well MW-10. The maximum detection of PFOA was 75.8 ng/L in monitoring well MW-10.

2022 Supplemental Remedial Investigation

Two additional monitoring wells were installed and sampled as part of the 2022 SRI. Both monitoring wells are located on the east side of Throop Avenue along the sidewalk. These additional monitoring wells are hydraulically side gradient in relation to the Joey’s Cleaners tenant space. Groundwater samples collected from these newly installed monitoring wells did not contain CVOC exceedances of the AWQS. One of the newly installed monitoring wells was unable to produce enough volume to collect a groundwater sample for PFAS; however, PFAS was able to be analyzed in groundwater collected from the other newly installed monitoring well (MW-15). PFOS and PFOA were detected in this monitoring well at 43.8 ng/L and 37.5 ng/L, respectively (above the NYSDEC November 2022 guidance value of 10 ng/L).

Monitoring well locations are shown on Figure 3. Groundwater exceedances and detections are summarized on Figures 6 and 7.

4.4 GEI Soil Vapor, Indoor Air, and Outdoor Air Investigation

Regulatory guidance on soil vapor and indoor air sampling is provided in the NYSDOH Center for Environmental Health (CEH) Bureau of Environmental Exposure Investigation (BEEI) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006 (NYSDOH Guidance). The NYSDOH Guidance utilizes three Matrices (Matrices A through C, updated May 2017) to evaluate soil vapor intrusion potential relative to sub-slab vapor concentrations as compared to indoor air detections. The NYSDOH Guidance identifies sub-slab vapor concentration thresholds above which active measures (monitoring or mitigating) are
required for occupied spaces. In addition, AGVs have been established for ambient air for methylene chloride, PCE and TCE at 60 µg/m³, 30 µg/m³ and at 2 µg/m³, respectively.

### 2019 Remedial Investigation

A total of 11 soil vapor samples, 11 indoor air samples, and one outdoor air sample were collected during the implementation of this RI. Each indoor air sample was collected from the basement of the tenant spaces. The following section details the results of the analytical testing.

Detections above the AGVs were limited to PCE in four basement indoor air samples and methylene chloride in one sample. These PCE detections above the AGV included IA-1 (54 µg/m³), IA-2 (180 µg/m³), IA-3 (68 µg/m³), and IA-7 (92 µg/m³). These samples were collected from the basements of the Joey’s Cleaners space, the Covenant Elevation Christian Center, the 99 Cent Store, and the Wright Insurance Agency, respectively. Methylene chloride was above the AGV in the basement of the Wright Insurance Agency with a concentration of 67 µg/m³.

Detections of CVOCs included in the Matrices at elevated levels in sub-slab soil vapor included PCE, TCE and cis-1,2-DCE at maximum concentrations of 2,700 µg/m³, 490 µg/m³, and 88 µg/m³, respectively. All the maximum concentrations for these compounds were detected in SV-3, which is located in the southern portion of the Joey’s Cleaners space. 1,1,1-Trichloroethane (1,1,1-TCA) (maximum of 3.8 µg/m³ in SV-2), carbon tetrachloride (maximum of 0.39 µg/m³ in SV-4), and methylene chloride (maximum of 12 µg/m³ in SV-1) were also detected.

Detections of CVOCs included in the Matrices in indoor air included PCE at a maximum concentration of 180 µg/m³ in IA-2, TCE at a maximum of 1.7 µg/m³ in IA-11, cis-1,2-DCE at an estimated concentration of 0.85 µg/m³ in IA-11, carbon tetrachloride at a maximum concentration of 0.42 µg/m³ in IA-5, and methylene chloride at a maximum concentration of 25 µg/m³. Carbon tetrachloride was detected in outdoor air at 0.38 µg/m³ and PCE was detected in outdoor air at 1.5 µg/m³. No other CVOCs that are included in the NYSDOH Decision Matrices were detected in outdoor air at the Site.

A comparison using the Matrices was conducted for each of the five tenant spaces in which a sub-slab vapor sample and an indoor air sample were collected. The comparison indicated that the NYSDOH recommends mitigation to minimize current or potential exposures associated with soil vapor intrusion within the basement of the Joey’s Cleaners tenant space (1244 East Gun Hill Road) for PCE, TCE, and cis-1,2-DCE. Additionally, based upon the detections of methylene chloride, the NYSDOH recommends identifying any potential sources and resample or for mitigation to be performed.

In the Covenant Elevation Christian Center, adjacent to the east of the Joey’s Cleaners tenant space (1246 East Gun Hill Road) the Matrices recommended identifying any potential sources
and resample or for mitigation be performed due to elevated detections of PCE. Additionally, based upon the detections of TCE, the NYSDOH continued monitoring including sub-slab vapor, basement air and outdoor air sampling.

In the 99 Cent Store, adjacent to the west of the Joey’s Cleaners tenant space (1238-1240 East Gun Hill Road) the Matrices recommend identifying any potential sources and resample or for mitigation to be performed based upon detections of PCE and methylene chloride.

The Matrices indicated that no further action is necessary based upon the detected levels of CVOCs in the other two tenant spaces where an indoor air and soil vapor samples were collected. In the other spaces where only indoor air samples were collected, exceedances of the AGVs were limited to the basement of the Wright Insurance Agency for PCE and methylene chloride. Although no soil vapor sample was collected from the Wright Insurance Agency, based upon the indoor air concentration of PCE, the NYSDOH matrices recommend identifying sources and resampling or mitigation.

A total of four soil vapor probes (SV-8 through SV-11) were installed outside of the footprint of the Site building. CVOCs were detected in all four of the soil vapor samples; however, they were relatively low (<10 µg/m³) excluding one detection of PCE. PCE was detected at a concentration of 87.68 µg/m³ in soil vapor sample SV-11.

Petroleum-related VOCs were detected at relatively low levels throughout the Site in soil vapor, indoor air, and outdoor air.

**2021 Supplemental Remedial Investigation**

A total of two soil vapor samples, 12 indoor air samples, and three outdoor air samples were collected during the implementation of this RI. Each indoor air sample was collected from the first floor of the tenant spaces, with the exception of 21-IA-BASEMENT, which was collected from the basement of the Wright Insurance Agency. The following section details the results of the analytical testing.

Detections above the AGVs were limited to PCE in four indoor air samples. These PCE detections above the AGV included 21-IA1 (130 µg/m³), 21-IA2 (210 µg/m³), 21-IA4 (160 µg/m³), and 21-IA-6 (46 µg/m³). These samples were collected in the Covenant Elevation Christian Center space, Joey’s Cleaners space, the Digital Printing and Signs space, and the Fellowship Tabernacle space, respectively.

A comparison of the soil vapor and indoor air concentrations to the Matrices provided by the NYSDOH was conducted for the basement of the Wright Insurance Agency. The results of the evaluation indicate that monitoring is necessary in connection with the concentrations of TCE detected. TCE was detected in soil vapor at concentrations of 20 µg/m³ in 21-SV1, 0.55 µg/m³
in 21-SV2. TCE was detected in indoor air 0.32 µg/m³ and was not detected in the outdoor air sample 21-OA1.

Additionally, in connection with the concentrations of PCE detected, the evaluation indicates that identifying source(s) and resampling or mitigation is necessary. PCE was detected in soil vapor at 78 µg/m³ in 21-SV1 and 45 µg/m³ in 21-SV2, as well as in indoor air sample 21-IA1 at 52 µg/m³. PCE was detected in the corresponding outdoor air sample OA-1 at 0.58 µg/m³.

Detections of CVOCs included in the Matrices in on-Site indoor air included PCE at a maximum concentration of 210 µg/m³ in 21-IA2, TCE and carbon tetrachloride at maximum concentrations of 0.35 µg/m³ and 0.66 µg/m³, respectively in 21-IA3, and 1,1,1-Trichloroethane and methylene chloride at maximum concentrations of 0.39 µg/m³ and 23 µg/m³, respectively in 21-IA-BASEMENT.

PCE was detected in outdoor air at a maximum of 6.4 µg/m³ on in 21-OA1 on February 4, 2021. Carbon tetrachloride was detected in outdoor air at a maximum of 0.43 µg/m³ in 21-OA1 on March 12, 2021. Methylene chloride was detected in outdoor air at a maximum concentration of 2.3 µg/m³ in 21-OA1 on February 4, 2021. No other CVOCs that are included in the NYSDOH Decision Matrices were detected in outdoor air at the Site.

An additional soil vapor, indoor air, and outdoor air sample were collected from a neighboring residential home. A comparison of the soil vapor and indoor air concentrations to the Matrices provided by the NYSDOH was conducted for the neighboring residential home. The results of the comparison indicate that no further action is necessary for this property.

**2022 Supplemental Remedial Investigation**

No soil vapor, indoor air, or outdoor air samples were collected as part of the 2022 SRI.
5. **Qualitative Human Health Exposure Assessment**

5.1 **Overview**

A qualitative human health exposure assessment (QHHEA) for the Site has been prepared in accordance with the requirements of Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10), Appendix 3B, May 2010 and is presented in the following subsections.

5.2 **Contaminant Fate and Transport**

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the COC that are present at, or migrating from, the Site. COCs are identified as those exceeding the applicable standards. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

As part of the RIR, a QHHEA was performed to determine whether the Site poses an existing or future health hazard to the Site’s exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This QHHEA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of DER-10.

5.3 **Potential Routes of Human Health Exposure**

An exposure pathway begins with a source and mechanism of contaminant release resulting in the contamination of a receiving matrix (environmental medium). A complete exposure pathway also requires a point of potential contact with the contaminated matrix (i.e., exposure point), an exposure route (i.e., inhalation, ingestion, or dermal contact), and a receptor population. If an exposure pathway is not complete because it does not include a contaminated matrix, a point of potential contact, an exposure route, or a receptor, then no risk exists.

There is no potential exposure to groundwater under current conditions. However, under current Site conditions there is potential exposure to soil in the landscaped portion of the rear yard of the Site if people dig below the vegetative layer. It is unlikely that any Site-related soil contamination is present off-Site that could result in potential exposure.

Additionally, there is exposure to contaminated soil vapor at the Site due to soil vapor intrusion. Based upon the off-Site soil vapor intrusion assessment conducted at a neighboring residential home, off-Site exposure to contaminated soil vapor is not likely. Potential on-site receptors are
employees, customers or other visitors or trespassers of the commercial tenants. Off-Site receptors would include pedestrians, occupants of nearby buildings, or construction workers performing nearby ground-intrusive work.

### 5.4 Overall Human Health Exposure Assessment

People may contact contaminants in soil if they dig below the vegetative layer in the landscaped rear yard or below the asphalt surface within the building footprint. People are not drinking the contaminated groundwater because the area is served by a public water supply that obtains water from a different source not affected by this contamination. Groundwater in the area is too deep to be encountered during typical construction projects that may occur in the area. However, it is possible that some construction projects will result in work encountering contaminated groundwater. VOCs in the soil and/or groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into the building and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Based on the results of the investigation, soil vapor intrusion may be occurring in several of the tenant spaces. However, the NYSDOH matrices only require mitigation in the basements of two of the tenant spaces in addition to the Joey’s Cleaners tenant space. However, PCE was detected above its AGV of 30 µg/m³ in the first floor of four of the tenant spaces. The complete exposure pathway in these spaces will be addressed by an Interim Remedial Measure Work Plan (IRMWP).

Based upon the Soil Vapor Intrusion Assessment conducted for a neighboring residential home, soil vapor intrusion is not occurring in the neighboring buildings. It is not clear if current dry-cleaning operations inside Joey’s cleaners are impacting the indoor air quality. The impacts present in indoor air represent a complete exposure pathway.
6. Fish and Wildlife Impact Analysis

The Site was assessed against the Fish and Wildlife Resources Impact Analysis (FWRIA) Decision Key (NYSDEC, 2010; DER-10, Appendix 3C) to determine if a FWRIA is required. Based on this evaluation, no FWRIA is required. It should be noted that the Site does not contain habitat of an endangered, threatened, or special concern species. The decision key and rationale for the selections is provided below.
7. Conceptual Site Model

7.1 Conceptual Site Model

The Conceptual Site Model (CSM) provides a framework for understanding contaminant distribution at the Site based on the data collected to date. This CSM discusses the nature, extent, and potential migration of impacts at the Site. The GEI RI and SRI performed at the Site provided sufficient data to fully characterize the nature, extent, and potential migration of impacts at the Site, and downgradient of the Site, and to design a remedy for these impacts.

7.1.1 Impact Summary

The identified soil impacts are predominantly present within the fill unit on the Site and include SVOCs and metals typical of historical fill within the area. However, PCE was also detected in soil up to a maximum concentration of 11 mg/Kg. Detections of COCs in soil above regulatory standards (UUSCOs and PGWSCO) were found in samples taken from behind the Joey’s Cleaners space, samples collected near the rear of the Joey’s Cleaners space, and from nearby the center of the Joey’s Cleaners tenant space.

The fill layer was present throughout the Site and typically consisted of sand with varying amounts of silt, and brick fragments. The fill layer was observed up to approximately 2 ft. below the building’s footprint and 5 ft. below grade outside the building’s footprint. The maximum detections of fill-related compounds were found in GEI soil boring SB-4 which was installed within the basement of the Covenant Elevation Christian Center Overcomer’s House tenant space. Soil in GEI boring SB-10 had slightly elevated PID readings below the fill layer and concentrations slightly exceeding the UUSCO and PGWSCO for PCE were detected in the interval just above the groundwater interface. GEI boring SB-10 is located immediately south of the tenant space occupied by Joey’s Cleaners. Soil borings conducted south of the Site along Throop Avenue did not display detections of VOCs above UUSOCs or PGWSCOs or PFAS above NYSDEC Guidance Values for Residential use (November 2022).

The primary groundwater impacts at the Site included the COCs, PCE and its breakdown products TCE and vinyl chloride. The detections of these compounds above the AWQS in groundwater may be the result of a historic discharge from dry-cleaning operations conducted within the tenant space occupied by Joey’s Cleaners. During GEI’s 2019 groundwater sampling event, PCE was detected at a maximum concentration 97 µg/L, TCE was detected a maximum level of 22 µg/L, and vinyl chloride was detected at a maximum concentration of 9.7 µg/L in the monitoring wells located downgradient of the tenant space occupied by Joey’s Cleaners. During GEI’s 2021 SRI, PCE was detected at a maximum of 110 µg/L, TCE was detected a maximum
level of 14 µg/L, and vinyl chloride was detected at a maximum of 2.4 µg/L. No CVOC exceedances were noted during GEI’s 2022 SRI.

Groundwater exceedances of NYSDEC Sampling, Analysis, and Assessment of PFAS (November 2022) were found in all monitoring wells at the Site. However, the highest concentrations were located behind and downgradient of the Joey’s Cleaners tenant space. Groundwater contamination is fully delineated at the Site as two of the monitoring wells furthest downgradient along Throop Avenue did not display elevated concentrations of COCs or PFAS. Additionally, monitoring wells located on the east side of Throop Avenue, hydraulically side-gradient of the Site, did not display elevated concentrations of COCs. The monitoring well on this sidewalk which was sampled for PFAS displayed both PFOA and PFOS at concentrations above 10 ng/L; however, the concentrations detected are similar to concentrations found in monitoring wells upgradient of the Joey’s Cleaners tenant space.

Benzene, a petroleum-related VOC, was detected above AWQS in upgradient groundwater monitoring wells MW-6 and MW-9. As stated previously, this is possibly due to off-site migration from the upgradient NYSDEC Spill site (#9708846), as these samples also displayed slight petroleum odors. Exceedances of PAHs were also observed in MW-6 and are likely related to the fill material present on the Site. The groundwater sample collected from this MW-6 was turbid and the entrained sediments may have contributed to the PAH exceedances. The maximum PAH exceedances in soil were identified near this location in soil boring SB-4.

Sub-slab and co-located indoor air samples were collected from basements of six of the tenant spaces. A comparison of the soil vapor and indoor air concentrations to the Matrices provided by the NYSDOH. Detections of CVOCs included in the Matrices in sub-slab soil vapor and indoor air primarily included PCE, with elevated detections of TCE and cis-1,2 DCE limited to soil vapor. The highest detections were generally found within or adjacent to the Joey’s Cleaners tenant space. Based upon this assessment mitigation is recommended for the Joey’s Cleaners space. In the Covenants Elevation Christian Center and in the 99 Cent Store, the recommended action is to identify sources and resample or mitigate. The recommended actions are primarily due to the concentrations of PCE.

For the basement of the Wright Insurance Agency, the results of the evaluation conducted during the 2021 SRI indicate that monitoring is necessary in connection with the concentrations of TCE and in connection with the concentrations of PCE detected, the evaluation indicates that identifying source(s) and resampling or mitigation is necessary. The Matrices indicated that no further action is necessary based upon the detected levels of CVOCs in the two tenant spaces where an indoor air and soil vapor samples were collected. For the neighboring residential home that was sampled the matrices also indicate that no further action is necessary. In the basements of tenant spaces where only indoor air samples were collected, exceedances of the AGVs were limited to the Wright Insurance Agency for PCE and methylene chloride. In the first floors of the tenant spaces, exceedances of the AGVs were limited to detections of PCE in the
Covenant Elevation Christian Center space, Joey’s Cleaners space, the Digital Printing and Signs space, and the Fellowship Tabernacle space.

A total of four soil vapor probes were installed and sampled outside of the footprint of the Site building. CVOCs were detected in all four of the soil vapor samples. PCE was detected at a maximum concentration of 87 µg/m³ in soil vapor sample SV-11 located in the rear yard area behind the Joey’s Cleaners space.

Petroleum-related VOCs were detected at relatively low levels throughout the Site in soil vapor, indoor air, and outdoor air.

7.1.2 Ecological and Human Receptors

There is minimal to no risk for ecological receptor impacts at the Site given the lack of habitat, the urban nature of the area surrounding the Site, and the transient nature of wildlife in urban areas.

Impacts at the Site have been identified in all three media. Soil impacts include typical impacts found within urban or historical fill of unknown origin. However, PCE was also detected in soil up to a maximum concentration of 11 mg/Kg. Detections of COCs in soil above regulatory standards (UUSCOs) were found in samples taken from behind the Joey’s Cleaners space, samples collected in the rear of the Joey’s Cleaners space, and from the center of the Joey’s Cleaners tenant space.

People may contact contaminants in soil if they dig below the vegetative layer in the landscaped rear yard or below the asphalt surface within the building footprint or contact contaminated groundwater. Groundwater is not a source of drinking water in the area and typical construction projects do not reach the depth of groundwater in this area. However, it is possible for construction to reach groundwater therefore, the potential does exist for exposure to contaminated groundwater. Based on the results of the investigation, soil vapor intrusion may be occurring in several of the tenant spaces. However, it is not clear if current dry-cleaning operations inside Joey’s Cleaners is impacting the indoor air quality. The impacts present in indoor air represent a complete exposure pathway.
8. Summary, Conclusions and Recommendations

The results of this RI, and the previous investigations conducted at the Site, indicate that impacts are present in soil, groundwater, soil vapor and indoor air. The source of the impacts is likely related to the dry-cleaning facilities that historically operated on-Site within Joey’s Cleaners tenant space.

In general, concentrations exceeding applicable criteria included CVOCs in all three media, the primary COC for the Site. Other exceedances included benzene in upgradient monitoring wells MW-6 and MW-9, and PAHs in fill material located at the tenant space neighboring the Joey’s cleaners tenant space. Metals were found in fill material exceeding NYSDEC Commercial Use SCOs and Protection of Groundwater SCOs, and pesticides were found exceeding NYSDEC Unrestricted Use SCOs and Protection of Groundwater SCOs.

The results of all investigations conducted at the Site are summarized below:

8.1 Soil

8.1.1 GEI 2019 Remedial Investigation, 2021 Supplemental Remedial Investigation and 2022 Supplemental Remedial Investigation

PCE exceedances above the UUSCOs and PGWSCOs were detected in one soil boring located behind Joey’s Cleaners building [SB-10 (8 to 10 ft)] at a concentration of 1.5 mg/Kg. Other VOC detections included acetone and methylene chloride at concentrations above UUSCOs and PGWSCOs but below the RRSCOs and CUSCOs. SVOC exceedances of UUSCOs were limited to PAHs which were detected in six soil borings. Pesticides were detected at seven boring locations above the UUSCOs. Metals were detected above the UUSCOs and/or the RRSCOs in each of the 11 soil borings. PCBs were not detected in any of the samples collected. No VOCs were detected above UUSCOs or PGWSCOs or PFAS above Guidance Values for Residential Use (November 2022) in off-Site soil borings conducted during the 2021 SRI. Additionally, no VOCs were detected above UUSCOs or PGWSCOs or PFAS above Guidance Values for Residential Use (November 2022) in on or off-Site soil borings conducted during the 2022 SRI.

8.1.2 Previous Investigations

In December 2012, March 2013, and August 2013, TEI conducted soil borings in the basement of Joey’s Cleaners, adjacent tenant spaces, and rear yard. Analytical results confirmed the presence of PCE in the TEI borings B-7 (March 2013, 1.5 mg/Kg), SB-1 and SB-2 (December 2012, 5.1 mg/Kg and 4.5 mg/Kg, respectively), and B-10 (August 2013, 11 mg/Kg). The detected concentrations are above the UUSCOs of 1.3 mg/Kg, but below the RRSCOs.
These samples were collected in the southern end of Joey’s Cleaners closest to the dry-cleaning equipment, with the exception of the sample collected from B-7, which was collected from the center of the Joey’s Cleaners basement. The exceedances in the TEI samples listed above were all collected from less than 3 ft. below basement grade. However, the validity of this data cannot be confirmed as it is unknown if field QA/QC procedures were completed, the sample collection locations were estimated, and a third-party data validator did not confirm the usability of the data. Copies of available previous reports are included in Appendix A.

8.2 Groundwater

8.2.1 GEI 2019 Remedial Investigation, 2021 Supplemental Remedial Investigation and 2022 Supplemental Remedial Investigation

GEI installed and sampled a total of 15 monitoring wells during implementation of this 2019 RI and 2021 and 2022 SRIs. VOC exceedances of the AWQS were primarily limited CVOCs including PCE, TCE and vinyl chloride. Exceedances of PCE was found in MW-4 (97 µg/L), MW-5 (66 µg/L), and IMW-1 (5.1 µg/L). Exceedances of TCE (22 µg/L) and vinyl chloride (9.7 µg/L) were also observed in MW-5. These wells are located in the basement of Joey’s Cleaners and downgradient of the building.

Benzene also exceeded the AWQS in an upgradient well (MW-6). There are no known or suspected sources of benzene on-Site. A Gulf gas station with an open spill file (NYSDEC Spill Number 9708846) is located northeast (upgradient) of the project site across Gun Hill Road and may be the source of the benzene exceedance.

SVOC detections were limited to PAHs in monitoring well MW-6. MW-6 is located near SB-4, where the highest concentrations of PAHs were detected in soil. Metal’s exceedances were generally found throughout the Site and were likely related to urban fill soil and road salt application and are not COCs for this Site. The PAHs may be attributed to sample turbidity.

No pesticides or PCBs were detected at levels above NYSDEC AWQS.

The emerging contaminant 1,4-dioxane was analyzed for utilizing SIM in two monitoring wells including the interior monitoring well IMW-1 within the Joey’s Cleaners tenant space and the upgradient monitoring well MW-7. Additionally, the emerging contaminants PFAS compounds were sampled in the groundwater in the monitoring well IMW-1. The NYSDEC issued its most recent guidance on PFAS in groundwater in November 2022. According to the NYSDEC guidance, further assessment of groundwater may be warranted if PFOA or PFOS is detected at a concentration above 10 ng/L and it is attributable to the Site. In IMW-1, PFOS was detected at 25.8 ng/L and PFOA was detected at 31.9 ng/L.
In July 2020, groundwater samples were collected from the remaining monitoring wells and analyzed for emerging contaminants. Analytical results indicate that 1,4-dioxane was not detected in any of the on-Site monitoring wells. However, detections were noted for PFAS compounds. Detections of individual PFOS and PFOA were found above 10 ng/L in all seven on-Site monitoring wells which were included as part of this groundwater sampling event. The maximum detection of PFOS was 173 ng/L in MW-5. This monitoring well was the source of the duplicate sample MW-X, which displayed a detection of PFOS at 203 ng/L. The maximum detection of PFOA was 6,010 ng/L in downgradient monitoring well MW-4.

During GEI’s 2021 SRI, PCE was detected at a maximum of 110 µg/L, TCE was detected a maximum level of 14 µg/L, and vinyl chloride was detected at a maximum of 2.4 µg/L. These detections were found in MW-10, the newly installed monitoring well located slightly downgradient of the Joey’s Cleaners tenant space. The next downgradient monitoring well, MW-11, was sampled and found to contain PCE at 54 µg/L, TCE at 5.3 µg/L. These detections are all above AWQS. Vinyl chloride was detected, but below its’ AWQS. The remaining downgradient wells did not display VOCs above AWQS. Additionally, it should be noted that MW-9, a side-gradient monitoring well, displayed a detection of benzene at 100 µg/L, which is above its AWQS. As stated previously, this is likely migrating from the upgradient Gulf gasoline station. No other VOCs were detected in this monitoring well above AWQS. There are no known or suspected sources of benzene on-Site.

Groundwater samples collected from all five additional monitoring wells displayed detections of both PFOS and PFOA above 10 ng/L. The maximum detection of PFOS was 58.4 ng/L in monitoring well MW-10. The maximum detection of PFOA was 75.8 ng/L in monitoring well MW-10. During the 2022 SRI, PFOS and PFOA were detected in monitoring well MW-15 at 43.8 ng/L and 37.5 ng/L, respectively (above the NYSDEC November 2022 guidance value of 10 ng/L).

No historical on- or off-site sources were identified for 1,4-dioxane, or PFAS.

### 8.2.2 Previous Investigations

In April 2013, August 2013, and March 2014, TEI collected groundwater from the Site and analytical data confirmed the presence of CVOCs, including PCE and its breakdown products above the AWQS. PCE was found at a maximum detection of 580 µg/L in March 2014. Additionally, cis-1,2 DCE was found at a maximum detection of 460 µg/L, TCE was found at a maximum detection of 75 µg/L, and vinyl chloride was found at a maximum detection of 18 µg/L. These detections were found in the rear yard downgradient from the Joey’s Cleaners tenant space. However, the validity of this data cannot be confirmed as it is unknown if field QA/QC procedures were completed, the sample collection locations were estimated, and a third-party data validator did not confirm the usability of the data.
8.3 Soil Vapor, Indoor Air, and Outdoor Air

8.3.1 GEI 2019 Remedial Investigation and 2021 Supplemental Remedial Investigation

Thirteen soil vapor samples, 23 indoor air samples, and four outdoor air samples were collected from on-Site as part of the RI and SRI. One soil vapor sample, one indoor air sample, and one outdoor air sample were collected from a neighboring residential home, as part of the SRI. Detections above the NYSDOH AGVs were limited to PCE in four basement indoor air samples, four first-floor indoor air samples, and methylene chloride in one basement indoor air sample. The PCE detections above the AGVs were from samples collected in the basements of Joey’s Cleaners space, the Covenant Elevation Christian Center, the 99 Cent Store, and the Wright Insurance Agency, and the first-floors of the Covenant Elevation Christian Center space, Joey’s Cleaners space, the Digital Printing and Signs space, and the Fellowship Tabernacle space. Methylene chloride was detected above the AGV in the Wright Insurance Agency. The maximum concentrations for CVOCs in soil vapor were detected in the southern portion of the Joey’s Cleaners space.

Due to levels of CVOCs in soil vapor and indoor air, the NYSDOH Matrices recommend mitigation in the basement of Joey’s Cleaners tenant space. Additionally, the Matrices recommend identifying sources and resample or mitigation in the basements of Covenant Elevation Christian Center, 99 Cent Store, Wright Insurance Agency, and no further action for the basements of Fellowship Tabernacle, Colwell’s Driving School (former Value Tax and Metro PCS) or the neighboring residential home.

CVOCs were detected in each of the four soil vapor samples collected outside of the building footprint; however, they were relatively low excluding one detection of PCE in a sample collected near the rear of the Joey’s Cleaners.

Petroleum-related VOCs were detected at relatively low levels throughout the Site in soil vapor, indoor air, and outdoor air.

8.3.2 Previous Investigations

According to previous reports provided to GEI, TEI collected two ambient air samples from the Site in October 2014. Both samples were collected in 6-liter SUMMA canisters. One ambient air sample was collected from 1238 East Gun Hill Road, the tenant space that borders Joey’s Cleaners on the west side, currently the 99 Cent Store. The other sample was collected from 1246 East Gun Hill Road, the tenant space that borders Joey’s Cleaners on the east side, currently the Covenant Elevation Christian Center Overcomers House. The TEI report did not disclose or identify the location where these samples were collected. No comparison to the NYSDOH May 2017 Matrices was able to be conducted as no companion soil vapor samples
were collected. However, CVOCs such as PCE, TCE, Carbon Tetrachloride, and Methylene Chloride were detected. Maximum detections of TCE and Carbon Tetrachloride were 32.1 µg/m³ and 0.692 µg/m³, respectively, and were found in the 1238 East Gun Hill Road tenant space. Maximum detections of PCE and Methylene Chloride were 501 µg/m³ and 7.43 µg/m³, respectively, and were found in the 1246 East Gun Hill Road tenant space. However, the validity of this data cannot be confirmed as it is unknown if field QA/QC procedures were completed, the sample collection locations were estimated, and a third-party data validator did not confirm the usability of the data.

8.4 Conclusions

Detections of COCs in soil above regulatory standards (UUSCOs) were found in samples taken from behind the Joey’s Cleaners space, including samples collected in the rear of the Joey’s Cleaners space, and from the center of the Joey’s Cleaners tenant space. Detections of the primary COC (PCE) were identified in soil up to a maximum concentration of 11 mg/Kg beneath the Joey’s Cleaners space during a previous investigation.

The primary groundwater impacts at the Site included PCE, TCE, and vinyl chloride. The monitoring wells with exceedances were located behind and generally downgradient of the Joey’s Cleaners space and as such, residual groundwater contaminants are due to the historic use of the Site as a dry-cleaner.

The primary impacts to soil vapor and indoor air are CVOCs including PCE, TCE, and cis-1,2-DCE. The PCE detections in indoor air above the AGVs were from samples collected in the basements of Joey’s Cleaners space, the Covenant Elevation Christian Center, the 99 Cent Store, and the Wright Insurance Agency and the first-floors of the Covenant Elevation Christian Center space, Joey’s Cleaners space, the Digital Printing and Signs space, and the Fellowship Tabernacle space. The maximum concentrations for CVOCs in soil vapor were detected in the southern portion of the Joey’s Cleaners space.

The CVOC impacts identified in soil, groundwater, soil vapor and indoor air are likely related to the dry-cleaning facilities that historically operated on-Site within Joey’s Cleaners tenant space.

People may contact contaminants in soil if they dig in the landscaped rear yard or below the asphalt surface within the building footprint. Based on the results of the RI, soil vapor intrusion may be occurring in several of the tenant spaces. However, it is not clear if current dry-cleaning operations inside Joey’s Cleaners is impacting the indoor air quality in the building since the tenant spaces are attached. The impacts present in the indoor air represent a complete exposure pathway. There is no potential exposure to soil or groundwater under current Site conditions.

The soil impacts also include PAH compounds and metals that are commonly found in urban fill. Benzene, a petroleum-related VOC, was also detected above AWQS in an upgradient

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groundwater monitoring well MW-6 and side gradient monitoring well MW-9. It is likely that these exceedances are result of contamination migrating to the Site from the upgradient gas station, as the sample observations detected a slight petroleum odor as well. There are no known or suspected sources of petroleum-contamination on-Site. Exceedances of PAHs were also identified in MW-6. However, it is likely these are related to fill material in the area since the highest PAH exceedances in soil were also observed near the area of MW-6.

### 8.5 Recommendations

A comparison of the soil vapor and indoor air concentrations to the matrices provided by the NYSDOH in the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006 (updated in May 2017) was conducted for each of the five tenant spaces in which a sub-slab vapor sample and an indoor air sample were collected. The results and recommendations of the evaluation are as follows:

**Joey’s Cleaners tenant space:** Mitigation for PCE, TCE, and cis-1,2-DCE. Additionally, based upon the detections of methylene chloride, the NYSDOH recommends identifying any potential sources and resample or mitigation to be performed.

**Covenant Elevation Christian Center:** Identify any potential sources and resample or mitigation to be performed due to elevated detections of PCE. Continued monitoring including sub-slab vapor, basement air and outdoor air sampling is recommended based on the TCE concentrations.

**99 Cent Store:** Identify any potential sources and resample or mitigation to be performed based upon detections of PCE and methylene chloride.

**Fellowship Tabernacle:** No further action

**Colwell’s Driving School (former Value Tax and Metro PCS):** No further action.

**Wright Insurance Agency:** Continued monitoring is necessary due to concentrations of TCE; and regarding the concentrations of PCE detected, identifying source(s) and resampling or mitigation is necessary.

**Neighboring Residential Home:** No further action.

Based on the results of this investigation and considering the recommendations provided in the NYSDOH SVI Matrices, GEI recommends conducting an IRM to evaluate and address the complete exposure pathway to impacts in indoor air in the spaces where exceedances of AGVs were noted. An IRM Work Plan was submitted and approved by NYSDEC. The IRM was completed on June 7, 2023, and post IRM Operations, Maintenance, and Monitoring is currently ongoing. The remaining impacts will be addressed in the RAWP that includes a remedial
alternatives analysis to evaluate remedial options and costs of remediating contaminated media to prevent potential exposure pathways from becoming complete. The investigations conducted provided sufficient characterization of impacts to design an effective remedy.