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DRAFT ALTERNATIVES ANALYSIS and REMEDIAL ACTION WORK PLAN 60 WILLIAM STREET NYSDEC BCP NO: C336098

58-60 WILLIAM STREET NEWBURGH, NEW YORK

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File No. 0207044
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REMEDIAL ACTION WORK PLAN
60 WILLIAM STREET DEVELOPMENT
58-60 WILLIAM STREET
NEWBURGH, NEW YORK
NYSDEC SITE C336098

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I, Scott A. Underhill, certify that I am currently a New York State-registered Professional Engineer and that this Remedial Action Work Plan was prepared in accordance with the applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation Technical Guidance for Site Investigation and Remediation (DER-10).

FINAL TO BE CERTIFIED AND STAMPED

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Executive Summary

This Remedial Action Work Plan (RAWP) was developed by H & A of New York Engineering and Geology, LLP (Haley & Aldrich of New York) on behalf of 60 William St. LLC for the 60 William Street Development Site, located at 58-60 William Street, Newburgh, New York (the "Site"). 60 William St. LLC applied to and was accepted into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP). A Brownfield Cleanup Agreement (BCA) was executed by the NYSDEC on 22 February 2024 with 60 William St. LLC (the "Volunteer") (BCP Site No. C336098).

This RAWP summarizes the nature and extent of contamination on the Site as determined from data gathered during the Remedial Investigation (RI) performed by Haley & Aldrich of New York in August through September 2024 and the associated supplemental sampling activities performed in July 2025. It provides an evaluation of a Track 1 cleanup and other applicable remedial action alternatives, their associated costs, and the recommended and preferred remedy. The remedies described in this document are consistent with the procedures defined in the NYSDEC Division of Environmental Remediation (DER) Program Policy: Technical Guidance for Site Investigation and Remediation (DER-10) and comply with applicable federal, state, and local laws, regulations, and requirements.

SITE DESCRIPTION/PHYSICAL SETTING/SITE HISTORY

The Site is located within the East End Historic District of Newburgh, New York, and is identified as Block 3, Lots 31 (58 William Street) and 32 (60 William Street) on the City of Newburgh tax map. As per an amendment to the BCA executed on July 2, 2025, the Site size was reduced by 0.009 acres to remove the 15-foot (ft) by 25-ft northwest area that currently operates as part of the park. The Site is now 0.169 acres and is bounded to the north by a multi-story residential building; to the east by William Street, followed by mixed-use commercial, office, and residential buildings; to the south by vacant mixed-use commercial and residential buildings; and to the west by a recreational park adjacent to Hasbrouck Street and residential buildings. The Project Locus is shown on **Figure 1**. Existing Site features are displayed on the Site Map provided as **Figure 2**. Site survey maps are provided in **Appendix A**.

The Site is located within a medium-density residential (RM) area overlayed with a commercial district (CD) within the East End Historic District. The Site is in an urban area characterized by residential and commercial properties. A copy of the zoning map is included in **Appendix B**.

Based on a Phase I Environmental Site Assessment (ESA) conducted by Smit Environmental Services, LLC (SES) for the Site on July 12, 2022, and a Phase I ESA conducted in December 2022 by Haley & Aldrich of New York, the Site was first developed in the late 1800s. Sanborn maps first depict Lot 31 and Lot 32 as occupied by residential and commercial properties. The 1957 Sanborn map depicts gasoline tanks within the southeastern corner of Lot 32 and in the northeastern corner of Lot 32, bordering Lot 31. The gasoline tanks were present on Sanborn maps from 1957 to 1971, coinciding with depictions of an auto repair shop and service station, labeled to be operating as "Sam & Irv's Service Station." It is unknown how long the service station remained in operation; however, the buildings on Lot 32 were depicted as demolished by 1987. Lot 31 is currently vacant.

One sensitive receptor, a recreational park, is located within a 500-foot (ft) radius of the Site.

- Hasbrouck Street Park, 10 Hasbrouck Street, Newburgh, New York 12550, listed as a public park.

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Properties immediately surrounding the Site consist of residential and commercial uses.

SUMMARY OF THE REMEDIAL INVESTIGATION FINDINGS

The RI and associated supplemental sampling activities were completed in accordance with Title 6 of the New York Codes, Rules, and Regulations (NYCRR) Part 375, DER-10, the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and subsequent updates), the July 2024 Remedial Investigation Work Plan (RIWP), prepared by Haley & Aldrich of New York, and the NYSDEC-approved May 2025 RIWP Addendum. The objectives of the RI and associated supplemental sampling were to determine the nature and extent of contamination in soil, groundwater, and soil vapor. The RI was performed from August 27, 2024, through September 6, 2024. Supplemental sampling activities were performed from July 15, 2025, through July 24, 2025.

A summary of environmental findings of the RI and associated supplemental sampling includes the following:

- The Site is underlain by a layer of historic fill consisting of light to dark brown to orange, coarse to medium silty sand and sandy silt with varying amounts of gravel, concrete, brick, organic matter, fines, and clay observed from surface grade to approximately 5 to 9 ft below ground surface (bgs) in each soil boring. The fill layer is deepest within the western portion of the Site as identified in RI soil boring SB-04, where fill was observed up to 9 ft bgs. The fill layer is underlain by a potential native layer consisting of light brown to dark brown coarse to medium sand with varying amounts of fines, silt, clay, and gravel. Deeper borings located on the eastern portion of the Site observed higher concentrations of grey silty sand with trace clay and gravels extending down to approximately 20 ft bgs.
- Groundwater was encountered at elevations ranging from 131.97 to 136.59 ft above mean sea level (amsl) or between 8.10 to 11.95 ft bgs using the North American Vertical Datum of 1988 (NAVD 1988), and groundwater beneath the Site is anticipated to flow generally to the east-northeast toward the Hudson River.
- Soil analytical results were compared to NYSDEC 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCOs), Restricted Residential Soil Cleanup Objectives (RRSCOs), and Protection of Groundwater Soil Cleanup Objectives (PGWSCOs). Note that no standards for per- and polyfluoroalkyl substances (PFAS) in soil currently exist in New York State; however, the NYSDEC published soil guidance values (GVs) for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) in October 2020 (latest revision April 2023). PFOA and PFOS soil sample results were compared to the unrestricted use, restricted residential, and protection of groundwater GVs outlined in the April 2023 PFAS Guidance.
- Groundwater analytical results were compared to 6 NYCRR Part 703.5 NYSDEC TOGS 1.1.1 Ambient Water Quality Standards (AWQS) and GVs for Class GA Water. Emerging contaminants PFOA and PFOS were compared to the GVs for PFOA and PFOS outlined in the NYSDEC April 2023 PFAS Guidance. Emerging contaminant 1,4-dioxane was compared to the GV as set by NYSDEC in March 2023.
- Subsurface soils are impacted with elevated concentrations of semi-volatile organic compounds (SVOCs), mainly polycyclic aromatic hydrocarbons (PAHs), metals, and PFAS. Historic fill material varies in depth throughout the Site, extending to depths ranging from approximately 5 to 9 ft bgs.

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Additionally, native soils are impacted in some areas with metals and/or PFAS to approximately 11 ft bgs.

- Contaminants of concern (COCs) for the Site include metals, SVOCs (including PAHs), and PFAS in soil; volatile organic compounds (VOCs), total/dissolved metals, and PFAS in groundwater; and VOCs in soil vapor.

SUMMARY OF THE REMEDY

Alternative I, a Track 1 remedy, will include the following tasks:

1. Development and implementation of a Construction Health and Safety Plan (CHASP) for the protection of on-site workers.
2. Development and implementation of a Community Air Monitoring Plan (CAMP) for the protection of community residents and the environment during remediation and construction activities.
3. Design and construction of a support-of-excavation (SOE) system to facilitate the Track 1 remediation.
4. Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
5. Removal of miscellaneous debris on the Site.
6. Decommissioning of on-site monitoring wells, as necessary, in accordance with NYSDEC Commissioner Policy (CP)-43.
7. Excavation, stockpiling, off-site transport, and disposal of approximately 3,900 cubic yards (cu yd) of contaminated historical fill/native material Site-wide that exceeds UUSCOs as defined by 6 NYCRR Part 375-6.8. Excavation will extend to 14 ft bgs Site-wide. Bedrock may be removed, as necessary, to facilitate dewatering.
8. Dewatering, characterization, and treatment of water accumulated in excavations prior to discharge to an NYSDEC-approved sewer/sanitary line (pending permits). The dewatering system will include either sumps or well points and include pre-treatment via an on-site settling tank or bag filters and activated carbon prior to off-site disposal.
9. Collection of dewatering effluent samples to document carbon filtration efficacy at the Site during remediation.
10. If encountered, removal, decommissioning, and off-site disposal of any underground storage tanks (USTs) and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) during redevelopment in accordance with DER-10, 6 NYCRR Part 613-2.6b, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
11. Implementation of a preliminary waste characterization to facilitate off-site disposal of excavated soil/fill.
12. Screening for indications of contamination (by visual means, odor, and monitoring with photoionization detectors [PIDs]) of excavated material during intrusive Site work.
13. Appropriate off-site disposal of material removed from the Site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.

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14. Backfilling of excavated areas, as necessary for development, with certified-clean material (i.e., meeting UUSCOs), recycled concrete aggregate (RCA), or virgin, native crushed stone.
15. Collection and analysis of confirmation soil samples from the excavation base, in accordance with DER-10, to document post-excavation conditions to confirm a Track 1 remedy was achieved. If the proposed endpoint sample exceeds the Track 1 UUSCOs, over-excavation and additional endpoint sampling may be performed, as necessary, to meet Track 1 UUSCOs. If soil is removed to bedrock at a proposed confirmation sample location, the area will be photo-documented with no confirmation sample collected.
16. Completion of a desktop Soil Vapor Intrusion (SVI) Evaluation in accordance with DER-10 and the NYSDOH Final Guidance on Soil Vapor Intrusion following remedial excavation activities and prior to occupancy.
17. If Track 1 Unrestricted Use is not achieved, the development of a Site Management Plan (SMP) for long-term management of residual contamination as required by an Environmental Easement (EE) will be required.

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I	Quality Assurance Project Plan
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K	Climate Screening Checklist
L	NYSDOH Generic CAMP

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List of Acronyms and Abbreviations

Acronym Symbol	Definition
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
A	
AFFF	aqueous film-forming foam
AMSL	above mean sea level
AOC	Area of Concern
ASP	Analytical Services Protocol
AWQS	Ambient Water Quality Standards
B	
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylenes
btoc	below top of casing
C	
C&D	Construction and Demolition
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CHASP	Construction Health & Safety Plan
COC	Contaminant of Concern
CP-51	Commissioners Policy-51 *(specifically "October 2010 NYSDEC Commissioners Policy 51")*
CPP	Citizen Participation Plan
CQAP	Construction Quality Assurance Plan
CSM	Conceptual Site Model
cu yd	cubic yard
CVOC	chlorinated volatile Organic Compound
D	
DER	Division of Environmental Remediation
DER-10	Division of Environmental Remediation-10 *(specifically "May 2010 NYSDEC Technical Guidance for Site Investigation and Remediation")*
DMM	Division of Materials Management
DUSR	Data Usability Summary Report
DustTrak	TSI DustTrak® Environmental Monitor

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List of Acronyms and Abbreviations (continued)

Acronym	Definition
E	
EC	Engineering Controls
ECL	Environmental Conservation Law
EDD	Electronic Data Deliverable
EE	Environmental Easement
El.	Elevation
ELAP	Environmental Laboratory Approval Program
ESA	Environmental Site Assessment
ESI	Environmental Site Investigation
Eurofins	Eurofins Environment Testing Northeast, LLC
EWP	Excavation Work Plan
F	
FER	Final Engineering Report
ft bgs	feet below ground surface
FWRIA	Fish and Wildlife Resource Impact Analysis
G	
GV	Guidance Value
H	
Haley & Aldrich of New York	H & A of New York Engineering and Geology, LLP
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
I	
IC	Institutional Control
in.	inches
IRM	Interim Remedial Measures
L	
L/min	liters per minute
Lakewood	Lakewood Environmental Services, Corp.
M	
mg/kg	milligrams per kilogram
mL/min	milliliters per minute
MS/MSD	matrix spike/matrix spike duplicate
MW	Monitoring Well

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List of Acronyms and Abbreviations (continued)

Acronym	Definition
N	
NAVD	North American Vertical Datum
ND	Non-detect
NTU	nephelometric turbidity unit
NYCDEP	New York City Department of Environmental Protection
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
O	
OSHA	Occupational Health and Safety Administration
P	
PAH	polycyclic aromatic hydrocarbon
PBS	Petroleum Bulk Storage
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PGWSCOs	Protection of Groundwater Soil Cleanup Objectives
PID	photoionization detector
PM-10	Particles with diameters generally less than 10 micrometers and smaller
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
ppt	parts per trillion
PVC	polyvinyl chloride
Q	
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional

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List of Acronyms and Abbreviations (continued)

Acronym	Definition
R	
RA	Remedial Action
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCA	recycled concrete aggregate
RCRA	Resource Conservation and Recovery Act
RE	Remedial Engineer
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RRSCO	Restricted Residential Soil Cleanup Objective
S	
Sanborn	Sanborn Fire Insurance Company
SCG	Standards, Criteria, and Guidelines
SCO	Soil Cleanup Objective
SDS	Safety Data Sheet
SEFA	Spreadsheets for Environmental Footprint Analysis
SES	Smit Environmental Services, LLC
Site	58-60 William Street, Newburgh, New York
S/MMP	Soil/Materials Management Plan
SMP	Site Management Plan
SOE	support-of-excavation
SPDES	State Pollutant Discharge Elimination System
sq ft	square feet
SVI	Soil Vapor Intrusion
SVOC	semi-volatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
T	
TAL	Total Analyte List
TCE	trichloroethylene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS 1.1.1	Technical and Operational Guidance Series 1.1.1 *(Specifically "June 1998 NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values, Class GA for the protection of a source of drinking water modified per the April 2000 addendum")*

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List of Acronyms and Abbreviations (continued)

Acronym	Definition
U	
USEPA	United States Environmental Protection Agency
UST	underground storage tank
UUSCO	Unrestricted Use Soil Cleanup Objective
V	
VOC	volatile organic compound
Volunteer	60 William St. LLC

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1. Introduction

This Remedial Action Work Plan (RAWP) was developed by H & A of New York Engineering and Geology, LLP (Haley & Aldrich of New York) on behalf of 60 William St. LLC for the proposed development located at 58-60 William Street (Block 3, Lots 31 and 32) within the City of Newburgh, New York (the Site). In February 2024, the project (Site No. C336098) was accepted into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP), and a countersigned Brownfield Cleanup Agreement (BCA) was issued with 60 William St. LLC classified as a "Volunteer." The Volunteer proposes to remediate the Site for mixed-use commercial and residential purposes.

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI) performed by Haley & Aldrich of New York in August and September 2024 and the associated supplemental sampling activities completed in July 2025. It provides an evaluation of Track 1 and Track 2 cleanups, their associated costs, and the recommended and preferred remedy. The remedy described in this document is consistent with the procedures defined by the NYSDEC Division of Environmental Remediation *(*specifically *"May 2010 NYSDEC Technical Guidance for Site Investigation and Remediation")* (DER-10) and complies with all applicable standards, criteria, and guidance (SCG). The remedy described in this document also complies with all applicable federal, state, and local laws, regulations, and requirements.

The NYSDEC and New York State Department of Health (NYSDOH) have not yet determined if this Site poses a significant threat to human health and the environment. The RI for this Site did not identify fish and wildlife resources. A formal Remedial Design document will not be prepared.

1.1 SITE LOCATION AND DESCRIPTION

The Site is located within the East End Historic District of Newburgh, New York, and is identified as Block 3, Lot 31 (58 William Street) and Lot 32 (60 William Street) on the City of Newburgh tax map. The Site is approximately 7,400 square feet (sq ft) (0.17 acres) and is bounded to the north by a multi-story residential building; to the east by William Street, followed by mixed-use commercial, office, and residential buildings; to the south by vacant mixed-use commercial and residential buildings; and to the west by a recreational park adjacent to Hasbrouck Street. The Project Locus is shown on **Figure 1**. Existing Site features are shown on the Site Map provided as **Figure 2**. The Site is located in a commercial zoning district (CD) within the East End Historic District as shown on the Newburgh Zoning Map. The Volunteer plans to redevelop the Site for mixed-use commercial and residential purposes consistent with the current zoning.

1.2 PROPOSED REDEVELOPMENT PLAN

The Remedial Action (RA) to be performed under the RAWP is intended to make the Site protective of human health and the environment consistent with the contemplated end use. The proposed redevelopment plan and end use are described herein to provide the basis for this assessment. However, the RA contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

The proposed development will consist of a new four-story building with an excavation to accommodate a cellar, extending approximately 12 feet (ft) below grade, and will include the following: multiple

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commercial spaces, residential dwellings, restrooms, an electrical room, a fire pump room, a water service room, stairwells, balconies on floors two through four, and various mechanical and storage rooms. The building will be used for commercial and residential purposes, which is consistent with current zoning. A copy of the proposed development plans is included in **Appendix C**.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The Site is located in an urban area surrounded by commercial and residential properties. The Site is bounded to the north by a multi-story residential building; to the east by William Street, followed by mixed-use commercial, office, and residential buildings; to the south by vacant mixed-use commercial and residential buildings; and to the west by a recreational park adjacent to Hasbrouck Street. Adjoining and surrounding property uses are further detailed below:

Direction	Adjoining properties	Surrounding Properties
North	Commercial building	Residential and commercial buildings
South	Mixed-use commercial and residential building	Multi-family residential buildings
East	Bounded by William Street with mixed-use commercial and residential buildings, including a dry cleaner to the southeast of the Site.	St. Georges Cemetery, residential and commercial buildings
West	Recreational park	Multi-family residential buildings

Additionally, one sensitive receptor is located within a 500 ft radius listed below:

No.	Name (Approximate Distance From Site)	Address
1	Hasbrouck Street Park (adjacent to Site to the West)	10 Hasbrouck Street

1.4 SITE HISTORY

Based on a Phase I Environmental Site Assessment (ESA) conducted by Smit Environmental Services, LLC (SES) for the Site on July 12, 2022, and a Phase I conducted in December 2022 by Haley & Aldrich of New York, the Site was first developed in the late 1800s where Sanborn Fire Insurance Company (Sanborn) maps depict Lot 31 and Lot 32 as occupied by residential and commercial properties. The 1957 Sanborn map depicts gasoline tanks within the southeastern corner of Lot 32 and in the northeastern corner of Lot 32, bordering Lot 31. The gasoline tanks were present on Sanborn maps from 1957 to 1971, coinciding with depictions of an auto repair shop and service station, labeled to be operating as “Sam & Irv’s Service Station.” The length of time that the Site operated as a service station is unknown; however, the buildings on Lot 32 were depicted as demolished by 1987. Lot 31 is currently vacant.

1.5 PREVIOUS ENVIRONMENTAL REPORTS

The following reports were prepared for the Site prior to submission of the 2025 Remedial Investigation Report (RIR):

1. May 2022 Site Remediation Proposal, prepared by SES
2. July 2022 Phase I ESA, prepared by SES

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3. December 2022 Phase I ESA, prepared by Haley & Aldrich of New York.
4. March 2023 Preliminary Geotechnical Investigation, prepared by Haley & Aldrich of New York
5. April 2023 Limited Phase II Environmental Site Investigation (ESI) Report, prepared by Haley & Aldrich of New York

Previous investigation findings are included in Appendix A of the Remedial Investigation Work Plan (RIWP) dated July 3, 2024, prepared by Haley & Aldrich of New York. The results of these previous investigations were relied upon in addition to the RI and associated supplemental sampling findings for the preparation of this RAWP.

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2. Description of Remedial Investigation Findings

The Site was investigated in accordance with the scope of work presented in the NYSDEC-approved RIWP dated July 2024 and the NYSDEC-approved RIWP Addendum dated May 2025. The investigation was conducted between August 2024 and September 2024, with supplemental sampling conducted in July 2025. The updated draft RIR was submitted to NYSDEC in September 2025.

2.1 REMEDIAL INVESTIGATION

The RI consisted of the following:

1. Advancement of eight soil borings to depths ranging from 12 to 20 ft below ground surface (bgs), with samples collected from the top 2 inches (in.) immediately beneath the Site cover, from the top 2 in. to 2 ft within five of the eight soil borings, from the bottom of the historical fill interval (i.e., 3 to 5 ft bgs, 5 to 7 ft bgs, or 6 to 8 ft bgs), at the groundwater interface (8 to 10 ft bgs or 9 to 11 ft bgs) and within groundwater at five out of the eight borings (10 to 12 ft bgs or 11 to 13 ft bgs). A total of 75 soil samples were collected.
2. Two test pits were excavated to 10 ft bgs in the vicinity of the suspected underground storage tanks (USTs). One tank was found within the northeastern corner of the Site on the border of Lot 31 and Lot 32. Soil samples for each of the test pits were taken at the base of the excavation.
3. Installation of four 2-in. permanent groundwater monitoring wells to depths ranging from 15 to 16 ft bgs and collection of five groundwater samples, four samples from the newly installed permanent wells, and one sample from a previously installed monitoring well on the Site.
4. Survey and gauging of monitoring wells to determine groundwater elevation and flow direction.
5. Installation of six soil vapor probes to a depth of approximately 7 to 8 ft bgs and collection of six soil vapor samples.

The supplemental sampling event consisted of the following:

1. Advancement of ten soil borings to depths ranging from 2 to 19 ft bgs, with samples collected from 2 to 4 ft bgs, 4 to 6 ft bgs, and 13 to 15 ft bgs from one soil boring; 2 to 4 ft bgs from horizontal delineation soil borings; and 13 to 15 ft bgs and 15 to 17 ft bgs from vertical delineation soil borings. A total of 28 supplemental soil samples were collected.
2. Installation of two 2-in. permanent groundwater monitoring wells to a depth of approximately 20 ft bgs and collection of seven groundwater samples: two samples from the newly installed permanent wells and five samples from a previously installed monitoring well on the Site.
3. Survey and gauging of monitoring wells to determine groundwater elevation and flow direction.

Soil and groundwater samples were collected in laboratory-prepared sample bottles (pre-preserved when appropriate), placed in ice-packed coolers maintained at approximately 4 degrees Celsius under standard chain-of-custody procedures, and transported to Eurofins Environment Testing Northeast, LLC (Eurofins) of Edison, New Jersey (Certification No. 11452). Soil vapor samples were collected in laboratory-supplied batch certified-clean 6-liter Summa® canisters with two-hour flow controllers and transported under

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standard chain-of-custody to Eurofins and transported to their Burlington, Vermont, location. Eurofins is an NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory (ELAP Nos. 12028 and VT972) and was responsible for analyzing the samples as per the analyses and methods identified in the RIR. Community air monitoring was conducted during all ground-intrusive activities.

2.1.1 Soil Boring Installation and Soil Sampling

Eight soil borings were advanced between 12 and 20 ft bgs, using a track-mounted Geoprobe® 6610 DT drill rig operated by a licensed operator provided by Lakewood Environmental Services, Corp. (Lakewood). Soil samples were collected from acetate liners using a stainless-steel trowel or sampling spoon. Soils were logged continuously by field personnel using the Modified Burmeister Soil Classification System. The presence of staining, odors, and photoionization detector (PID) response was noted in soil boring logs. Soil boring logs are provided in Appendix F of the RIR.

Soil samples representative of Site conditions were collected from eight locations across the Site, as shown on **Figure 3**. Four to five samples were collected at each boring, including from the surface at 0 to 2 in. bgs and 2 in. bgs to 2 ft bgs (SB-01, SB-02, SB-03, SB-04, and SB-08) to evaluate the material as a potential cover system for the RA; from the 2-ft interval at the base of the observed fill layer which ranged from 3 to 5 ft bgs (SB-08), 5 to 7 ft bgs (SB-02), and 6 to 8 ft bgs (SB-01, SB-03, SB-04, SB-05, SB-06, and SB-07); from the 2-ft interval above the groundwater interface, either 8 to 10 ft bgs (SB-01, SB-03, SB-04, SB-05, SB-06, and SB-07) or 9 to 11 ft bgs (SB-02 and SB-08); and from the first 2-ft interval within the water table ranging from 10 to 12 ft bgs (SB-01, SB-03, and SB-04) and at 11 to 13 ft bgs (SB-02 and SB-08).

Soils with elevated PID readings and/or petroleum-like odors were observed in the boring SB-02 (located in the north-central portion of the Site) from 10 to 14 ft bgs with a maximum PID reading of 64.2 parts per million (ppm), and in soil boring SB-04 (located in the south-eastern portion of the building) from 9 to 16ft bgs with a maximum PID reading of 84.2 ppm.

Additional soil samples were collected from the location of April 2023 Limited Phase II ESA boring B-04, as well as 5-ft step-out locations, to delineate historical elevated concentrations of lead. Samples were collected from each of the delineation borings at 0 to 2 ft bgs, 2 to 4 ft bgs, and 4 to 6 ft bgs, and analyzed for total and Toxicity Characteristic Leaching Procedure (TCLP) lead.

Additionally, two test pits (TP-01 and TP-02) were advanced to the depths of approximately 10 ft bgs in the vicinity of two suspected USTs to investigate potential impacts of subsurface soils. During the RI, one UST was discovered at TP-01, located within the northeastern corner of the Site. No UST was discovered in TP-02, located in the southeastern portion of the Site.

Soils associated with the test pits were screened with a PID to evaluate potential impacts. Soil samples were collected at the base of the UST (10 ft bgs) in TP-01, and at the base of the excavation (10 ft bgs) in TP-02, and analyzed for Commissioner Policy (CP)-51 volatile organic compounds (VOCs), CP-51 semi-volatile organic compounds (SVOCs), and total lead.

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Haley & Aldrich of New York collected 75 soil samples (plus quality assurance/quality control [QA/QC] samples) for laboratory analysis. Soil samples were collected in laboratory-supplied containers; VOC grab samples were collected using Terra Core® sampling devices.

2.1.1.1 Supplemental Soil Boring Installation and Soil Sampling

Ten additional soil borings were installed by a track-mounted direct push drill rig (Geoprobe®) operated by a licensed operator provided by AARCO. Boring DB-01B was reinstalled at RI soil boring DB-01B to vertically delineate lead concentrations detected above Unrestricted Use Soil Cleanup Objectives (UUSCOs) during initial RI activities. Soil samples were collected from the reinstalled boring at DB-01B at 2 to 4 ft bgs, 4 to 6 ft bgs, and 13 to 15 ft bgs. Three borings (DB-01B-N, DB-01B-S, and DB-01B-W) were installed 5 ft from the original DB-01B location in the north, south, and west directions. As a contingency, three soil borings (DB-01B-N1, DB-01B-S1, and DB-01B-W1) were installed an additional 5 ft from DB-01B and were placed on hold pending analysis. Samples collected as part of the DB-01B delineation were collected at 2 to 4 ft bgs and at the 2-ft interval at the base of the observed fill layer. Samples were collected from acetate liners using a stainless-steel trowel or sampling spoon.

To address vertical delineation, RI boring SB-06, previously sampled at a maximum depth of 10 ft bgs, was readvanced and sampled from 13 to 15 ft bgs (HA-SB06_13-15) and 17 to 19 ft bgs (HA-SB06_15-17). Two soil borings (SB-03 and SB-09) were also advanced and sampled from 13 to 15 ft bgs and 17 to 19 ft bgs to confirm the presence of native soils meeting UUSCOs. Supplemental sample locations are also shown in **Figure 3**, and a Supplemental Sample and Analysis Plan is provided in **Table 1A** of the RIR.

Soils were logged continuously by field personnel using the Modified Burmister Soil Classification System. The presence of staining, odors, and PID response was noted in soil boring logs. Supplemental soil boring logs are provided as **Appendix F**.

Haley & Aldrich of New York collected 28 supplemental soil samples (plus QA/QC samples) for laboratory analysis. Samples were collected using laboratory-provided clean bottle ware; VOC grab samples were collected using Terra Core® sampling devices. Soil samples were relinquished under standard chain-of-custody protocol and delivered via courier to Eurofins for analysis.

2.1.2 Groundwater Investigation

Four 2-in. diameter permanent monitoring wells were installed to depths ranging from approximately 15.4 to 16.6 ft bgs. Each monitoring well was constructed using a 2-in. diameter polyvinyl chloride (PVC) riser pipe with 10-ft-long, 10-slot (0.01-in.) slotted screens. Each monitoring well was constructed within a 2-in. annular space backfilled with #0 or #00 certified clean sand fill, followed by a bentonite plug, and sealed at grade with a steel guard pipe. Monitoring well screens were installed to straddle the water table. Following installation, monitoring wells were developed by surging a pump in the well several times to pull fine-grained material from the well. Development was conducted until the water turbidity was 50 nephelometric turbidity units (NTU) or less, or 10 well volumes were purged, whichever was achieved first. Additionally, OW-01 was redeveloped prior to sampling during the RI.

Groundwater monitoring wells were sampled utilizing low-flow sampling procedures for groundwater sampling. Prior to sampling, the water level was measured from each monitoring well using an electronic

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water level meter. Groundwater from each well was purged using low pumping rates (less than 500 milliliters per minute [mL/min]) to limit drawdown of the water level. Dedicated disposable field equipment used at each well included high-density polyethylene and silicon tubing. Wells were purged until turbidity, pH, temperature, dissolved oxygen, and specific conductivity stabilized. If monitoring wells ran dry during low-flow sampling, a minimum of three well volumes were purged prior to the collection of groundwater samples.

During a monitoring well gauging event concurrent with the well survey performed by DPK Land Surveying on October 8, 2024, groundwater was encountered at depths ranging from 8.10 to 11.95 ft below top of casing (btoc); groundwater generally flows from west to northeast. Well construction logs and groundwater elevation data are provided in Appendix G and Table 2 of the RIR, respectively. Groundwater contours are provided on **Figure 4**.

2.1.2.1 Supplemental Permanent Monitoring Well Installation and Groundwater Sampling

The purpose of the supplemental groundwater sampling was to obtain groundwater data to fill in data gaps of the Site conditions observed during previous investigations. Monitoring well locations are provided on **Figure 3**.

Two 2-in. permanent monitoring wells (MW-05 and MW-06) were installed to approximately 20 ft bgs. MW-05 was installed off-site, downgradient of MW-03, to evaluate off-site conditions, specifically related to per- and polyfluoroalkyl substances (PFAS). MW-06 was installed on-site, south of MW-03, to evaluate deeper groundwater conditions. Groundwater was encountered between 12.30 and 12.85 ft bgs during the supplemental groundwater sampling event. Both wells were screened from 10 to 20 ft bgs so that the screen straddled the groundwater interface, and the top of screen was approximately 2 ft above the measured depth to water. Monitoring wells were installed via hollow-stem augers. Each monitoring well was constructed with a 2-in. annular space and installed using either #0 or #00 certified clean sand fill.

Monitoring wells were developed as per procedures used in the initial RI sampling. Groundwater monitoring wells were sampled utilizing low-flow sampling methods as per the approved RIWP. Well construction logs and groundwater elevation data are provided in Appendix G and Table 2 of the RIR, respectively. Groundwater contours are provided on **Figure 4**.

During a monitoring well gauging event concurrent with the well survey performed by DPK Land Surveying on July 23, 2025, groundwater was encountered at depths ranging from 10.94 to 15.74 ft btoc; groundwater generally flows from west to northeast.

2.1.3 Soil Vapor Investigation

Soil vapor samples were collected in accordance with the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH, October 2006). Six temporary soil vapor probes were installed by Lakewood to approximately 7 to 8 ft bgs, or approximately 2 ft above the water table. The temporary vapor implants were installed with a direct-push rig (e.g., Geoprobe®) to advance a stainless-steel probe to the desired sample depth.

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To ensure the stainless-steel soil vapor probe was sealed completely to the surface using bentonite, a tracer gas was used in accordance with NYSDOH protocols to serve as a QA/QC measure to verify the integrity of the soil vapor probe seal. In addition, one to three implant volumes were purged prior to the collection of the soil vapor samples. Sampling occurred for the duration of two hours. At the conclusion of the sampling round, tracer monitoring was performed a second time to confirm the continued integrity of the probe seals. No leaks were observed during the soil vapor sampling.

Haley & Aldrich of New York collected six soil vapor samples in accordance with the NYSDEC-approved RIWP. Samples were collected in appropriately sized Summa® canisters that were batch-certified clean by the laboratory. Samples were analyzed for VOCs using U.S. Environmental Protection Agency (USEPA) Method TO-15. The flow rate for both purging and sampling did not exceed 0.2 liters per minute (L/min). The soil vapor purge log is included in Appendix J of the RIR.

2.1.4 Samples Collected

During the RI, a total of 75 soil samples (plus two duplicates, two matrix spike/matrix spike duplicate [MS/MSD] sets, two field blanks, and four trip blanks for QA/QC purposes) were collected from surface grade at intervals including 2 in., 2 in. bgs to 2 ft bgs within borings SB-01, SB-02, SB-03, SB-04, and SB-08 for further evaluation of a potential cover system as part of the RA; the 2-ft interval at the base of the observed fill layer which ranged from 3 to 5 ft bgs in SB-08, 5 ft bgs to 7 ft bgs in boring SB-02, and 6 ft bgs to 8 ft bgs in borings SB-01, SB-03, SB-04, SB-05, SB-06 and SB-07; from the 2-ft interval above the groundwater interface, or 8 to 10 ft bgs in borings SB-01, SB-03, SB-04, SB-05, SB-06, and SB-07, or 9 to 11 ft bgs in borings SB-02 and SB-08; and from the first 2-ft interval within the water table at the five deeper borings ranging from 10 to 12 ft bgs in borings SB-01, SB-03, and SB-04 and at 11 to 13 ft bgs in borings SB-02 and SB-08. Samples were collected using laboratory-provided clean bottle ware, and VOC grab samples were collected using Terra Cores®.

During the supplemental sampling activities, 28 soil samples (plus QA/QC samples) were collected. Ten additional borings were advanced by track-mounted direct push (Geoprobe®). RI boring DB-01B was re-installed to vertically delineate lead detected above UUSCOs; soil was sampled at 2 to 4 ft bgs, 4 to 6 ft bgs, and 13 to 15 ft bgs. Three delineation borings (DB-01B-N, DB-01B-S, DB-01B-W) were installed 5 ft from DB-01B (north, south, west), and three contingency borings (DB-01B-N1, DB-01B-S1, DB-01B-W1) were installed 5 ft farther; delineation samples at these locations were collected at 2 to 4 ft bgs and at the 2-ft interval at the base of the observed fill layer. For vertical delineation, borings SB-06 (readvanced), SB-03, and SB-09 were sampled at 13 to 15 ft bgs and 17 to 19 ft bgs to confirm native soils meet UUSCOs. Samples were collected using laboratory-provided clean bottle ware, and VOC grab samples were collected using Terra Cores®.

A total of five groundwater samples, one from each monitoring well installed during the RI and one from the pre-existing flush-mounted monitoring well installed during a previous geotechnical investigation, were collected for laboratory analysis. One field blank, two trip blanks, one duplicate sample, and one MS/MSD sample were also collected for QA/QC purposes. Groundwater monitoring wells were sampled using low-flow sampling methods. Monitoring wells were purged, and physical and chemical parameters stabilized before samples were taken.

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During the supplemental sampling activities, a total of seven groundwater samples, one from each monitoring well installed during the RI and associated supplemental sampling, were collected for laboratory analysis. One field blank, two trip blanks, one duplicate sample, and one MS/MSD sample were also collected for QA/QC purposes. Groundwater monitoring wells were sampled using low-flow sampling methods. Monitoring wells were purged, and physical and chemical parameters stabilized before samples were taken.

A total of six soil vapor samples were collected for laboratory analysis, one from each temporary soil vapor probe. Samples were collected in appropriately sized Summa® canisters that were batch-certified clean by the laboratory. Sampling occurred for the duration of two hours.

2.1.5 Chemical Analysis

The laboratory analyses performed on the soil, groundwater, and soil vapor samples are summarized below.

Soil samples collected from drilling were analyzed for the following parameters:

- Target Compound List (TCL) VOCs by USEPA Method 8260D/5035;
- TCL SVOCs using USEPA Method by 8270E;
- Total Analyte List (TAL) Metals by USEPA Method 6010D;
- TCL Polychlorinated Biphenyls (PCBs) by USEPA Method 8082A;
- TCL Pesticides by USEPA Method 8081B;
- PFAS by USEPA Method 1633; and,
- 1,4-dioxane by USEPA Method 8270E.

Lead delineation soil samples were analyzed for:

- Total Lead using USEPA Method 6020A; and,
- TCLP Lead using USEPA Method 6020B.

Soil samples during the excavation of test pits to locate potential USTs were analyzed for the following parameters:

- CP-51 VOCs using USEPA Method 8260D;
- CP-51 SVOCs using USEPA Method 8270E; and,
- Total Lead using USEPA Method 6020A.

Groundwater samples collected were analyzed for the following parameters:

- TCL VOCs by USEPA Method 8260D;
- TCL SVOCs by USEPA Method 8270;
- Total and Dissolved Metals by USEPA Methods 6010/6020;

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- Total PCBs by USEPA Method 8082;
- TCL Pesticides by USEPA Method 8081B;
- 1,4-dioxane by USEPA Method 8270E-SIM; and,
- PFAS by USEPA Method 1633a.

Soil vapor samples were analyzed for VOCs using USEPA Method TO-15.

2.2 REMEDIAL INVESTIGATION FINDINGS SUMMARY

Below is a summary of the RI findings.

2.2.1 Soil Sampling Results

Soil analytical results were compared to NYSDEC Title 6 of the New York Codes, Rules and Regulations (NYCRR) Part 375 UUSCOs, Restricted Residential Soil Cleanup Objectives (RRSCOs), and Protection of Groundwater Soil Cleanup Objectives (PGWSCOs). Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) soil sample results are compared to the UUSCO, RRSCO, and PGWSCO guidance values (GVs) outlined in the April 2023 PFAS Guidance. Soil analytical results from the initial RI sampling event are summarized below and shown on **Figure 5A**.

Volatile Organic Compounds

No VOCs were detected in any soil samples above applicable standards.

Semi-Volatile Organic Compounds

SVOCs were detected in soil boring SB-07 throughout the fill layer, reaching up to 8 ft bgs. Seven SVOCs, specifically polycyclic aromatic hydrocarbons (PAHs), were detected in shallow samples SB-07_0-2" and SB-07_2"-2' at concentrations above the UUSCOs, RRSCOs, and/or PGWSCOs, including benzo(a)anthracene (maximum concentration of 22 milligrams per kilogram [mg/kg] in SB-07_2"-2'), benzo(a)pyrene (maximum concentration of 22 mg/kg in SB-07_2"-2'), benzo(b)fluoranthene (maximum concentration of 25 mg/kg in SB-07_2"-2'), benzo(k)fluoranthene (maximum concentration of 6.1 mg/kg in SB-07_2"-2'), chrysene (maximum concentration of 20 mg/kg in SB-07_2"-2'), dibenzo(a,h)anthracene (maximum concentration of 3.5 mg/kg in SB-07_2"-2'), and Indeno(1,2,3-cd)pyrene (maximum concentration of 13 mg/kg in SB-07_2"-2').

Within the sample SB-07_6'-8', which was collected 2 ft from the base of the fill layer, six PAHs were detected at estimated concentrations above the UUSCOs, RRSCOs, and/or PGWSCOs, including benzo(a)anthracene (estimated concentration of 2.1 mg/kg), benzo(a)pyrene (estimated concentration of 2.4 mg/kg), benzo(b)fluoranthene (estimated concentration of 3 mg/kg), benzo(k)fluoranthene (estimated concentration of 1.3 mg/kg), and dibenzo(a,h)anthracene (estimated concentration of 0.37 mg/kg). In sample DUP-02-20240830, which correlates to SB-07_6'-8'. One additional PAH was detected at concentrations above the UUSCO, RRSCO, and/or PGWSCO, which included chrysene at a maximum estimated concentration of 5 mg/kg.

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No other SVOCs were detected in any soil samples above applicable standards.

Metals

Metals were detected in multiple soil samples at depths ranging from 2 in. to 11 ft bgs at concentrations exceeding the UUSCOs, RRSCOs and/or PGWSCOs, including arsenic (maximum concentration of 48.9 mg/kg in SB-01_0-2"), copper (maximum concentration of 3540 mg/kg in SB-06_6'-8'), lead (estimated maximum concentration of 3540 mg/kg in SB-07_0-2"), mercury (estimated maximum concentration of 4.2 mg/kg in SB-07_2"-2'), and zinc (maximum concentration of 3540 mg/kg in SB-07_2"-2').

For the lead delineation surrounding SB-03, lead was below the USEPA TCLP lead value of 5 mg/kg.

No other metals were detected in any soil samples above applicable standards.

Polychlorinated Biphenyls

No PCBs were detected above applicable standards in any soil samples collected.

Pesticides

No pesticides were detected in any soil samples above applicable standards.

Emerging Contaminants

1,4-dioxane was not detected above laboratory detection limits in any soil samples collected at the Site.

PFOS and PFOA were detected in multiple samples throughout the Site at depths ranging from 2 in. to 11 ft bgs above the GV of 0.88 parts per billion (ppb) for unrestricted use and the GV of 1 ppb for protection of groundwater. PFOS ranged from non-detect (ND) to a maximum concentration of 7.3 ppb in SB-02_9'-11', and PFOA ranged from ND to a maximum concentration of 1.3 ppb in SB-06_2"-2'.

Concentrations of total PFOA/PFOS ranged from ND to a maximum concentration of 8.4 ppb in SB-02_9'-11'.

2.2.1.1 Supplemental Soil Sampling Results

Soil analytical results from the supplemental sampling event are summarized below and shown on **Figure 5B**. Lead delineation results are shown on **Figure 5C**.

Volatile Organic Compounds

No VOCs were detected above applicable standards.

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Semi-Volatile Organic Compounds

No SVOCs were detected above applicable standards.

Metals

No metals were detected above applicable standards.

Polychlorinated Biphenyls

No PCBs were detected above applicable standards.

Pesticides

No pesticides were detected above applicable standards.

Emerging Contaminants

1,4-dioxane was not detected above laboratory detection limits.

PFOS was detected in multiple samples throughout the Site at depths ranging from 13 to 17 ft bgs above laboratory reporting limits but below the GVs. PFOA was not detected in any supplemental soil samples collected.

Concentrations of total PFOA/PFOS ranged from ND to a maximum concentration of 0.00033 mg/kg in SB-06_13-15.

Lead Delineation

TCLP Lead was not detected above applicable standards in any lead delineation samples. Total Lead was detected above either RRSCOs or UUSCOs in six of 19 supplemental soil samples collected throughout the Site. Concentrations above RRSCOs ranged from 521 mg/kg in DB-01B_2-4 to a maximum of 637 mg/kg in DB-01B-S1_2-4. Concentrations above UUSCOs ranged from 71.7 mg/kg in DB-01B-W_2-4 to a maximum of 133 mg/kg in DB-01B-S_2-4.

2.2.2 Groundwater Sampling Results

Groundwater analytical results were compared to 6 NYCRR Part 703.5 NYSDEC Technical and Operational Guidance Series 1.1.1 (TOGS 1.1.1) Ambient Water Quality Standards (AWQS). Emerging contaminants PFOA and PFOS were compared to the GVs for PFOA and PFOS outlined in the NYSDEC April 2023 PFAS Guidance. Emerging contaminant 1,4-dioxane was compared to the GV as set by NYSDEC in March 2023. Groundwater analytical results from the initial RI sampling event are summarized below and shown on **Figure 6A**.

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Volatile Organic Compounds

Two VOCs, acetone and 2-Butanone, were detected in MW-02 above the AWQS at a concentration of 66 ppb and 61 ppb, respectively. Acetone and 2-Butanone are known lab contaminants.

No other VOCs were detected in any groundwater samples above the AWQS.

Semi-Volatile Organic Compounds

No SVOCs were detected above the AWQS in any groundwater sample.

Polychlorinated Biphenyls

No PCBs were detected above laboratory detection limits in any groundwater sample.

Dissolved Metals

Two dissolved metals were detected in multiple groundwater samples above the AWQS, including manganese (maximum concentration of 3230 ppb in MW-03) and sodium (maximum concentration of 102,000 ppb in MW-01). Additionally, iron was detected above the AWQS in one groundwater sample, OW-01, at a concentration of 436 ppb.

No other dissolved metals were detected above the AWQS in any groundwater sample.

Total Metals

Three total metals were detected above the AWQS in several groundwater samples, including iron (maximum concentration of 4,360 ppb in MW-04), manganese (maximum concentration of 3,140 ppb in MW-03), and sodium (maximum concentration of 101,000 ppb in MW-01).

No other total metals were detected above the AWQS in any groundwater sample.

Pesticides

No pesticides were detected above laboratory detection limits in any groundwater sample.

Emerging Contaminants

Concentrations of 1,4-dioxane were compared to the GV of 0.35 ppb issued on March 15, 2023, by the NYSDEC. Emerging contaminants PFOA and PFOS in groundwater are compared to the NYSDEC March 2023 GV of 6.7 parts per trillion (ppt) and 2.7 ppt, respectively.

1,4-dioxane was not detected above laboratory detection limits in any groundwater sample.

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PFOS was detected above the GV of 2.7 ppt in three of the six groundwater samples, at a maximum concentration of 400 ppt in MW-03. PFOA was detected above the GV of 6.7 ppt in three of the six groundwater samples, at a maximum concentration of 150 ppt in MW-02.

Total PFOA/PFOS concentrations in groundwater samples ranged from 77 ppt in MW-01 to a maximum concentration of 484 ppt in MW-03.

2.2.2.1 Supplemental Groundwater Sampling Results

Groundwater analytical results from the supplemental sampling event are summarized below and shown on **Figure 6B**.

Volatile Organic Compounds

No VOCs were detected above the AWQS in any groundwater samples collected during supplemental sampling.

Semi-Volatile Organic Compounds

No SVOCs were detected above the AWQS in any groundwater samples collected during supplemental sampling.

Polychlorinated Biphenyls

No PCBs were detected above the AWQS in any groundwater samples collected during supplemental sampling.

Dissolved Metals

Two dissolved metals were detected in multiple groundwater samples above the AWQS, including manganese (maximum concentration of 5730 micrograms per liter [µg/L] in MW-06) and sodium (maximum concentration of 93,100 µg/L in DUP-01_20250723, parent sample MW-01).

No other dissolved metals were detected in any supplemental groundwater samples above the AWQS.

Total Metals

Four total metals were detected above the AWQS in several groundwater samples, including arsenic (maximum concentration of 33.2 µg/L in OW-1), iron (maximum concentration of 17,200 µg/L in MW-03), manganese (maximum concentration of 3,060 µg/L in MW-03), and sodium (maximum concentration of 93,700 µg/L in DUP-01_20250723, parent sample MW-01).

No other total metals were detected in any supplemental groundwater samples above the AWQS.

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Pesticides

No pesticides were detected above the AWQS in any groundwater samples collected during supplemental sampling.

Emerging Contaminants

Concentrations of 1,4-dioxane were compared to the GV of 0.35 ppb issued on March 15, 2023, by the NYSDEC. Emerging contaminants PFOA and PFOS in groundwater are compared to the April 2023 PFAS Guidance GVs of 6.7 ppt and 2.7 ppt, respectively. **Figure 6B** provides supplemental emerging contaminant data in groundwater.

1,4-dioxane was not detected above the AWQS in any groundwater samples collected during supplemental sampling.

PFOS was detected above the GV of 2.7 ppt in six of the eight supplemental groundwater samples at a maximum concentration of 952 ppt in MW-06. PFOA was detected above the GV of 6.7 ppt in seven of the eight supplemental groundwater samples at a maximum concentration of 170 ppt in MW-06.

Total PFOA/PFOS concentrations in groundwater samples ranged from 7.42 ppt in MW-05 to a maximum concentration of 1,120 ppt in MW-06.

2.2.3 Soil Vapor Sampling Results

Total VOC concentrations ranged from 61.15 micrograms per cubic meter (µg/m^3) in SV-06 to a maximum of 2325.2 µg/m^3 in SV-02. Total chlorinated volatile organic compound (CVOC) concentrations ranged from 0.0 µg/m^3 in SV-02 and SV-03 to a maximum of 9.1 µg/m^3 in SV-05. Total benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations ranged from 6.1 µg/m^3 in SV-02 to a maximum of 62.7 µg/m^3 in sample SV-05.

Several petroleum-related VOCs were detected at elevated concentrations in soil vapor samples, including benzene, which was detected in five of the six samples (maximum concentration of 3.8 µg/m^3 in SV-05), toluene, which was detected within all samples (maximum concentration of 16 µg/m^3 in SV-03), ethylbenzene, which was detected in four of the six samples (maximum concentration of 11 µg/m^3 in SV-05), m,p-xylenes, which was detected in four of the six samples (maximum concentration 30 µg/m^3 in SV-05), and o-xylene, which was detected in five of the six samples (maximum concentration 9.5 µg/m^3 in SV-05).

Tetrachloroethene (PCE) was detected in one sample, SV-05, at a concentration of 9.3 µg/m^3. Vinyl chloride was detected in one sample, SV-01, at a concentration of 0.28 µg/m^3. Trichloroethylene (TCE) and Cis-1,2-dichloroethene were not detected in any of the samples analyzed.

Other VOCs that were detected included acetone, which was detected in all samples with a maximum concentration analyzed in SV-01 at 87 µg/m^3, trichlorofluoromethane, also known as CFC-11, which was detected in all samples with a maximum concentration of 2200 µg/m^3 in SV-02, 2-butanone which was detected in five of the six samples with a maximum concentration of 26 µg/m^3 in SV-05, butane which was

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detected in five of the six samples with a maximum concentration of 130 µg/m^3 in SV-05, isopropyl alcohol, which was detected in SV-05 at a concentration of 210 µg/m^3, and tert-butyl alcohol which was detected in five of the six samples with a maximum concentration of 39 µg/m^3 in SV-02.

The emerging contaminant 1,4-dioxane was not detected above laboratory detection limits.

Figure 7 provides the soil vapor sampling locations as well as a summary of soil vapor data from the sampling event.

2.3 SIGNIFICANT THREAT

The NYSDEC and NYSDOH have not yet made a determination as to whether or not the Site poses a significant threat to human health and the environment.

2.4 GEOLOGY AND HYDROGEOLOGY

2.4.1 Historic Fill Material

Based on field observations from the RI and associated supplemental sampling, the Site is underlain by a layer of historic fill material consisting mainly of light to dark brown to orange, coarse to medium silty sand and sandy silt with varying amounts of brick, gravel, concrete, organic matter, fines, and clay observed from surface grade to approximately 5 to 9 ft bgs.

2.4.2 Native Soil

The native layer consisted of light brown to dark brown coarse to medium sand with varying amounts of fines, silt, clay, and gravels. Deeper borings located on the eastern portion of the Site observed higher concentrations of grey silty sand with trace clay and gravels extending down to approximately 20 ft bgs. Soils with elevated PID readings and/or petroleum-like odors were observed in the boring SB-02 (located in the north-central portion of the Site) from 10 to 14 ft bgs with a maximum PID reading of 64.2 ppm, and in soil boring SB-04 (located in the south-eastern portion of the former building) from 9 to 16 ft bgs with a maximum PID reading of 84.2 ppm..

2.4.3 Bedrock

Assumed bedrock was encountered during the geophysical investigation at approximately 14 ft bgs. Bedrock was encountered during the supplemental RI sampling activities at depths ranging from approximately 14.5 to 20 ft bgs. According to the New York State Museum and Science Service Geologic Map of New York, Lower Hudson Sheet, dated 1970, the uppermost geologic formation underlying the soils at the Site is the Middle Ordovician Normanskill Formation.

2.4.4 Hydrogeology

Groundwater was encountered at depths ranging from approximately 10.94 to 15.74 ft btoc, and groundwater beneath the Site generally flows from the west to northeast, with depth to water

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measurements ranging from elevation (El.) 131.97 ft at MW-05 to El. 136.59 ft at MW-06 (North American Vertical Datum of 1988 [NAVD 88]). A groundwater contour map is provided as **Figure 4**.

2.5 CONTAMINATION CONDITIONS

A conceptual site model (CSM) was developed based on the findings of the RI and associated supplemental sampling. The CSM provides a framework for distribution of impacted materials Site-wide and potential migration/exposure pathways.

2.5.1 Conceptual Model of Site Contamination

Subsurface soils are impacted with elevated concentrations of metals, PAHs, and PFAS, which are consistent with characteristics of historic fill. Historic fill material varies throughout the Site, extending up to 9 ft bgs. Native soils are also impacted in some areas with metals and PFAS up to 11 ft bgs. PFAS found within historical fill and groundwater may be the result of a regional PFAS plume impacting the City of Newburgh, Town of Newburg, and Town of New Windsor. In May 2015, the City of Newburgh issued its 2014 Annual Water Quality Report with PFAS contamination identified in Washington Lake, located upgradient from the Site. The NYSDOH confirmed the presence of PFAS in March 2016. Immediately, NYSDEC began to investigate the source of the contamination affecting the City of Newburgh and, with the NYSDOH, assisted the city in connecting to an alternate water supply[1].

Washington Lake is located upgradient from the Site. In addition, it is also possible that PFAS contamination is the result of on-site sources such as potential releases associated with past Site operations or the fire that occurred on former Lot 31. However, the fire on Lot 31 occurred after 2019, and the production and use of aqueous film-forming foam (AFFF) began being phased out in the early 2000s[2]. In addition, PFAS was observed throughout the Site and not only in the vicinity of Lot 31, indicating that the primary source of impact was likely upgradient from the property.

2.5.2 Description of Areas of Concern

Based on Site observations, Site development history, and the findings of the previous environmental reports, one area of concern (AOC) was identified.

AOC 1 – Site-Wide Historical Fill in Soils

Site soils are impacted with elevated concentrations of metals, PAHs, and PFAS, which are consistent with characteristics of historical fill. PAHs were detected in soil boring SB-07 over UUSCOs/RRSCOs and PGWSCOs from 0 to 2 ft bgs and 6 to 8 ft bgs. Historical fill with metals exceeding the UUSCOs/RRSCOs varies in depth throughout the Site, ranging from 0 to 2 ft bgs and 6 to 11 ft bgs. PFOS was detected over the GV at a concentration of 7.3 ppb in SB-02_9'-11' and PFOA was detected over the GV at a concentration of 1.3 ppb in SB-06_2"-2'.

[1] https://dec.ny.gov/environmental-protection/site-cleanup/regional-remediation-project-information/region-3/newburgh
[2] https://www.epa.gov/archive/epapages/newsroom_archive/newsreleases/33aa946e6cb11f35852568e1005246b4.html

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2.6 ENVIRONMENTAL AND PUBLIC HEALTH ASSESSMENTS

2.6.1 Qualitative Human Health Exposure Assessment

A qualitative exposure assessment consists of characterizing the exposure setting (including the physical environment and potentially exposed human populations), identifying exposure pathways, and evaluating chemical fate and transport. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has the following five elements:

1. Receptor population;
2. Contaminant source;
3. Contaminant release and transport mechanism;
4. Point of exposure; and,
5. Route of exposure.

An exposure pathway is complete when all five elements of an exposure pathway are documented; a potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway is not documented but could reasonably occur. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway does not exist in the present and will not exist in the future.

2.6.1.1 Receptor Population

The receptor population includes the people who are or may be exposed to contaminants at a point of exposure. The identification of potential human receptors is based on the characteristics of the Site, the surrounding land uses, and the probable future land uses. The Site is currently vacant with overgrown vegetation. Since the Site is vacant, individual receptors would currently only include construction/maintenance workers who may be employed to perform work on the property.

The Site owner plans to redevelop the property with a four-story mixed-use commercial and residential building, consistent with surrounding property use and zoning. Exposed receptors under the future use scenario may be comprised of residents of the future building, indoor employees, outdoor employees (e.g., groundskeepers or maintenance staff), and construction workers who may be employed at or perform work on the property. Site visitors may also be considered receptors; however, their exposure would be similar to that of the indoor employees but at a lesser frequency and duration.

2.6.1.2 Contaminant Sources

The source of contamination is defined as either the source of contaminant release to the environment (such as a waste disposal area or point of discharge) or the impacted environmental medium (soil, air, water) at the point of exposure. Sections 6 and 7 of the RIR discuss the contaminants of concern (COCs) present in the Site media at elevated concentrations above background levels. In general, these are metals, SVOCs (including PAHs), and PFAS in soil; VOCs, total/dissolved metals, and PFAS in groundwater; and VOCs in soil vapor.

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2.6.1.3 Contaminant Release and Transport

Contaminant release and transport mechanisms carry contaminants from the source to points where people may be exposed and are specific to the type of contaminant and site use. This would include the indoor vapor intrusion pathway, also referred to as "soil vapor intrusion" (SVI). Additional pathways could include skin contact, inhalation, and incidental ingestion of VOCs present in groundwater when and where construction workers are involved in subsurface activities where volatiles are present at elevated concentrations.

2.6.1.4 Exposure Route and Mechanisms

The point of exposure is a location where actual or potential human contact with a contaminated medium may occur. Based on the exceedances of UUSCOs, PGWSCOs, RRSCOs, and/or PFAS GVs for SVOCs, metals, and PFAS in various locations and depths in soil, exceedances of the AWQS or PFAS GVs for VOCs, metals, and PFAS in groundwater, and detections of VOCs in soil vapor, the point of exposure is defined as the entire Site.

The route of exposure is the manner in which a contaminant actually enters or contacts the human body (e.g., ingestion, inhalation, dermal absorption). Based on the types of receptors and point of exposure identified above, potential routes of exposure are listed below.

Current Use Scenario

The Site is currently two vacant lots with overgrown vegetation and is secured with fencing. The risk of exposure to contaminated soil and contaminated groundwater is very low. Release and transport mechanisms include contaminated surface soil transported as dust, contaminated groundwater flow, and volatilization of contaminants from soil and/or groundwater into the vapor phase. Persons at risk of exposure, via the indicated exposure routes, are noted below:

- Occupant/Employee/Visitor – skin contact, inhalation, and incidental ingestion
- Construction/Utility Worker – skin contact, inhalation, and incidental ingestion

Construction/Remediation Scenario

In the continued absence of engineering controls (ECs) and institutional controls (ICs), there will be continued exposure pathways during construction/remediation, specifically related to surface soil. Planned construction/remedial activities include removal of the impervious Site cover, removal of USTs (if present), excavation and off-site disposal of soil, and dewatering of impacted groundwater (if required) to facilitate the construction of the foundation elements. Release and transport mechanisms include disturbed and exposed soil during excavation, contaminated soil transported as dust, contaminated groundwater flow (dewatering, if required), and volatilization of contaminants from soil and/or groundwater into the vapor phase. Persons at risk of exposure, via the indicated exposure routes, are noted below.

- Construction/Utility Worker – skin contact, inhalation, and incidental ingestion
- Public Adjacent to the Site – inhalation

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Future Use Scenario

The anticipated future use as a redeveloped property with a multi-story mixed-use commercial and residential building will include a potential cellar to approximately 12 ft bgs. In the absence of remedial removal of impacted material, remaining contaminant release and transport would include potential migration of contaminated groundwater and volatilization of contaminants from soil and/or groundwater into the vapor phase. Routes of future exposure include cracks in the foundation or slab, or emergency repairs to the foundation walls or slab. Persons at risk of exposure, via the indicated exposure routes, are noted below.

- Construction/Utility Worker – skin contact, inhalation, and incidental ingestion
- Occupant/Employee/Visitor – inhalation
- Public Adjacent to the Site – inhalation

SVI is a relevant transport mechanism under the current and future use scenarios. Concerning skin contact, inhalation, and incidental ingestion of volatile organics present in soil and groundwater, the potential is low for exposure to VOCs for construction workers involved in subsurface activities where volatiles are present at elevated concentrations, given the results of the RI and associated supplemental sampling.

2.6.1.5 Exposure Assessment

Based on the above assessment, the potential exposure pathways for the current and future use conditions are discussed below.

Current Use Scenario

Site COCs include metals and SVOCs in soil. Under current conditions, the likelihood of exposure to soil is limited. The Site is currently vacant and secured with fencing, with Site access only granted to personnel associated with the planned development. Potable water for the City of Newburgh, including the Site, will continue to be sourced from the Brown's Pond reservoir and New York City's Catskill Aqueduct. Intrusive work on the Site will be done in accordance with a Site-specific Health and Safety Plan (HASP) and the donning of personal protective equipment (PPE).

Construction/Remediation Scenario

The exposure element exists for each element during the construction/remediation phase. The overall risk will be minimized by the implementation of a Site-specific Construction Health and Safety Plan (CHASP), localized monitoring of organic vapors, community air monitoring on the Site perimeter for particulates and VOCs, vapor and dust suppression techniques, installation of a stabilized entrance, cleaning of truck tires and undercarriages, and use of appropriate PPE. Additionally, the Site will be remediated under this RAWP, which will include a Soil/Materials Management Plan (S/MMP) that will highlight measures for PPE, covering of stockpiles, housekeeping, suppression techniques (particulates and vapor), and measures to prevent off-site migration of contaminants. In addition, the Site will be secured and inaccessible to the public during remedial construction.

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Future Use Scenario

Under the proposed future condition (after construction/remediation), residual contaminants may remain on the Site depending on the remedy achieved. The remaining contaminants would include those listed in the current conditions. If contaminants remain on the Site after construction/remediation, the route of exposure will be mitigated by proper installation of ECs, such as a Site composite cover system, and implementation of ICs, such as land use and groundwater use restrictions.

2.6.2 Fish & Wildlife Remedial Impact Analysis

NYSDEC DER-10 requires an on-site and off-site Fish and Wildlife Resource Impact Analysis (FWRIA) if certain criteria are met. The Site, which was developed as early as the late 1800s, included an auto repair shop at 60 William Street until the late 1980s. The Site is located in the City of Newburgh. The Site provides little or no wildlife habitat or food value and/or access to the detected subsurface contamination. No natural waterways are present on or adjacent to the Site. The proposed future use of the Site is for residential and commercial purposes. Based on the requirements stipulated in Section 3.10 and Appendix 3C of DER-10, there was no need to prepare a FWRIA for the Site.

2.7 INTERIM REMEDIAL ACTION

No Interim Remedial Measures (IRMs) have been performed or are proposed at the Site.

2.8 REMEDIAL ACTION OBJECTIVES

Based on the results of the RI and associated supplemental sampling, the following Remedial Action Objectives (RAOs) have been identified for this Site.

2.8.1 Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- *Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.*
- *Remove the source of ground or surface water contamination.*

2.8.2 Soil

RAOs for Public Health Protection

- *Prevent ingestion/direct contact with contaminated soil.*
- *Prevent inhalation exposure to contaminants volatilizing from soil.*

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RAOs for Environmental Protection

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

2.8.3 Soil Vapor

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

2.8.4 Protection of Human Health and the Environment

Alternative I – The remedy would significantly reduce the potential for each of the identified pathways of exposure to on-site contaminated media. Remediating the Site to Track 1 standards would result in the removal of Site soils that exceed UUSCOs. Encountered USTs would be decommissioned, removed, and disposed of off-site, and petroleum-impacted material, if encountered, would be excavated and disposed of off-site. The RAOs for public health and environmental protection would be met through the removal of contaminated media at the Site to meet UUSCOs, which would significantly reduce the potential for exposure pathways via possible ingestion, inhalation, or dermal contact.

No ECs or ICs will be required because this remedy removes the potential for exposure to Site contamination; therefore, this remedy is the most protective of human health and the environment.

Alternative II – The Track 2 remedy will provide similar overall protection to public health and the environment as Alternative I. Remediating the Site to Track 2 standards will result in the removal of Site soils to 4 ft bgs with localized hotspot excavations to depths of 8 or 15 ft bgs and documentation of concentrations compared to RRSCOs. If encountered, USTs would be decommissioned, removed, and disposed of off-site, and petroleum-impacted material, if encountered, would be excavated and disposed of off-site. The RAOs for public health and environmental protection would be met through the removal of shallow contaminated media at the Site exceeding RRSCOs, removal of USTs and source petroleum-impacted material, and the installation and maintenance of a Site cover system as an EC, which would significantly reduce the potential for exposure pathways via possible ingestion, inhalation, or dermal contact.

Public health will be protected during remediation under both remedial alternatives by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures when needed. The environment will be protected by implementing and applying soil management controls as needed during future Site excavation and any other ICs through the enforcement of an Environmental Easement (EE), if needed.

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3. Description of Remedial Action Plan

3.1 EVALUATION OF REMEDIAL ALTERNATIVES

This section presents an analysis of the proposed remedial alternatives that could potentially be achieved under the BCP. The proposed soil cleanup objectives (SCOs) under Alternative I would be the Part 375 UUSCOs under a Track 1 cleanup. Alternative II would utilize Part 375 RRSCOs under a Track 2 cleanup. Both alternatives would achieve the established RAOs outlined in Section 2.8. Following evaluation, Alternative I was selected as the preferred remedy.

3.1.1 Alternative I – Technical Description

Alternative I, a Track 1 remedy, will include the following tasks:

- Development and implementation of a CHASP for the protection of on-site workers.
- Development and implementation of a Community Air Monitoring Plan (CAMP) for the protection of community residents and the environment during remediation and construction activities.
- Design and construction of a support-of-excavation (SOE) system to facilitate the Track 1 remediation.
- Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
- Removal of miscellaneous debris on the Site.
- Decommissioning of on-site monitoring wells, as necessary, in accordance with NYSDEC CP-43.
- Excavation, stockpiling, off-site transport, and disposal of approximately 3,900 cubic yards (cu yd) of contaminated historical fill/native material Site-wide that exceeds UUSCOs as defined by 6 NYCRR Part 375-6.8. Excavation will extend to 14 ft bgs Site-wide. Bedrock may be removed, as necessary, to facilitate dewatering.
- Dewatering, characterization, and treatment of water accumulated in excavations prior to discharge to an NYSDEC-approved sewer/sanitary line (pending permits). The dewatering system will include either sumps or well points and include pre-treatment via an on-site settling tank or bag filters and activated carbon prior to off-site disposal.
- Collection of dewatering effluent samples to document carbon filtration efficacy at the Site during remediation.
- If encountered, removal, decommissioning, and off-site disposal of any USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) during redevelopment in accordance with DER-10, 6 NYCRR Part 613-2.6b, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Implementation of a preliminary waste characterization to facilitate off-site disposal of excavated soil/fill.

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- Screening for indications of contamination (by visual means, odor, and monitoring with PIDs) of excavated material during intrusive Site work.
- Appropriate off-site disposal of material removed from the Site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
- Backfilling of excavated areas, as necessary for development, with certified-clean material (i.e., meeting UUSCOs), recycled concrete aggregate (RCA), or virgin, native crushed stone.
- Collection and analysis of confirmation soil samples from the excavation base, in accordance with DER-10, to document post-excavation conditions to confirm a Track 1 remedy was achieved. If the proposed endpoint sample exceeds the Track 1 UUSCOs, over-excavation and additional endpoint sampling may be performed, as necessary, to meet Track 1 UUSCOs. If soil is removed to bedrock at a proposed confirmation sample location, the area will be photo-documented with no confirmation sample collected.
- Completion of a desktop SVI Evaluation in accordance with DER-10 and the NYSDOH Final Guidance on Soil Vapor Intrusion following remedial excavation activities and prior to occupancy.
- If Track 1 Unrestricted Use is not achieved, the development of a Site Management Plan (SMP) for long-term management of residual contamination, as required by an EE, will be required.

The Alternative I remediation extent is shown on **Figure 8** and is based on data presented in the 2025 RIR and the proposed development plans. The requirements for each of the Alternative I tasks are described below.

On-site Worker, Public Health, and Environmental Protection

A Site-specific CHASP is appended to this RAWP (**Appendix D**) and will be implemented during excavation and foundation construction to protect on-site workers from accidents and acute and chronic exposures to the identified contaminated media. Public health will be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP. The CAMP will include continuous perimeter monitoring of dust and organic vapor using TSI DustTrak® Environmental Monitor (DustTrak) aerosol monitors and PIDs (or an equivalent setup) capable of recording data and calculating 15-minute averages. Field personnel will monitor Site perimeters for visible dust and odors.

Support of Excavation

To accommodate the removal of soil that exceeds Track 1 UUSCOs, an SOE system will be required. Excavations are anticipated to be completed into the water table throughout the Site. Additional SOE to support hotspot excavation areas throughout the Site may be constructed, as necessary.

Waste Characterization

Waste characterization will be performed for off-site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC results will be reported. Data available for excavated material to be disposed

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of at a given facility will be submitted to the disposal facility with a suitable explanation prior to shipment and receipt.

Hazardous soil, if present, will be managed in accordance with applicable federal, state, and local regulations. As such, the handling, transport, and disposal of hazardous fill material is subject to USEPA and Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations. The excavated material would be segregated in the field and temporarily placed in stockpiles, or direct-loaded and transported by Part 364-permitted trucks to a facility permitted by the Resource Conservation and Recovery Act (RCRA) to accept hazardous waste.

Fill and Soil Removal

Metals, SVOCs, and PFAS were detected in historic fill material and deeper native soil (metals and PFAS only) at concentrations that exceeded the UUSCOs and/or NYSDEC PFAS GVs for unrestricted use. To achieve Track 1, soil removal and disposal will extend from surface grade to at least 14 ft bgs across the Site, or to bedrock. Within the excavation proposed on Lot 31, there is a hotspot centered on Limited Phase II soil boring B-04, consisting of approximately 10 cu yd of soil with elevated total lead concentrations. In addition, as further detailed below, soil removal between surface grade and 10 ft bgs on the northeastern portion of Lot 32, in proximity to the USTs, will remove potentially contaminated material associated with the USTs. The lead-contaminated soil and UST areas will be documented for waste characterization and UST closeout purposes; however, the remedial excavation to 14 ft bgs will encompass both of these hotspots. For remedial purposes, a total of approximately 3,900 cu yd of material may be removed from the Site. The soil will be screened for visual, olfactory, and instrumental evidence of environmental impacts.

UST Removal

Based on prior investigations, there are currently two USTs present on the Site associated with former automobile service station operations. These USTs, as well as any unknown USTs, if encountered, and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) would be decommissioned in accordance with applicable NYSDEC tank closure requirements, including DER-10 Section 5.5, 6 NYCRR Part 613-2.6b, and NYSDEC CP-51. USTs and/or associated appurtenances would be registered and administratively closed with the NYSDEC Petroleum Bulk Storage (PBS) unit. Petroleum-impacted soil would be excavated and disposed of off Site at a permitted disposal facility in accordance with applicable regulations. It is anticipated that soil in the vicinity of the USTs will require excavation to 10 ft bgs and will extend to at least 14 ft bgs as part of the Site-wide excavation; however, depth may extend based on observations of petroleum-impacted material upon tank removal. Closure documentation, such as Contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, would be provided as appendices in the Final Engineering Report (FER).

Fluids Management

Liquids removed from the Site, including dewatering fluids, would be handled, transported, and disposed of in accordance with applicable local, state, and federal regulations. Fluids will not be recharged back to the land surface or subsurface. Discharge of water generated during remedial construction to surface

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waters (i.e., a local pond, stream, and/or river) is prohibited without a State Pollutant Discharge Elimination System (SPDES) permit.

Based on the depth to water, dewatering is anticipated to facilitate the excavation of material that exceeds the UUSCOs and the construction of foundation components. Dewatering fluids discharged into the City of Newburgh sewer system would be addressed through approval by the City of Newburgh. No dewatering discharge will commence prior to the City of Newburgh's approval.

Evaluation of the dewatering system design is ongoing, but at a minimum, the system will consist of either sumps or well points transferred to an on-site settling tank or bag filters and an activated carbon treatment system prior to off-site disposal and/or discharge to the City of Newburgh's combined sewer system.

Dewatering effluent will be sampled once per month during active dewatering of Site groundwater, to the extent possible. Effluent samples will be analyzed for PFAS to document groundwater quality at the Site during remediation.

Excavation Backfill

With remedial excavation extending to 14 ft bgs and foundation elements expected to be installed approximately 12 ft bgs, some need for backfill is anticipated. Imported material would consist of clean fill that meets the Allowable Constituent Levels of Imported Fill or Soil defined in DER-10 Appendix 5 or other acceptable fill material, such as virgin stone from a quarry or RCA. If RCA/virgin stone is imported to the Site, it will come from an NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and/or permitting requirements for the period of RCA/virgin stone acquisition. RCA/virgin stone imported from compliant facilities will not require chemical testing, unless required by NYSDEC under its terms for operation of the facility. Imported RCA must be derived from recognizable and uncontaminated concrete. NYSDEC Request to Import/Reuse forms will be submitted, and a template is provided in **Appendix E**.

Confirmation Soil Sampling

Per NYSDEC DER-10, confirmation soil samples will be collected from the excavation base (estimated to be at approximately 14 ft bgs) at a frequency of one sample per 900 sq ft to confirm Track 1 UUSCOs were achieved. Sidewall samples will not be collected from the Site perimeter because excavation will extend across the Site footprint, and SOE measures (e.g., sheeting and lagging) will have vertical excavation faces along the Site perimeter. If the proposed confirmation sample does not meet Track 1 UUSCOs, over-excavation and additional sampling will be performed to ensure that impacted material above Track 1 UUSCOs has been removed from the Site. If soil is removed to bedrock at a proposed confirmation sample location, the area will be photo-documented with no confirmation sample collected.

An estimated nine confirmation soil samples, plus QA/QC samples, would be collected and analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals, PFAS, and 1,4-dioxane. The proposed confirmation sample locations are included on **Figure 9**. Should excavation be required to bedrock to achieve the proposed UUSCOs, photo documentation of cleared bedrock in the 900 sq ft area will serve as the endpoint confirmation and included in the future photographic log.

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Post-Remedy Soil Vapor Intrusion Evaluation

Following the RA and prior to occupancy, a desktop SVI Evaluation will be conducted at the Site and submitted to NYSDEC and NYSDOH. Should the desktop SVI Evaluation indicate SVI, a potential remedial alternative/element would be proposed.

3.1.2 Alternative II – Technical Description

Alternative II, a Track 2 remedy, will include the following tasks:

- Development and implementation of a CHASP for the protection of on-site workers.
- Development and implementation of a CAMP for the protection of community residents and the environment during remediation and construction activities.
- Design and construction of an SOE system to facilitate the Track 2 remediation.
- Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
- Removal of miscellaneous debris on the Site.
- Decommissioning on-site monitoring wells, as necessary, in accordance with NYSDEC CP-43.
- Excavation, stockpiling, off-site transport, and disposal of approximately 1,300 cu yd of historical fill material and solid waste that exceeds RRSCOs as defined by 6 NYCRR Part 375-6.8. Excavation will extend to 4 ft bgs Site-wide for the Track 2 remedy, with the exception of a 5-ft by 5-ft hotspot to 8 ft bgs, centered around Phase II soil boring B-04; a 15-ft by 15-ft hotspot to 15 ft bgs, centered around RI soil borings SB-06 and SB-07; a 10-ft by 10-ft hotspot to 15 ft bgs, centered around RI soil boring SB-02; and a 12-ft by 20-ft hotspot to 10 ft bgs, centered around the USTs.
- If encountered, removal, decommissioning, and off-site disposal of any USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) during redevelopment in accordance with DER-10, 6 NYCRR Part 613-2.6b, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Screening for indications of contamination (by visual means, odor, and monitoring with PIDs) of excavated material during intrusive Site work.
- Appropriate off-site disposal of material removed from the Site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
- Collection and analysis of documentation soil samples from the excavation base, in accordance with DER-10, to document post-excavation conditions of the Track 2 remedy.
- Completion of an SVI Evaluation, in accordance with DER-10 and the NYSDOH Final Guidance on Soil Vapor Intrusion, following remedial excavation activities and prior to occupancy.
- Construction of an engineered composite cover system that consists of 8-in. concrete slab underlain by 6 in. of ¾-in. aggregates and a waterproof/vapor barrier system (minimum 20-mil) beneath the building footprint that covers the entire Site, and a waterproof/vapor barrier system (minimum 20-mil) outside the foundation walls along the Site perimeter to prevent potential vapor intrusion migrating from off Site into the building.

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- Establishment of use restrictions, if necessary, including prohibitions on the use of groundwater from the Site and prohibitions on sensitive Site uses, such as farming or vegetable gardening in residual Site soil, to significantly reduce the potential for future exposure pathways.
- Establishment of an SMP for ICs and ECs that includes an Institutional and Engineering Control Plan, a Monitoring Plan, and an Operations and Maintenance Plan.
- Recording of an EE to ensure future owners of the Site continue to maintain ECs/ICs as required.

The Alternative II remediation extent is shown on **Figure 10** and is based on data presented in the 2023 Limited Phase II ESI Report, 2025 RIR, and the proposed development plans. The requirements for each of the Alternative II tasks are described below.

On-site Worker, Public Health, and Environmental Protection

A Site-specific CHASP is appended to this RAWP (**Appendix D**) and will be enforced during excavation and foundation construction to protect on-site workers from accidents and acute and chronic exposures to the identified contaminated media. Public health will be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP. The CAMP will include continuous perimeter monitoring of dust and organic vapor using DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. Field personnel will monitor Site perimeters for visible dust and odors.

Support of Excavation

To accommodate the removal of soil to 8 ft bgs and 15 ft bgs to remove soil above RRSCOs, and to 10 ft bgs to accommodate the tank removal under a Track 2 remedy, an SOE system will be required. Additional SOE to support hotspot excavation areas within the Site may be constructed, as necessary.

Waste Characterization

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

Hazardous soil will be managed in accordance with applicable federal, state, and local regulations. As such, the handling, transport, and disposal of hazardous fill material is subject to USEPA and OSHA HAZWOPER regulations. The excavated material would be segregated in the field and temporarily placed in stockpiles, or direct-loaded and transported by Part 364-permitted trucks to a facility permitted by the RCRA to accept hazardous waste.

Fill and Soil Removal

Metals, SVOCs, and PFAS were detected in historic fill material and deeper native soil (metals and PFAS only) at concentrations that exceeded the UUSCOs, RRSCOs, and/or NYSDEC PFAS GVs. To achieve Track 2,

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approximately 1,300 cu yd of historical fill material and solid waste that exceeds RRSCOs will be removed from the Site. Excavation will extend to 4 ft bgs Site-wide, with the exception of a 5-ft by 5-ft hotspot to 8 ft bgs, centered around Phase II soil boring B-04; a 15-ft by 15-ft hotspot to 15 ft bgs, centered around RI soil borings SB-06 and SB-07; a 10-ft by 10-ft hotspot to 15 ft bgs, centered around RI soil boring SB-02; and a 12-ft by 20-ft hotspot to 10 ft bgs, centered around the USTs. The soil will be screened for visual, olfactory, and instrumental evidence of environmental impacts.

UST Removal

Based on prior investigations, there are currently two USTs present on the Site associated with former automobile service station operations. These USTs, as well as any unknown USTs, if encountered, and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) would be decommissioned in accordance with applicable NYSDEC tank closure requirements, including DER-10 Section 5.5, 6 NYCRR Part 613-2.6b, and NYSDEC CP-51. USTs and/or associated appurtenances would be registered and administratively closed with the NYSDEC PBS unit. Petroleum-impacted soil would be excavated and disposed of off Site at a permitted disposal facility in accordance with applicable regulations. It is anticipated that soil in the vicinity of the USTs will require excavation to 10 ft bgs; however, depth may extend based on observations of petroleum-impacted material upon tank removal. Closure documentation, such as Contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, would be provided as appendices in the FER.

Fluids Management

No dewatering activities are anticipated to achieve Track 2. Localized dewatering with containerization, classification, and disposal at an approved receiving facility will be implemented, if needed, during tank removal activities. Liquids removed from the Site, including dewatering fluids, if needed, will be handled, transported, and disposed of in accordance with applicable local, state, and federal regulations.

Documentation Soil Sampling

Per NYSDEC DER-10, documentation soil samples will be collected from the excavation base (estimated to be approximately 4 ft bgs) at a frequency of one sample per 900 sq ft to document post-excavation conditions as part of the Track 2 remedy. Bottom endpoint soil samples will also be collected from the base of the hotspot or tank excavations and from each hotspot or tank excavation sidewall, as necessary, and analyzed for applicable analytes to confirm the removal of all soil with concentrations above RRSCOs. Sidewall samples will be collected from the Site perimeter at a frequency of one sample per 30 linear feet. If the Site is sloped for SOE, then one sidewall sample would be collected for every 30 linear feet, per DER-10.

An estimated 11 documentation soil samples and 28 sidewall samples, including 16 hotspot sidewall samples, plus QA/QC samples, would be collected from the remedial excavation base and analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals, PFAS, and 1,4-dioxane.

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Post-Remedy Soil Vapor Intrusion Evaluation

Following RAs and prior to occupancy, a desktop SVI Evaluation will be conducted to determine whether ECs will be required to address potential SVI at the Site. The desktop SVI Evaluation will be submitted to NYSDEC and NYSDOH.

Composite Cover System

A composite cover system, consisting of a minimum of 4 in. of clean subbase (RCA or virgin stone) overlain by a 6-in. concrete slab and installation of a waterproofing/vapor barrier (20-mil thick) to mitigate the potential for a soil vapor exposure pathway, will be installed as part of the redevelopment. Landscaped portions of the Site, which will be excavated to 4 ft bgs, will be covered in a nonwoven geotextile fabric, to be used as a demarcation barrier, followed by clean backfill meeting the RRSCOs or other acceptable fill material, such as virgin stone from a quarry or RCA, to grade. This composite cover system would be considered an EC.

Site Management Plan and Environmental Easement

An EE would be recorded referencing ICs that are part of the selected remedy, which would be binding upon all subsequent owners and occupants of the property. The ICs would: 1) restrict the Site's use to restricted residential, commercial, and industrial uses, although land use is subject to local zoning laws; 2) restrict the use of groundwater as a source of potable or process water, unless it undergoes necessary water quality treatment as determined by the NYSDEC or NYSDOH; 3) require implementation of an NYSDEC-approved SMP; 4) require the completion and submission to the NYSDEC of a periodic certification of ICs and ECs in accordance with Part 375; and 5) include notice-of-use restrictions of the Site's soil.

The SMP would identify all use restrictions, ECs, and long-term monitoring and maintenance requirements to ensure the ICs and/or ECs remain in place and are effective. The SMP will include, but may not be limited to:

- An Excavation Work Plan (EWP) which details the provisions for management of future excavations in areas of remaining contamination;
- Descriptions of the provisions of the EE, including any land use and/or groundwater use restrictions;
- Provision for evaluation of the potential for SVI for any buildings developed on the Site, including provision for implementing actions recommended to address exposures related to SVI;
- Provision for the management and inspection of the identified ECs;
- Maintaining Site access controls and NYSDEC notification;
- The steps necessary for the periodic reviews and certification of the ICs and ECs;
- A Monitoring Plan to assess the performance and effectiveness of the remedy. The Monitoring Plan will include, but may not be limited to:

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  - Monitoring for vapor intrusion for any buildings developed on the Site, as may be required by the Institutional and Engineering Control Plan discussed above; and,
- A schedule of monitoring and frequency of submittals to NYSDEC.

3.2 SELECTION OF THE PREFERRED REMEDY

The following is an evaluation of the proposed remedy based on the BCP remedy evaluation criteria listed below. The first two criteria are considered "threshold criteria," and the remaining criteria are "balancing criteria." A remedial alternative must meet the threshold criteria to be considered and evaluated further under the balancing criteria.

- Protection of human health and the environment
- Compliance with SCGs
- Short-term effectiveness and impacts
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume of contaminated material
- Implementability
- Cost-effectiveness
- Community acceptance
- Green and Sustainable Remediation (including climate resiliency)
- Land use

3.2.1 Compliance with Standards, Criteria, and Guidance

Both alternatives will be in compliance with applicable SCGs listed in Section 4.1 by removing Site sources of contamination to achieve the RAOs. While implementing either remedy, the protection of public health and the environment will be maintained by enforcing a Site-specific CHASP and CAMP. OSHA requirements for on-site construction safety will be followed by Site contractors performing work.

3.2.2 Short-Term Effectiveness and Impacts

Alternative I – The most significant short-term adverse impacts and risks to the community will be the potential complications and risks involved with designing and constructing the SOE and underpinning for the building and structures adjoining the Site. Potential impositions on roadway and pedestrian traffic associated with construction may result from the remedial excavation to achieve Track 1 cleanup. Increased truck traffic in Alternative I, relative to Alternative II, would be necessary to haul out the additional soil that exceeds UUSCOs to achieve Track 1 standards.

Under Alternative I, the excavated soil and fill would require up to approximately 200 20-cu-yd truck trips for disposal (assuming the estimated remedial excavation depth of 14 ft bgs). Implementing Alternative I would require approximately three to four months of effort (assuming normal work hours). Truck traffic will be routed on the most direct course using major thoroughfares where possible and appropriate (see

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Section 5.4.4 for a full discussion of truck routing), and flaggers will be used to protect pedestrians at Site entrances and exits. Waiting times associated with the analysis of confirmation sampling and resampling may delay construction, leaving soil exposed for a longer time, resulting in a potential increase in dust, odors, and/or organic vapor from the excavation and construction-related noise. The effects of these potential adverse impacts on the community, workers, and the environment will be minimized by implementing the respective control plans.

Alternative II – Alternative II will result in similar, though lesser, short-term adverse impacts and risks to the community. The excavated soil and fill would require approximately 65 20-cu-yd truck trips. Implementing the Alternative II concept would require approximately one to two months of effort (assuming normal work hours).

Under both remedial alternatives, dust will be controlled by the on-site application of water spray as needed. ECs, such as slowing the pace of work, applying foam and/or dust suppressant, and/or covering portions of the excavation, will be used to suppress odors/dust when required. Work will be modified or stopped according to the action levels defined in the CAMP. Therefore, short-term impacts are similar for both alternatives.

3.2.3 Long-Term Effectiveness and Performance

Alternative I will remove contaminated soil from the Site exceeding UUSCOs, while Alternative II will remove contaminated soil from the Site to 4 ft bgs, which will be documented in post-excavation confirmation or documentation soil sampling. Both alternatives will require a post-construction desktop SVI Evaluation to be implemented to evaluate the potential for vapor intrusion into the newly constructed building. Alternative I would result in no restrictions to the use of the Site, while Alternative II would result in Restricted-Residential uses.

3.2.4 Reduction of Toxicity, Mobility, or Volume of Contaminated Material

Both remedial alternatives would permanently and significantly reduce the toxicity, mobility, and volume of contamination through the removal of historic fill and buried solid waste through excavation and off-site disposal.

3.2.5 Implementability

Alternative I – Implementing a Track 1 remedy will be technically challenging because of SOE requirements associated with the protection of the neighboring buildings and streets; however, the SOE requirements will be comparable to those required for construction. This remedy will consist primarily of excavation with standard bucket excavators. The availability of local contractors, personnel, and equipment suitable for working in a structurally challenging environment is high due to the frequency of this type of remediation in the region. The excavation and SOE are not expected to require schedule extensions or additional costs. If deeper contamination above UUSCOs is encountered requiring unanticipated over-excavation, the cost will be marginal compared to the benefit of achieving an unrestricted use remediation and avoiding long-term ECs and ICs. Additional coordination between trades may be required. This alternative is considered feasible.

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Alternative II – The technical feasibility of implementing the Alternative II remedy is similar to Alternative I, if not more feasible, as less excavation and SOE will be required to achieve the Track 2 remedy. This alternative will consist primarily of excavation with standard bucket excavators. The availability of local contractors, personnel, and equipment suitable for working in a structurally challenging environment is high due to the frequency of this type of remediation in the region. Additional coordination between trades may be required. This alternative is considered feasible.

3.2.6 Cost-Effectiveness

Alternative I – Based on the assumptions detailed for Alternative I, the estimated remediation cost of a Track 1 cleanup is approximately $2,475,000. A detailed cost estimate for a Track 1 cleanup is provided in **Table 1**.

Alternative II – Based on the assumptions detailed for Alternative II, the estimated remediation cost of a Track 2 cleanup is approximately $1,788,000. Although Alternative II is more cost-effective in the short term, Alternative I is more cost-effective in the long term, as Alternative II will require long-term operation, maintenance, and monitoring for Site management. A detailed cost estimate for a Track 2 cleanup is provided in **Table 2**.

3.2.7 Community Acceptance

Both remedial alternatives should be acceptable to the community because the potential exposure pathways to on-site contamination will be addressed upon completion of the respective remedies, and the Site will be remediated to allow for a higher-level use. The selected remedy will be subject to a 45-day public comment period in accordance with the Citizen Participation Plan (CPP), included as **Appendix F**. Substantive public comments will be addressed before the remedy is approved.

3.2.8 Green and Sustainable Remediation

An environmental footprint analysis was conducted for both remedial alternatives. Alternative I, a Track 1 remedy, would potentially export a greater volume (up to approximately 3,900 tons) of non-hazardous waste off the Site to a recycling facility than Alternative II, a Track 2 remedy, due to the expected requirement of greater excavation depths. Additionally, Alternative I will potentially result in slightly more air emissions than Alternative II due to the expected additional excavation and off-site disposal required. The environmental footprint analysis is included as **Appendix G**.

3.2.9 Land Use

The current, intended, and reasonably anticipated future residential land use of the Site and its surroundings are compatible with both remedial alternatives. The proposed development, while still in the development stages, will include the construction of a four-story mixed-use commercial/residential facility with a cellar extending approximately 12 ft bgs. Mid-rise residential and commercial use buildings are located at properties surrounding the Site.

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3.3 SELECTION OF THE PREFERRED REMEDY

Both alternatives will be protective of human health and the environment and meet the remedy selection criteria. Alternative I achieves the RA goals established for the redevelopment project and is effective in the short term. Alternative I effectively reduces contaminant mobility and is a better alternative in the reduction of contaminant volume. Alternative I is more effective in the long term because the Site achieves unrestricted use. Alternative I is preferred over Alternative II if it can be feasibly and practically implemented at a similar cost while providing greater overall protection to human health and the environment. Therefore, Alternative I is the recommended remedial alternative for this Site. However, if Alternative I is not achievable, Alternative II is similarly protective of human health and the environment.

Figure 8 depicts the Alternative I (Track 1) cleanup plan. **Figure 10** depicts the Alternative II (Track 2) cleanup plan. The Alternative I and II remediation extents are based on data presented in the 2023 Limited Phase II ESI Report (Haley & Aldrich of New York, 2023) and 2025 RIR (Haley & Aldrich of New York, 2025).

3.3.1 Zoning

The Site is zoned as a medium-density residential (RM) area overlayed with a commercial district (CD) within the East End Historic District. The Site is in an urban area characterized by residential and commercial properties.

3.3.2 Surrounding Property Uses

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy. The construction of a new multi-family residential building conforms to recent development patterns in the area and current zoning.

3.3.3 Citizen Participation

Both remedial alternatives should be acceptable to the community because the potential exposure pathways to on-site contamination will be addressed upon completion of the respective remedies, and the Site will be remediated to allow for a higher-level use. The selected remedy will be subject to a 45-day public comment period in accordance with the CPP, included as **Appendix F**. Substantive public comments will be addressed before the remedy is approved.

3.3.4 Environmental Justice Concerns

Per the "Potential Environmental Justice Areas in Newburgh, New York," the Site is in a potential Environmental Justice area, identified as Census Block Group 360710005011, with 31.02 percent of the population below the poverty level and a minority population of 93.26 percent. The NYSDEC's Office of Environmental Justice acts as an advocate on behalf of these areas, which are disproportionately affected by environmental burdens. The proposed remedy will best reduce the environmental burden on the surrounding area.

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3.3.5 Land Use Designations

There are no federal or state land use designations.

3.3.6 Population Growth Patterns

The population growth patterns and projections support the current and anticipated future land use.

3.3.7 Accessibility to Existing Infrastructure

The Site is accessible via existing infrastructure.

3.3.8 Proximity to Cultural Resources

The Site is not in close proximity to a registered landmark.

3.3.9 Proximity to Natural Resources

The Site is not located in close proximity to important federal, state, or local natural resources, including waterways, wildlife refuges, wetlands, and critical habitats of endangered or threatened species.

3.3.10 Off-site Groundwater Impacts

Municipal water supply wells are not present in this area of the City of Newburgh; therefore, groundwater from the Site does not affect municipal water supply wells or recharge areas.

3.3.11 Proximity to Floodplains

The Site is not located in a floodplain.

3.3.12 Geography and Geology of the Site

The Site geology is described in Section 2.4 and will not pose greater challenges to the implementation of the preferred remedy than to the alternative.

3.3.13 Current Institutional Controls

There are currently no ICs being implemented at the Site.

3.4 SUMMARY OF SELECTED REMEDIAL ACTIONS

The selected Track 1 (Alternative I) remedy will include the following:

- Development and implementation of a CHASP for the protection of on-site workers.
- Development and implementation of a CAMP for the protection of community residents and the environment during remediation and construction activities.

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- Design and construction of an SOE system to facilitate the Track 1 remediation.
- Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
- Removal of miscellaneous debris on the Site.
- Decommissioning of on-site monitoring wells, as necessary, in accordance with NYSDEC CP-43.
- Excavation, stockpiling, off-site transport, and disposal of approximately 3,900 cu yd of contaminated historical fill/native material Site-wide that exceeds UUSCOs as defined by 6 NYCRR Part 375-6.8. Excavation will extend to 14 ft bgs Site-wide. Bedrock may be removed, as necessary, to facilitate dewatering.
- Dewatering, characterization, and treatment of water accumulated in excavations prior to discharge to an NYSDEC-approved sewer/sanitary line (pending permits). The dewatering system will include either sumps or well points and include pre-treatment via an on-site settling tank or bag filters and activated carbon prior to off-site disposal.
- Collection of dewatering effluent samples to document carbon filtration efficacy at the Site during remediation.
- If encountered, removal, decommissioning, and off-site disposal of any USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) during redevelopment in accordance with DER-10, 6 NYCRR Part 613-2.6b, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Implementation of a preliminary waste characterization to facilitate off-site disposal of excavated soil/fill.
- Screening for indications of contamination (by visual means, odor, and monitoring with PIDs) of excavated material during intrusive Site work.
- Appropriate off-site disposal of material removed from the Site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
- Backfilling of excavated areas, as necessary for development, with certified-clean material (i.e., meeting UUSCOs), RCA, or virgin, native crushed stone.
- Collection and analysis of confirmation soil samples from the excavation base, in accordance with DER-10, to document post-excavation conditions to confirm a Track 1 remedy was achieved. If the proposed endpoint sample exceeds the Track 1 UUSCOs, over-excavation and additional endpoint sampling may be performed, as necessary, to meet Track 1 UUSCOs. If soil is removed to bedrock at a proposed confirmation sample location, the area will be photo-documented with no confirmation sample collected.
- Completion of a desktop SVI Evaluation in accordance with DER-10 and the NYSDOH Final Guidance on Soil Vapor Intrusion following remedial excavation activities and prior to occupancy.
- If Track 1 Unrestricted Use is not achieved, the development of an SMP for long-term management of residual contamination, as required by an EE, will be required.

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Remedial activities will be performed in accordance with this RAWP and the NYSDEC-issued Decision Document under the oversight of a New York State-licensed Professional Engineer. Deviations from the RAWP and/or Decision Document will be promptly reported to the NYSDEC for approval and explained in the FER.

Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and Site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing the use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling, and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic, and social goals; and,
- Integrating the remedy with the end use where possible and encouraging green and sustainable redevelopment.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis was completed and is included in **Appendix G**. The environmental footprint analysis was completed using USEPA's Spreadsheets for Environmental Footprint Analysis (SEFA), which is an NYSDEC-accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction, and material use were estimated for both Alternatives. Goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, are incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during the implementation of the RA and reported in the FER, including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program includes a climate change vulnerability assessment to evaluate the impact of climate change on the project Site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress, and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities. Climate change is not expected to have a significant impact on the remedial system.

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4. Remedial Action Program

4.1 GOVERNING DOCUMENTS

The primary documents governing the RA are summarized in this section.

4.1.1 Standards, Criteria, and Guidance

- 29 Code of Federal Regulations (CFR) Part 1910.120 – Hazardous Waste Operations and Emergency Response (HAZWOPER)
- 6 NYCRR Part 364 – Waste Transporter Permits
- 6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- 6 NYCRR Subpart 373-4 – Facility Standards for the Collection of Household Hazardous Waste and Hazardous Waste from Conditionally Exempt Small Quantity Generators
- 6 NYCRR Subpart 374-1 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Subpart 374-3 – Standards for Universal Waste
- 6 NYCRR Part 375 – Environmental Remediation Programs
- 6 NYCRR Part 376 – Land Disposal Restrictions
- 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Permits
- CFR Title 29 Part 1926 – Safety and Health Regulations for Construction
- CP-43 – Commissioner Policy on Groundwater Monitoring Well Decommissioning (December 2009)
- NYSDEC Spill Response Guidance Manual
- NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances Under NYSDEC's Part 375 Remedial Programs (April 2023)
- CP-51 – Soil Cleanup Guidance (2010)
- DER-10 – Technical Guidance for Site Investigation and Remediation (May 3, 2010)
- DER-23 – Citizen Participation Handbook for Remedial Programs (March 2010)
- DER-31 – Green Remediation (2011)
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006)
- TOGS 1.1.1 – Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations

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- Screening and Assessment of Contaminated Sediment (Division of Fish, Wildlife and Marine Resources, June 2014)

4.1.2 Site-Specific Construction Health & Safety Plan

A Site-specific CHASP has been prepared (**Appendix D**). The CHASP will apply to remedial and construction-related work on the Site. The CHASP provides a mechanism for establishing on-site safe working conditions, safety organization, procedures, and PPE requirements during the implementation of the remedy. The CHASP meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65, respectively). The CHASP includes, but is not limited to, the following components:

- Organization and identification of key personnel;
- Training requirements;
- Medical surveillance requirements;
- List of Site hazards;
- Excavation safety;
- Drill rig safety;
- Work zone descriptions and monitoring procedures;
- Personal safety equipment and PPE requirements;
- Decontamination requirements;
- Standard operating procedures;
- Contingency plan;
- CAMP; and,
- Safety data sheets (SDS).

The Volunteer and associated parties preparing the remedial documents submitted to the state of New York, and those performing the construction work, are completely responsible for the preparation of an appropriate CHASP and for the performance of the work according to the CHASP and applicable laws. The CHASP and requirements defined in this RAWP pertain to all remedial and ground-intrusive work performed at the Site until the issuance of a Certificate of Completion. The Haley & Aldrich of New York Safety Coordinator will be Brian Ferguson, a resume for whom is included in **Appendix H**. If required, confined space entry will comply with OSHA requirements to address the potential risk posed by combustible and toxic gases. All remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements federally mandated by OSHA.

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4.1.3 Quality Assurance Project Plan

A Quality Assurance Project Plan (QAPP) has been prepared that describes the QC components that will ensure that the proposed remedy accomplishes the remedial goals and RAOs and is completed in accordance with the design specifications. The QAPP is provided as **Appendix I** and includes:

- Responsibilities of key personnel and their organizations for the proposed remedy;
- Qualifications of the QA officer;
- Sampling requirements, including methodologies, quantity, volume, locations, frequency, and acceptance and rejection criteria; and,
- Descriptions of the reporting requirements for QA activities, including weekly QA review reports.

4.1.4 Construction Quality Assurance Plan

A Construction Quality Assurance Plan (CQAP) has been prepared that describes the QCI components that will ensure that the proposed remedy accomplishes the remedial goals and RAOs and is completed in accordance with the design specifications. Because the remedy will be accomplished concurrently with building construction, the Contractor and Construction Manager will have the primary responsibility to provide construction quality. A list of engineering personnel involved in the implementation of the CQAP and procedures that will be carried out by the remedial engineering team are listed in Section 4.2.1. Project personnel resumes are provided in **Appendix H**.

4.1.5 Soil/Materials Management Plan

An S/MMP has been prepared that includes detailed plans for managing soils/materials that are disturbed at the Site, including during excavation, handling, storage, transport, and disposal. The S/MMP also includes controls that will be applied to these efforts to facilitate effective, nuisance-free performance in compliance with applicable federal, state, and local laws and regulations (see Section 5.4).

4.1.6 Stormwater Pollution Prevention Plan

Erosion and sediment controls will be implemented as necessary in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control. Best management practices for soil erosion and sediment control will be selected to minimize erosion and sedimentation off the Site from the outset of remediation to the completion of development. Stormwater pollution prevention will be implemented as described below in Section 5.4.10. A Stormwater Pollution Prevention Plan (SWPPP) is not necessary because the project will disturb less than 1 acre, and stormwater discharge will be to a combined sewer in accordance with the City of Newburgh regulations.

4.1.7 Community Air Monitoring Plan

Details of the CAMP are discussed in section 5.4.12.

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4.1.8 Contractors' Site Operations Plan

The Remedial Engineer (RE) will review plans and submittals for this remedial project, Contractor and subcontractor document submittals, and will confirm that plans and submittals are in compliance with this RAWP. The RE is responsible for ensuring that all later document submittals for this remedial project, including Contractor and subcontractor document submittals, are in compliance with this RAWP. Remedial documents, including Contractor and subcontractor document submittals, will be submitted to the NYSDEC and NYSDOH in a timely manner and prior to the start of work associated with the remedial document.

4.1.9 Citizen Participation Plan

Document repositories were established at the following locations and contain the applicable project documents:

1. Newburgh Free Library
   124 Grand Street
   Newburgh, New York 12550
   Phone: 845.563.3600
   Hours: Monday to Thursday – 9 a.m. to 8 p.m.
   Friday to Saturday – 9 a.m. to 5 p.m.
   Sunday – 1 p.m. to 5 p.m.

2. NYSDEC
   Central Office
   625 Broadway, 12th Floor
   Albany, New York 12233-7016
   Hours: Monday to Friday – 9 a.m. to 5 p.m.

In addition, an electronic repository can be accessed via DECInfo Locator at the following link: https://extapps.dec.ny.gov/data/DecDocs/C336098/.

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

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

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4.2 GENERAL REMEDIAL CONSTRUCTION INFORMATION

4.2.1 Project Organization

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

The following project personnel are anticipated for oversight of the RAWP implementation. Project personnel resumes are provided in **Appendix H**.

NYSDEC Case Manager	John Miller
NYSDOH Case Manager	Christopher Budd
Remedial Engineer	Scott A. Underhill, P.E.
Principal/Qualified Environmental Professional	Mari Cate Conlon
Project Manager	Matthew Levy
Haley & Aldrich of New York Health & Safety Director	Brian Fitzpatrick, CHMM
Health & Safety Officer	Brian Ferguson
Field Support and Coordination	Nicole Mooney
Field Team Leader/Quality Assurance Officer	Owen Hennigan

Haley & Aldrich of New York personnel, under the direct supervision of the Qualified Environmental Professional (QEP) and the RE, will be on the Site during the implementation of the RAWP to monitor particulates and organic vapor in accordance with the CAMP. CAMP results that exceed specified action levels will be reported to the NYSDEC and NYSDOH.

Haley & Aldrich of New York personnel will meet with the Construction Superintendent daily to discuss the plans for that day and schedule upcoming activities. Field personnel will document remedial activities. Field activities will be forwarded to the Field Team Leader and Project Manager daily and to the QEP and the RE on a weekly basis. Daily reports will also be submitted to the NYSDEC and NYSDOH Case Managers by noon the following business day.

Field personnel will screen excavations with a PID during ground-intrusive work. PID readings, including specifically elevated readings, will be recorded in the project field book (or on separate logs) and reported to the NYSDEC and NYSDOH. Field personnel under the direct supervision of the RE and QEP will collect endpoint samples from the base and sidewalls of the excavation in accordance with this RAWP.

Field observations and laboratory tests will be recorded in the project field book or on separate logs. Recorded field observations may take the form of notes, charts, sketches, and/or photographs. A photo log will be kept to document construction activities during remediation.

The Field Team Leader will maintain original field paperwork during performance of the remedy. Remedial activities will be documented in the monthly BCP progress reports. The Project Manager will maintain the field paperwork after completion and will maintain submittal document files.

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4.2.2 Remedial Engineer

The RE for this project will be Scott A. Underhill. The RE is a registered professional engineer licensed by the state of New York. The RE will have primary direct responsibility for the implementation of the remedial program at the Site. The RE will certify in the FER that the remedial activities were observed by qualified environmental professionals under their supervision and that the remediation requirements set forth in this RAWP and other relevant provisions of the Environmental Conservation Law (ECL) 27-1419 have been achieved in substantial conformance with the RAWP.

Under the direction of the RE, the work of other contractors and subcontractors involved in aspects of the remedial construction will be documented, including soil excavation, stockpiling, confirmation sample collection, air monitoring, emergency spill response services, import of backfill, and management of waste transport and disposal. The RE will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The RE will review the pre-remedial plans submitted by contractors and subcontractors for substantial conformance with this RAWP and will provide a certification in the FER. The RE will provide the certifications listed below in Section 8.1.

4.2.3 Remedial Action Construction Schedule

The RA construction schedule is discussed below in Section 9 and included in **Appendix J**. The NYSDEC will be promptly notified of proposed changes, delays, and/or deviations to the schedule.

4.2.4 Work Hours

The hours for operation of remedial construction will conform to the City of Newburgh Department of Buildings and Code Compliance construction code requirements or to specific variances issued by that agency. The NYSDEC will be notified by the Volunteer of any variances issued by the City of Newburgh Department of Buildings and Code Compliance. The NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

Site access will be controlled by gated entrances to the property. The Site perimeter will be secured with gated and signed plywood fencing with restricted points of entry in accordance with the City of Newburgh Department of Buildings and Code Compliance and the City of Newburgh Department of Streets and Bridges permits and requirements. The purpose of the fencing is to limit Site access to authorized personnel, protect pedestrians from Site activities, and maintain Site security.

4.2.6 Traffic Control

Site traffic will be controlled through designated points of access along William Street. Access points will be continuously monitored, and if necessary, a flagging system will be used to protect workers, pedestrians, and authorized guests. Traffic will also be required to adhere to applicable local, state, and federal laws.

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4.2.7 Contingency Plan

Contingency plans, as described below, have been developed to effectively deal with the potential unexpected discovery of additional contaminated media or USTs.

4.2.8 UST Discovery

Based on prior investigations, there are currently two USTs present on the Site associated with former automobile service station operations, which will be decommissioned, along with any additional unknown USTs encountered, and removed as part of the RA. All encountered USTs, known or unknown, will also be decommissioned as per the 6 NYCRR Part 613-2.6b and DER-10 Section 5.5. After removal of the tank and residual contents, confirmatory post-excavation soil samples will not be collected where the proposed excavation would extend below the UST. Post-excavation soil samples are not expected where the proposed excavation would extend below the UST, unless visual, olfactory, or instrumental field screening techniques indicate the potential for contamination. If petroleum-impacted soils are encountered, they will be segregated, characterized, and disposed of at an appropriate off-site facility. Closure documentation, including affidavits, bills of lading, and tank disposal receipts, will be included in the FER. If necessary, the NYSDEC PBS registration will be updated.

In the event that additional USTs, outside of the two known tanks, are encountered during ground-intrusive activities, the NYSDEC Case Manager will be promptly notified. Pertinent information will be included in the monthly BCP progress report.

4.2.9 Worker Training and Monitoring

Worker training and monitoring will be conducted in accordance with the Site-specific CHASP.

4.2.10 Agency Approvals

Permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction.

4.2.11 NYSDEC BCP Signage

Signs are optional for BCP sites and will be discussed with the NYSDEC Case Manager. If a sign is to be displayed, it will follow NYSDEC specifications for design and content. The NYSDEC Case Manager will provide details on signage protocol as necessary.

4.2.12 Pre-Construction Meeting with NYSDEC

Prior to the start of remedial construction, a meeting will be held among the NYSDEC, RE, the Volunteer, the Construction Manager, and the Remediation Contractor to discuss project roles, responsibilities, and expectations associated with this RAWP.

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4.2.13 Emergency Contact Information

An emergency contact sheet that states the specific project contacts (with names and phone numbers) for use by NYSDEC and NYSDOH in the case of an emergency is included in the CHASP.

4.2.14 Remedial Action Costs

Detailed summaries of the total estimated costs of the Track 1 and Track 2 remedies are included in **Tables 1** and **2**, respectively.

4.3 SITE PREPARATION

4.3.1 Mobilization

Prior to commencing remedial construction, the Remediation Contractor will mobilize to the Site and prepare for remedial activities. Mobilization and Site preparation activities may include the following:

- Identifying the location of aboveground and underground utilities (e.g., power, gas, water, sewer, and telephone), equipment, and structures as necessary to implement remediation;
- Mobilizing necessary remediation personnel, equipment, and materials to the Site;
- Constructing one or more stabilized construction entrance(s) consisting of non-hazardous material at or near the Site exit, which takes into consideration the Site setting and Site perimeter;
- Constructing an equipment decontamination pad for trucks, equipment, and personnel that come into contact with impacted materials during remediation; and/or,
- Marking out metal hotspots and other hotspot areas (if identified during the RI or preliminary waste characterization sampling event).

4.3.2 Monitoring Well Decommissioning

Monitoring wells be decommissioned in accordance with NYSDEC CP-43 by an experienced driller with oversight from Haley & Aldrich of New York, as necessary. Decommissioning documentation will be provided in the FER.

4.3.3 Erosion and Sedimentation Controls

Since the planned earthwork activities will be below the adjacent sidewalk grade, full-time erosion and sedimentation measures are not anticipated. Best management practices for soil erosion will be implemented to minimize erosion and sedimentation off the Site.

4.3.4 Stabilized Construction Entrance(s)

A temporary stabilized construction entrance will be installed within the eastern portion of the Site, leading out to William Street. The entrance will be covered with NYSDEC-approved gravel or RCA and graded so that runoff water will be directed on the Site. Vehicles exiting construction areas will be cleaned

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using clean water or dry brushing, as needed, to remove Site soil from the tires and undercarriages. The Contractor will protect and maintain the existing sidewalks and roadways at both Site access points.

4.3.5 Utility Marker and Easements Layout

60 William St. LLC and its Contractors are solely responsible for the identification of utilities and/or easements that might be affected by work under this RAWP and implementation of the required, appropriate, or necessary health and safety measures during the performance of the work under this RAWP. 60 Willam St. LLC and its Contractors are solely responsible for the safe execution of the work performed under this RAWP. 60 William St. LLC and its Contractors must obtain the necessary local, state, and/or federal permits or approvals that may be required to perform the work detailed in this RAWP. Approval of this RAWP by the NYSDEC does not constitute satisfaction of these requirements.

4.4 EXCAVATION SUPPORT

Appropriate management of the structural stability of on-site or off-site structures during Site activities is the sole responsibility of 60 William St. LLC and its Contractors. 60 William St. LLC and its Contractors are solely responsible for the safe execution of the work performed under this RAWP. 60 William St. LLC and its Contractors must obtain the necessary local, state, and/or federal permits or approvals that may be required to perform the work detailed in this RAWP. Additionally, 60 William St. LLC and its Contractors are solely responsible for the implementation of the required, appropriate, or necessary health and safety measures during the performance of work conducted under this RAWP.

4.4.1 Equipment and Material Staging

The Contractor will notify the RE and 60 William St. LLC in writing, with receipt confirmed, at least 30 calendar days in advance of pending Site work mobilization. During mobilization, construction equipment will be delivered to the Site, temporary facilities constructed, and temporary utilities installed. The Contractor will place and maintain temporary toilet facilities within the work areas for usage by Site personnel.

4.4.2 Decontamination Area

An outbound-truck inspection station will be set up at or near the Site exit. Before exiting the Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. If observed, soil and debris will be removed. Brooms, shovels, and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary. The Contractor is responsible for collecting soil that is tracked immediately off the Site and returning the soil to the Site.

4.4.3 Site Fencing

The Site will be secured with a gated fence with appropriate signage maintained by the Contractor. The fence will limit access to authorized personnel and protect pedestrians from Site activities.

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4.4.4 Demobilization

After remediation and construction are completed, the Contractor will be responsible for demobilizing equipment and materials not designated for off-site disposal. The RE's representative will document that the Contractor performs follow-up coordination and maintenance for the following activities:

- Removal of sediment and erosion control measures and disposal of materials in accordance with applicable rules and regulations;
- Equipment decontamination;
- Refuse disposal; and,
- Removal of remaining contaminated material or waste.

4.5 REPORTING

Periodic reports and an FER will be required to document the RA. The RE, Scott A. Underhill, will be responsible for certifying the FER and is licensed to practice engineering in the state of New York. Should Mr. Underhill become unable to fulfill this responsibility, another suitably qualified New York State Professional Engineer will take his place. Field reports will be included as appendices to the FER. In addition to the periodic reports and the FER, copies of the relevant Contractor documents will be submitted to the NYSDEC.

4.5.1 Daily Reports

Reports providing a summary of activities for each day of active remedial work will be emailed to the NYSDEC and NYSDOH Case Managers on a daily basis. These reports will include:

- The project number, statement of activities, an update of the progress made, locations of excavation, and other remedial work performed;
- Quantities of material imported and exported from the Site;
- Status of on-site soil/fill stockpiles;
- A summary of citizen complaints including relevant details (i.e., name, phone number, basis of complaint, actions taken);
- A summary of CAMP results noting exceedances; and,
- Photographs of notable Site conditions and activities.

Reports are not intended to be the primary mode of communication for notifying NYSDEC of emergencies, requests for changes to the RAWP, or time-critical information. However, these conditions, if to occur, will be included in the daily reports. Emergency conditions and changes to the RAWP will be directly communicated to the NYSDEC Case Manager.

Daily reports will include a description of daily activities with a Site map that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public. The NYSDEC-assigned project number will appear on all reports.

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4.5.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Case Managers by the 10th of the following month of the reporting period and will include:

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

4.5.3 Other Reporting

Photographs of the remedial activities will be taken and included in the daily reports and FER with provided descriptions of the representative photographs. Progress with respect to green and sustainable remediation metrics will be tracked during the implementation of the RA and reported in the FER, including a comparison to the analyses provided in this RAWP. The climate screening process and results will be documented in the form of a completed checklist and brief letter report. A completed climate screening checklist for the remediation phase is provided in **Appendix K**. An updated checklist will be included in the FER to document the post-remediation status of the Site.

4.5.4 Complaint Management Plan

Complaints from the public regarding nuisance or other Site conditions will be addressed by notifying the NYSDEC of the complaint and investigating the cause/source of the issue. Records will be kept regarding the date and time of the complaint, the nature of the complaint, the type of communication (i.e., telephone, email, letter, etc.), and the name and contact information of the complaint provider. Corrective measures will then be formulated and put into place to address the complaint as soon as possible. The resolution will be documented and submitted to the NYSDEC. A representative of the Volunteer will reply within two weeks of receipt to the complaint provider to ensure resolution.

4.5.5 Deviations from the Remedial Action Work Plan

Deviations from the RAWP will be communicated to and coordinated with the NYSDEC in advance. Notification will be provided to the NYSDEC by telephone and email for conditions requiring immediate action (e.g., conditions judged to be a danger to the surrounding community). Based on the significance of the deviation, an addendum to this RAWP may be necessary and will include:

- Reasons for deviating from the approved RAWP;
- Approval process to be followed for changes/editions to the RAWP; and,
- Effect of the deviations on the overall remedy.

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5. Remedial Action: Material Removal from Site

Remediation will include the following material removal:

- Excavation, stockpiling, off-site transport, and disposal of up to approximately 3,900 cu yd of historic fill/native material that exceed UUSCOs as defined by 6 NYCRR Part 375-6.8. Excavation of material that exceeds UUSCOs is estimated to extend to approximately 14 ft bgs Site-wide.

The soil will be screened for visual, olfactory, and instrumental evidence of environmental impacts.

5.1 SOIL CLEANUP OBJECTIVES

SCOs for the Site will be the Track 1 UUSCO concentrations and NYSDEC PFAS GVs listed in **Table 3**. Soil and materials management will be conducted in accordance with the S/MMP as described below. Soil sample locations and results that exceed the UUSCOs are shown on **Figures 5A** and **5B**. UST closures, as applicable, will, at a minimum, conform to the criteria defined in DER-10.

5.2 REMEDIAL PERFORMANCE EVALUATION (CONFIRMATION SAMPLING)

5.2.1 Soil Sampling Frequency

One endpoint soil sample will be collected for every 900 sq ft of excavation base Site-wide in accordance with NYSDEC DER-10, or at an alternative frequency approved by NYSDEC. Endpoint samples will be collected to confirm that UUSCOs have been achieved. A total of nine confirmation soil samples, plus QA/QC samples, will be collected from the remedial excavation base. The proposed endpoint sample locations are shown on **Figure 9**.

5.2.2 Methodology

Confirmation soil samples will be collected from the base of the remedial excavations in accordance with NYSDEC DER-10 to document remedial performance and will be analyzed for the Part 375 list of VOCs, SVOCs, pesticides, metals, PCBs, PFAS, and 1,4-dioxane. Samples will be collected into laboratory-provided bottle ware. VOCs will be collected into Terra Cores® or Encores®. Samples will be transported under chain-of-custody protocol to an ELAP-certified laboratory. Should additional soil samples be deemed necessary (e.g., additional tank closure, an unknown environmental condition through visual evidence of a remaining source, or over-excavation of a failed confirmation sample), confirmation sampling will be conducted in accordance with NYSDEC DER-10.

5.2.3 Reporting of Results

Analytical laboratories that analyze confirmation soil samples, prepare results, and perform contingency sampling will be NYSDOH ELAP-certified.

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5.2.4 Quality Assurance/Quality Control

QC procedures for confirmation soil sampling are included in the QAPP (refer to **Appendix I**). Confirmation analytical results will be provided in the NYSDEC's electronic data deliverable (EDD) format for EQuIS™. Guidance on the sampling frequency is presented in NYSDEC DER-10 Section 5.4.

The QA/QC procedures required by the NYSDEC Analytical Services Protocol (ASP) and SW-846 methods will be followed, including instrument calibration, standard compound spikes, surrogate compound spikes, and analysis of QC samples. The laboratory will provide sample bottles, which will be pre-cleaned and preserved. Where there are differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP will take precedence.

5.2.5 Data Usability Summary Reports

ASP Category B deliverables will be prepared for remedial performance samples collected during the implementation of this RAWP. Data Usability Summary Reports (DUSRs) will be prepared by a qualified data validator, and the findings will be reported in the FER.

5.2.6 Reporting of Confirmation Sample Data in FER

Chemical labs used for all confirmation sample results and any contingency sampling will be NYSDOH ELAP-certified. Confirmation sampling will be performed in accordance with DER-10 sample frequency requirements. Sidewall samples will not be collected. Bottom samples will be collected at a rate of one for every 900 sq ft from the base of the remedial excavation. The FER will provide a tabular and map summary of all endpoint sample results and exceedances of SCOs, if applicable.

5.3 ESTIMATED MATERIAL REMOVAL QUANTITIES

Excavation on the Site for the proposed remedy is anticipated to generate approximately 3,900 cu yd of soil. A summary of anticipated material types to be excavated and disposed of off the Site is provided below:

1. Excavation, stockpiling, off-site transport, and disposal of up to approximately 3,900 cu yd of historic fill/native material that exceed UUSCOs and as defined by 6 NYCRR Part 375-6.8.

5.4 SOIL/MATERIALS MANAGEMENT PLAN

This section presents the approach to management, disposal, and reuse of soil, fill, and materials excavated from the Site. This plan is based on the current knowledge of Site conditions and will be altered as necessary. Field personnel, under the direction of the RE, will monitor and document the handling and transport of material removed from the Site for disposal as a regulated solid waste. Field personnel, under the direction of the RE, will assist the Remediation Contractor in identifying impacted materials during remediation, determining materials suitable for direct load out versus temporary on-site stockpiling, selecting samples for waste characterization, if necessary, and determining the proper off-site disposal facility. Separate stockpile areas will be constructed as needed for the various materials to be excavated or generated to avoid commingling impacted with non-impacted soil.

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5.4.1 Soil Screening Methods

Visual, olfactory, and instrumental soil screening and assessment will be performed during remediation and development-related ground-intrusive activities into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will include excavation and invasive work performed during the remedy and development, such as excavations for foundations and utility work.

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, RI, and RA will be surveyed by a surveyor licensed to practice in the state of New York. This information will be provided on maps in the FER. Screening will be performed by qualified environmental professionals. Resumes are provided in **Appendix H** for personnel responsible for field screening (i.e., those representing the RE) of invasive work for unknown contaminant sources during remediation and development work.

5.4.2 Stockpile Methods

Stockpiles will be used as necessary to separate and stage excavated material pending loading or characterization sampling. Separate stockpile areas will be constructed to avoid commingling materials. Stockpile areas will meet the following minimum requirements:

- Excavated soil will be placed onto a minimum thickness of 6-mil low-permeability liner of sufficient strength and thickness to prevent puncture during use; separate stockpiles will be created where material types are different. The use of multiple layers of thinner liners is permissible.
- Efforts will be made to place and remove the soil to minimize the potential to jeopardize the integrity of the liner.
- Stockpiles will be covered at the designated times (see below) with minimum 6-mil plastic sheeting or tarps that will be securely anchored to the ground. Stockpiles will be routinely inspected, and broken sheeting covers will be promptly replaced.
- Stockpiles will be covered upon reaching their capacity (approximately 1,000 cu yd) until ready for loading. Stockpiles that have not reached their capacity will be covered at the end of each workday.
- Each stockpile will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from rainwater that has drained off the soils and to mitigate the potential for surface water run-off.
- Stockpiles will be inspected at a minimum of once daily and after every storm event.
- If hazardous material is encountered, stockpiling on the Site will be avoided to the extent possible, in favor of live-loading into trucks permitted to transport hazardous waste.

5.4.3 Materials Excavation and Load Out

The RE or a qualified environmental professional under their supervision will monitor all ground-intrusive work and the excavation and load-out of excavated material.

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Loaded vehicles leaving the Site will be appropriately lined, securely covered, manifested, and placarded in accordance with the appropriate federal, state, and local requirements, including applicable transportation requirements (i.e., New York State Department of Transportation [NYSDOT] requirements). Trucks hauling historical fill material will not be lined unless free liquids are present or the material is grossly impacted. Hazardous wastes derived from the Site will be stored, transported, and disposed of in compliance with applicable local, state, and federal regulations.

An outbound-truck inspection and wash station will be operated on the Site. Trucks will be washed, as necessary, before leaving the Site, and Site ingress and egress points will be cleaned of dirt and other materials to prevent material generated during remediation and development from being tracked off the Site.

The Volunteer and its contractors are solely responsible for the safe performance of all invasive and other work performed under this QAPP and for the structural integrity of excavations and structures that may be affected by excavations (such as building foundations and bridge footings).

The Volunteers and associated parties will ensure that Site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this RAWP. Development-related grading cuts and fills will not be performed without NYSDEC approval and will not interfere with, or otherwise impair or compromise, the performance of remediation required by this RAWP. Mechanical processing of historical fill and contaminated soil on the Site is prohibited unless otherwise approved by NYSDEC.

Primary contaminant sources (including, but not limited to, tanks and hotspots) identified during Site characterization, the RI and associated supplemental sampling, and implementation of the remedy will be surveyed by a surveyor licensed to practice in the state of New York. The excavation will be surveyed, and survey information will be shown on maps to be included with the FER.

5.4.4 Materials Transport Off Site

Transport of materials will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed, and trucks will be properly placarded. Trucks heading to disposal facilities will travel north on William Street and make a left on Broadway to continue to Interstate 87, New York Thruway (or other NYSDEC-approved routes). Truck routes are shown on **Figure 11**.

Loaded trucks will exit in the vicinity of the Site using approved truck routes. These routes are the most appropriate route to and from the Site and take into account the following:

- Limiting transport through residential areas and past sensitive Sites;
- Use of city-mapped truck routes;
- Prohibiting off-site queuing of trucks entering the facility;
- Limiting total distance to major highways;
- Promoting safety in access to highways;

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- Overall safety in transport; and,
- Community input (where necessary).

Trucks will be prohibited from excessive stopping and idling in the neighborhood outside of the Site. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development. Queuing of trucks will be performed on the Site in order to minimize off-site disturbance. Off-site queuing will be prohibited. Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid or hazardous metals-impacted material, truck liners will be used. Trucks will be washed as necessary prior to leaving the Site. Truck wash waters will be collected and disposed of off the Site in an appropriate manner.

5.4.5 Materials Disposal Off Site

Disposal location(s) will be established at a later date and will be reported to the NYSDEC Case Manager. The total quantity of material expected to be disposed of off the Site is up to approximately 3,900 cu yd.

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be disposed of in accordance with all local, state (including 6 NYCRR Part 360), and federal regulations. If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Case Manager. Unregulated off-site management of materials from this Site is prohibited without formal NYSDEC approval.

Excavated material that does not meet UUSCOs, such as non-hazardous historical fill material, contaminated soil, and hazardous lead-impacted material, is prohibited from being taken to a New York State recycling facility (6 NYCRR Part 360.15 Registration Facility).

If hazardous soil is identified, it will be managed in accordance with applicable federal, state, and local regulations. As such, the handling, transport, and disposal of hazardous fill material is subject to USEPA and OSHA HAZWOPER regulations. The presence of hazardous waste requires compliance with both federal and state regulations and the following requirements:

1. Hazardous waste disposal requires obtaining a USEPA RCRA generator ID number;
2. Hazardous waste must be transported to a facility permitted by the RCRA to accept hazardous waste;
3. Hazardous waste must be segregated and cannot be commingled with other Site material; and,
4. Hazardous waste must be transported and disposed of by properly permitted (Part 364) transporters and facilities.

The following documentation will be obtained and reported by the RE for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws.

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- A letter from the RE or 60 William St. LLC to the receiving facility describing the material to be disposed of and requesting formal written acceptance of the material. This letter will state that the material to be disposed of is contaminated material generated at an environmental remediation site in New York State. The letter will provide the project identity and the name and phone number of the RE. The letter will include, as an attachment a, summary of all chemical data for the material being transported (including Site Characterization data).
- A letter from each receiving facility stating it is in receipt of the correspondence (above) and is approved to accept the material.

These documents will be included in the FER.

Non-hazardous historic fill and contaminated soils taken off the Site will be handled, at a minimum, as Municipal Solid Waste per 6 NYCRR Part 360.2. The RE is responsible for assuring the material is properly characterized and determining the appropriate disposal methods based on the characterization results.

Historical fill and contaminated soils from the Site are prohibited from being disposed of at Part 360.15 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but non-hazardous and are being removed from the Site are considered by the NYSDEC's Division of Materials Management (DMM) to be Construction and Demolition (C&D) materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill. They may be sent to a permitted C&D processing facility without permit modifications only upon prior notification of NYSDEC Region 3 DMM. This material is prohibited from being sent or redirected to a Part 360-15 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C&D facility that provides a detailed explanation that the material is derived from a DER remediation site, that the soil material is contaminated, and that it must not be redirected to an off-site Soil Recycling Facility. The letter will provide the project identity and the name and phone number of the RE. The letter will include, as an attachment, a summary of all chemical data for the material being transported.

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

A bill of lading system or equivalent will be used for off-site movement of non-hazardous wastes and contaminated soils. This information will be reported in the FER. Hazardous wastes derived from the Site will be stored, transported, and disposed of in full compliance with applicable local, state, and federal regulations. Appropriately licensed haulers will be used for material removed from this Site and will be in full compliance with all applicable local, state, and federal regulations.

Waste characterization sampling will be performed exclusively for the purposes of off-site soil disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state, and local laws, rules, regulations, and facility-specific permits. Sampling and analytical methods, sampling frequency,

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analytical results, and QA/QC associated with waste characterization activities will be reported in the FER. All data available for soil/material to be disposed of at a given facility must be submitted to the disposal facility with a suitable explanation prior to shipment and receipt. Waste characterization data will be used solely for complying with requirements for off-site disposal. Waste characterization sampling cannot be utilized for:

- Delineating the extent of contamination required for remediation at a Site;
- Replacing or substituting data collected as part of Site Characterization and/or RI;
- Replacing or substituting confirmation or documentation sampling as described in NYSDEC DER-10, Section 5.4; or
- Modifying remedial decisions as formalized in an NYSDEC-approved Decision Document or Record of Decision.

5.4.6 Materials Reuse On Site

Materials reuse is not anticipated at the Site. If on-site material is proposed for reuse, the chemical criteria for on-site reuse of material will be approved by NYSDEC. The RE will ensure that procedures defined for materials reuse in this RAWP are followed and that unacceptable material will not remain on the Site. A "Request to Import/Reuse Fill Material" form will be filed with the NYSDEC Case Manager for review and approval prior to material reuse on the Site. A copy of the form is presented in **Appendix E**.

Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on the Site. Demolition material reuse is not anticipated at the Site. Concrete crushing or processing on the Site is prohibited unless NYSDEC has specifically approved on-site processing and reuse of acceptable demolition material.

Contaminated on-site material, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

5.4.7 Fluids Management

Liquids to be removed from the Site, including dewatering fluids, will be handled, transported, and disposed of in accordance with applicable local, state, and federal regulations. Dewatered fluids will not be recharged back to the land surface or subsurface. Dewatering fluids discharged into the City of Newburgh sewer system would be addressed through approval by the City of Newburgh. Based on the depth to water, dewatering is anticipated to facilitate the excavation of material that exceeds the UUSCOs and the construction of foundation components. No dewatering discharge will commence prior to the City of Newburgh's approval. Discharge of water generated during remedial construction to surface waters (i.e., a local pond, stream, and/or river) is prohibited without an SPDES permit.

Evaluation of the dewatering system design is ongoing, but at a minimum, the system will consist of either sumps or well points transferred to an on-site settling tank or bag filters and an activated carbon treatment system prior to off-site disposal and/or discharge to the City of Newburgh's combined sewer system.

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Dewatering effluent will be sampled once per month during active dewatering of Site groundwater, to the extent possible. Effluent samples will be analyzed for PFAS to document groundwater quality at the Site during remediation.

5.4.8 Demarcation

Should the RA not achieve Track 1 UUSCOs, after the completion of soil removal and any other invasive remedial activities and prior to backfilling, a land survey will be performed by a New York State-licensed surveyor. The survey will define the top elevation of residual contaminated soils. A physical demarcation layer, consisting of orange snow fencing material or equivalent material, will be placed on this surface to provide a visual reference. This demarcation layer will constitute the top of the "Residuals Management Zone," the zone that requires adherence to special conditions for the disturbance of contaminated residual soils defined in the SMP. The survey will measure the grade covered by the demarcation layer before the placement of cover soils, pavement and sub-soils, structures, or other materials. This survey and the demarcation layer placed on this grade surface will constitute the physical and written record of the upper surface of the "Residuals Management Zone" in the SMP. A map showing the survey results will be included in the FER and the SMP.

5.4.9 Backfill from Off-Site Sources

Materials proposed for import onto the Site are anticipated as part of the preferred Track 1 remedy. Documentation of the material will be provided to NYSDEC for approval prior to its use on the Site. Imported soil for backfill must meet the requirements of 6 NYCRR Part 375-6.7(d) and NYSDEC DER-10 Section 5.4(e), Table 5.4(e)10. Material from industrial sites, spill sites, other environmental remediation sites, or other potentially contaminated sites will not be imported to the Site. Solid waste will not be imported onto the Site.

Backfill material will consist of clean fill (as described in the following paragraph) or other acceptable fill material, such as virgin stone from a quarry or RCA. If RCA is imported to the Site, it will be from an NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require chemical testing unless required by the NYSDEC under the terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete, with no more than 10 percent by weight passing through a No. 80 sieve. RCA is not acceptable for and will not be used as cover or drainage material.

Imported soil (i.e., clean fill) will meet the Allowable Constituents Levels of Imported Fill or Soil defined in DER-10 Appendix 5. Non-compliant soils will not be imported to the Site. Clean fill will be segregated at a source/facility that is free of environmental contaminants. Qualified environmental personnel will collect representative samples at a frequency consistent with NYSDEC CP-51. The samples will be analyzed for Part 375 VOCs, SVOCs, pesticides/herbicides, PCBs, cyanide, metals, including trivalent and hexavalent chromium, 1,4-dioxane, and PFAS by an NYSDOH ELAP-certified laboratory. Upon meeting these criteria, the certified-clean fill will be transported to the Site and segregated from impacted material, as necessary, on plastic sheeting until used as backfill. Trucks entering the Site with imported soils will be secured with tight-fitting covers.

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Soils that meet "general fill" requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Nothing in this RAWP should be construed as an approval for this purpose.

A "Request to Import/Reuse Fill Material" form will be filed with the NYSDEC Case Manager for review and approval prior to import to the Site. A copy of the form is presented in **Appendix E**. All materials proposed for import onto the Site will be approved by the RE and will be in compliance with provisions in this RAWP prior to receipt at the Site. Material from industrial sites, spill sites, other environmental remediation sites, or other potentially contaminated sites will not be imported to the Site. Solid waste will not be imported onto the Site.

The FER will include the following certification by the RE: "I certify that all import of soils from off Site, including source evaluation, approval, and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan."

5.4.10 Stormwater Pollution Prevention

A silt fence or hay bales will be installed around the perimeter of the remedial construction area, as required. Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook maintained at the Site and available for inspection by the NYSDEC. Necessary repairs to the silt fence and/or hay bales will be made immediately. Accumulated sediments will be removed as required to keep the barriers and hay bale checks functional. The manufacturer's recommendations will be followed for replacing the silt fence damaged due to weathering. Erosion and sediment control measures identified in the RAWP will be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they will be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to the sewer system.

5.4.11 Contingency Plan

As discussed above in Section 4.2.8, if USTs or other previously unidentified contaminant sources are found during on-site remedial excavation or development-related construction, sampling will be performed on product, if encountered, and surrounding subsurface materials (e.g., soil, stone). Chemical analyses will include Part 375 VOCs, SVOCs, PCBs, pesticides, metals, and PFAS. Analyses will not be otherwise limited without NYSDEC approval. Identification of unknown or unexpected contaminated media identified by screening during ground-intrusive work will be promptly communicated by phone to the NYSDEC Project Manager. These findings will also be detailed in the monthly BCP progress report.

Extreme Storm Preparedness and Response Contingency Plan

Damage from flooding or storm surge can include the dislocation of soil and stockpiled materials, the dislocation of Site structures, construction materials, and equipment, and the dislocation of SOE structures. Damage from wind during an extreme storm event can create unsafe or unstable structures, damage safety structures, and cause downed power lines, creating dangerous Site conditions and loss of power. In the event of emergency conditions caused by an extreme storm event, the Volunteer will undertake the following steps for Site preparedness prior to the event and response after the event.

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Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and generators will be removed from excavated areas, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions of the Site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; and, stormwater management systems will be inspected and fortified, including, as necessary, cleaning and repositioning silt fences and hay bales, cleaning storm sewer filters and traps, and securing and protecting pumps and hosing.

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A Site Inspection Report will be submitted to NYSDEC at the completion of the Site inspection and after the Site security is assessed, as necessary. Site conditions will be compared to the inventory of Site conditions and material performed prior to the storm event, and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures, or equipment, will be reported to public safety authorities via appropriate means such as calling 911.

Petroleum spills will be reported to NYSDEC within two hours of identification and consistent with New York State regulations. Public safety structures, such as construction security fences, will be repaired promptly to eliminate public safety threats. Debris will be collected and removed.

Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil, including unsafe slopes, will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. SOE structures will be inspected and fortified as necessary. Impacted stockpiles will be contained, and damaged stockpile covers will be replaced. Stormwater control systems and structures will be inspected and maintained as necessary.

If soil or fill materials are discharged off the Site to adjacent properties, property owners and NYSDEC will be notified, and a Corrective Measure Plan designed to remove and clean dislocated material will be submitted to NYSDEC and implemented following approval by NYSDEC and granting of Site access by the property owner. Impacted off-site areas may require characterization based on Site conditions, at the discretion of NYSDEC.

If on-site petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYSDEC's spill hotline at 800.457.7362 within statutorily defined timelines. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYSDEC.

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Storm Response Reporting

A Site Inspection Report will be submitted to NYSDEC at the completion of the Site inspection. Site conditions will be compared to the inventory of Site conditions and material performed prior to the storm event, and significant differences will be noted. The Site Inspection Report will be sent to the NYSDEC Case Manager and will include the Site name, address, tax block and lot, the Site's primary and alternate contact name and phone number.

Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the Site was dislocated and whether any of the soil left the Site; estimates of the volume of soil that left the Site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the SOE; presence of on-site or off-site exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYSDEC; description of corrective actions; and schedule for corrective actions.

This report should be completed and submitted to the NYSDEC Case Manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.4.12 Community Air Monitoring Plan

The CAMP will require real-time monitoring for particulates (i.e., dust) and VOCs at the upwind and downwind perimeters when ground-intrusive activities, including soil/waste excavation, soil handling, test pit excavation, and/or trenching, are in progress at the Site during remedial construction activities. The CAMP aims to provide protection for residents in the designated work area and residents of the downwind community from potential airborne releases that directly result from the remedial construction activities conducted at the Site. Adherence to the monitoring action levels specified in the CAMP requires monitoring and, when necessary, corrective actions to abate emissions, and/or shutdown work. The CAMP also helps to confirm that work activities do not spread contamination off the Site through the air. In addition, visual and olfactory observations will be made to keep dust and odors at a minimum around the work areas. VOCs will be monitored using PIDs, and particulates will be monitored using DustTrak equipment. Readings will be recorded every 15 minutes at the Site by field personnel.

The following actions will be taken based on monitoring of particulate concentrations:

- If the downwind inhalable particles with diameters generally less than 10 micrometers and smaller (PM-10) particulate level is 100 µg/m^3 greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 µg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 µg/m^3 above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work will resume if dust suppression measures and other controls are

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successful in reducing the downwind PM-10 particulate concentration to within 150 µg/m^3 of the upwind level and in preventing visible dust migration.

The following actions will be taken based on VOC monitoring:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 ft downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less, but in no case less than 20 ft, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shut down.

When work areas are within 20 ft of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of ECs, such as vapor/dust barriers, temporary negative pressure enclosures, or special ventilation devices, should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Background readings in the occupied spaces must be taken prior to the commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.
- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 µg/m^3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 µg/m^3 or less at the monitoring point.
- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Case Managers within 24 hours of the exceedance and will include the reason(s) for the exceedance and steps taken to address the exceedance. CAMP exceedances will be included in the daily reports. CAMP requirements are included in **Appendix L**.

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5.4.13 Odor, Dust, and Nuisance Control Plan

Dust, odor, and nuisance controls will be accomplished by the Remediation Contractor as described in this section. The FER will include the following certification by the RE: "I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the Remedial Action Work Plan."

5.4.13.1 Odor Control Plan

This Odor Control Plan is capable of controlling emissions of nuisance odors off the Site. Specific odor control methods to be used, if needed, will include the application of foam suppressants or tarps over the odor or VOC source areas. If nuisance odors are identified, work will be halted, and the source of the odors will be identified and corrected. Work will not resume until nuisance odors have been abated. The NYSDEC and NYSDOH will be notified of odor events and other complaints about the project. Implementation of odor controls is the responsibility of the Contractor. Monitoring odor emission, including the halt of work, will be the responsibility of the RE or their designated representative.

Necessary means will be employed to prevent on- and off-site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (a) direct load-out of soils to trucks for off-site disposal; (b) use of chemical odorants in spray or misting systems (e.g., Blanket 510 Wintergreen™); and (c) use of staff to monitor odors in surrounding neighborhoods. Odor control suppressant will be available on the Site during ground-intrusive work.

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

5.4.13.2 Dust Control Plan

A Dust Control Plan that addresses dust management during ground-intrusive on-site work will include, at a minimum: (a) the use of a dedicated water distribution system, an on-site water truck for road wetting, or an alternate water source with suitable supply and pressure for use in dust control; (b) the use of gravel for on-site roads to provide a clean and dust-free road surface; and (c) the limiting of the total area of on-site roads to minimize the area required for water spraying.

5.4.13.3 Other Nuisances

A plan for rodent control will be developed and used by the Remediation Contractor during Site preparation (including clearing and grubbing) and during remedial work. A plan for noise control will be developed and used by the Remediation Contractor during Site preparation and remedial work and will conform, at a minimum, to the New York City Department of Environmental Protection (NYCDEP) noise control standards.

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6. Residual Contamination to Remain on the Site

Residual contaminated soil will not exist beneath the development footprint after the Track 1 remedy is complete; therefore, ECs and ICs will not be required post-excavation. However, if the Track 1 remedy is not achieved, the following contingent Site management elements will be implemented prior to the Certificate of Completion:

- Establishment of an approved SMP to ensure long-term management of ECs and ICs, including the performance of periodic inspections and certification that the controls are performing as they were intended; and,
- Recording of an EE to ensure future owners of the Site maintain the required ECs/ICs.

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7. Engineering Controls

Following completion of the Track 1 UUSCO remedy, neither ECs nor ICs will be required as part of the RA.

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8. Final Engineering Report

An FER will be submitted to NYSDEC following the implementation of the remedy defined in this RAWP. The FER will be prepared in conformance with NYSDEC DER-10 and will include the following:

- Documentation that the remedial work required under this RAWP has been completed and has been performed in substantial conformance with this plan.
- A summary of the locations and characteristics of material removed from the Site, including the surveyed map(s) of each area, as necessary.
- As-built drawings for constructed elements, certifications, manifests, and bills of lading.
- A description of the changes to the remedy from the elements provided in the RAWP and associated design documents, if any.
- A tabular summary of performance evaluation sampling results, material characterization results, and other sampling and chemical analyses performed as part of the remedy.
- Written and photographic documentation of remedial work performed under this remedy.
- A summary of confirmation sampling results to show that the remaining soil left on the Site meets the Track 1 UUSCOs.
- If necessary, a summary of remaining contamination that exceeds the Track 1 UUSCOs and an explanation for why the material was not removed as part of the remedy. A table and a map that shows the remaining contamination in excess of the Track 1 UUSCOs would also be included.
- Documentation of treatment and/or disposal of material removed from the Site, including excavated contaminated soil, historical fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with the disposal of material must also include records and approvals for receipt of the material.
- Documentation of the origin and chemical quality of each material type imported onto the Site.
- Discussion of the green remediation practices/technologies employed throughout the remedial program. A final footprint analysis using a DER-accepted model, and any tracking methods used throughout the construction, including restoration activities.

Before approval of the FER and issuance of a Certificate of Completion, the daily or weekly reports and monthly BCP progress reports must be submitted in digital format (i.e., PDF).

8.1 CERTIFICATIONS

The following certification will appear in front of the Executive Summary of the FER. The certification will be signed by the RE, Scott A. Underhill , who is a Professional Engineer registered in New York State. This certification will be appropriately signed and stamped. The certification will include the following statements:

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I, _____, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 60 William Street Site (NYSDEC BCA Index No. C336098-02-24 Site No. C336098).

I certify that the Site description presented in this FER is identical to the Site descriptions presented in the Environmental Easement, the Site Management Plan, and the Brownfield Cleanup Agreement for the 60 William Street Site and related amendments.

I certify that the Remedial Action Work Plan dated [month day year] and Stipulations [if any] in a letter dated [month day year] and approved by the NYSDEC were implemented and that all requirements in those documents have been substantively complied with.

I certify that the remedial activities were observed by qualified environmental professionals under my supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved.

I certify that all use restrictions, Institutional Controls, Engineering Controls, and all operation and maintenance requirements applicable to the Site are contained in an Environmental Easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded. A Site Management Plan has been submitted by the [Applicant / Volunteer / Participant] for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the NYSDEC.

I certify that the export of all contaminated soil, fill, water or other material from the property was performed in accordance with the Remedial Action Work Plan, and were taken to facilities licensed to accept this material in full compliance with all Federal, State and local laws.

I certify that all import of soils from off-site, including source approval and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan.

I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology and soil screening methodology defined in the Remedial Action Work Plan.

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

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

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9. Schedule

Mobilization for implementation of the RAWP is expected to take place in about one to two weeks from receipt of the Decision Document. Once mobilization is complete, remediation of the Site will proceed. The remedy, which will be implemented in accordance with this RAWP, is anticipated to take about 12 to 16 weeks to complete. After completion of the remedy, an FER will be drafted and subsequently submitted to the NYSDEC for review and approval. A proposed project schedule is included in **Appendix J**.

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10. References

1. ASTM Phase I Environmental Site Assessment, 56-60 William Street, Newburgh, New York, Prepared by Haley & Aldrich of New York, for 60 William St. LLC, prepared December 30, 2022.

2. Brownfield Cleanup Program Application. 60 William Street Development, Newburgh, New York. Prepared by 60 William St. LLC & Haley & Aldrich of New York, prepared for the New York State Department of Environmental Conservation. Submitted December 15, 2023.

3. Draft Remedial Investigation Report, Prepared by 60 William St. LLC & Haley & Aldrich of New York, prepared for the New York State Department of Environmental Conservation. Submitted September 2025.

4. Limited Phase II Environmental Site Investigation (ESI) Report, 56-60 William Street, prepared by Haley & Aldrich of New York for 60 William St. LLC prepared April 10, 2023.

5. New York State Department of Environmental Conservation, Part 375 of Title 6 of the New York Compilation of Codes, Rules, and Regulations, Effective December 14, 2006.

6. New York State Department of Environmental Conservation, Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS), April 2023.

7. New York State Department of Health, Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006.

8. New York State Division of Water Technical and Operational Guidance Series (TOGS) (1.1.1), dated June 1998.

9. Phase I Environmental Site Assessment, 60 William Street, Newburgh, New York, Prepared by Smit Environmental Services for Gold River Financial Group, Inc., prepared July 12, 2022.

10. Preliminary Geotechnical Investigation, 56-60 William Street, prepared by Haley & Aldrich of New York for 60 William St. LLC, prepared March 23, 2023.

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

12. Program Policy DER-31 “Green Remediation,” New York State Department of Environmental Conservation, August 2010 revised January 2011.

13. Remedial Investigation Work Plan, Prepared by 60 William St. LLC & Haley & Aldrich of New York, prepared for the New York State Department of Environmental Conservation. Submitted July 30, 2024.

14. Site Remediation Proposal, 60 William Street, Newburgh, New York, Prepared by Smit Environmental Services for Gold River Financial Group, Inc. prepared May 31, 2022.

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15. United States Environmental Protection Agency, Low Flow Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, EQASOP-GW 001, September 19, 2017.

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TABLES

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TABLE 1
ALTERNATIVE I REMEDIAL COST ESTIMATE
60 WILLIAM STREET REDEVELOPMENT SITE
58-60 WILLIAM STREET, NEWBURGH, NEW YORK
BCP SITE NO. C336098

Consulting/Engineering Costs					
Task	**Description**	**Unit**	**Unit Cost**	**Quantity**	**Total Cost**
1	Waste Characterization	Lump Sum	$ 100,000	1	$ 100,000
2	Program Management (NYSDEC/NYSDOH Correspondence, Daily/Weekly/Monthly Reporting, etc.)	Month	$ 5,000	12	$ 60,000
3	Remedial Oversight	Month	$ 34,000	4	$ 136,000
4	Confirmation Sampling	Sample	$ 2,000	20	$ 40,000
5	Dewatering Sampling	Sample	$ 500	10	$ 5,000
6	Soil Vapor Intrusion Evaluation	Lump Sum	$ 10,000	1	$ 10,000
7	Closure Reporting and COC Coordination	Allowance	$ 75,000	1	$ 75,000
				Consulting/Engineering Subtotal	$ 426,000
Contractor Costs					
Task	**Description**	**Unit**	**Unit Cost**	**Quantity**	**Total Cost**
1	Mobilization/Demobilization, Site Maintenance, Security, etc.	Allowance	$ 350,000	1	$ 350,000
2	Waste Characterization Drilling	Lump Sum	$ 5,000	5	$ 25,000
3	Truck Wash Station	Month	$ 25,000	4	$ 100,000
4	Management/Handling Contaminated Material	Cubic Yard	$ 40	3,900	$ 156,000
5	Support of Excavation	Linear Foot	$ 1,500	350	$ 525,000
6	Clean UST system, dispose of residuals (assume 3,000 gallons wastewater) PBS Closure Paperwork	Lump Sum	$ 25,000	2	$ 50,000
7	Transport and Disposal of Non-Hazardous Impacted Fill and Soil Material	Ton	$ 50	3,900	$ 195,000
8	Transport and Disposal of Non-Hazardous Petroleum Impacted Fill Material	Ton	$ 55	0	$ -
9	Transport and Disposal of Hazardous Material (F Listed and/or Lead)	Ton	$ 275	0	$ -
10	Backfill Procurement, Placement and Compaction	Cubic Yard	$ 28	0	$ -
11	Site-Wide Dewatering	Lump Sum	$ 250,000	1	$ 250,000
12	Underground Storage Tank (Contingency Budget)	Allowance	$ 75,000	1	$ 75,000
				Contractor Subtotal	$ 1,726,000
				Total	$ 2,152,000
				15% Contingency	$ 322,800
				Estimated Total (Rounded to the nearest $1,000)	$ 2,475,000

Notes:

1. Assuming a Track 1 Remedy requiring excavation to approximately 14 ft bgs to remove soil exceeding Track 1 UUSCOs

2. Assumes density of 1.5 tons per cubic yard of fill/soil.

3. Assumes residual soil will meet Track 1 Unrestricted Use Soil Cleanup Objectives.

4. Assumes dewatering will be required.

5. SOE Costs are based on a conventional soldier pile and timber lagging system with lateral bracing provided by either steel rakers or tiebacks.

6. Costs are estimated and subject to change. Costs do not include new building construction.

7. RAWP implementation is assumed to take 3 to 4 months.

8. This cost estimate was prepared to compare various remedial alternatives as was based on available information at the time of preparation. The estimate may be +/- 30-50% of the actual cost. This estimate was not prepared for financial or legal consulting purposes and was not intended for use regarding compliance with financial reporting requirements or liability services.

9. This estimate does not include legal fees associated with attorneys involved in the project, insurance fees or outside consulting fees.

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TABLE 2
ALTERNATIVE II REMEDIAL COST ESTIMATE
60 WILLIAM STREET REDEVELOPMENT SITE
58-60 WILLIAM STREET, NEWBURGH, NEW YORK
BCP SITE NO. C336098

Consulting/Engineering Costs					
Task	**Description**	**Unit**	**Unit Cost**	**Quantity**	**Total Cost**
1	Waste Characterization	Lump Sum	$ 100,000	1	$ 100,000
2	Program Management (NYSDEC/NYSDOH Correspondence, Daily/Weekly/Monthly Reporting, etc.)	Month	$ 5,000	5	$ 25,000
3	Remedial Oversight	Month	$ 34,000	2	$ 68,000
4	Endpoint Sampling	Sample	$ 2,000	55	$ 110,000
5	Soil Vapor Intrusion Evaluation	Lump Sum	$ 10,000	1	$ 10,000
6	Closure Reporting and COC Coordination	Allowance	$ 75,000	1	$ 75,000
7	Annual Site Management (engineering control monitoring, etc.)	Year	$ 25,000	2	$ 50,000
				Consulting/Engineering Subtotal	$ 438,000
Contractor Costs					
Task	**Description**	**Unit**	**Unit Cost**	**Quantity**	**Total Cost**
1	Mobilization/Demobilization, Site Maintenance, Security, etc.	Allowance	$ 350,000	1	$ 350,000
2	Waste Characterization Drilling	Lump Sum	$ 5,000	5	$ 25,000
3	Truck Wash Station	Month	$ 25,000	2	$ 50,000
4	Management/Handling Contaminated Material	Cubic Yard	$ 40	1,300	$ 52,000
5	Support of Excavation	Linear Foot	$ 1,500	0	$ -
5	Clean UST system, dispose of residuals (assume 3,000 gallons wastewater) PBS Closure Paperwork	Lump Sum	$ 25,000	2	$ 50,000
6	Transport and Disposal of Non-Hazardous Impacted Fill and Soil Material	Ton	$ 50	1,300	$ 65,000
7	Transport and Disposal of Non-Hazardous Petroleum Impacted Fill Material	Ton	$ 55	0	$ -
8	Transport and Disposal of Hazardous Material (F Listed and/or Lead)	Ton	$ 275	0	$ -
9	Backfill Procurement, Placement and Compaction	Cubic Yard	$ 28	0	$ -
10	Localized Dewatering System	Allowance	$ 100,000	1	$ 100,000
11	Underground Storage Tank (Contingency Budget)	Allowance	$ 75,000	1	$ 75,000
12	Composite Cover System (inc. vapor barrier/waterproofing membrane)	Allowance	$ 350,000	1	$ 350,000
				Contractor Subtotal	$ 1,117,000
				Total	$ 1,555,000
				15% Contingency	$ 233,250
				Estimated Total (Rounded to the nearest $1,000)	$ 1,788,000

Notes:

1. Assuming a Track 2 Remedy with a 4 ft excavation and a 5 ft x 5 ft hotspot to 8 ft bgs, a 15 ft x 15 ft hotspot to 15 ft bgs, and a 10 ft x 10 ft hotspot to 15 ft bgs to remove soil exceeding Track 2 RRSCOs; and a 12 ft x 20 ft hotspot to 10 ft bgs for UST removal.

2. Assumes density of 1.5 tons per cubic yard of fill/soil.

3. Assumes residual soil will meet Track 2 Restricted Residential Soil Cleanup Objectives

4. SOE Costs are based on a conventional soldier pile and timber lagging system with lateral bracing provided by either steel rakers or tiebacks.

5. Costs are estimated and subject to change. Costs do not include new building construction.

6. RAWP implementation is assumed to take 1 to 2 months.

7. This cost estimate was prepared to compare various remedial alternatives as was based on available information at the time of preparation. The estimate may be +/- 30-50% of the actual cost This estimate was not prepared for financial or legal consulting purposes and was not intended for use regarding compliance with financial reporting requirements or liability services.

8. This estimate does not include legal fees associated with attorneys involved in the project, insurance fees or outside consulting fees.

DRAFT

TABLE 3
TRACK 1 SOIL CLEANUP OBJECTIVES
60 WILLIAM STREET REDEVELOPMENT SITE
58-60 WILLIAM STREET, NEWBURGH, NEW YORK
NYSDEC BCP SITE NO. C336098

PCBs/Pesticides (mg/kg)	
Delta-BHC	0.04
Lindane	0.1
Alpha-BHC	0.02
Beta-BHC	0.036
Heptachlor	0.042
Aldrin	0.005
Endrin	0.014
Dieldrin	0.005
4,4'-DDE	0.0033
4,4'-DDD	0.0033
4,4'-DDT	0.0033
Endosulfan I	2.4
Endosulfan II	2.4
Endosulfan sulfate	2.4
cis-Chlordane	0.094
PCBs, Total	0.1

Volatile Organic Compounds (mg/kg)	
Methylene chloride	0.05
1,1-Dichloroethane	0.27
Chloroform	0.37
Carbon tetrachloride	0.76
Tetrachloroethene	1.3
Chlorobenzene	1.1
1,2-Dichloroethane	0.02
1,1,1-Trichloroethane	0.68
Benzene	0.06
Toluene	0.7
Ethylbenzene	1
Vinyl chloride	0.02
1,1-Dichloroethene	0.33
trans-1,2-Dichloroethene	0.19
Trichloroethene	0.47
1,2-Dichlorobenzene	1.1
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
Methyl tert butyl ether	0.93
Xylenes, Total	0.26
cis-1,2-Dichloroethene	0.25
Acetone	0.05
2-Butanone	0.12
n-Butylbenzene	12
sec-Butylbenzene	11
tert-Butylbenzene	5.9
Naphthalene	12
n-Propylbenzene	3.9
1,3,5-Trimethylbenzene	8.4
1,2,4-Trimethylbenzene	3.6
1,4-Dioxane	0.1

Semivolatile Organic Compounds (mg/kg)	
Acenaphthene	20
Hexachlorobenzene	0.33
1,2-Dichlorobenzene	1.1
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
Fluoranthene	100
Naphthalene	12
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(k)fluoranthene	0.8
Chrysene	1
Acenaphthylene	100
Anthracene	100
Benzo(ghi)perylene	100
Fluorene	30
Phenanthrene	100
Dibenzo(a,h)anthracene	0.33
Indeno(1,2,3-cd)pyrene	0.5
Pyrene	100
Dibenzofuran	7
Pentachlorophenol	0.8
Phenol	0.33
2-Methylphenol	0.33
3-Methylphenol/4-Methylph	0.33
1,4-Dioxane	0.1

Metals (mg/kg)	
Arsenic, Total	13
Barium, Total	350
Beryllium, Total	7.2
Cadmium, Total	2.5
Copper, Total	50
Lead, Total	63
Manganese, Total	1600
Mercury, Total	0.18
Nickel, Total	30
Selenium, Total	3.9
Silver, Total	2
Zinc, Total	109

PFAS (µg/kg)	
PFOA	0.66
PFOS	0.88

Notes:
1. Criteria are 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives or NYSDEC April 2023 PFAS Guidance Values.
2. mg/kg: milligram per kilogram (parts per million [ppm])
3. µg/kg: microgram per kilogram (parts per billion [ppb])

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FIGURES

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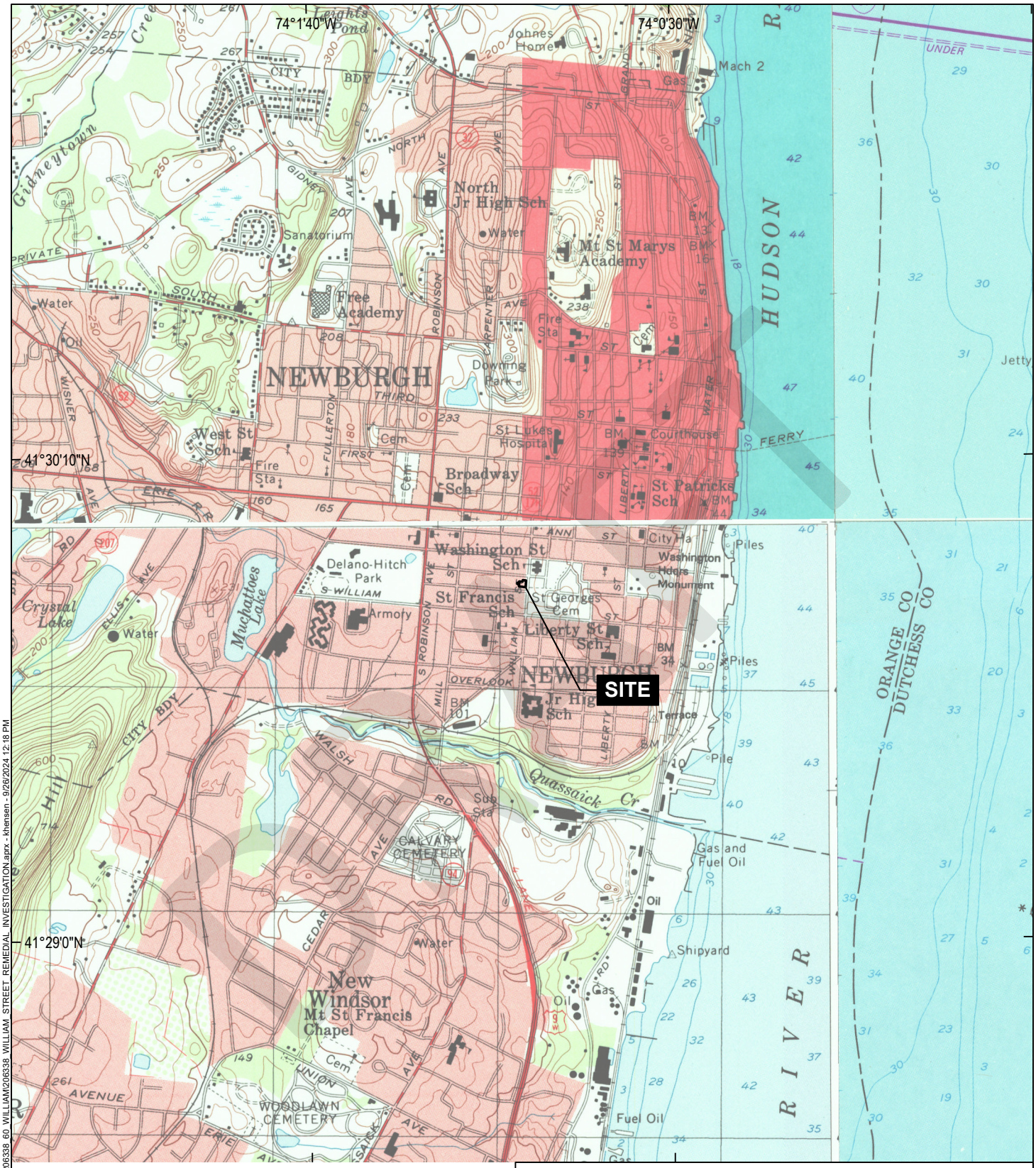

NY

MAP SOURCE: ESRI
SITE COORDINATES: 41°29'52"N, 74°0'59"W

HALEY ALDRICH

56-60 WILLIAM STREET
NEWBURGH, NEW YORK

PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT
SEPTEMBER 2025

FIGURE 1

GIS: \\haleyaldrich\share\CF\Projects\0206338\GIS\206338_60_WILLIAM206338_WILLIAM_STREET_REMEDIAL_INVESTIGATION.aprx - khensen - 9/26/2024 12:18 PM

LEGEND

- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE:: ORANGE COUNTY GIS
3. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024

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SCALE IN FEET

HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

SITE PLAN

SEPTEMBER 2025

FIGURE 2

PRELIMINARY

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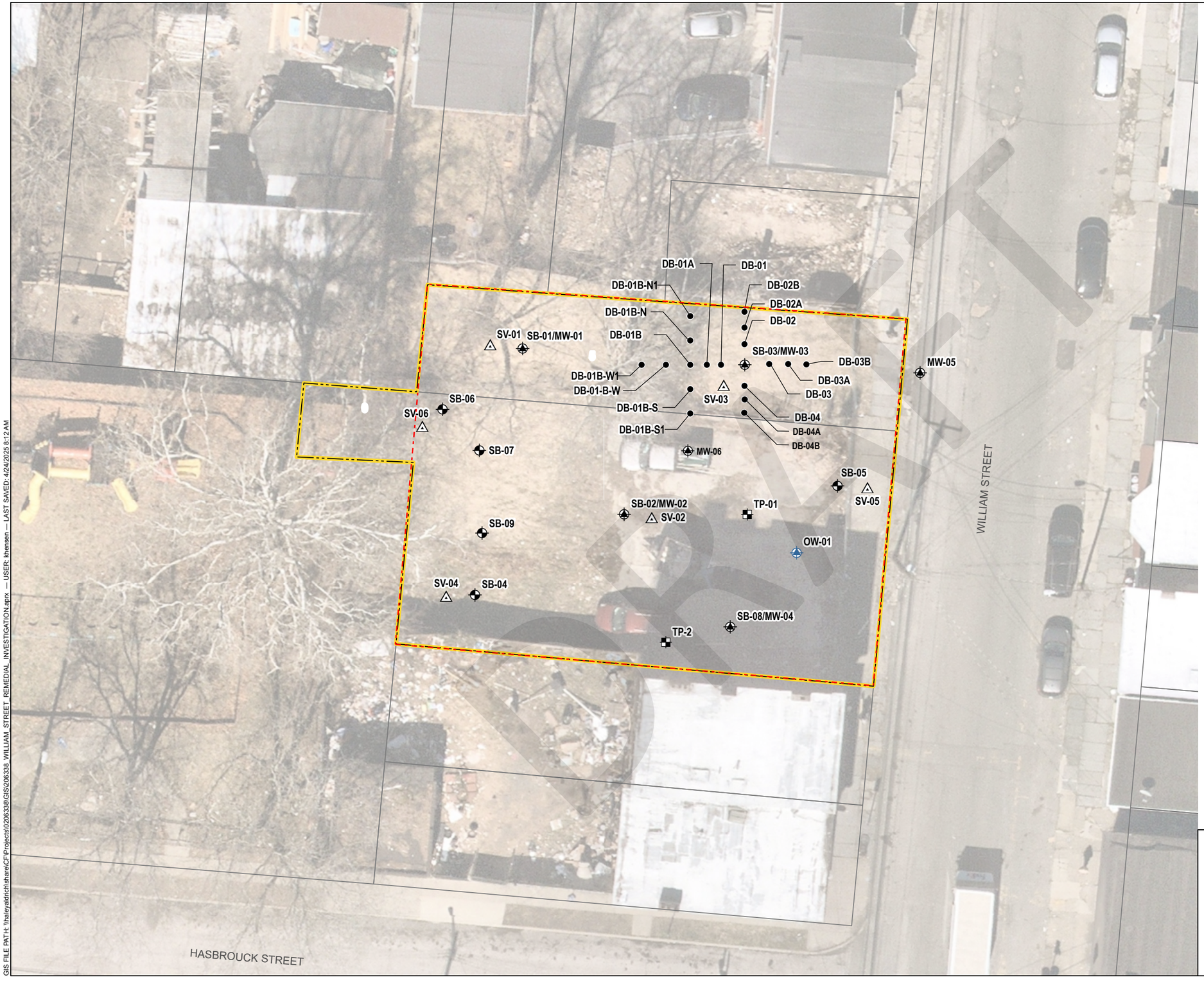

LEGEND

- 5-FT LEAD DELINEATION STEP-OUT
- SOIL VAPOR POINT
- SOIL BORING
- GROUNDWATER MONITORING WELL
- EXISTING GROUNDWATER MONITORING WELL
- SUSPECTED UNDERGROUND STORAGE TANK (UST) TEST PIT
- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE:: ORANGE COUNTY GIS
3. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024

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SCALE IN FEET

HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

SAMPLE LOCATION MAP

SEPTEMBER 2025

FIGURE 3

GIS FILE PATH: \\haleyaldrich\share\CF\Projects\0206338\GIS\206338_WILLIAM_STREET_REMEDIAL_INVESTIGATION.aprx — USER: khensen — LAST SAVED: 4/24/2025 8:12 AM

LEGEND

- GROUNDWATER MONITORING WELL
- EXISTING GROUNDWATER MONITORING WELL
- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- GROUNDWATER CONTOUR
- INFERRED GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION
- 131.97 GROUNDWATER ELEVATION
- SITE BOUNDARY POST BCA AMENDMENT

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: ORANGE COUNTY GIS
3. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024
4. MONITORING WELLS WERE SURVEYED BY DPK CONSULTING LLC. ON OCTOBER 8, 2024 AND JULY 23, 2025.
5. ELEVATION REFERS TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

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SCALE IN FEET

HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

GROUNDWATER CONTOUR MAP

SEPTEMBER 2025

FIGURE 4

GIS FILE PATH: \\haleyaldrich\share\CF\Projects\0206338\GIS\0206338_WILLIAM_STREET_REMEDIAL_INVESTIGATION.aprx — USER: khensen — LAST SAVED: 10/2/2024 11:36 AM

SB-06	08/29/2024 460-310411-13 460-310412-13 SB-06_0-2" 0 - 0.167 (ft)	08/29/2024 460-310411-14 460-310412-14 SB-06_2"-2' 0.167 - 2 (ft)	08/29/2024 460-310412-15 SB-06_6'-8' 6 - 8 (ft)	08/29/2024 460-310412-16 SB-06_8'-10' 8 - 10 (ft)
Total Metals (mg/kg)				
Copper	45.7	85		46.3
Lead	364	*684*	366	335
Mercury	*0.98*	*2*	*0.91*	*2.1*
Zinc	193	338	216	161
PFAS (ug/kg)				
Perfluorooctanesulfonic acid (PFOS)	*1.6*	*3.6*	*1.8*	0.81
Perfluorooctanoic acid (PFOA)	0.36	*1.3*	0.53	0.31

DB-01B	08/29/2024 460-310412-23 DB-01B_0'-2' 0 - 2 (ft)
Total Metals (mg/kg)	
Lead	*1980*

DB-01	08/29/2024 460-310412-17 DB-01_0'-2' 0 - 2 (ft)
Total Metals (mg/kg)	
Lead	*570*

SB-03	08/28/2024 460-310345-16 460-310346-16 SB-03_0-2" 0 - 0.167 (ft)	08/28/2024 460-310345-17 460-310346-17 SB-03_2"-2' 0.167 - 2 (ft)	08/28/2024 460-310345-18 460-310346-18 SB-03_6-8' 6 - 8 (ft)	08/28/2024 460-310345-19 460-310346-19 SB-03_8-10' 8 - 10 (ft)	08/28/2024 460-310345-20 SB-03_10-12' 10 - 12 (ft)
Total Metals (mg/kg)					
Lead	*812*	68.9	11.2	13.1	7.8
Mercury	*1.5*	0.36	0.041	0.041	0.01 J
Zinc	198	75.7	55.7	65.7	49.5
PFAS (ug/kg)					
Perfluorooctanesulfonic acid (PFOS)	1	*2.5 I*	0.97 I	ND (0.18)	0.35
Perfluorooctanoic acid (PFOA)	0.34	*0.9*	0.66	ND (0.18)	ND (0.21)

SB-01	08/28/2024 460-310345-6 460-310346-6 SB-01_0-2" 0 - 0.167 (ft)	08/28/2024 460-310345-7 460-310346-7 SB-01_2"-2' 0.167 - 2 (ft)	08/28/2024 460-310345-8 460-310346-8 SB-01_6-8' 6 - 8 (ft)	08/28/2024 460-310345-9 460-310346-9 SB-01_8-10' 8 - 10 (ft)	08/28/2024 460-310345-12 460-310346-10 SB-01_10-12' 10 - 12 (ft)
Total Metals (mg/kg)					
Arsenic	*48.9*	*16.1*	6.9	4.7	7.4
Lead	*577*	176	34.3	8.6	14.3
Mercury	*0.76*	*0.82*	0.058	0.021	ND (0.017)
Zinc	326	123	76.7	52.1	72
PFAS (ug/kg)					
Perfluorooctanesulfonic acid (PFOS)	*1.4*	0.5	0.27	ND (0.2)	ND (0.21)
Perfluorooctanoic acid (PFOA)	*0.95*	0.3	ND (0.19)	ND (0.2)	ND (0.21)

DB-04	08/29/2024 460-310412-51 DB-04_0'-2' 0 - 2 (ft)
Total Metals (mg/kg)	
Lead	106

DB-04A	08/29/2024 460-310412-54 DB-04A_0'-2' 0 - 2 (ft)
Total Metals (mg/kg)	
Lead	64.9

SB-05	08/29/2024 460-310412-9 SB-05_0-2in 0 - 0.167 (ft)	08/29/2024 460-310412-10 SB-05_2in-2' 0.167 - 2 (ft)	08/29/2024 460-310412-11 SB-05_6'-8' 6 - 8 (ft)	08/29/2024 460-310412-12 SB-05_8'-10' 8 - 10 (ft)
Total Metals (mg/kg)				
Lead	141	44.2	12.8	10.9
Mercury	*0.85*	0.1	0.027	0.013 J

DB-04B	08/29/2024 460-310412-57 DB-04B_0'-2' 0 - 2 (ft)
Total Metals (mg/kg)	
Lead	*887*

SB-02	08/28/2024 460-310345-10 460-310346-11 SB-02_0-2in 0 - 0.167 (ft)	08/28/2024 460-310345-11 460-310346-12 SB-02_2in-2' 0.167 - 2 (ft)	08/28/2024 460-310345-13 460-310346-13 SB-02_5-7' 5 - 7 (ft)	08/28/2024 460-310345-14 460-310346-14 SB-02_9-11' 9 - 11 (ft)	08/28/2024 460-310345-15 460-310346-15 SB-02_11-13' 11 - 13 (ft)
Total Metals (mg/kg)					
Lead	93.4	215	158	*693*	13
Mercury	0.095	0.47	*0.8*	0.47	0.021
Zinc	82.8	164	137	282	66.6
PFAS (ug/kg)					
Perfluorooctanesulfonic acid (PFOS)	1	*5*	*1.2*	*7.3*	0.4
Perfluorooctanoic acid (PFOA)	0.21	*0.88*	ND (0.18)	*1.1*	ND (0.17)

SB-04	08/29/2024 460-310412-4 SB-04_0-2" 0 - 0.167 (ft)	08/29/2024 460-310412-5 SB-04_2"-2' 0.167 - 2 (ft)	08/29/2024 460-310412-6 SB-04_6'-8' 6 - 8 (ft)	08/29/2024 460-310412-7 SB-04_8'-10' 8 - 10 (ft)	08/29/2024 460-310412-8 SB-04_10'-12' 10 - 12 (ft)
Total Metals (mg/kg)					
Lead	26.7	181	78.7	65.4	14
Mercury	0.13	0.71	0.53	0.23	0.023
Zinc	65.8	120	84.3	88	73.7

SB-07	08/29/2024 460-310411-1 460-310412-1 SB-07_0-2" 0 - 0.167 (ft)	08/29/2024 460-310411-2 460-310412-2 SB-07_2"-2' 0.167 - 2 (ft)	08/30/2024 460-310486-1 460-310553-1 SB-07-6-8' 6 - 8 (ft)	08/30/2024 460-310486-2 460-310553-2 DUP-02-20240830 6 - 8 (ft)	08/29/2024 460-310412-3 SB-07_8'-10' 8 - 10 (ft)
Total Metals (mg/kg)					
Arsenic	10.2	*31.4*	12.5	14.7	6.1
Copper	86.5	192	85.4	72.6	29
Lead	*1130*	*3540*	*720*	*596*	15.1
Mercury	*1.4*	*4.2*	*1.4*	*1.5*	0.06
Zinc	397	619	385	334	63
Semi-Volatile Organic Compounds (mg/kg)					
Benzo(a)anthracene	*12*	*22*	*2.1*	*5.3*	0.029 J
Benzo(a)pyrene					0.027 J
Benzo(b)fluoranthene	*16*	*25*	*3*	*7.1*	0.036
Benzo(k)fluoranthene	*4.3*	*6.1*	1.3	*2.2*	0.015 J
Chrysene	*12*	*20*	*2.4*	*5*	0.024 J
Dibenz(a,h)anthracene					ND (0.035)
Indeno(1,2,3-cd)pyrene		*13*			0.019 J
PFAS (ug/kg)					
Perfluorooctanesulfonic acid (PFOS)	*1.5*	0.65	*1.66*	*1.57*	0.21
Perfluorooctanoic acid (PFOA)	0.41	0.4	*0.89*	0.7 B	ND (0.18)

DB-02B
DB-02A
DB-02
EP-2
SV-01
EP-3
DB-01A
SB-01/MW-01
DB-01B
SB-03/MW-03
DB-03B
DB-03A
SV-03
DB-04
DB-01
DB-04B
DB-04A
EP-4
EP-5
SB-06
SV-06
EP-1
SB-07
SB-05
SV-05
EP-6
SB-02/MW-02
SV-02
TP-01
EP-8
OW-01
SV-04
SB-04
EP-9
EP-7
SB-08/MW-04
TP-2
WILLIAM STREET
HASBROUCK STREET

LEGEND

- 5-FT LEAD DELINEATION STEP-OUT
- SOIL VAPOR POINT
- SOIL BORING
- GROUNDWATER MONITORING WELL
- SUSPECTED UNDERGROUND STORAGE TANK (UST) TEST PIT
- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES (SCOS), RESTRICTED-RESIDENTIAL SCOS, AND 40 CFR 261 SUBPART C AND TABLE 1 OF 40 CFR 261.24.

3. DEFINITIONS:
NY-RRSCO = NYSDEC PART 375 RESTRICTED-RESIDENTIAL USE SCO
NY-UUSCO = NYSDEC PART 375 UNRESTRICTED USE SCO
NY-PGWSCO = NYDEC PART 375 PROTECTION OF GROUNDWATER SCO

4. EXCEEDANCES OF THE NY-UUSCOS SCOS ARE SHADED GRAY

5. EXCEEDANCES OF THE NY-RRSCOS ARE SHADED YELLOW

6. EXCEEDANCES OF THE NY-PGWSCOS ARE SHOWN IN BLACK TEXT AND IN *ITALICS*

7. ASSESSOR PARCEL DATA SOURCE: ORANGE COUNTY GIS

8. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024

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SCALE IN FEET

HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

SOIL EXCEEDANCE MAP

SEPTEMBER 2025

FIGURE 5A

GIS FILE PATH: \\haleyaldrich.com\share\CFI\Projects\0206338\GIS\206338_WILLIAM_STREET_REMEDIAL_INVESTIGATION.aprx — USER: khensen — LAST SAVED: 10/30/2024 11:43 AM

SB-06	07/16/2025 460-330846-2 460-330847-1 SB-06_13-15 13 - 15 (ft)	07/16/2025 460-330846-4 460-330847-3 DUP-01_20250716 13 - 15 (ft)	07/16/2025 460-330846-3 460-330847-2 SB-06_15-17 15 - 17 (ft)
PFAS (mg/kg)			
Perfluorooctanesulfonic acid (PFOS)	0.00033	0.00034	0.000071 J
US EPA PFAS (PFOS + PFOA)	0.00033	0.00034	ND (0.00024)

SB-03	07/16/2025 460-330846-5 460-330847-4 SB-03_13-15 13-15 (ft)	07/16/2025 460-330846-6 460-330847-5 SB-03_15-17 15 - 17 (ft)
PFAS (mg/kg)		
Perfluorooctanesulfonic acid (PFOS)	ND (0.0002)	0.00025 J
US EPA PFAS (PFOS + PFOA)	ND (0.0002)	0.00025 J

SB-09	07/15/2025 460-330742-2 460-330744-1 SB-09_13-15 13 - 15 (ft)	07/15/2025 460-330742-3 460-330744-2 SB-09_15-17 15 - 17 (ft)
PFAS (mg/kg)		
Perfluorooctanesulfonic acid (PFOS)	0.00031	ND (0.00026)
US EPA PFAS (PFOS + PFOA)	0.00031	ND (0.00026)

DB-01A
DB-01
DB-01B-N1
DB-02B
DB-02A
DB-01B-N
DB-02
SV-01
SB-01/MW-01
DB-01B
SB-03/MW-03
DB-03B
MW-05
DB-01B-W1
DB-03A
DB-01B-W
SV-03
DB-03
SB-06
SV-06
DB-01B-S
DB-04
DB-01B-S1
SB-07
SB-05
SV-05
SB-02/MW-02
SV-02
TP-01
SB-09
OW-01
SV-04
SB-04
SB-08/MW-04
TP-2
WILLIAM STREET
HASBROUCK STREET

LEGEND

- 5-FT LEAD DELINEATION STEP-OUT
- SOIL VAPOR POINT
- SOIL BORING
- GROUNDWATER MONITORING WELL
- EXISTING GROUNDWATER MONITORING WELL
- SUSPECTED UNDERGROUND STORAGE TANK (UST) TEST PIT
- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES (SCOS), RESTRICTED-RESIDENTIAL SCOS, AND 40 CFR 261 SUBPART C AND TABLE 1 OF 40 CFR 261.24.
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NY-RRSCO = NYSDEC PART 375 RESTRICTED-RESIDENTIAL USE SCO
NY-UUSCO = NYSDEC PART 375 UNRESTRICTED USE SCO
NY-PGWSCO = NYDEC PART 375 PROTECTION OF GROUNDWATER SCO
4. EXCEEDANCES OF THE NY-UUSCOS ARE SHADED GRAY
5. EXCEEDANCES OF THE NY-RRSCOS ARE SHADED YELLOW
6. EXCEEDANCES OF THE NY-PGWSCOS ARE SHOWN IN BLACK TEXT AND IN ITALICS
7. ASSESSOR PARCEL DATA SOURCE: ORANGE COUNTY GIS
8. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024

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SCALE IN FEET

HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

SUPPLEMENTAL SOIL RESULTS MAP

SEPTEMBER 2025

FIGURE 5B

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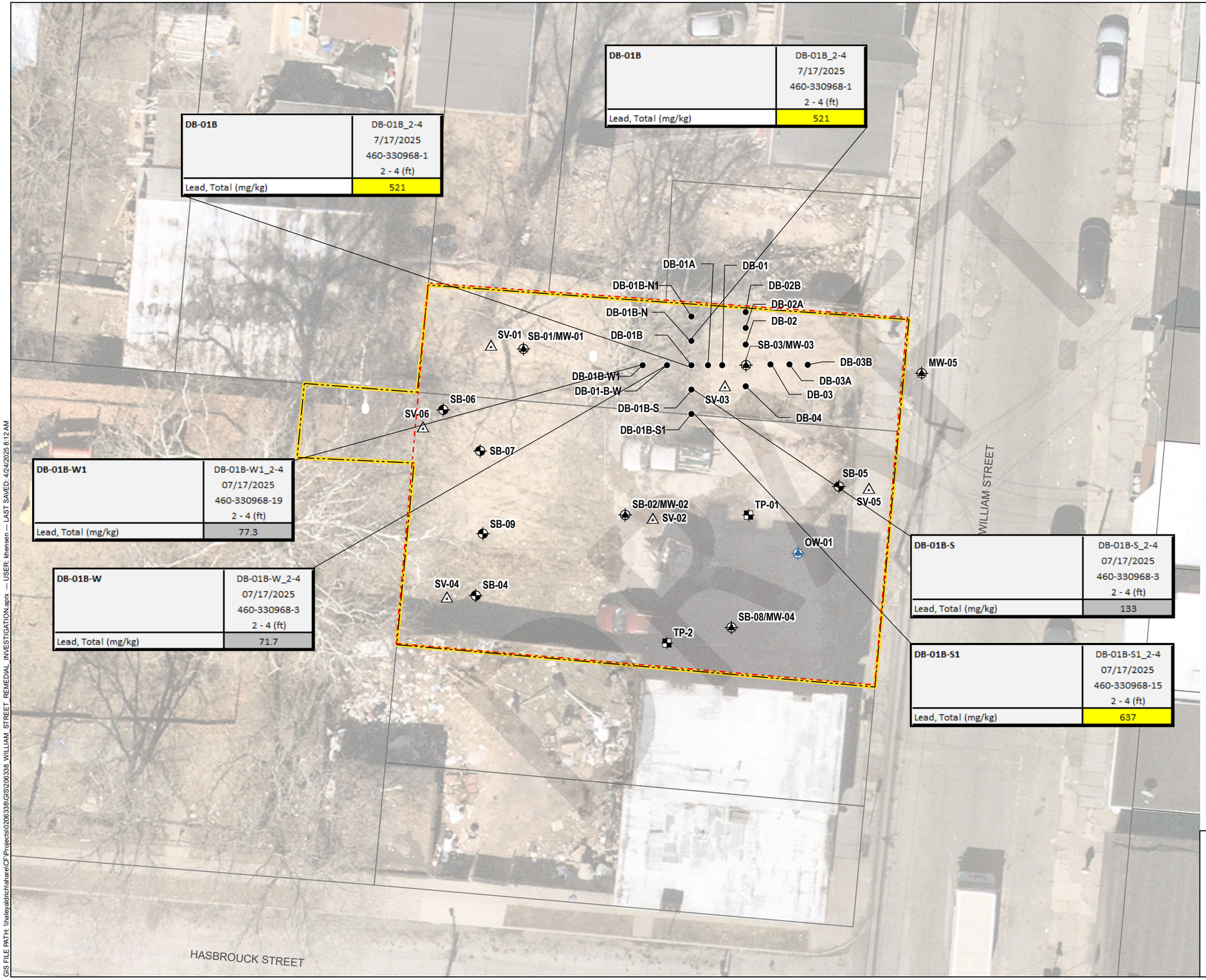

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LEGEND

- 5-FT LEAD DELINEATION STEP-OUT
- SOIL VAPOR POINT
- SOIL BORING
- GROUNDWATER MONITORING WELL
- EXISTING GROUNDWATER MONITORING WELL
- SUSPECTED UNDERGROUND STORAGE TANK (UST) TEST PIT
- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES (SCOS), RESTRICTED-RESIDENTIAL SCOS, AND 40 CFR 261 SUBPART C AND TABLE 1 OF 40 CFR 261.24.

3. DEFINITIONS:
NY-RRSCO = NYSDEC PART 375 RESTRICTED-RESIDENTIAL USE SCO
NY-UUSCO = NYSDEC PART 375 UNRESTRICTED USE SCO
NY-PGWSCO = NYDEC PART 375 PROTECTION OF GROUNDWATER SCO

4. EXCEEDANCES OF THE NY-UUSCOS ARE SHADED GRAY

5. EXCEEDANCES OF THE NY-RRSCOS ARE SHADED YELLOW

6. EXCEEDANCES OF THE NY-PGWSCOS ARE SHOWN IN BLACK TEXT AND IN ITALICS

7. ASSESSOR PARCEL DATA SOURCE: ORANGE COUNTY GIS

8. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024

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SCALE IN FEET

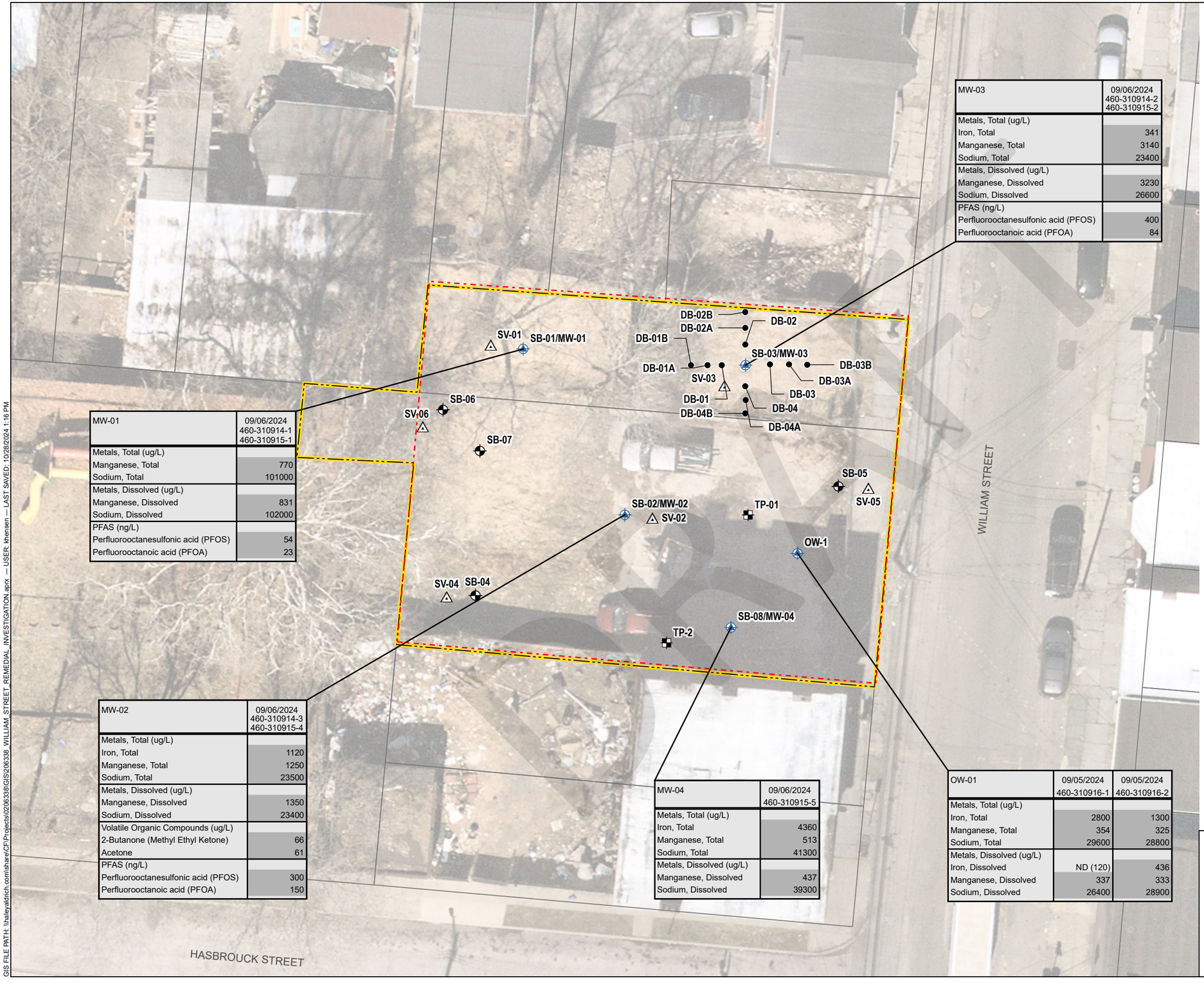
HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

LEAD DELINEATION SOIL EXCEEDANCE MAP

SEPTEMBER 2025

FIGURE 5C



MW-01	09/06/2024 460-310914-1 460-310915-1
Metals, Total (ug/L)	
Manganese, Total	770
Sodium, Total	101000
Metals, Dissolved (ug/L)	
Manganese, Dissolved	831
Sodium, Dissolved	102000
PFAS (ng/L)	
Perfluorooctanesulfonic acid (PFOS)	54
Perfluorooctanoic acid (PFOA)	23

MW-03	09/06/2024 460-310914-2 460-310915-2
Metals, Total (ug/L)	
Iron, Total	341
Manganese, Total	3140
Sodium, Total	23400
Metals, Dissolved (ug/L)	
Manganese, Dissolved	3230
Sodium, Dissolved	26600
PFAS (ng/L)	
Perfluorooctanesulfonic acid (PFOS)	400
Perfluorooctanoic acid (PFOA)	84

MW-02	09/06/2024 460-310914-3 460-310915-4
Metals, Total (ug/L)	
Iron, Total	1120
Manganese, Total	1250
Sodium, Total	23500
Metals, Dissolved (ug/L)	
Manganese, Dissolved	1350
Sodium, Dissolved	23400
Volatile Organic Compounds (ug/L)	
2-Butanone (Methyl Ethyl Ketone)	66
Acetone	61
PFAS (ng/L)	
Perfluorooctanesulfonic acid (PFOS)	300
Perfluorooctanoic acid (PFOA)	150

MW-04	09/06/2024 460-310915-5
Metals, Total (ug/L)	
Iron, Total	4360
Manganese, Total	513
Sodium, Total	41300
Metals, Dissolved (ug/L)	
Manganese, Dissolved	437
Sodium, Dissolved	39300

OW-01	09/05/2024 460-310916-1	09/05/2024 460-310916-2
Metals, Total (ug/L)		
Iron, Total	2800	1300
Manganese, Total	354	325
Sodium, Total	29600	28800
Metals, Dissolved (ug/L)		
Iron, Dissolved	ND (120)	436
Manganese, Dissolved	337	333
Sodium, Dissolved	26400	28900

LEGEND

- 5-FT LEAD DELINEATION STEP-OUT
- SOIL VAPOR POINT
- SOIL BORING
- GROUNDWATER MONITORING WELL
- SUSPECTED UNDERGROUND STORAGE TANK (UST) TEST PIT
- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT

	AQWS
Volatile Organic Compounds (ug/L)	
2-Butanone (Methyl Ethyl Ketone)	50
Acetone	50
Inorganic Compounds (ug/L)	
Manganese, Dissolved	300
Sodium, Dissolved	20000
Iron, Total	300
Manganese, Total	300
Sodium, Total	20000
PFAS (ug/L)	
Perfluorooctanesulfonic acid (PFOS)	0.0027
Perfluorooctanoic acid (PFOA)	0.0067

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION(NYSDEC) TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS (AWQS)
3. ALL RESULTS SHOWN EXCEED THE NYSDEC AWQS AND/OR 2023 GUIDANCE VALUES.
4. RESULTS ARE DISPLAYED IN MICROGRAMS PER LITER (ug/L).
5. PFAS RESULTS ARE SHOWN IN NANOGRAMS PER LITER (ng/L).
6. ASSESSOR PARCEL DATA SOURCE:: ORANGE COUNTY GIS
7. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024

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SCALE IN FEET

HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

GROUNDWATER EXCEEDANCE MAP

SEPTEMBER 2025

FIGURE 6A

GIS FILE PATH: \\haleyaldrich.com\share\CPI\Projects\02063338\GIS\206338_WILLIAM_STREET_REMEDIAL_INVESTIGATION.aprx — LAST SAVED: 10/28/2024 1:16 PM — USER: khensen

MW-01	07/23/2025 460-331402-2 MW-01_20250723	07/23/2025 460-331402-4 DUP-01_20250723
Metals, Total (ug/L)		
Iron, Total	2710	2120
Sodium, Total	92200	93700
Metals, Dissolved (ug/L)		
Manganese, Dissolved	321 J	77.5 J
Sodium, Dissolved	90400	93100
PFAS (ng/L)		
Perfluorooctanesulfonic acid (PFOS)	34.0	35.0
Perfluorooctanoic acid (PFOA)	11.4	11.1
US EPA PFAS (PFOS + PFOA)	45.4	46.1

MW-03	07/23/2025 460-331402-3 MW-03_20250723
Metals, Total (ug/L)	
Iron, Total	17200
Lead, Total	76.3
Manganese, Total	3060
Sodium, Total	35300
Metals, Dissolved (ug/L)	
Manganese, Dissolved	2550
Sodium, Dissolved	34800
PFAS (ng/L)	
Perfluorooctanesulfonic acid (PFOS)	224
Perfluorooctanoic acid (PFOA)	93.1
US EPA PFAS (PFOS + PFOA)	317

MW-06	07/23/2025 460-331402-1 MW-06_20250723
Metals, Dissolved (ug/L)	
Manganese, Dissolved	5730
Sodium, Dissolved	28100
PFAS (ng/L)	
Perfluorooctanesulfonic acid (PFOS)	952
Perfluorooctanoic acid (PFOA)	170
US EPA PFAS (PFOS + PFOA)	1120

MW-05	07/24/2025 460-331418-4 MW-05_20250724
PFAS (ng/L)	
Perfluorooctanesulfonic acid (PFOS)	95.4
Perfluorooctanoic acid (PFOA)	82.2
US EPA PFAS (PFOS + PFOA)	178

MW-02	07/24/2025 460-331418-2 MW-02_20250724
Metals, Total (ug/L)	
Iron, Total	1930
Manganese, Total	1370
Metals, Dissolved (ug/L)	
Manganese, Dissolved	1070
PFAS (ng/L)	
Perfluorooctanesulfonic acid (PFOS)	335
Perfluorooctanoic acid (PFOA)	77
US EPA PFAS (PFOS + PFOA)	412

MW-04	07/24/2025 460-331418-3 MW-04_20250724
Metals, Total (ug/L)	
Iron, Total	765
Manganese, Total	410
Sodium, Total	38600
Metals, Dissolved (ug/L)	
Manganese, Dissolved	402
Sodium, Dissolved	35800
PFAS (ng/L)	
Perfluorooctanoic acid (PFOA)	7.42

OW-1	07/24/2025 460-331418-1 OW-1_20250724
Metals, Total (ug/L)	
Iron, Total	10100
Manganese, Total	665
Sodium, Total	27400
Metals, Dissolved (ug/L)	
Sodium, Dissolved	27400

DB-01A
DB-01
DB-01B-N1
DB-02B
DB-02A
DB-01B-N
DB-02
SV-01
SB-01/MW-01
DB-01B
SB-03/MW-03
DB-03B
MW-05
DB-01B-W1
DB-03A
DB-01-B-W
SV-03
DB-03
SB-06
DB-01B-S
DB-04
SV-06
DB-01B-S1
SB-07
MW-06
SB-05
SV-05
SB-02/MW-02
SV-02
TP-01
SB-09
OW-01
SV-04
SB-04
SB-08/MW-04
TP-2
HASBROUCK STREET
WILLIAM STREET

LEGEND

- 5-FT LEAD DELINEATION STEP-OUT
- SOIL VAPOR POINT
- SOIL BORING
- GROUNDWATER MONITORING WELL
- EXISTING GROUNDWATER MONITORING WELL
- SUSPECTED UNDERGROUND STORAGE TANK (UST) TEST PIT
- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION(NYSDEC) TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS (AWQS)
3. ALL RESULTS SHOWN EXCEED THE NYSDEC AWQS AND/OR 2023 GUIDANCE VALUES.
4. RESULTS ARE DISPLAYED IN MICROGRAMS PER LITER (ug/L).
5. PFAS RESULTS ARE SHOWN IN NANOGRAMS PER LITER (ng/L).
6. ASSESSOR PARCEL DATA SOURCE:: ORANGE COUNTY GIS
7. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024

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SCALE IN FEET

HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

SUPPLEMENTAL GROUNDWATER EXCEEDANCE MAP

SEPTEMBER 2025 0 5

FIGURE 6B

GIS FILE PATH: \\haleyaldrich\share\CF\Projects\0206338\GIS\206338_WILLIAM_STREET_REMEDIAL_INVESTIGATION.aprx — USER: khensen — LAST SAVED: 4/24/2025 8:12 AM

SV-01	SV-01 08/28/2024 200-74970-1
VOCs	
1,2,4-Trimethylbenzene	0.92 J
1,3-Butadiene	2.2
1,3-Dichlorobenzene	36
2,2,4-Trimethylpentane	1.2
2-Butanone (Methyl Ethyl Ketone)	5.7
Acetone	87
Benzene	2.6
Butane	5.6
Carbon disulfide	7.3
Carbon tetrachloride	0.19 J
Chlorobenzene	1.3
Chloromethane (Methyl Chloride)	1.1
Cyclohexane	1.2
Dichlorodifluoromethane (CFC-12)	1.9 J
Ethylbenzene	0.78 J
Hexane	1.5 J
Isopropyl Alcohol (2-Propanol)	3.9 J
m,p-Xylenes	1.8 J
Methylene chloride (Dichloromethane)	0.67 J
N-Heptane	1.6
o-Xylene	0.86 J
Tert-Butyl Alcohol (tert-Butanol)	19
Tetrachloroethene	0.23 J
Toluene	4.2
Trichlorofluoromethane (CFC-11)	1.2
Trifluorotrichloroethane (Freon 113)	0.54 J
Vinyl chloride	0.28

SV-03	SV-03 08/29/2024 200-74970-3
VOCs	
1,3-Butadiene	0.17 J
1,4-Dichlorobenzene	0.66 J
2,2,4-Trimethylpentane	1.1
2-Butanone (Methyl Ethyl Ketone)	3.7
Acetone	49
Benzene	1.5
Butane	4.9
Carbon disulfide	8.4
Chlorobenzene	1.4
Chlorodifluoromethane	0.42 J
Chloroform (Trichloromethane)	17
Chloromethane (Methyl Chloride)	1.1
Cyclohexane	1.6
Cymene (p-Isopropyltoluene)	2.7
Dichlorodifluoromethane (CFC-12)	1.7 J
Ethylbenzene	1.8
Hexane	1.6 J
m,p-Xylenes	5.3
Methylene chloride (Dichloromethane)	0.64 J
N-Heptane	1.5
n-Propylbenzene	0.46 J
o-Xylene	2.6
Styrene	0.8 J
Tert-Butyl Alcohol (tert-Butanol)	29
Tetrachloroethene	1.1 J
Toluene	16
Trichlorofluoromethane (CFC-11)	2.7
Trifluorotrichloroethane (Freon 113)	0.43 J

SV-06	SV-06 08/29/2024 200-74970-6
VOCs	
1,1,1-Trichloroethane	0.8 J
1,2,4-Trimethylbenzene	2.9
1,3,5-Trimethylbenzene	0.86 J
2,2,4-Trimethylpentane	1
4-Ethyltoluene (1-Ethyl-4-Methylbenzene)	0.39 J
Acetone	14
Benzene	1.3
Butane	4.3
Carbon disulfide	3
Carbon tetrachloride	0.14 J
Chlorobenzene	0.95
Chlorodifluoromethane	0.91 J
Chloroform (Trichloromethane)	0.44 J
Cyclohexane	3.2
Dichlorodifluoromethane (CFC-12)	1.8 J
Ethylbenzene	2.3
Hexane	6.8
m,p-Xylenes	6.3
N-Heptane	3.9
n-Propylbenzene	0.31 J
o-Xylene	2.9
Styrene	2.2
Tert-Butyl Alcohol (tert-Butanol)	11 J
Tetrachloroethene	0.33 J
Toluene	4.8
Trichlorofluoromethane (CFC-11)	1.3

SV-04	SV-04 08/29/2024 200-74970-4
VOCs	
1,1,1-Trichloroethane	1.6
1,2,4-Trimethylbenzene	3.5
1,3,5-Trimethylbenzene	1.1
1,4-Dichlorobenzene	0.55 J
1,4-Dioxane	0.46 J
2,2,4-Trimethylpentane	1.1
2-Butanone (Methyl Ethyl Ketone)	3.6
4-Ethyltoluene (1-Ethyl-4-Methylbenzene)	0.72 J
Acetone	26
Benzene	0.71
Butane	1.4
Carbon disulfide	9
Chlorobenzene	1.7
Chlorodifluoromethane	0.59 J
Chloroform (Trichloromethane)	0.38 J
Cyclohexane	1.4
Cymene (p-Isopropyltoluene)	0.5 J
Dichlorodifluoromethane (CFC-12)	2 J
Ethylbenzene	1.8
Hexane	0.96 J
Isopropylbenzene (Cumene)	0.83 J
m,p-Xylenes	5.1
Methylene chloride (Dichloromethane)	0.69 J
N-Heptane	1.6
n-Propylbenzene	0.47 J
o-Xylene	2.8
Styrene	0.76 J
Tert-Butyl Alcohol (tert-Butanol)	30
Tetrachloroethene	0.72 J
Toluene	5.6
Trichlorofluoromethane (CFC-11)	1.2
Trifluorotrichloroethane (Freon 113)	0.46 J

SV-02	SV-02 08/29/2024 200-74970-2
VOCs	
1,1,1-Trichloroethane	1.8 J
1,2,4-Trimethylbenzene	3.1
1,3,5-Trimethylbenzene	0.96 J
2,2,4-Trimethylpentane	0.49 J
2-Butanone (Methyl Ethyl Ketone)	3
Acetone	74
Benzene	0.45 J
Carbon disulfide	1.7 J
Chlorobenzene	0.51 J
Chlorodifluoromethane	0.85 J
Chloroform (Trichloromethane)	1.8 J
Dichlorodifluoromethane (CFC-12)	2.9 J
Ethylbenzene	0.93 J
m,p-Xylenes	3.3 J
o-Xylene	1.9
Styrene	0.54 J
Tert-Butyl Alcohol (tert-Butanol)	39
Tetrachloroethene	0.71 J
Toluene	4.2
Trichloroethene	0.36 J
Trichlorofluoromethane (CFC-11)	2200 D

SV-05	SV-05 08/29/2024 200-74970-5
VOCs	
1,2,4-Trimethylbenzene	2.5
1,3,5-Trimethylbenzene	0.49 J
1,3-Butadiene	0.14 J
1,3-Dichlorobenzene	2.7
2,2,4-Trimethylpentane	6.2
2-Butanone (Methyl Ethyl Ketone)	26
2-Hexanone (Methyl Butyl Ketone)	2.4
4-Ethyltoluene (1-Ethyl-4-Methylbenzene)	0.38 J
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	4.7
Acetone	67
Benzene	3.8
Butane	130 D
Carbon disulfide	5.9
Chlorobenzene	1.6
Chlorodifluoromethane	0.79 J
Chloroform (Trichloromethane)	0.22 J
Chloromethane (Methyl Chloride)	0.35 J
Cyclohexane	3.1
Cymene (p-Isopropyltoluene)	3.1
Dichlorodifluoromethane (CFC-12)	1.7 J
Ethylbenzene	11
Hexane	7.5
Isopropyl Alcohol (2-Propanol)	210 D
Isopropylbenzene (Cumene)	0.67 J
m,p-Xylenes	30
Methyl methacrylate	0.95 J
Methylene chloride (Dichloromethane)	1 J
N-Heptane	6.3
n-Propylbenzene	0.33 J
o-Xylene	9.5
Styrene	1
Tert-Butyl Alcohol (tert-Butanol)	18
Tetrachloroethene	9.3
Tetrahydrofuran	7.2 J
Toluene	8.4
Trichlorofluoromethane (CFC-11)	40

SV-01 SB-01/MW-01 SV-06 SB-06 SB-07 SV-04 SB-04 DB-02B DB-02A DB-02 DB-01B DB-04 SB-03/MW-03 DB-01A SV-03 DB-03B DB-03A DB-03 DB-01 DB-04B DB-04A SB-05 SV-05 SB-02/MW-02 SV-02 TP-01 OW-1 SB-08/MW-04 TP-2

HASBROUCK STREET

WILLIAM STREET

LEGEND

- 5-FT LEAD DELINEATION STEP-OUT
- SOIL VAPOR POINT
- SOIL BORING
- GROUNDWATER MONITORING WELL
- SUSPECTED UNDERGROUND STORAGE TANK (UST) TEST PIT
- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ALL DETECTED ANALYTES SHOWN ON FIGURE.
3. SOIL VAPOR ANALYSIS – VOLATILE ORGANIC COMPOUNDS (VOCs)
4. RESULTS ARE DISPLAYED IN MICROGRAMS PER CUBIC METER ($\mu g/M^3$)
5. ASSESSOR PARCEL DATA SOURCE: ORANGE COUNTY GIS
6. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024

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SCALE IN FEET

HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

SOIL VAPOR DATA MAP

OCTOBER 2024

FIGURE 7

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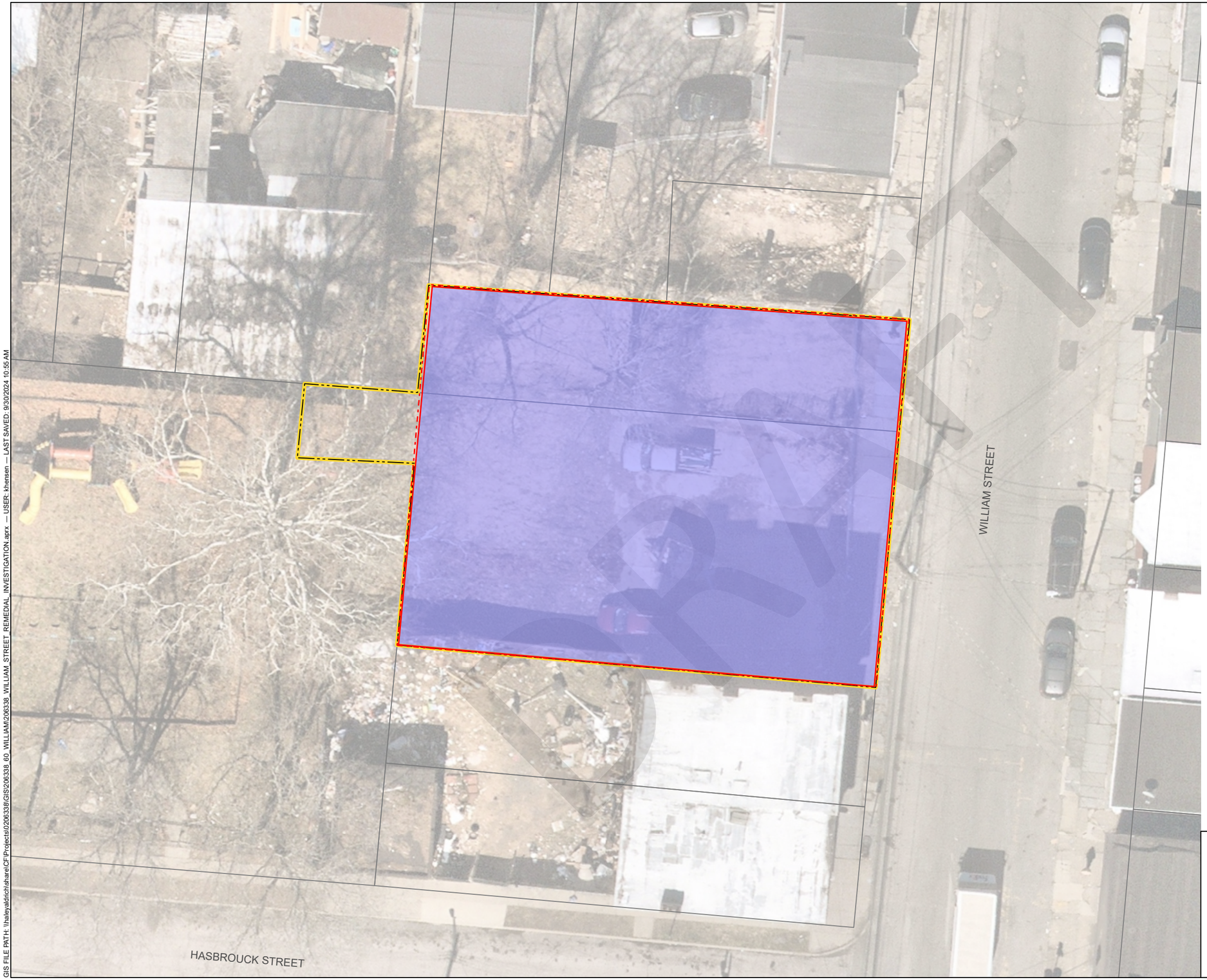

LEGEND

- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT
- EXCAVATION TO 14 FT BGS OR BEDROCK

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE:: ORANGE COUNTY GIS
3. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024
4. BEDROCK ESTIMATED AT 14 FT BGS

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SCALE IN FEET

HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

ALTERNATIVE I EXCAVATION PLAN

SEPTEMBER 2025

FIGURE 8

GIS FILE PATH: \\haleyaldrich\share\CFI\Projects\0206338\GIS\206338_60_WILLIAM\206338_WILLIAM_STREET_REMEDIAL_INVESTIGATION.aprx — USER: khensen — LAST SAVED: 9/30/2024 10:55 AM

LEGEND

- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT
- EXCAVATION TO 14 FT BGS OR BEDROCK
- 5x5 LEAD HOT SPOT EXCAVATION TO 8 FT BGS
- UST EXCAVATION TO 10 FT BGS
- PROPOSED ENDPOINT SAMPLE LOCATION

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE:: ORANGE COUNTY GIS
3. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024
4. BEDROCK ESTIMATED AT 14 FT BGS

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SCALE IN FEET

HALEY ALDRICH

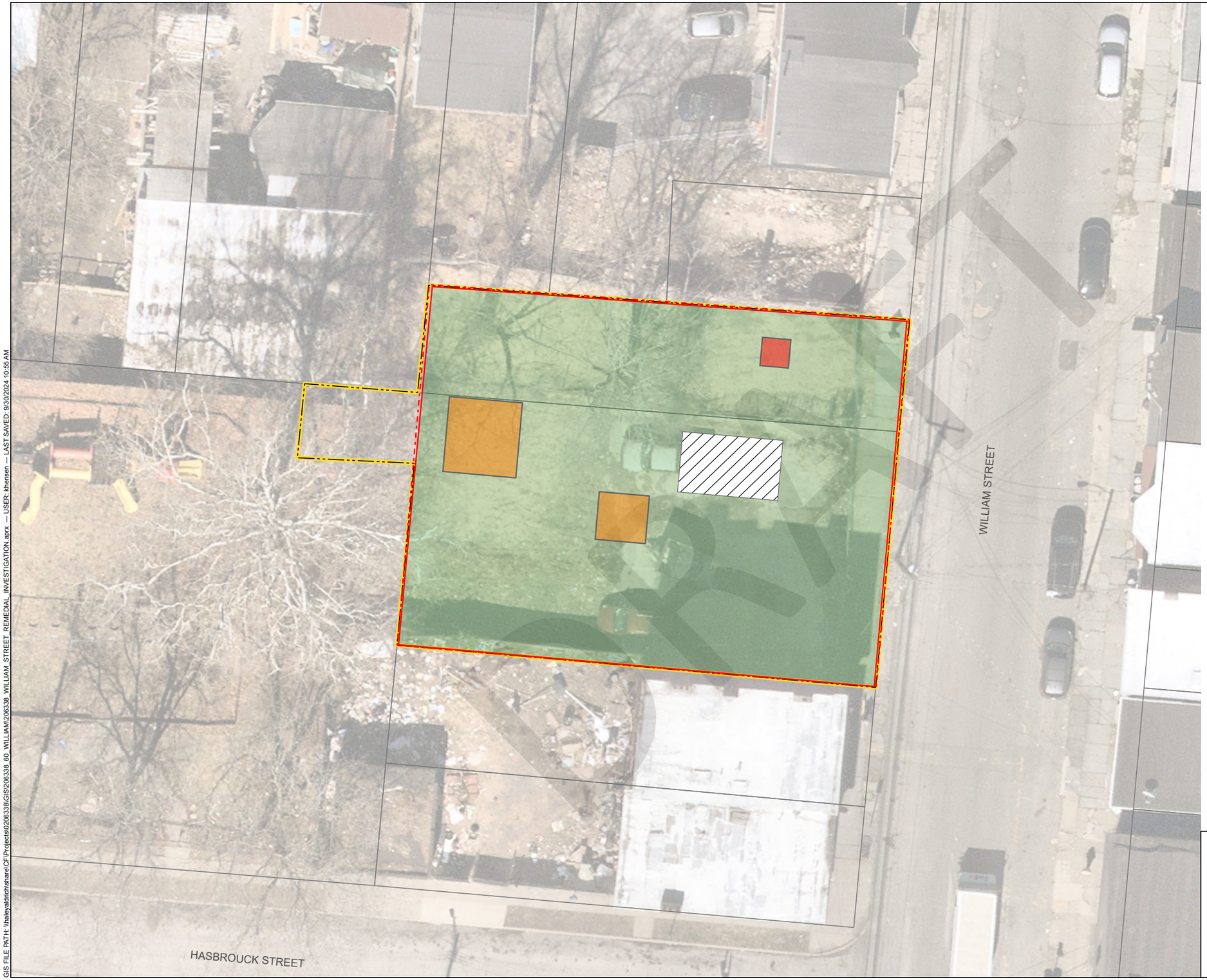
58-60 WILLIAM STREET
NEWBURGH, NEW YORK

ENDPOINT SAMPLE LOCATION PLAN

SEPTEMBER 2025

FIGURE 9

GIS FILE PATH: \\haleyaldrich\share\CFI\Projects\0206338\GIS\206338_60_WILLIAM\206338_WILLIAM_STREET_REMEDIAL_INVESTIGATION.aprx — USER: khensen — LAST SAVED: 9/30/2024 10:55 AM



LEGEND

- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT
- EXCAVATION TO 4 FT BGS
- 5x5 LEAD HOT SPOT EXCAVATION TO 8 FT BGS
- UST EXCAVATION TO 10 FT BGS
- HOT SPOT EXCAVATION TO 15 FT BGS

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE:: ORANGE COUNTY GIS
3. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024
4. BEDROCK ESTIMATED AT 14 FT BGS

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SCALE IN FEET

HALEY ALDRICH

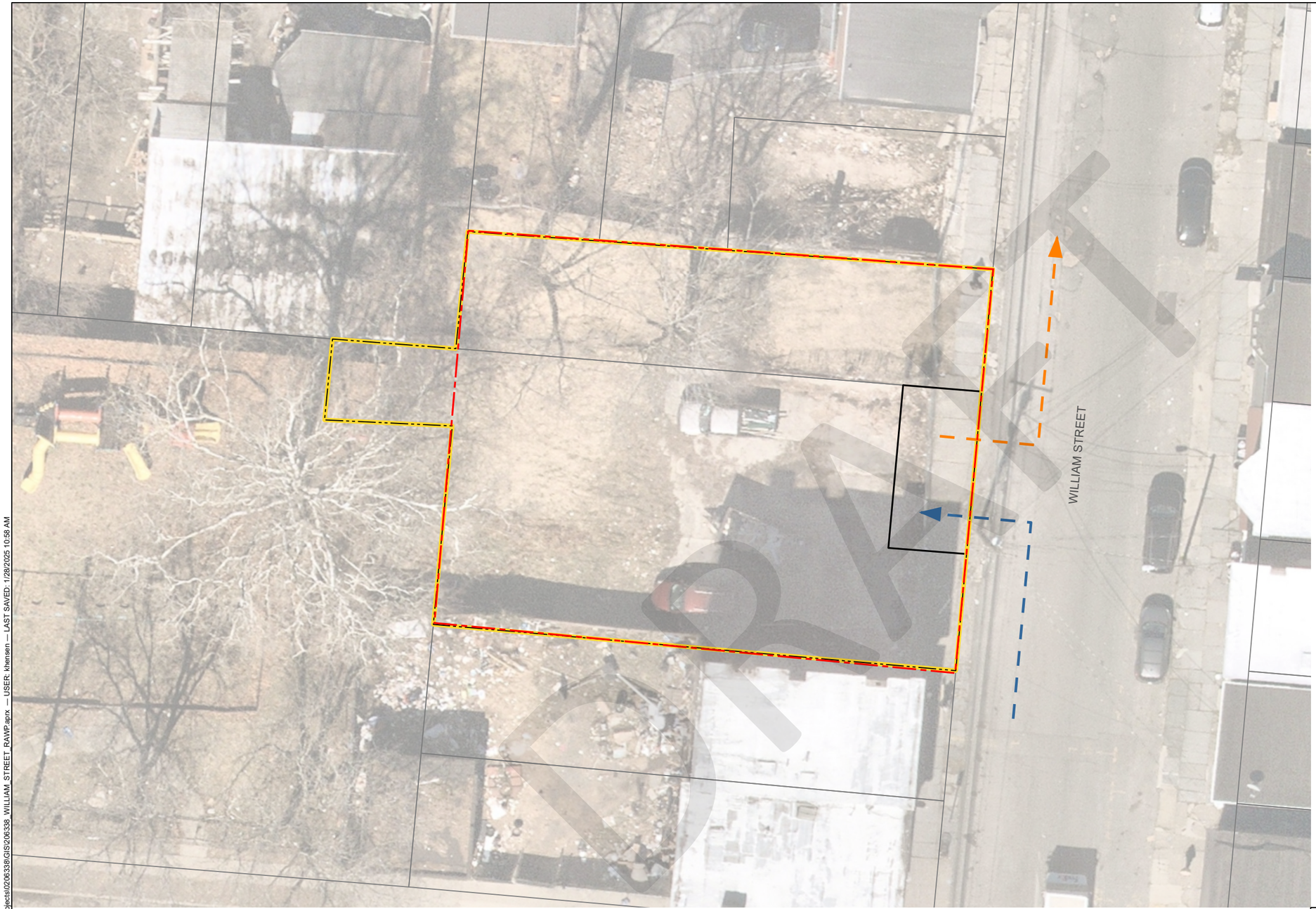
58-60 WILLIAM STREET
NEWBURGH, NEW YORK

ALTERNATIVE II EXCAVATION PLAN

SEPTEMBER 2025

FIGURE 10

GIS FILE PATH: \\haleyaldrich\share\CF\Projects\0206338\GIS\206338_60_WILLIAM\206338_WILLIAM_STREET_REMEDIAL_INVESTIGATION.aprx — USER: khensen — LAST SAVED: 9/30/2024 10:55 AM



LEGEND

- (11) PRINCIPAL ARTERIAL INTERSTATE
- (14) PRINCIPAL ARTERIAL OTHER
- (16) MINOR ARTERIAL
- (17) MAJOR COLLECTOR

LEGEND

- TRUCK EGRESS
- TRUCK INGRESS
- PREVIOUS SITE BOUNDARY
- PARCEL BOUNDARY
- SITE BOUNDARY POST BCA AMENDMENT

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: ORANGE COUNTY GIS
3. BASE MAP SOURCE: ESRI
4. AERIAL IMAGERY SOURCE: NEARMAP, 24 MARCH 2024

N

0 20 40
SCALE IN FEET

HALEY ALDRICH

58-60 WILLIAM STREET
NEWBURGH, NEW YORK

TRUCK ROUTE MAP

SEPTEMBER 2025

FIGURE 11

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0206338\GIS\206338_WILLIAM_STREET_RAMP.aprx — USER: khensen — LAST SAVED: 1/28/2025 10:58 AM

DRAFT

APPENDIX A
Survey Maps

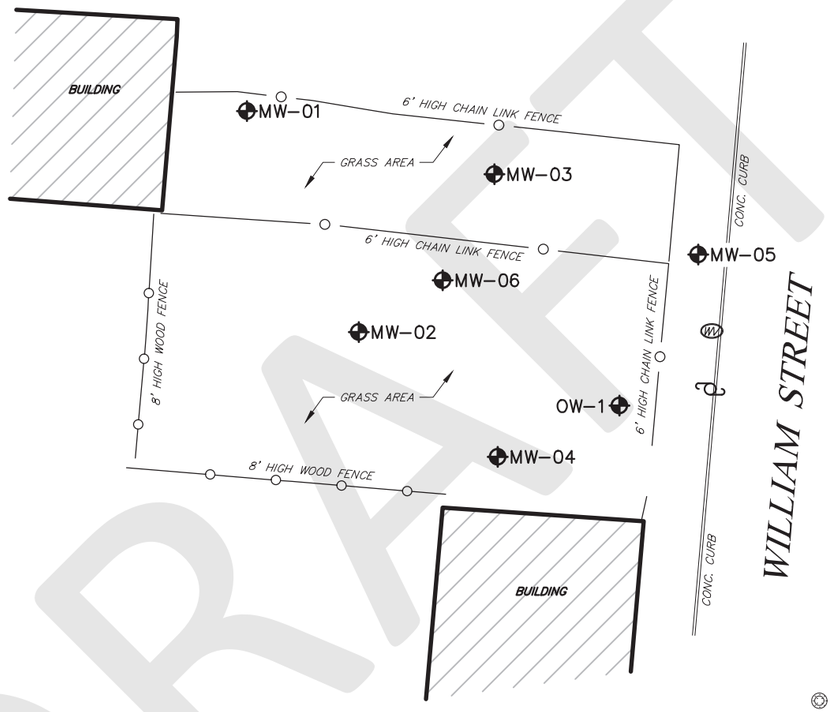
MONITORING WELLS	GROUND	RIM	PVC
OW-1	146.13	146.11	145.97
MW-01	143.64	147.92 RISER	147.76
MW-02	146.55	150.74 RISER	150.20
MW-03	145.04	148.54 RISER	147.84
MW-04	146.94	151.12 RISER	150.56

DATE OF SURVEY: JULY 23, 2025

MONITORING WELLS	GROUND	RIM	PVC
MW-05	144.89 CONC	144.82	144.63
MW-06	146.66 PAVE	148.89 RISER	148.10

NOTES:

1. FIELD WORK PERFORMED ON OCTOBER 8, 2024 AND JULY 23, 2025.
2. ELEVATION DATUM NAVD 1988 DERIVED USING GPS RECEIVERS AND KEYNET. CORS STATION: NYBR BROOKLYN PIER CORS ARP ELEV=42.13' (NAVD 1988)



NY EAST STATE PLANE
COORDINATE SYSTEM NAD 1983

UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

GRAPHIC SCALE

30 0 15 30

(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION	BY	CHKD
1	07/24/2025	ADDED MW-05 & MW-06	P.C.	C.S.

STATE OF NEW YORK · JAMES J. HEISER · 050932-1 · LICENSED LAND SURVEYOR

James J. Heiser
Professional Land Surveyor
JHEISER@DPKCONSULTING.NET

DATE 07/24/2025

N.J. Lic: 24GS04331100
PA. Lic: SU075616
N.Y. Lic: 050932-1
CT. Lic: 70476
DE. LIC: S6-0010858

Date: 10/14/24	Dr.: P.C.	Chk.: C.S.	SCALE: 1" = 30'	JOB No. 24-10471	Dwg:24-10471MW01

DPK LAND SURVEYING
DPK LAND SURVEYING, LLC
200 METROPLEX DRIVE - STE. 285, EDISON, NJ 08817
P:732-764-0100 F: 732-764-0990
NEW YORK CERTIFICATE OF AUTHORIZATION NO. 0012585

MONITORING WELL LOCATION MAP

FOR:
HALEY & ALDRICH

SITE:
58-60 WILLIAM STREET
NEWBURGH, NEW YORK

S:_Projects\2024\24-10471\CAD\24-10471MW01.dwg Jul 25, 2025-10:33am BY:(RogerMaandal)

DRAFT

WO 00196352

60 Williams St, Newburgh, NY
Smit Environmental 5-12-22

Red - Electric power lines, conduit and street light cable	Yellow - Gas, Oil, Steam, petroleum or gaseous material	Orange - Communications, Fiber Optic, CATV, and/or alarm.	Blue - Potable water.	Purple - Reclaimed water, irrigation, and/or slurry lines	Green - Sewers and drains	Pink - Temporary survey marking or unknown structures	White - proposed excavation.

This is NOT to-scale

888-858-9830 / www.BHUG.com

BLOOD HOUND
Underground Utility Locators

DRAFT

APPENDIX B
Zoning Map

City of Newburgh
Zoning

SUBJECT SITE

- Waterfront Protection Overlay
- HistoricDistrict
- Colonial Terrace Architectural Design District
- Neighborhood Commercial Overlay
- Commercial District Overlay
- DN
- PWD
- BC
- WG
- Commercial District
- Conservation Development District
- Industrial District
- Institution
- Open Space
- Park
- R1
- RL
- RM
- RH
- Utility

0 500 1,000 2,000 3,000 Feet

Effective September 1, 2015

Map produced and maintained by City of Newburgh.

FOR VISUAL REFERENCE ONLY

DISCLAIMER: Maps and data are provided without warranty concerning the accuracy, completeness, or suitability for any particular purpose. City of Newburgh makes no representations and assumes no liability from any damage arising out of reliance upon the information contained herein.

APPENDIX C
Proposed Development Plans

DRAFT

58,60-62 WILLIAM STREET

NEWBURGH, NEW YORK 12550

ARC APPLICATION
DECEMBER 26, 2023

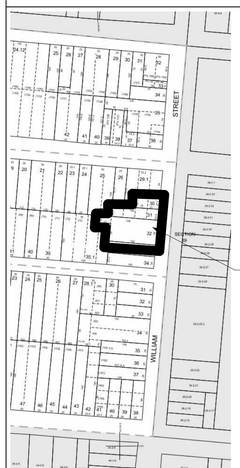
OWNER:
GRCGNY
175 HOOPER STREET
BROOKLYN, NY 11211

ARCHITECT:
BERG + MOSS ARCHITECTS
473 MAIN STREET, SUITE No. 1
BEACON, NY 12508

DRAWING LIST

NO.	TITLE	SCALE	12/26/2023		
G-000.00	COVER SHEET	N/A	X		
A-300.00	BUILDING ELEVATIONS	1/4" = 1'-0"	X		
A-301.00	BUILDING ELEVATIONS	1/4" = 1'-0"	X		
A-315.00	STOREFRONT PLAN & DETAILS	VARIES	X		
A-316.00	DETAIL WALL SECTIONS	3" = 1'-0"	X		
A-400.00	WINDOW DETAILS & NOTES	VARIES	X		
APPX-000.00	EXTERIOR VIEWS	N/A	X		

TAX MAP



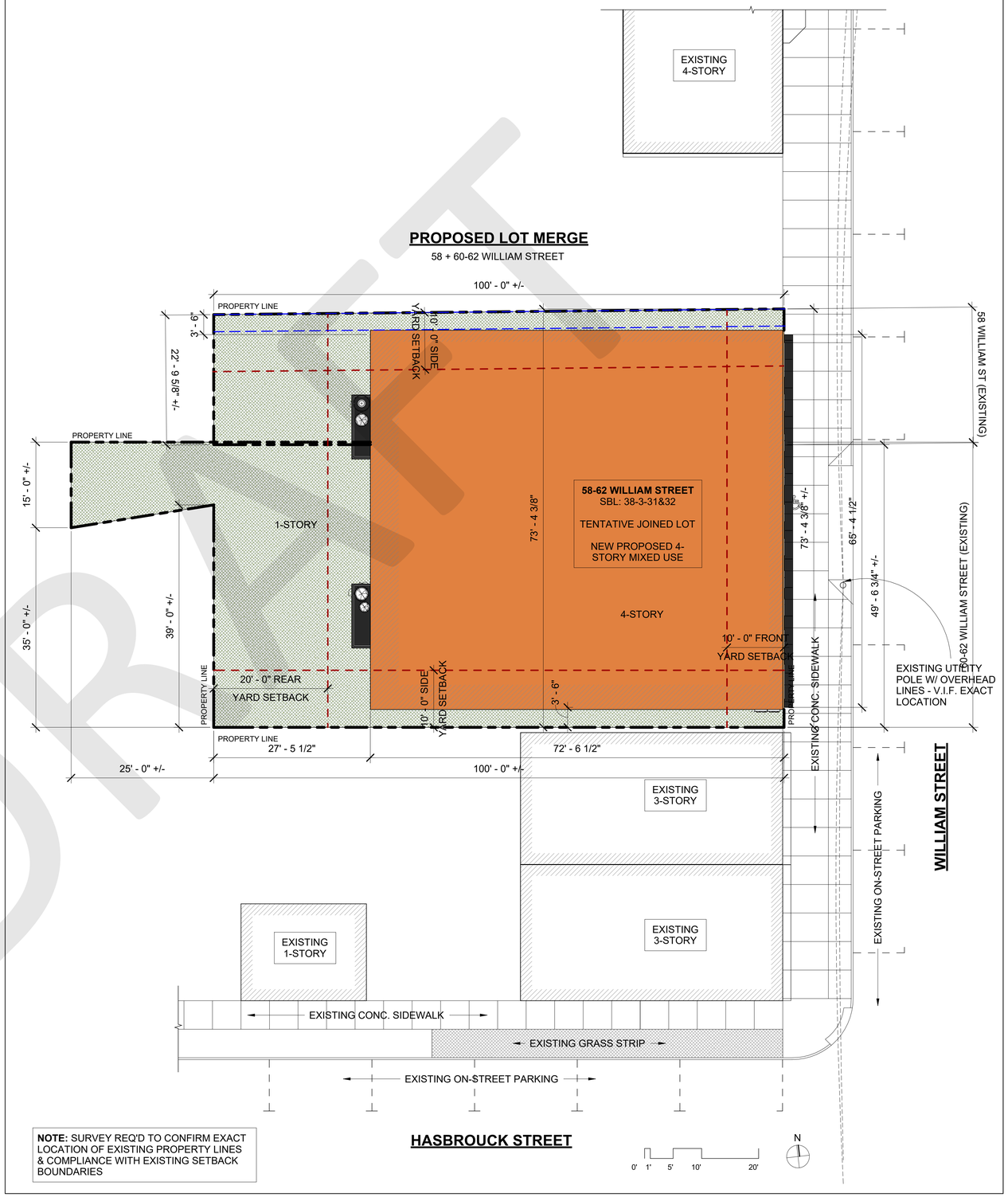
ZONING MAP

PROJECT DESCRIPTION:

LOCATION:	58,60-62 WILLIAM STREET, NEWBURGH, NY 12550
TAX MAP:	SECTION: 38, BLOCK: 3, LOT: 32 & 31
LOT AREA:	0.198 Ac. = 8650 SF
ZONING DISTRICT:	RM - MEDIUM DENSITY RESIDENTIAL (HISTORIC DISTRICT OVERLAY)
EXISTING USE:	VACANT
PROPOSED USE:	MIXED USE (R-2 RESIDENTIAL & B-BUSINESS/RETAIL)

SITE PLAN

1" = 10'-0"



NOTE: SURVEY REQ'D TO CONFIRM EXACT LOCATION OF EXISTING PROPERTY LINES & COMPLIANCE WITH EXISTING SETBACK BOUNDARIES

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BEACON, NY 12508
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INFO@BERGMOSS.COM

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58,60-62 William St.
NEWBURGH, NEW YORK 12550

KEY PLAN

PROJECT NORTH

DRAWING TITLE
ARC Cover Sheet

DRAWING NO.
G-000.00

SEAL & SIGNATURE

DATE: 12.26.2023
SCALE: 1" = 10'-0"
DWG BY: Author
CHK BY: Checker

WINDOW SCHEDULE

MARK	MANUFACTURER	SERIES	TYPE	ROUGH OPENING WIDTH	ROUGH OPENING HEIGHT	SILL HEIGHT	COLOR	INTERIOR CASING	U-FACTOR	COMMENTS
A	PELLA	ARCHITECT SERIES (CLAD)	DOUBLE-HUNG	3'-0"	6'-0"	2'-0"	EXT: BLACK INT: WHITE		0.25 - 0.30	

WINDOW NOTES

1. CONTRACTOR TO TAPE AND SEAL ALL WINDOWS/FLANGES AND BLOCKING
2. CONTRACTOR TO PROVIDE ALL NECESSARY TRIM & MOULDING ('AZEK' OR EQUAL) TO TRIM OUT OPENINGS

NOTE: PRIOR TO ORDERING, CONTRACTOR TO VERIFY ROUGH OPENING SIZES & REPORT ANY DEIVIATION TO THE OWNER OR ARCHITECT.
ALL WINDOWS SHALL MEET THE MIN. U-FACTOR OF 0.32 OR BETTER

NOTE: ALL NEW WINDOWS TO BE ALUM. CLAD WOOD WINDOWS

COLORS SCHEDULE

MARK	LOCATION	MANUFACTURER	MODEL #	COLOR NAME	FINISH	COMMENTS
P-1	AS NOTED	BENJAMIN MOORE	CW-680	MOPBOARD BLACK	SEMI-GLOSS	PRIMER + 2 COATS
P-2	AS NOTED	WESTERN STATES METAL ROOFING	G90	BLUE ZINC MATTE		
P-3	AS NOTED	BELDEN BRICK		SUNGLO VELOUR		
P-4	AS NOTED	BENJAMIN MOORE	CW-285	GAMBOGE	SEMI-GLOSS	PRIMER + 2 COATS
P-5	AS NOTED	SWISSPEARL	CARAT	SAPPHIRE 7060		HORIZONTAL CEMENT BOARD

NOTE:

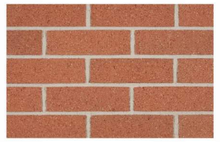
NO DRYER / EXHAUST / FRESH AIR VENTS SHALL BE VISIBLE ON THE WILLIAM STREET ELEVATION UNLESS OTHERWISE NOTED - ALL EXPOSED VENTS ON REMAINING ELEVATIONS TO BE PAINTED TO MATCH SURROUNDING EXTERIOR FINISH

Mopboard Black
CW-680

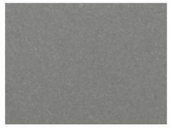
Gamboge
CW-285

"GALVANIZED G90" 7/8" CORRUGATED METAL PANEL BY WESTERN STATES METAL ROOFING

COLOR DEPICTED "BLUE ZINC MATTE"



MODEL DEPICTED BASED ON "SUNGLO VELOUR" TYPE THIN BRICK BY BELDEN BRICK (ABOVE)



Sapphire 7060

FIBER CEMENT CLAPBOARD SIDING BY SWISSPEARL (OR APPROVED EQUAL)

EXTERIOR LIGHT FIXTURE L1

MACADAM WALL SCONCE BY REJUVINATION LIGHTING

MODEL NO. A1776 OR EQUAL

LAMP SHADE COLOR TO BE "OIL RUBBED BRONZE"

LIGHT TYPE TO BE 2700K OR LESS

EXTERIOR LIGHT FIXTURE L2

FLEXFIRE LED'S, COLORBRIGHT LED STRIP W/ EXTRUDED COVER

MODEL NO. IP65-CB-DYN2430-XXV-16FT OR EQUAL

"KLUS LIPOD" EXTRUDED COVER W/ BLACK COVER COLOR

LIGHT TYPE TO BE 2700K OR LESS

EXTERIOR LIGHT FIXTURE L3

ASPECTLED 2.25" LED RECESSED LIGHT

MODEL NO. AL-RL-S-225-U OR EQUAL

LAMP HOUSING AND TRIM COLOR TO BE BLACK

LIGHT TYPE TO BE 2700K OR LESS

East (William Street) 1
1/4" = 1'-0"

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58,60-62 William St.
NEWBURGH, NEW YORK 12550

KEY PLAN

PROJECT NORTH

DRAWING TITLE
Building Elevations

DRAWING NO.
A-300.00

SEAL & SIGNATURE

DATE:	12.26.2023
SCALE:	1/4" = 1'-0"
DWG BY:	Author
CHK BY:	Checker

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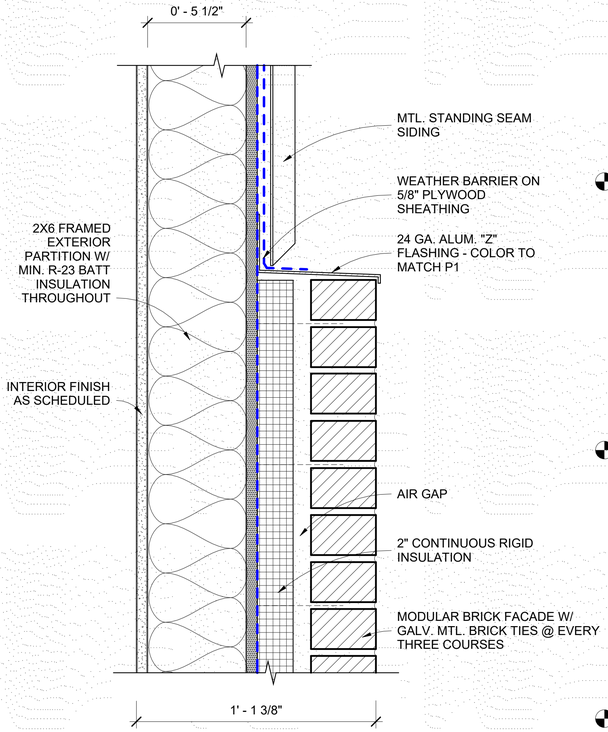
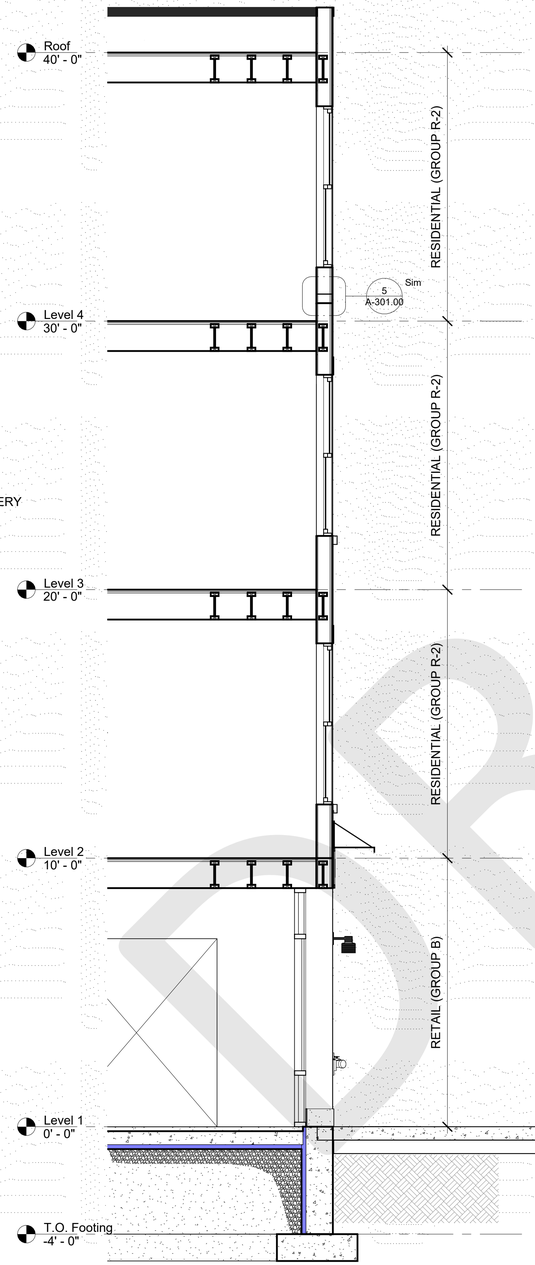


Exterior Material Meeting Detail 5
3" = 1'-0"



Section 2 4
3/8" = 1'-0"

West Elevation 3
1/8" = 1'-0"

South Elevation 2
1/8" = 1'-0"

North Elevation 1
1/8" = 1'-0"

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58,60-62 William St.
NEWBURGH, NEW YORK 12550

KEY PLAN

PROJECT NORTH

DRAWING TITLE
Building Elevations

DRAWING NO.
A-301.00

SEAL & SIGNATURE

DATE:	12.26.2023
SCALE:	As indicated
DWG BY:	Author
CHK BY:	Checker

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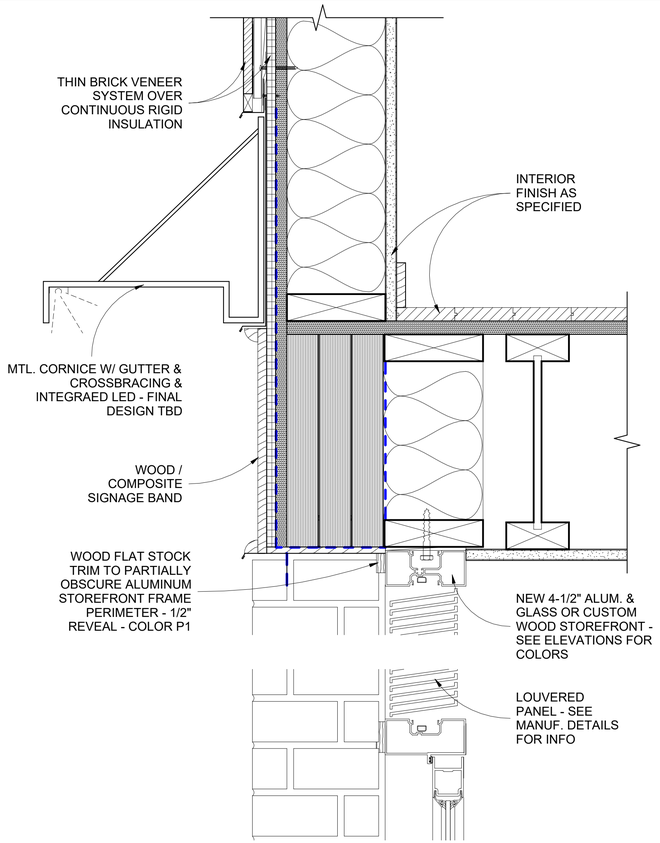
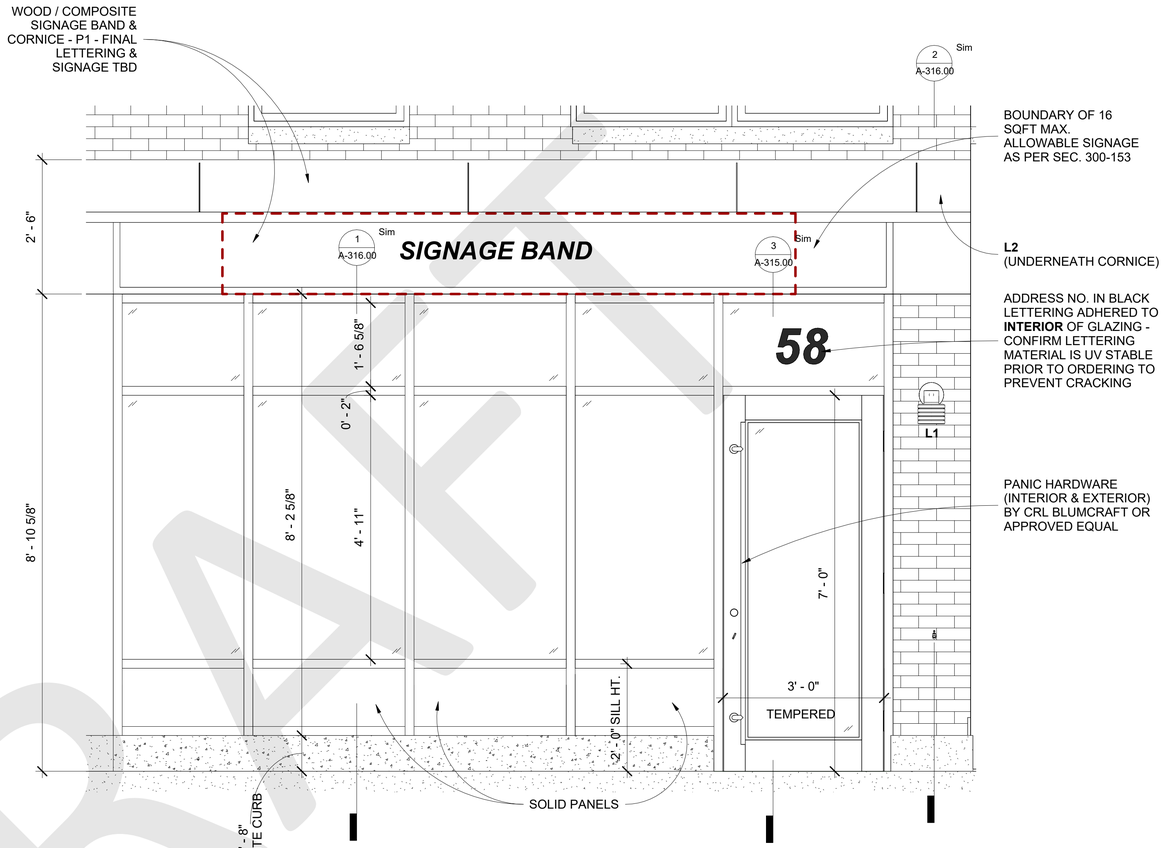
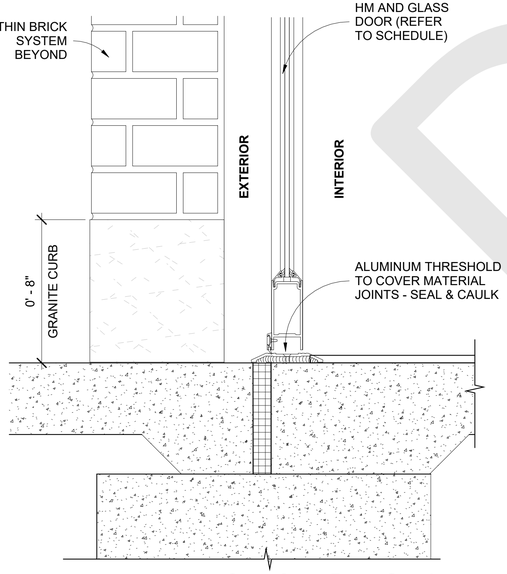
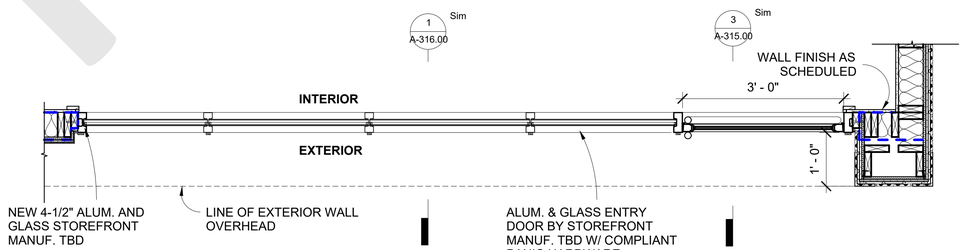




Partial Storefront Elevation 2
3/4" = 1'-0"



Storefront Door Section 3
3" = 1'-0"



Partial Storefront Plan Detail 1
3/4" = 1'-0"

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NEWBURGH, NEW YORK 12550

KEY PLAN

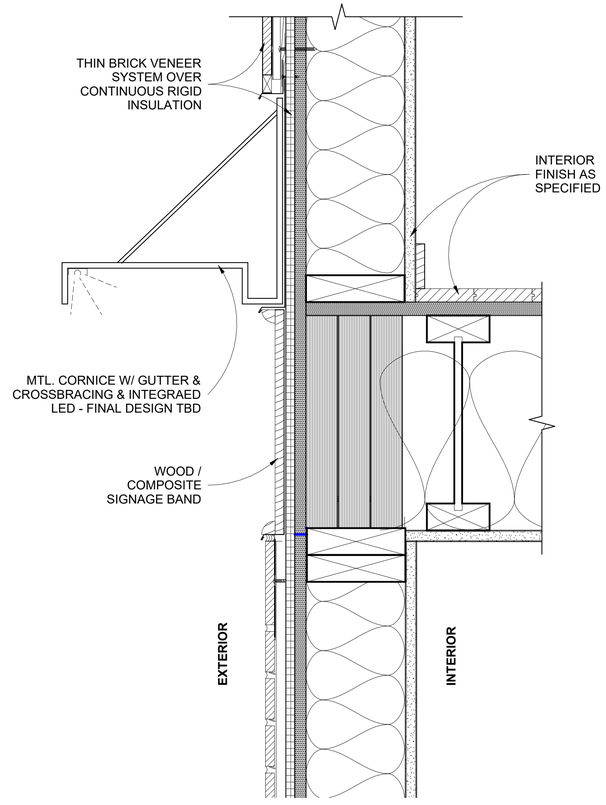
PROJECT NORTH

DRAWING TITLE
Storefront Plan & Details

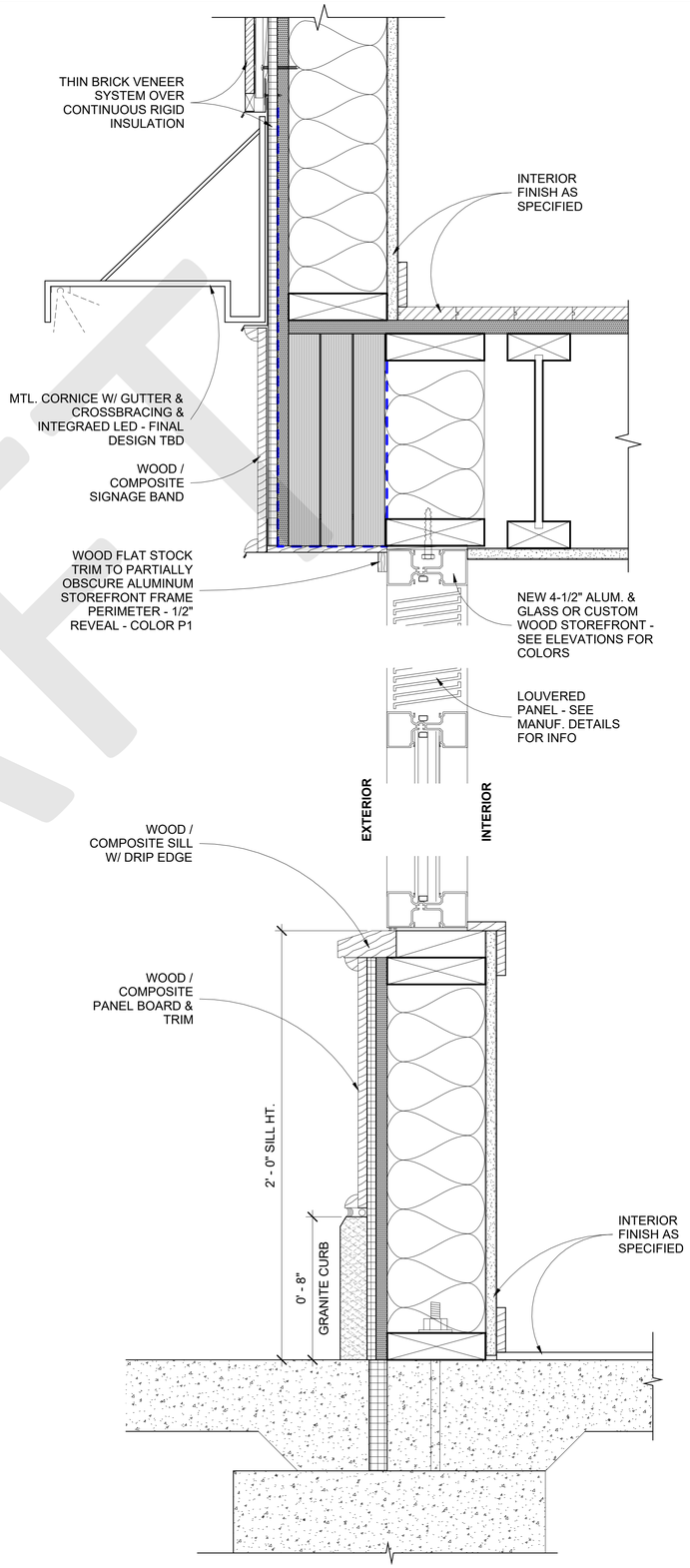
DRAWING NO.
A-315.00

SEAL & SIGNATURE

DATE: 12.26.2023
SCALE: As indicated
DWG BY: Author
CHK BY: Checker



Section at Pier & Typ. Exterior Wall 2
3" = 1'-0"



Storefront Section 1
3" = 1'-0"

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BMA
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473 MAIN STREET No. 1
BEACON, NY 12508
T: 845 831 1318
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58,60-62 William St.
NEWBURGH, NEW YORK 12550

KEY PLAN

PROJECT NORTH

DRAWING TITLE
Detail Wall Sections

DRAWING NO.
A-316.00

SEAL & SIGNATURE

DATE:	12.26.2023
SCALE:	3" = 1'-0"
DWG BY:	Author
CHK BY:	Checker

WINDOW GUARD REQUIREMENTS

OVERVIEW:
APPROVED WINDOW GUARDS ARE REQUIRED TO BE PROVIDED, INSTALLED AND MAINTAINED BY THE OWNERS, MANAGERS, OR AGENTS OF MULTIPLE DWELLINGS (THREE (3) APARTMENTS OR MORE), IN APARTMENT AND PUBLIC HALLWAY WINDOWS WHERE CHILDREN TEN (10) YEARS OF AGE OR YOUNGER RESIDE.

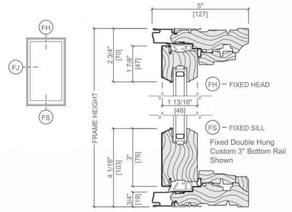
EXCEPTIONS ARE:
1. WINDOWS THAT PROVIDE ACCESS TO FIRE ESCAPES.
2. SECONDARY EGRESS WINDOWS IN FIRST FLOOR APARTMENTS WHERE THERE ARE FIRE ESCAPES ON UPPER FLOORS.
IT SHALL BE THE DUTY OF EACH PERSON WHO MANAGES OR CONTROLS A MULTIPLE DWELING TO ASCERTAIN WHETHER A CHILD IN THE PROTECTED AGE CATEGORY RESIDES THEREIN, AND TO COMPLY WITH THE REQUIREMENTS OF THE LAW ACCORDINGLY.

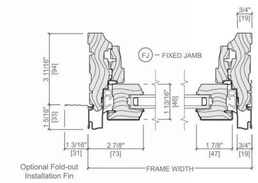
APPROVED WINDOW GUARDS:
1. APPROVED WINDOW GUARDS MUST BE MADE OF RIGID METAL AND BE A MINIMUM OF 15 INCHES TALL WITH 3 OR MORE HORIZONTAL BARS SPACED SO THAT THEY REJECT THE PASSAGE OF A FIVE (5) INCH SPHERE. SPACES BETWEEN THE HORIZONTAL BARS SHOULD BE NO MORE THAN 4½ INCHES WIDE.
2. THE MANUFACTURER'S APPROVAL NUMBER MUST BE IMPRINTED ON A VERTICAL STILE OF THE GUARD. FOR EXAMPLE: HDWG # 03-77-15. THE NUMBER MUST BE LISTED ON THE APPROVAL LIST OF MANUFACTURERS AND MODEL NUMBERS, DISTRIBUTED BY THE DEPARTMENT OF HEALTH AND MENTAL HYGIENE (DOHMH).
3. GUARDS MUST BE APPROPRIATE FOR THE TYPE OF WINDOW IN WHICH THEY ARE INSTALLED: DOUBLE HUNG, CASEMENT, SLIDER, etc. WHEN THE INSTALLAION OF AN APPROVED DOHMH WINDOW GUARD IS INFEASIBLE FOR STRUCTURAL REASONS, A REQUEST FOR A VARIANCE MUST BE SUBMITTED IN WRITING FOR REVIEW BY THE WINDOW GUARD POLICY AND ACCEPTANCE BOARD.
4. A LANDLORD OR MANAGER MUST PRODUCE A SUPPORTING LETTER FROM THE WINDOW GUARD POLICY AND ACCEPTANCE BOARD IF A VARIANCE IS CLAIMED AS HAVING BEEN GRANTED.
SELECTIVE INSTALLATION: WINDOW GUARDS MAY NOT BE INSTALLED SELECTIVELY. THEY MUST BE INSTALLED IN ALL WINDOWS, INCLUDING BUT NOT LIMITED TO WINDOWS LEADING TO A TERRACE OR BALCONY, BATHROOM WINDOWS AND FIRST FLOOR APARTMENT WINDOWS.
HALLWAY WINDOWS:
ALL WINDOWS IN PUBLIC HALLWAYS AND COMMON AREAS ON ALL FLOORS MUST BE GUARDED.

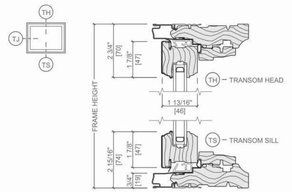
PROPER INSTALLATION:
1. WINDOW GUARDS THAT HAVE BEEN APPROVED BY DOHMH MUST BE FIRMLY AND SECURELY FASTENED INTO WELL MAINTAINED, STURDY AND STRUCTURALLY SOUND (NOT ROTTEN) WINDOW FRAMES USING TAMPER-PROOF SCREWS.
2. DOHMH APPROVED GUARDS HAVE A "HDWG #" APPROVAL NUMBER STAMPED ON THE GUARD, ARE MADE OF RIGID METAL, HAVE AT LEAST 3 HORIZONTAL BARS AND ARE AT LEAST 15 INCHES TALL.
3. TAMPER-PROOF AND "ONE-WAY" SCREWS MUST BE USED FOR INSTALLING GUARDS. THESE SCREWS CANNOT BE REMOVED WITH ANY ORDINARY SLOTTED HEAD OR PHILLIPS HEAD SCREW DRIVER.
4. THERE MAY BE NO MORE THAN 4½ INCHES OF OPEN, UNGUARDED SPACE ANYWHERE IN THE WINDOW APERTURE.
5. APPROVED "STOPS" MUST BE INSTALLED IN THE TRACKS OF THE WINDOW SO THAT THE LOWER SASH CANNOT BE RAISED MORE THAT 4½ INCHES ABOVE THE LOWER HALF OF THE TOP HORIZONTAL BAR OF THE GUARD. RIGID METAL "L" SHAPED STOPS OR "BLOCKS" MUST BE INSTALLED ON BOTH SIDES OF THE WINDOW TRACK TO ENSURE THAT WHEN THE WINDOW IS OPEN THE SPACE BETWEEN THE WINDOW GUARD AND THE OPEN WINDOW IS NOT GREATER THAN 4½ INCHES. WINDOW GUARD INFORMATION SHEET (REV. 1/2010)
6. IF AN APPROVED GUARD IS USED AND THERE ARE NO OPEN, UNGUARDED SPACES GREATER THAN 4½ INCHES WHEN THE WINDOW IS OPENED FULLY THEN NO STOPS ARE NECESSARY.

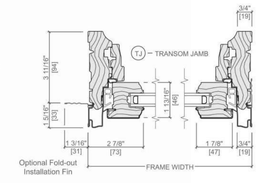
Architect Series® Traditional Hung Window

Unit Sections - Aluminum-Clad Ogee Exterior Glazing Profile

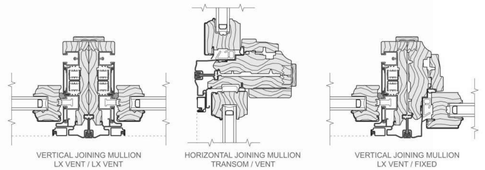




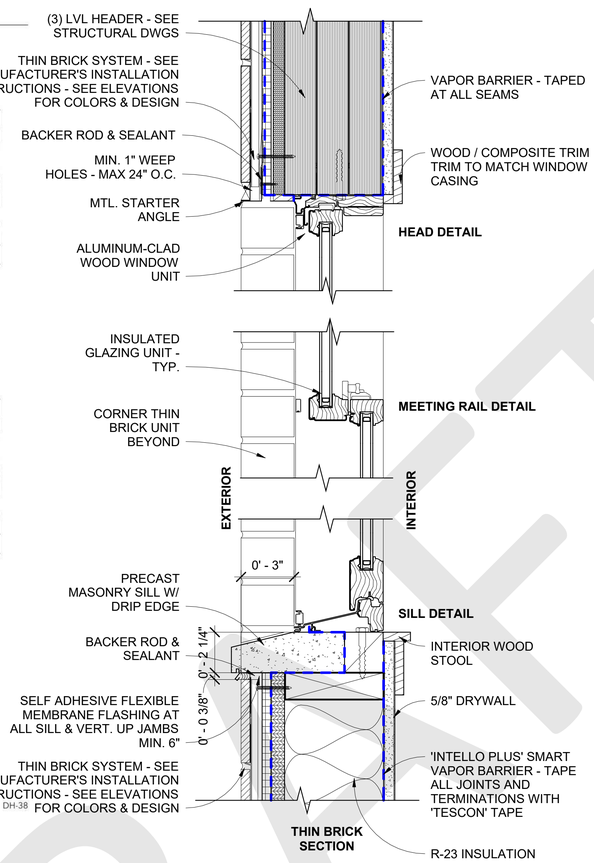


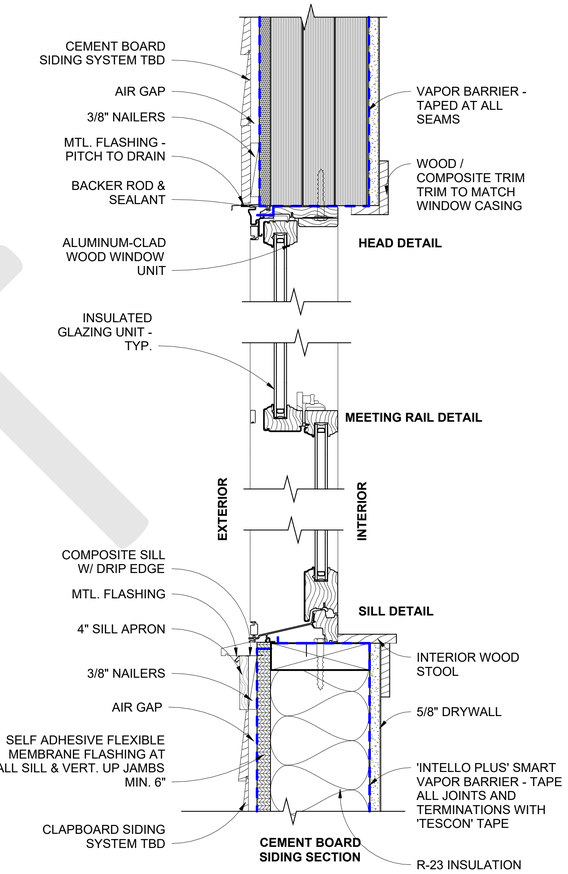


Typical Joining Mullions



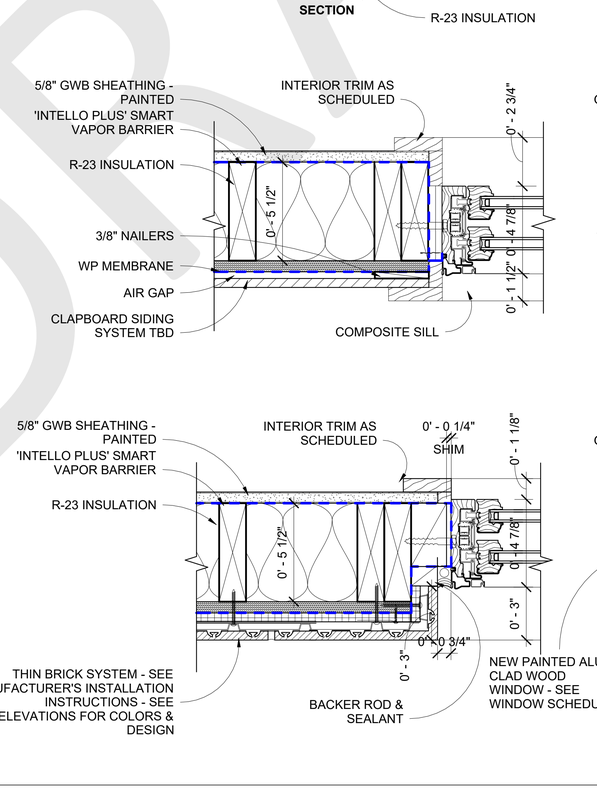
Scale 3" = 1' 0"
All dimensions are approximate.
See Combinations Section for mullion limitations and reinforcing requirements.





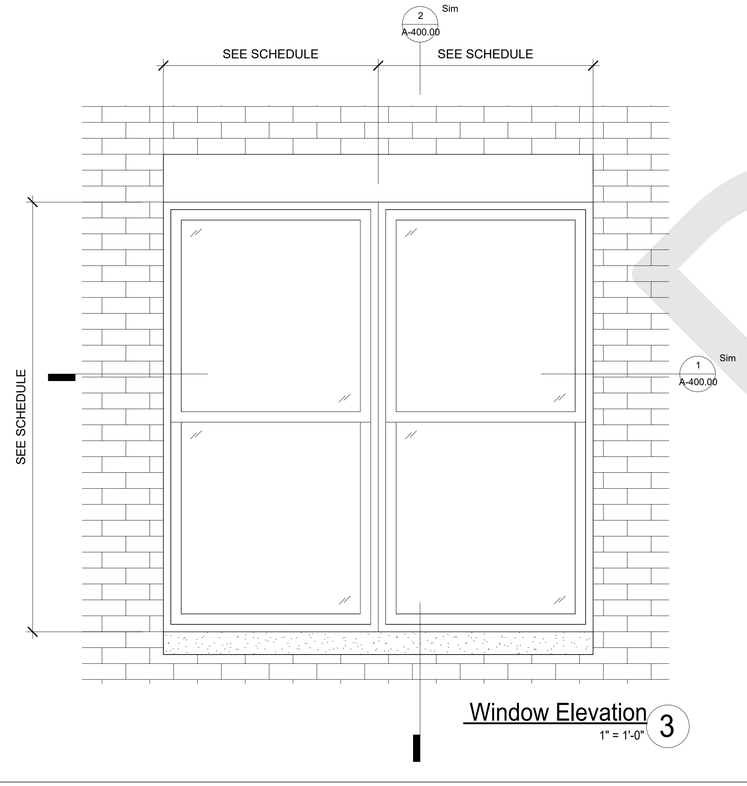
Typ. Window Section 2

3" = 1'-0"



Typ. Window Jamb Detail 1

3" = 1'-0"



Window Elevation 3

1" = 1'-0"

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473 MAIN STREET No. 1
BEACON, NY 12508
T: 845 831 1318
INFO@BERGMOSS.COM

c 2023 Berg + Moss Architects, PC

No.	Date	Description
	12.26.2023	ARC Filing

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58,60-62 William St.
NEWBURGH, NEW YORK 12550

KEY PLAN

PROJECT NORTH

DRAWING TITLE
Window Details & Notes

DRAWING NO.
A-400.00

SEAL & SIGNATURE

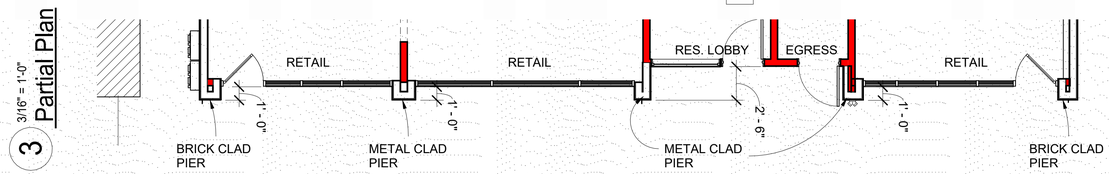
DATE:	12.26.2023
SCALE:	As indicated
DWG BY:	Author
CHK BY:	Checker

DRAFT

View from William Street (looking North) 2

EXISTING SITE PHOTOS
(taken from William Street - 09/07/2023)

William Street Elevation 1
3/16" = 1'-0"



3 Partial Plan
3/16" = 1'-0"

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No.	Date	Description
	12.26.2023	ARC Filing

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58,60-62 William St.
NEWBURGH, NEW YORK 12550

KEY PLAN

PROJECT NORTH

DRAWING TITLE
Exterior Views & Photography

DRAWING NO.
APPX-000.00

SEAL & SIGNATURE

DATE: 12.26.2023
SCALE: 3/16" = 1'-0"
DWG BY: Author
CHK BY: Checker

58-62 William Street

NEWBURGH, NEW YORK 12550

SITE PLAN APPLICATION - 08.05.2024

OWNER:
GRCGNY
175 HOOPER STREET
BROOKLYN, NEW YORK 11211

ARCHITECT:
BERG + MOSS ARCHITECTS, PC
473 MAIN STREET, SUITE NO. 1
BEACON, NEW YORK 12508

Approved by resolution of the Planning Board of the City of Newburgh, New York, on the _____ day of _____, 20__, subject to all requirements and conditions of said resolution. Any change, erasure, modification or revision of this plat, as approved, shall void this approval.
Signed this _____ day of _____, 20__, by:

Lisa C. Daily, Planning Board Chairwoman

Signed this _____ day of _____, 20__, by:

Jason C. Morris, P.E., City Engineer

Owner/Applicant Consent Note:

The undersigned owner for the property shown herein certifies that she/he/it are familiar with this plan set, including its notes and its contents as stated hereon, and all conditions of approval. The Applicant and the Owner understand their obligation to the City to keep the premises as per plan approval until a new or revised plan for development or use of the site is approved by the Planning Board. Additionally, Owner and Applicant also acknowledge that further compliance with the City of Newburgh Zoning Ordinance is our responsibility. Planning Board approval is not the equivalent of a building permit or certificate of occupancy, both of which can only be secured through the City of Newburgh Building Department.

Owner, sign and date.

Applicant, sign and date if different from Owner.

NOTE: AS-BUILT PLANS AND INSPECTION OF IMPROVEMENTS. NO CERTIFICATE OF OCCUPANCY SHALL BE GRANTED UNTIL THE APPLICANT HAS FILED A SET OF AS-BUILT PLANS WITH THE CITY ENGINEER AND BUILDING INSPECTOR, INDICATING ANY DEVIATIONS FROM THE APPROVED SITE PLAN. THE BUILDING INSPECTOR SHALL BE RESPONSIBLE FOR THE INSPECTION OF SITE IMPROVEMENTS, INCLUDING COORDINATION WITH THE CITY ENGINEER, AND SHALL GRANT A CERTIFICATE OF OCCUPANCY UPON A FINDING THAT THE PROJECT AS-BUILT COMPLIES IN ALL MATERIAL RESPECTS WITH THE SITE PLAN

EXISTING WATER & SEWER NOTES: THE EXISTING WATER SERVICE(S), TO BE ABANDONED, SHALL BE TURNED OFF AT THE CORPORATION STOP, THE WATER SERVICE PIPE DISCONNECTED FROM THE CORPORATION STOP, AND THE OPEN END OF THE CORPORATION STOP PLUGGED. THE ABANDONMENT OF THE SERVICE SHALL BE OVERSEEN AND CONFIRMED BY THE WATER SUPERINTENDENT OR DESIGNATED REPRESENTATIVE.
• THE EXISTING SANITARY SEWER CONNECTION(S), TO BE ABANDONED, MUST BE CUT AND CAPPED AT THE SEWER MAIN. THE ABANDONMENT OF THE SERVICE SHALL BE OVERSEEN AND CONFIRMED BY THE CITY ENGINEER OR DESIGNATED REPRESENTATIVE.

DRAWINGS LIST

Z-000.00	SITE PLAN & ZONING ANALYSIS
Z-001.00	SIDEWALK PLAN
Z-002.00	REAR YARD LANDSCAPING PLAN
Z-003.00	SITE PLAN DETAILS - TREE PLANTING & PERMEABLE PAVERS
Z-004.00	SITE PLAN DETAILS - WATER & SEWER CONNECTIONS
Z-005.00	SITE PLAN DETAILS - WATER & SEWER CONNECTIONS

TAX MAP

NOTE: SITE PLAN CONSTRUCTED USING DATA FROM SURVEY PERFORMED BY HOWARD W. WEEDEN, PLS ON JUNE 20TH, 2022.

TRASH COLLECTION:

PER CITY OF NEWBURGH ZONING CODE SEC. 183-19, A WRITTEN PERMIT FROM THE SUPERINTENDENT OF PUBLIC WORKS INDICATING THAT ARRANGEMENTS HAVE BEEN MADE WITH A PRIVATE WASTE COLLECTION PROVIDER WHO IS FULLY QUALIFIED, PERMITTED, AUTHORIZED, AND LICENSED UNDER ALL APPLICABLE STATE AND LOCAL LAWS, RULES AND REGULATIONS FOR THE COLLECTION OF WASTES GENERATED BY THE PROPERTY.

GENERAL NOTES

LOCATION:	58-62, NEWBURGH, NY 12550
TAX MAP:	SBL: 58: 38-3-31 60-62: 38-3-32
DEED REFERENCE:	58: BOOK: 13432, PAGE: 1152 60-62: BOOK: 14954, PAGE: 160
OWNER OF RECORD:	GRCGNY 175 HOOPER STREET BROOKLYN, NEW YORK 11211
APPLICANT:	BERG + MOSS ARCHITECTS, PC 473 MAIN STREET, SUITE NO. 1 BEACON, NEW YORK 12508
ZONING DISTRICT:	RM: MEDIUM DENSITY RESIDENTIAL ; HISTORIC DISTRICT OVERLAY
EXISTING USE:	VACANT (EMPTY LOTS)
PROPOSED USE:	MIXED USE - R2 RESIDENTIAL & B-BUSINESS
NARRATIVE:	NEW CONSTRUCTION OF FOUR STORY MIXED USE BUILDING W/ RETAIL SPACE AND THREE STORIES OF R-2 RESIDENTIAL UNITS ABOVE.
HOURS OF OPERATION:	N/A - USED AS HOUSING / CONFIRM W/ RETAIL TENNANTS

LOT SUMMARY

TAX LOT	STREET ADDRESS	ZONING DISTRICT	LOT SIZE	LOT AREA
38 - 3 - 31	58 WILLIAM STREET	(RM) MEDIUM-DENSITY RESIDENTIAL	24 X 100	+/- 2,400 SF
38 - 3 - 32	60-62 WILLIAM STREET	(RM) MEDIUM-DENSITY RESIDENTIAL	50 X 125	+/- 6,250 SF
TOTAL				**+/- 8,650 SF**

58 WILLIAM STREET / 60-62 WILLIAM STREET

TENTATIVE JOINED LOT
(RM) MEDIUM DENSITY RESIDENTIAL DISTRICT

LOT STANDARDS	MIN./MAX.	PROPOSED	VARIANCE REQD.
LOT AREA	1,800 SF/UNIT= 1,800 x 21=37,800 SF	+/- 8,650 SF *	**29,150 SF**
LOT WIDTH	45 FT	+/- 74 FT	N/A
LOT DEPTH	80 FT	+/- 125 FT	N/A
FRONT YARD SETBACK	10 FT. REQ'D	0 (WILLIAM ST) *	**10 FT**
SIDE YARD SETBACK	10 FT. REQ'D (EA.)	3.9 FT (NORTH)* 3.5 FT (SOUTH) *	**6.1 FT (NORTH)** **6.5 FT (SOUTH)**
REAR YARD SETBACK	20 FT. MIN.	27.5 FT	N/A
LOT COVERAGE	50% MAX. (4,325 SF)	+/- 54.7% (4,738 SF) *	**5% (413 SF)**
HEIGHT (FT.) No. STORIES	45 FT. MAX. 4 STORIES MAX.	44 FT. 4 STORIES	N/A N/A
OFF-STREET PARKING	0.75 / BEDROOM 0.75 x 35 BDRMS = 26	0 SPACES *	**26 SPACES**

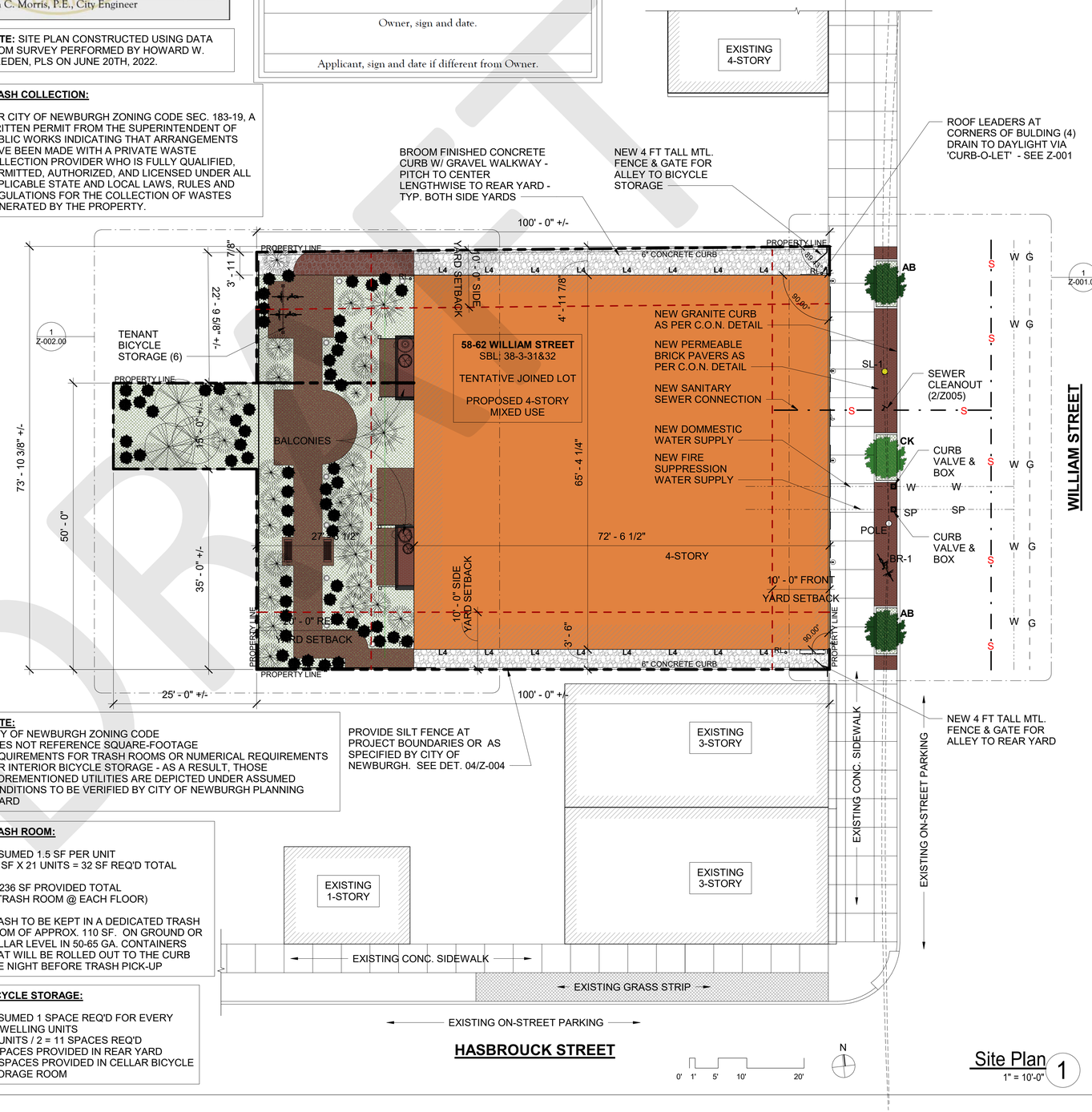
* INDICATES AREA VARIANCE REQUIRED

ADDITIONAL LAND USE APPROVALS

BOARD	APPLICATION NO.	APPROVAL DATE
ARCHITECTURAL REVIEW BOARD ZONING BOARD OF APPEALS PLANNING BOARD	AR 2023-121 APPEAL NO. 2024-19 INDEX NO. 2024-12	01/09/2024

NYS DEC BROWNFIELD CLEANUP PROGRAM

REFER TO THE BROWNFIELD CLEANUP AGREEMENT, INDEX C336098-02-24 AND ASSOCIATED WORK PLANS FOR SITE CLEANUP SPECIFICATIONS



NOTE:
CITY OF NEWBURGH ZONING CODE DOES NOT REFERENCE SQUARE-FOOTAGE REQUIREMENTS FOR TRASH ROOMS OR NUMERICAL REQUIREMENTS FOR INTERIOR BICYCLE STORAGE - AS A RESULT, THOSE AFOREMENTIONED UTILITIES ARE DEPICTED UNDER ASSUMED CONDITIONS TO BE VERIFIED BY CITY OF NEWBURGH PLANNING BOARD

PROVIDE SILT FENCE AT PROJECT BOUNDARIES OR AS SPECIFIED BY CITY OF NEWBURGH. SEE DET. 04/Z-004

TRASH ROOM:

ASSUMED 1.5 SF PER UNIT
1.5 SF X 21 UNITS = 32 SF REQ'D TOTAL

+/- 236 SF PROVIDED TOTAL
(1 TRASH ROOM @ EACH FLOOR)

TRASH TO BE KEPT IN A DEDICATED TRASH ROOM OF APPROX. 110 SF. ON GROUND OR CELLAR LEVEL IN 50-65 GA. CONTAINERS THAT WILL BE ROLLED OUT TO THE CURB THE NIGHT BEFORE TRASH PICK-UP

BICYCLE STORAGE:

ASSUMED 1 SPACE REQ'D FOR EVERY 2 DWELLING UNITS
21 UNITS / 2 = 11 SPACES REQ'D
6 SPACES PROVIDED IN REAR YARD
10 SPACES PROVIDED IN CELLAR BICYCLE STORAGE ROOM

Site Plan 1
1" = 10'-0"

Berg+Moss Architects
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BERG + MOSS ARCHITECTS PC
473 MAIN STREET No. 1
BEACON, NY 12508
T: 845 831 1318
INFO@BERGMOSS.COM

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No.	Date	Description
	07.05.2024	Planning Board Filing Set
	08.05.2024	Planning Board Revision

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58,60-62 William St.
NEWBURGH, NEW YORK 12550

KEY PLAN

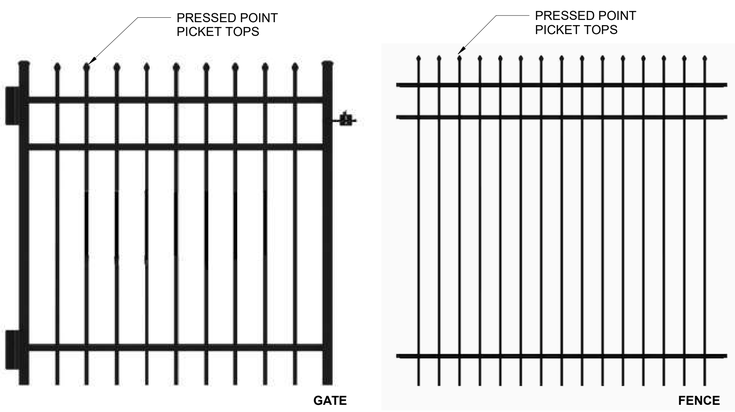
PROJECT NORTH

DRAWING TITLE
Planning Board Review - Site Plan & Zoning Analysis

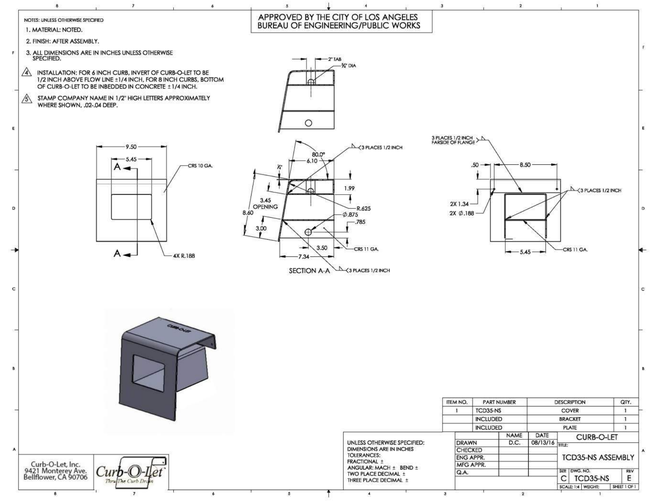
DRAWING NO.
Z-000.00

SEAL & SIGNATURE

DATE: 05.30.2024
SCALE: As indicated
DWG BY: Author
CHK BY: Checker

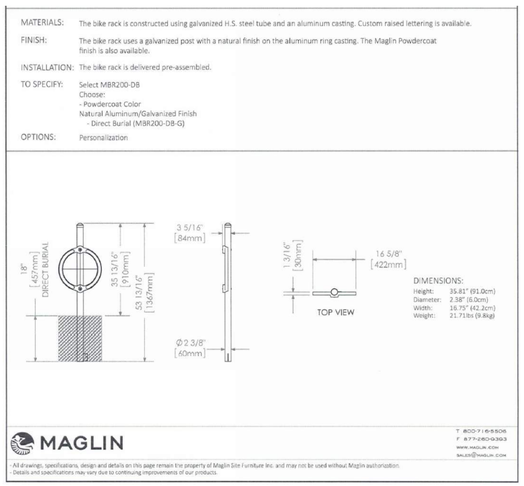


ALUMINUM / WROUGHT IRON FENCE AND GATE SAMPLE
IRONCRAFT ORLEANS ORLEANS 6-FT H X 6-FT W
4-FT H X 4-FT W GATE BLACK ALUMINUM PRESSED POINT PICKET TOPS
NOTE: FENCE IN REAR YARD TO BE 4'-0" HIGH.



CURB-O-LET INVERT
MODEL NO. TCD35-NS

COUPLING DS-56-44 SHALL COVERT FROM ROOF LEADER TO ADAPTER.
ADAPTER CP-SPA05 SHALL BE USED TO CONVERT TO UNDER SIDEWALK PIPE
PIPE CP-SP305H (5 FOOT SECTIONS) TO BE INSTALLED UNDER SIDEWALK.
ALL JOINTS TO BE SEALED WITH MASTIC.



BR-1
EXTERIOR BICYCLE RACK BY
MAGLIN OR APPROVED EQUAL

EXTERIOR LIGHTING TYPES - SEE Z-002 FOR SCEDULE

EXTERIOR LIGHT FIXTURE L1

MACADAM WALL SCONCE BY REJUVINATION LIGHTING

MODEL NO. A1776 OR EQUAL

LAMP SHADE COLOR TO BE "OIL RUBBED BRONZE"

EXTERIOR LIGHT FIXTURE L2

FLEXFIRE LED'S, COLORBRIGHT LED STRIP W/ EXTRUDED COVER

MODEL NO. IP65-CB-DYN2430-XXV-16FT OR EQUAL

"KLUS LIPOD" EXTRUDED COVER W/ BLACK COVER COLOR

EXTERIOR LIGHT FIXTURE L3

ASPECTLED 2.25" LED RECESSED LIGHT

MODEL NO. AL-RL-S-225-U OR EQUAL

LAMP HOUSING AND TRIM COLOR TO BE BLACK

ALL LIGHT TYPES TO BE 2700K OR LESS

LEGEND

OH	OVERHEAD WIRES
	CURB VALVE
UP	UTILITY POLE
W	WATER
G	GAS
SP	SPRINKLER
SA	SANITARY SEWER

AT BUILDING/FOUNDATION & SIDEWALK BORDER, INSTALL 1/2" TH. PREFORMED FILLER, BONDBREAKER AND POURABLE URETHANE SEALANT

SIDEWALK NOTES:

- REPAIR OF THE CURBS AND SIDEWALKS WILL REQUIRE COMPLIANCE WITH THE CITY'S STREETSCAPE STANDARDS. THE CITY OF NEWBURGH STANDARD DETAILS SHALL TAKE PRECEDENT OVER THE LAYOUT DEPICTED IN THE PLAN

- PRIOR TO PLANTING, VERIFY IN FIELD EXACT LOCATIONS OF NEW STREET TREES & COORDINATE W/ OTHER TRADES TO AVOID CONFLICT W/ UNDERGROUND UTILITY LINES (SEE DETAILS FOR REQ'D UTILITY CLEARANCES & TREE PLANTING)

NOTES:

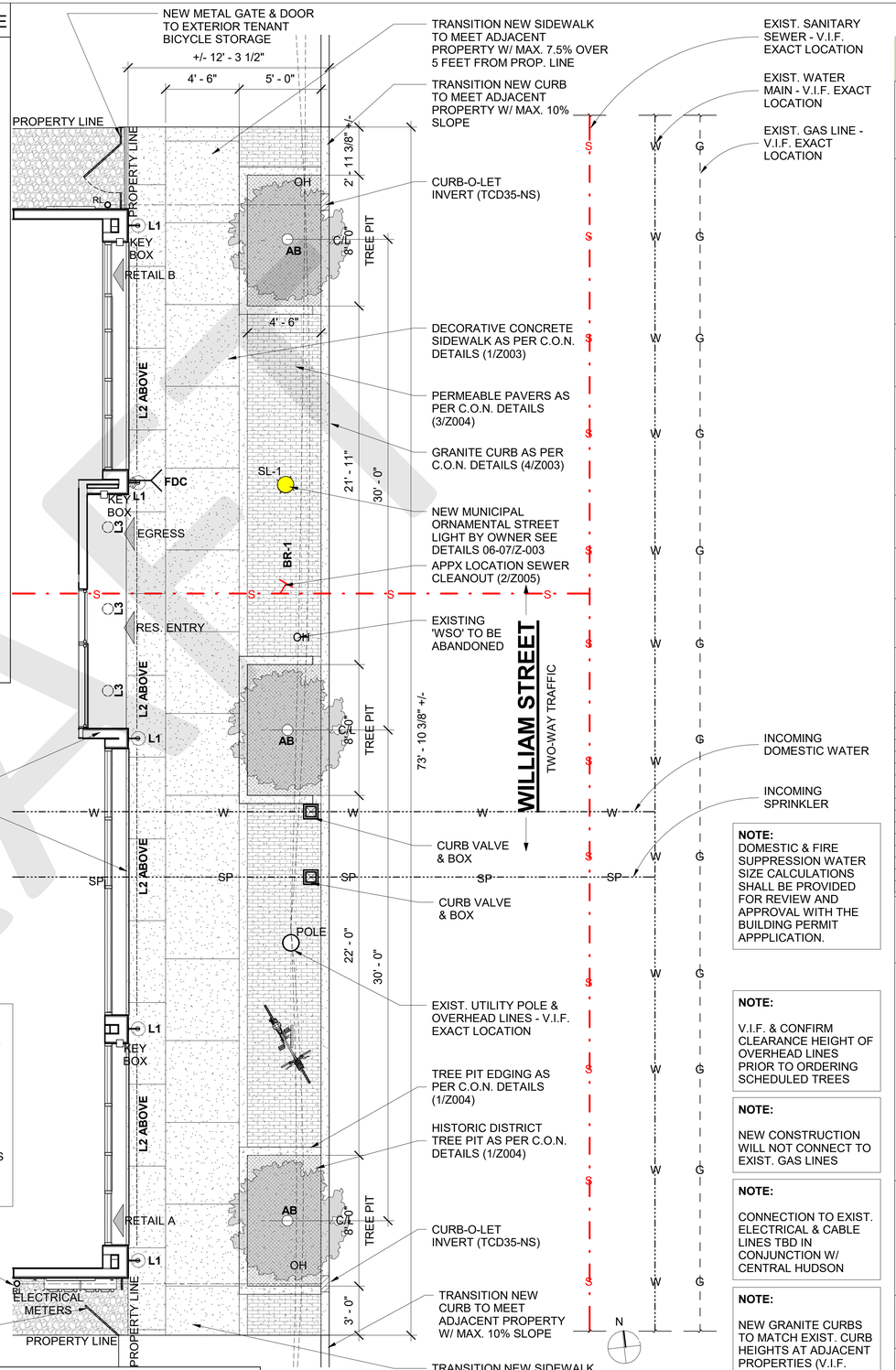
1. IN ACCORDANCE WITH SEC.300-51 *ENVIRONMENTAL PERFORMANCE STANDARDS*, SPECIFICALLY (D) THE FOLLOWING SHALL BE IMPLEMENTED:

   A. NO USE SHALL PRODUCE GLARE SO AS TO CAUSE ILLUMINATION BEYOND THE BOUNDARIES OF THE PROPERTY ON WHICH IT IS LOCATED IN EXCESS OF 0.5 FOOTCANDLE.

   B. ALL EXTERIOR LIGHTING, INCLUDING SECURITY LIGHTING, IN CONNECTION WITH ALL BUILDINGS, SIGNS, OR OTHER USES SHALL BE DIRECTED AWAY FROM ADJOINING STREETS AND PROPERTIES.

2. ALL LIGHTING SHALL BE CONSISTENT WITH A COLOR TEMPERATURE OF 2,700 KELVIN OR LESS.

3. PROPOSED SITE LIGHTING FEATURES, AS APPLICABLE, SHALL UTILIZE A COMBINATION OF TIMER AND SENSOR FEATURES TO TURN OFF OR DIM SITE LIGHTING OUTSIDE NORMAL BUSINESS HOURS AND TO ACTIVATE THE LIGHTING AFTER HOURS.



NOTE: KEEP ROOF DRAIN CLEAR OF ELEC. METERS

NEW METAL GATE & DOOR TO REAR YARD ACCESS

ELECTRICAL METERS

PROPERTY LINE

STREET TREE PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	ROOT	SPACING	COMMENTS
AB	AUTUMN BRILLIANCE	SERVICEBERRY	3		B&B	AS SHOWN - MIN. 30' O.C.	V.I.F. EXACT LOCATIONS OF EXISTING UTILITY POLES AND CENTRAL SERVICES BEFORE PLANTING - TREES ARE NOT TO BE PLANTED OVER INCOMING SERVICES

William Street Sidewalk Plan

1/4" = 1'-0"

1

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BERG + MOSS ARCHITECTS PC
473 MAIN STREET No. 1
BEACON, NY 12508
T: 845 831 1318
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58,60-62 William St.

NEWBURGH, NEW YORK 12550

KEY PLAN

PROJECT NORTH

DRAWING TITLE
Sidewalk Detail Plan

DRAWING NO.
Z-001.00

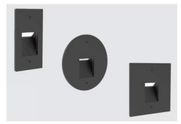
SEAL & SIGNATURE

DATE: 05.30.2024
SCALE: 1/4" = 1'-0"
DWG BY: Author
CHK BY: Checker

L-4

HYDREL

CATALOG NUMBER
NOTES
TYPE



HSL11

Static White and Static Color Step Light 11

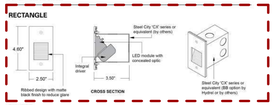
HIGHLIGHTS

- Integral Driver
- Short, Medium, and Long throw distributions
- Standard 0-10V dimming option
- Die-cast housing with solid aluminum, brass, or stainless steel faceplate
- Wet location listed
- Back Box provided by Hydrel or by others
- Suitable for concrete pour if BB option is chosen or Steel City back box is used

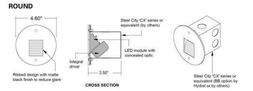
5 YEAR WARRANTY

DIMENSIONS

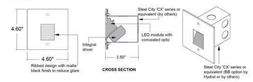
RECTANGLE



ROUND



SQUARE



LUMEN PACKAGES

Distribution	Delivered Lumens	Input Watts	Lumens/ Watt
Short	36	3	12
Long	54	3	18

Performance data based upon 30K LED 80CRI

© 2015-2024 Acuity Brands Lighting, Inc. • One Lithonia Way Conyers GA 30012
Phone: 800-705-SERV (7378) • www.hydrel.com

ORDERING INFORMATION

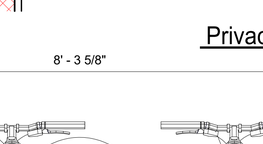
EXAMPLE: HSL11 SQ LED 27K MVOLT L MINS BRB

Series*	Shape*	Source*	Color Temperature*	Voltage*	Distribution*
HSL11 Step Light 11	RECT Rectangle RO Round SQ Square	LED	27K 2700K 30K 3000K 35K 3500K 40K 4000K 50K 5000K	AMBUW Amber Limited Wavelength 590 nm BLU Blue RED Red RDO Red-Orange	MVOLT Multi-Volt 120V thru 277V	L Long Throw M Medium Throw S Short Throw

Dimming Optional	OPTION	Finish*
MINS Dimming Driver	BB Back Box Note: Include BB if you need a back box, otherwise back box is by others. Note: Suitable for concrete pour if BB option is chosen or Steel City back box is used	BRB Brushed Brass BBP Brushed Brass Paint BRSS Brushed Stainless Steel LBPS Light Bronze Paint Smooth PBR Polished Brass PSS Polished Stainless Steel SBK Satin Black Paint SBW Satin White Paint CF Custom Finish RALTBD Ral Paint Finishes Note: RALTBD for pricing only, replace with applicable RAL call out when ready to order. See the VALUEBOOK for available options. It is recommended that Hydrel products only use textured paint.

Note: * is a required field

PERFORMANCE DATA



Lumen Multiplier Table for CCT

CCT	Multiplier
27K	0.888
30K	1.000
35K	1.031
40K	1.047
50K	1.056
AMBUW	0.263
RED	0.318
GREEN	0.546
BLUE	0.283

BUG RATING CHART

SERIES	CCT	Distribution	BUG Rating
HSL11	30K	S Short Throw	B0UX00

Note: For full report see IES file.

Expected Life: Static White LED: L70 @ 60,000 hours
Static Color LED: L70 @ 60,000 hours

OPERATING TEMPERATURE: -40°C through 45°C

© 2015-2024 Acuity Brands Lighting, Inc. • One Lithonia Way Conyers GA 30012
Phone: 800-705-SERV (7378) • www.hydrel.com

L-5

LEDGE LED PATH LIGHT
6081

WAC LANDSCAPE LIGHTING

Fixture Type:
Catalog Number:
Project:
Location:

PRODUCT DESCRIPTION

Sleek linear design blends seamlessly into pathways while providing soft, directional illumination

SPECIFICATIONS

Input: 9-15VAC (Transformer is required)
Power: 3.0W / 4.50A
Brightness: Up to 105 lm
CRI: 90
Rated Life: 60,000 hours

FEATURES

- IP66 rated, Protected against powerful water jets
- Factory sealed water tight fixtures
- Translucent lens provides uniform light distribution
- Mounting stake, 6 foot lead wire, and direct burial gel filled wire nuts are included
- Recommended spacing for installation: Residential: 8 to 10ft; Commercial: 5 to 7ft
- Maintains constant lumen output against voltage drop
- UL & cUL 1838 Listed

ORDERING NUMBER

		Color Temp		Finish	
6081	Linear Path	27 30	2700K Warm White 3000K Pure White	BK BZ	Black on Aluminum Bronze on Aluminum

6081-___BK

Example: **6081-30BK**

wwSighting.com
Phone (800) 526.2588
Fax (800) 526.2585

Headquarters/Eastern Distribution Center
44 Harbor Park Drive
Port Washington, NY 11050

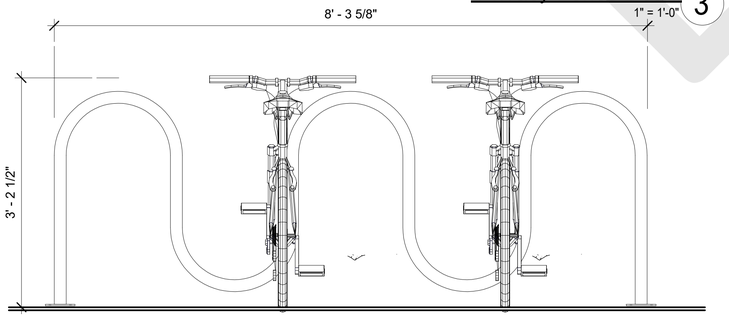
Central Distribution Center
1600 Distribution Ct
Lithia Springs, GA 30122

Western Distribution Center
1750 Archibald Avenue
Ontario, CA 91760

WAC Lighting retains the right to modify the design of our products at any time as part of the company's continuous improvement program.

Privacy Fence Detail 3

1" = 1'-0"



Bike Rack Detail 2

1" = 1'-0"

LUMINAIRE SCHEDULE

TAG	TYPE	MOUNTING	MODEL	QUANTITY
L-1	ACCENT SCONCE	WALL @ 7'-0"	REJUVENATION - A1776	5
L-2	STRIP LIGHT	STOREFRONT UNDERMOUNT	FLEXFIRE IP65-CB-DYN2430-XXV-16FT	4
L-3	SPOT LIGHT	SOFFIT UNDERMOUNT	ASPECTLED AL-RL-S-225-U	3
L-4	STEP LIGHT	WALL @ 1'-6"	HYDREL HSL11	16
L-5	BOLLARD LIGHT	GROUND @ 2'-0"	WAC LEDGE 6081	9

LIGHTING NOTES PER SECTION 300-51:

1. NO LIGHTING SHALL PRODUCE AN ILLUMINATION LEVEL EXCEEDING 0.5 FOORCANDLES BEYOND THE PROPERTY LINE.

2. ALL EXTERIOR LIGHTING, INCLUDING SECURITY LIGHTING, IN CONNECTION WITH ALL BUILDINGS, SIGNS OR OTHER USES SHALL BE DIRECTED AWAY FROM ADJOIING STREETS & PROPERTIES,

3. COLOR TEMPERATURE SHALL BE 2700 KELVIN OR LESS

4. PROPOSED SITE LIGHTING FIXTURES, AS APPLICABLE SHALL UTILIZE A COMBINATION TIME AND SENSOR FEATURES TO TURN OFF OR DIM SITE LIGHTING OUTSIDE NORMAL BUSINESS HOURS.

Rear Yard Landscaping Plan 1

1/4" = 1'-0"

BERG + MOSS ARCHITECTS PC
473 MAIN STREET No. 1
BEACON, NY 12508
T: 845 831 1318
INFO@BERGMOSS.COM

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No.	Date	Description
	07.05.2024	Planning Board Filing Set
	08.05.2024	Planning Board Revision

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58,60-62 William St.

NEWBURGH, NEW YORK 12550

KEY PLAN

PROJECT NORTH

DRAWING TITLE
Rear Yard Landscaping Plan

DRAWING NO.
Z-002.00

SEAL & SIGNATURE

DATE: 05.30.2024
SCALE: As indicated
DWG BY: Author
CHK BY: Checker

NOTES:

1. ALL UTILITY CONNECTIONS FOR WATER, SANITARY SEWER, GAS, ELECTRIC SHALL BE PROVIDED PER THE APPROVAL OF THE CITY OF NEWBURGH ENGINEER.
2. LOCATIONS OF THE EXISTING WATER SERVICE LINE AND SANITARY SEWER SERVICE ARE TO BE FIELD VERIFIED BEFORE PROCEEDING WITH THE PROPOSED UTILITY WORK.

   *** IF THE EXISTING WATER AND SEWER CONNECTIONS ARE DETERMINED TO BE INADEQUATE TO SERVE THE PROPOSED DEVELOPMENT, THEN EACH RESPECTIVE UTILITY MUST BE ABANDONED AT THE MAIN. THE EXISTING WATER SERVICE SHALL BE TURNED OFF AT THE CORPORATION STOP, THE WATER SERVICE LATERAL DISCONNECTED FROM THE CORPORATION STOP, AND THE OPEN END OF THE CORPORATION STOP PLUGGED. THE EXISTING SANITARY SEWER CONNECTION MUST BE CUT AND CAPPED AT THE SEWER MAIN.
3. ELECTRIC, TELEPHONE AND CABLE TELEVISION SERVICES TO BE UNDERGROUND. ELECTRIC CONNECTIONS ARE THE PURVIEW OF CENTRAL HUDSON GAS & ELECTRIC (NO GAS CONNECTIONS FOR NEW BUILDING).
4. ALL EXTERIOR LIGHTING IN CONNECTION WITH ALL BUILDINGS, SIGNS OR OTHER USES SHALL BE DIRECTED AWAY FROM ADJOINING STREETS AND PROPERTIES AND SHALL NOT CAUSE ANY OBJECTIONABLE GLARE OBSERVABLE FROM SUCH STREETS AND PROPERTIES AS REQUIRED BY SECTION 300-51(D) OF THE ZONING LAW
5. THE SITE LIGHTING SHALL BE PROPERLY DESIGNED AND SHIELDED SO AS TO AVOID GLARE AND PREVENT VISIBILITY OF THE SOURCE OF THE LIGHT FROM AREAS OFF-SITE AS REQUIRED BY SECTION 300-51(D) OF THE ZONING LAW.

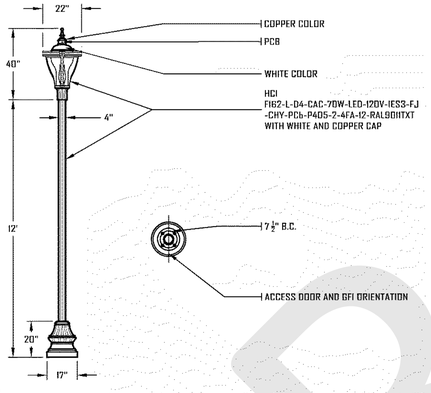
SECTION 293-8 - CONNECTION TO THE CITY WATER SYSTEM

1. A PERMIT IS REQUIRED FROM THE CITY OF NEWBURGH CODES DEPT. AUTHORIZED BY THE PLUMBING INSPECTOR
2. A CITY OF NEWBURGH LICENSED PLUMBER MUST BE RETAINED TO INSTALL THE WATER CONNECTION
3. A BONDED EXCAVATOR IS REQUIRED FOR ALL EXCAVATIONS WITHIN THE CITY STREET RIGHT-OF-WAY.
4. THE CITY OF NEWBURGH WATER SUPERINTENDENT SHALL BE NOTIFIED VIA A CORPORATION TAP REQUEST, PRIOR TO MAKING CONNECTION TO THE MUNICIPAL WATER SYSTEM.
5. THE CITY OF NEWBURGH WATER DEPT. SHALL INSTALL THE CORPORATION TAP INTO THE MUNICIPAL WATER SYSTEM FOR WATER SERVICE CONNECTIONS UP TO ONE (1) INCH. CORPORATION TAPS ABOVE ONE (1) INCH IN SIZE SHALL BE DONE BY AN APPROVED CONTRACTOR SPECIALIZING IN LARGE DIAMETER TAPPING.
6. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO AND DURING BACKFILL..

SECTION 248-8 - BUILDING SEWERS AND CONNECTIONS

1. A PERMIT IS REQUIRED FROM THE CITY OF NEWBURGH CODES DEPT. AUTHORIZED BY THE PLUMBING INSPECTOR
2. A CITY OF NEWBURGH LICENSED PLUMBER MUST BE RETAINED TO INSTALL SANITARY SEWER CONNECTIONS.
3. A BONDED EXCAVATOR IS REQUIRED FOR ALL EXCAVATIONS WITHIN THE CITY STREET RIGHT-OF-WAY.
4. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO AND DURING BACKFILL..

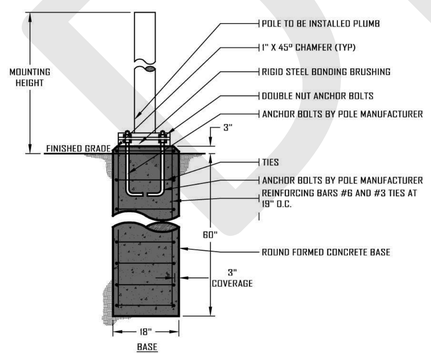
National Flood Hazard Layer FIRMette



DETAIL NOTES:

1. PROPOSED LIGHTS SHALL MEET CITY OF NEWBURGH STANDARDS BY HERITAGE CASTING & IRONWORKS OR APPROVED EQUAL.
2. MATERIAL AND METHODS OF CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.

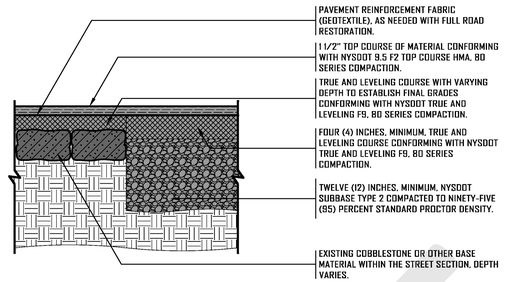
07 ORNAMENTAL STREET LIGHT
CITY OF NEWBURGH STANDARD DETAIL — N.T.S.



DETAIL NOTES:

1. CONDUITS AND GROUNDING SHALL BE AS SPECIFIED ON APPROVED PLAN.
2. ALL CONCRETE SHALL BE 3,000 PSI @ 28 DAYS
3. DESIGNED FOR 90 MPH WIND WITH FIXTURE AREA OF 13 SF
4. FOUNDATION DIAMETER AND REINFORCING CIRCLE SHALL BE COORDINATED WITH ANCHOR BOLT LIMITS
5. FOUNDATIONS SHALL BEAR ON UNDISTURBED NATURAL SOIL OR COMPACTED CRUSH STONE
6. ALL EXCAVATIONS SHALL BE BACKFILLED WITH STRUCTURAL FILL AND COMPACTED TO 95% OF MAXIMUM MATERIAL DENSITY
7. EXPOSED AREAS OF CONCRETE AND ONE FOOT MIN BELOW FINISHED GRADE SHALL BE FORMED

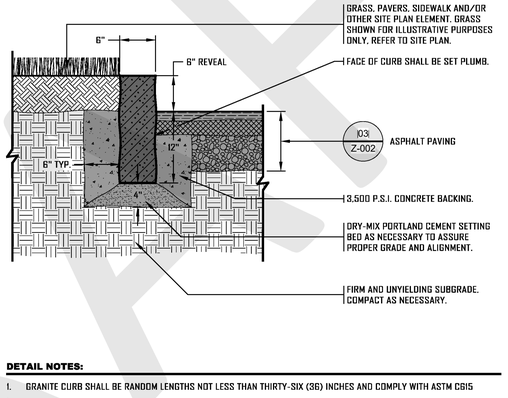
06 EXT. MOUNTED LIGHT WITH CONC. BASE
CITY OF NEWBURGH STANDARD DETAIL — N.T.S.



DETAIL NOTES:

1. MATERIAL AND METHODS OF CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS..
2. HOT MIX ASPHALT (HMA) PAVEMENT SHALL CONFORM WITH SECTION 400 *HOT MIX ASPHALT* OF THE ABOVE REFERENCED NYSDOT STANDARD SPECIFICATIONS AND THE TYPE CALLED OUT IN THESE DRAWINGS. ALTHOUGH SECTION 400 IN ITS ENTIRETY IS REFERENCED, THE HOT MIX ASPHALT (HMA) PAVEMENT(S) SPECIFIED FOR THIS CONTRACT SHALL BE AS SPECIFIED UNDER SECTION 402 *HOT MIX ASPHALT (HMA) PAVEMENTS*'.
3. TACK COAT MATERIAL AND APPLICATION RATE WHEN SPECIFIED OR CALLED OUT IN THESE DRAWINGS OR REQUIRED BY THE REFERENCED SPECIFICATIONS SHALL CONFORM WITH SECTION 407 *TACK COAT* OF THE NYSDOT STANDARD SPECIFICATIONS. REFER TO NOTE NO. 1 ABOVE
4. PAVEMENT REINFORCEMENT FABRIC (GEOTEXTILE) SHALL BY TENSAR GLASGRID 8501 OR APPROVED EQUIVALENT. PRODUCT SHALL BE INSTALLED PER MANUFACTURES SPECIFICATIONS.

05 ASPHALT PAVEMENT - CITY R.O.W.
CITY OF NEWBURGH STANDARD DETAIL — 1" = 1'-0"



DETAIL NOTES:

1. GRANITE CURB SHALL BE RANDOM LENGTHS NOT LESS THAN THIRTY-SIX (36) INCHES AND COMPLY WITH ASTM C615 .
2. JOINTS SHALL BE 1/4 INCH, FULLY MORTARED ,FINISHED FLUSH WITH THE EXPOSED CURB SURFACES. ALL SURFACES SHALL BE CLEANED OF EXCESS MORTAR.
3. A SIX (6) INCH CURB REVEAL SHALL BE MAINTAINED, WHERE NEW AND/OR RESET GRANITE CURB MEETS EXISTING CURB, A 3:1 SLOPE SHALL BE MAINTAINED TO TRANSITION THE SIX (6) INCH CURB REVEAL TO MEET THE EXISTING CURB REVEAL.

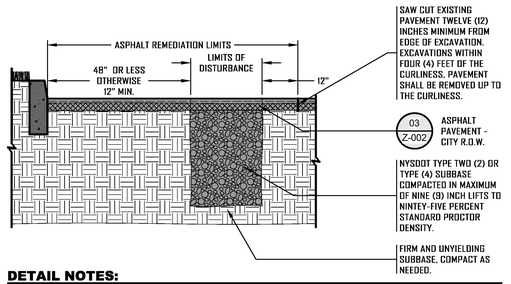
04 GRANITE CURB
CITY OF NEWBURGH STANDARD DETAIL — 1" = 1'-0"

811

Know what's below.
Call before you dig.

NOTIFY 811 AT LEAST FORTY-EIGHT (48) HOURS, EXCLUDING THE DAY OF THE NOTIFICATION, BEFORE ANY GROUND DISTURBANCE AND HAVE THE UNDERGROUND UTILITIES MARKED OUT. WAIT FOR THE AFFECTED UTILITY OPERATORS TO RESPOND, AND THEN CONFIRM THE UTILITIES HAVE BEEN ACCURATELY LOCATED. RESPECT THE IDENTIFIED LOCATIONS AND DIG ACCORDINGLY, TAKING PRECAUTIONS, ESPECIALLY WITHIN THE KNOWN TOLERANCE ZONE. IN THE EVENT MARK OUTS CANNOT BE MAINTAINED AND/OR GROUND DISTURBANCE CONTINUES LONGER THAN TEN (10) DAYS, NOTIFY 811 AND REQUEST A REMARK.

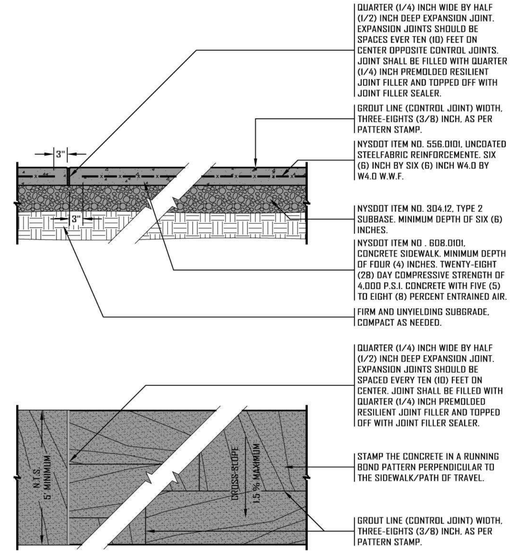
03 DIG SAFELY NEW YORK
CITY OF NEWBURGH STANDARD DETAIL



DETAIL NOTES:

1. WORK WITHIN THE R.O.W. LIMITS ALONG SOUTH STREET BETWEEN MARINE DRIVE / WATER STREET AND THE WESTERN CITY LINE AND/OR MARINE DRIVE BETWEEN THE SOUTHERN CITY LINE AND ROBINSON AVENUE (9W) REQUIRES A PERMIT FROM THE NYSDOT. THIS PERMIT WOULD BE IN ADDITION TO ANY REQUIRED CITY OF NEWBURGH PERMITS.
2. EXCAVATION SHALL NOT BE BACKFILLED WITHOUT THE CITY'S PLUMBING INSPECTOR OR DESIGNATED REPRESENTATIVE PRESENT. INSPECTION / WITNESS MAY BE SCHEDULED THROUGH THE CITY OF NEWBURGH'S DEPARTMENT OF CODE COMPLIANCE BY CALLING (845) 569-7400.
3. NO EXCAVATED MATERIAL OR PAVEMENT, FROZEN, WET OR SPONGY MATERIAL, OR CLAY SHALL BE USED AS BACKFILL.
4. ALL JOINTS TO BE SEALED WITH ASPHALT EMULSION (AS-2D).
5. IF EXISTING PAVEMENT THICKNESS EXCEEDS 6", INCREASE THICKNESS OF BINDER COURSE TO MATCH EXISTING TOTAL THICKNESS.
6. ALL PAVEMENT MARKINGS DISTURBED SHALL BE RESTORED TO THE SATISFACTION OF THE CITY.

02 ASPHALT REMEDIATION - CITY R.O.W.
CITY OF NEWBURGH STANDARD DETAIL — 1/2" = 1'-0"



DETAIL NOTES:

1. MATERIAL AND METHODS OF CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.
2. ALL WORK SHALL CONFORM WITH SECTION 608 *SIDEWALK, DRIVEWAYS, AND BICYCLE PATHS* OF THE NYSDOT STANDARD SPECIFICATIONS, REFER TO NOTE NO. 1 ABOVE.
3. CONCRETE MATERIALS, PLACEMENT AND CONSTRUCTION SHALL CONFORM WITH SECTION 500 *PORTLAND CEMENT CONCRETE* OF THE NYSDOT STANDARD SPECIFICATIONS, REFER TO NOTE NO. 1 ABOVE.
4. REINFORCING STEEL FOR CONCRETE SHALL CONFORM WITH SECTION 556 R*EINFORCING STEEL FOR CONCRETE STRUCTURES*' OF THE NYSDOT STANDARD SPECIFICATIONS, REFER TO NOTE NO. 1 ABOVE, AND AS SPECIFICALLY CALLED OUT IN THE DRAWINGS.
5. SUBBASE MATERIAL SHALL CONFORM WITH SECTION 304 *SUBBASE COURSE* OF THE NYSDOT STANDARD SPECIFICATIONS, REFER TO NOTE NO. 1 ABOVE
6. CONCRETE SIDEWALK IN THE EAST END HISTORIC DISTRICT SHALL BE DYED WITH BUTTERFIELD UNI-MIX® U28 CHARCOAL OR APPROVED EQUIVALENT AND STAMPED WITH EIGHTEEN (18) INCH BY THIRTY-SIX (36) INCH BLUESTONE BY BUTTERFIELD COLOR. PRODUCT NUMBER BST4210 OR APPROVED EQUIVALENT. A SET OF STAMPS ARE AVAILABLE FROM THE CITY OF NEWBURGH CODE COMPLIANCE DIFFICE. THE FINISHED SIDEWALKS SHALL BE SEALED WITH BUTTERFIELD COLOR® CLEAR-GUARD™ CURE & SEAL CLEAR GUARD PRO 350 OR APPROVED EQUIVALENT WITH A POLYMER ADDITIVE DESIGNED TO ADD TO SEALER FOR A SLIP-RESISTANT SURFACE.
7. EXPANSION JOINTS SHALL BE INSTALLED AT ALL EXISTING IMMOVABLE OBJECTS, AT CONSTRUCTION COLD JOINTS, AND AS PER THE SPACING IDENTIFIED IN THIS DETAIL OR SPECIFICALLY CALLED OUT IN THE DRAWINGS.
8. NO JOINTS SHALL NOT BE SAW CUT. ALL JOINT SHALL BE AS PER THE STAMPED TEXTURE OR TOOLED, REFER TO NOTE NO. 6 ABOVE.
9. WHERE IT IS NECESSARY TO PLACE FILL FOR PURPOSE OF BRINGING THE SUBGRADE ELEVATION UP TO A SPECIFIED GRADE, THE FILL MATERIAL PLACED SHALL BE IN CONFORMATION WITH SECTION 203 *EXCAVATION AND EMBANKMENT* OF THE NYSDOT STANDARD SPECIFICATIONS, REFER TO NOTE NO. 1 ABOVE.
10. THE FINISHED SIDEWALK SHALL BE SEALED WITH PROSOCO CONSOLIDECK SALTGUARD WB PENETRATING WATER AND SALT BARRIER, EUCLID CHEMICAL COMPANY BARACADE SILANE 100 SILANE WATER AND SALT REPELLENT, OR APPROVED EQUIVELANT.

101 CONCRETE SIDEWALK - DECORATIVE
CITY OF NEWBURGH STANDARD DETAIL, APPROVED JUNE 16, 2022 — 3/4" = 1'-0"

Berg+Moss Architects
BMA
BERG + MOSS ARCHITECTS PC
473 MAIN STREET No. 1
BEACON, NY 12508
T: 845 831 1318
INFO@BERGMOSS.COM

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No.	Date	Description
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	08.05.2024	Planning Board Revision

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58,60-62 William St.
NEWBURGH, NEW YORK 12550

KEY PLAN

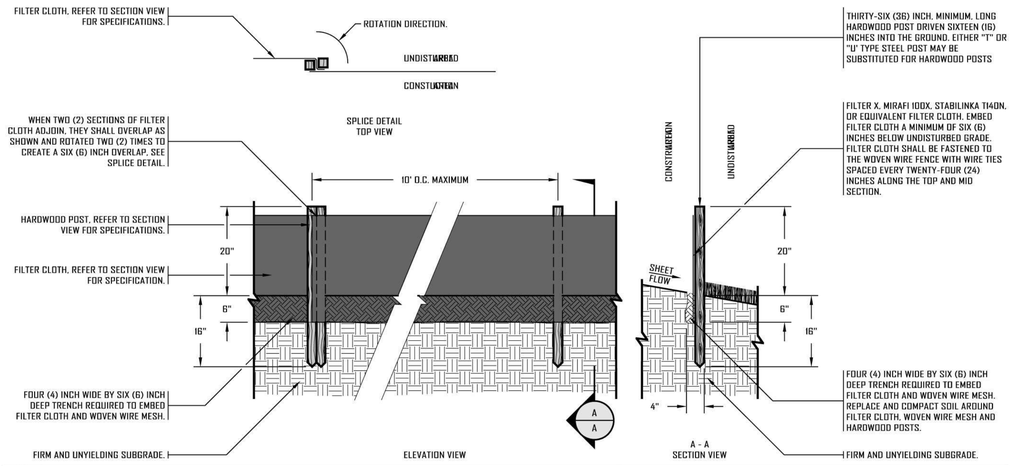
PROJECT NORTH

DRAWING TITLE
Site Plan Details - Street & Sidewalk

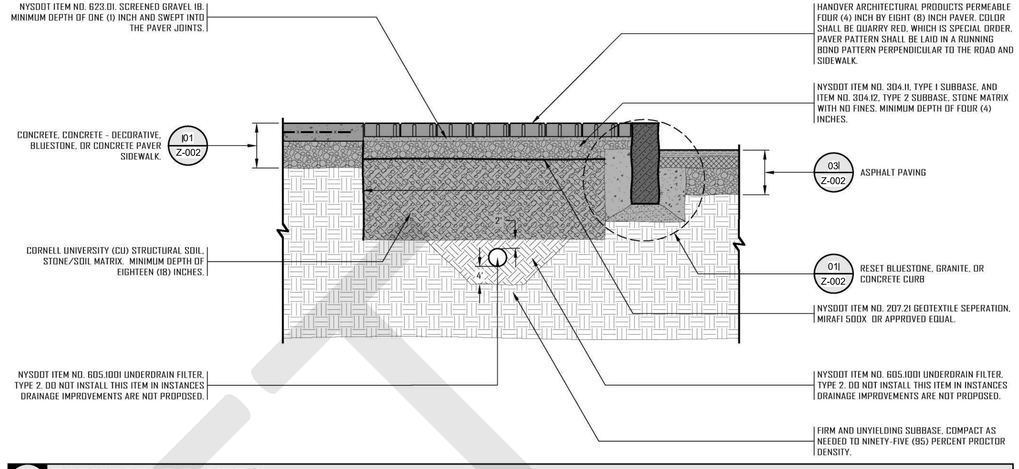
DRAWING NO.
Z-003.00

SEAL & SIGNATURE

DATE: 05.30.2024
SCALE:
DWG BY: Author
CHK BY: Checker



04 SILT FENCE
CITY OF NEWBURGH STANDARD DETAIL — 3/4" = 1'-0"



03 PERMEABLE PAVERS
CITY OF NEWBURGH STANDARD DETAIL, APPROVED MARCH 30, 2022 — 3/4" = 1'-0"

PLANTING NOTES:

1. NOTIFY 811 AT LEAST FORTY-EIGHT (48) HOURS, EXCLUDING THE DAY OF THE NOTIFICATION, BEFORE ANY GROUND DISTURBANCE HAS COMMENCED AND HAVE THE UNDERGROUND UTILITIES MARKED OUT. WAIT FOR THE AFFECTED UTILITY OPERATORS TO RESPOND, AND THEN CONFIRM THE UTILITIES HAVE BEEN ACCURATELY LOCATED. RESPECT THE IDENTIFIED LOCATIONS AND DIG ACCORDINGLY, TAKING PRECAUTIONS, ESPECIALLY WITHIN THE KNOWN TOLERANCE ZONE. IN THE EVENT MARK OUTS CANNOT BE MAINTAINED AND/OR GROUND DISTURBANCE CONTINUES LONGER THAN TEN (10) DAYS, NOTIFY 811 AND REQUEST A REMARK.

2. ALL PLANT MATERIAL FURNISHED IN ACCORDANCE WITH THIS PLAN SET SHALL MEET OR EXCEED THE MINIMUM STANDARDS WITHIN THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK. PLANT MATERIAL NOT IN COMPLIANCE WITH THE LATEST EDITION OF THE AMERICAN STANDARDS FOR NURSERY STOCK WILL NOT AND SHALL NOT BE ACCEPTED BY THE PROJECT OWNER AND/OR MUNICIPAL OFFICIAL.

3. ALL PLANT MATERIAL SHALL BE GUARANTEED UNDER A WARRANTY PERIOD FOR A MINIMUM OF TWO (2) YEARS FROM THE DATE OF FINAL ACCEPTANCE. ALL PLANT MATERIAL DEEMED UNSATISFACTORY MUST BE REPLACED IN THE SAME PLANTING SEASON DEEMED UNACCEPTABLE. PLANT MATERIAL SHALL BE REPLACED WITH NEW PLANTS, OF APPROXIMATE EQUAL SIZE AND NO SMALLER THAN ORIGINALLY SPECIFIED ON THE APPROVED PLAN SETS, AT THE NEXT APPROPRIATE PLANTING PERIOD.

4. CERTAIN SPECIES OF TREES HAVE A HIGH RISK OF FAILURE WHEN FIELD DUG AND PLANTED DURING THE FALL PLANTING SEASON. THE FOLLOWING SPECIES ARE KNOWN AS FALL PLANTING/DIG HAZARD:

ACER RUBRUM	*BETULA SP.*	*CARPINUS SP.*
CELTIS SP.	*CERCIS SP.*	*CERCIDUPHYLLUM*
CORNUS SP.	*FAGUS SP.*	*HALESIA SP.*
LIQUIDAMBER STYRACIFLUA	*LIRIODENDRON TULIPIFERA*	*MALUS SP.*
MYSSA SYLVATCA	*OSTRYA VIRGINIANA*	*PLATANUS SP.*
PYRUS SP.	*PYRUS SP.*	*QUERCUS SP.*
TAXODIUM DISTICHUM	*TILIA TOMENTOSA*	*ZELKOVA SERRATA*

THE NURSERY STOCK FOR THE AFOREMENTIONED SPECIES, IF INCLUDED AS PART OF THE APPROVED PLAN SET, SHALL BE SUPPLIED FROM THOSE DUG DURING THE PREVIOUS SPRING PLANTING SEASON AND HELD OVER THE SUMMER SEASON.

5. THE CONTRACTOR SHALL FIELD ADJUST THE LOCATIONS OF PLANT MATERIAL AS NECESSARY TO AVOID DAMAGE TO ALL EXISTING UNDERGROUND UTILITIES AND/OR EXISTING ABOVE GROUND ELEMENTS. ALL CHANGES REQUIRED SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE AND SHALL BE COORDINATED WITH THE OWNER AND/OR MUNICIPAL OFFICIAL.

6. SPRING PLANTING SHOULD TAKE PLACE BETWEEN MARCH 15TH AND JUNE 15TH. FALL PLANTING SHOULD TAKE PLACE BETWEEN SEPTEMBER 1ST AND OCTOBER 30TH. AVOID PLANTING OUTSIDE THE AFOREMENTIONED DATES, ESPECIALLY IN THE HEAT OF SUMMER, UNLESS PROPER IRRIGATION AND MONITORING IS IMPLEMENTED TO ENSURE HEALTH AND VIGOR OF PLANT MATERIAL.

7. THE CROWN OF ROOT BALL SHALL BEAR A SIMILAR RELATIONSHIP, OR SLIGHTLY ABOVE, FINISHED GRADE AS IT BORE TO PREVIOUS GRADE. PLACE ON SUBSOIL PEDESTAL IN ACCORDANCE WITH THE PLANTING DETAILS.

8. REMOVED ANY DEAD OR BROKEN BRANCHES AND THIN AS NEEDED UP TO ONE-THIRD (1/3) OF EXISTING PLANT STRUCTURE, RETAINING ORIGINAL SHAPE.

9. NATURAL OR DYED BROWN SHREDDED BARK MULCH SHOULD BE APPLIED TO ALL PLANTING BEDS TO AN APPROXIMATE DEPTH OF THREE (3) INCHES. INDIVIDUAL TREES WITHIN LAWN AREAS SHOULD, ALTHOUGH NOT ALWAYS DEPICTED IN THE PLANS, HAVE A MINIMUM THREE (3) FOOT DIAMETER, PREFERABLE FIVE (5) FOOT DIAMETER MULCH RING CONSISTENT WITH A SPADE-CUT EDGE.

10. IRRIGATE PLANT MATERIALS DAILY FOR TWO (2) WEEKS WITH TWO (2) TO THREE (3) GALLONS OF WATER PER ONE (1) INCH OF TRUNK SIZE OR ONE (1) GALLON PER SHRUB/PERENNIAL. THEN IRRIGATE MINIMUM TWO (2) TIMES A WEEK UNTIL WELL ESTABLISHED. USE APPROPRIATE JUDGMENT DEPENDENT UPON PRECIPITATION RATES.

11. EACH PLANT SHALL BE FERTILIZED WITH A PREMIUM GENERAL-PURPOSE PHOSPHORUS FREE ORGANIC FERTILIZER. APPLICATION RATE SHALL BE IN ACCORDANCE WITH MANUFACTURES RECOMMENDATIONS AND SHOULD BE APPLIED IN THE FOLLOWING SPRING PLANTING SEASON. PLANTS SHOULD NOT BE FERTILIZED IN THE SAME YEAR THEY ARE PLANTED IN ORDER TO ALLOW NEW ROOT GROWTH. AS OF JANUARY 1, 2012 THE NYSDEC RESTRICTS THE USE OF PHOSPHORUS FERTILIZER ON LAWNS OR NON-AGRICULTURAL TURF. IT IS RECOMMENDED THAT A SOIL TEST BE CONDUCTED IN ORDER TO ENSURE THE USE OF AN APPROPRIATE FERTILIZER. ADDITIONALLY, NO FERTILIZER SHOULD BE APPLIED WITHIN TWENTY (20) FEET OF A WATER BODY OR ON PAVED SURFACES.

12. ALL PLANTINGS SHOWN ON THE APPROVED PLAN SET SHALL BE MAINTAINED IN A VIGOROUS GROWING CONDITION THROUGHOUT THE DURATION OF USE AND PLANTS NOT SO MAINTAINED ARE TO BE REPLACED WITH NEW PLANTS, OF APPROXIMATE EQUAL SIZE AND NO SMALLER THAN ORIGINALLY SPECIFIED ON THE APPROVED PLAN SETS, AT THE NEXT APPROPRIATE PLANTING PERIOD.

SEEDING SCHEDULE:

1. TEMPORARY SEEDING

   1.1. SPRING OR EARLY FALL
   APPLICATION RATE: ONE (1) LBS. PER 1,000 SQ.FT.

BOTANICAL NAME	COMMON NAME	MIX COMPOSITION
Lolium multiflorum	ANNUAL RYEGRASS	SEVENTY (70) PERCENT
Lolium perenne	PERENNIAL RYEGRASS	THIRTY (30) PERCENT

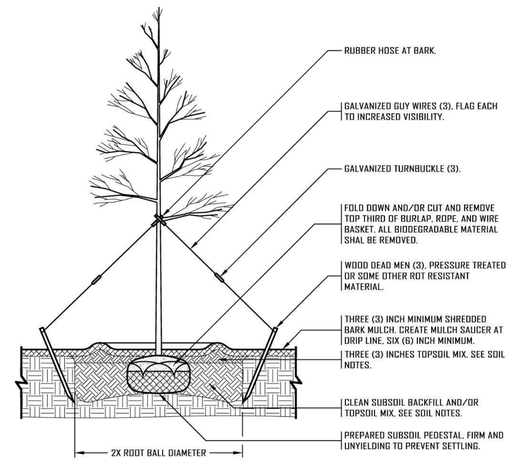
   1.2. LATE FALL OR WINTER
   APPLICATION RATE: 2.5 LBS. PER 1,000 SQ.FT.

BOTANICAL NAME	COMMON NAME	MIX COMPOSITION
Secale cereale	WINTER RYE	100 PERCENT

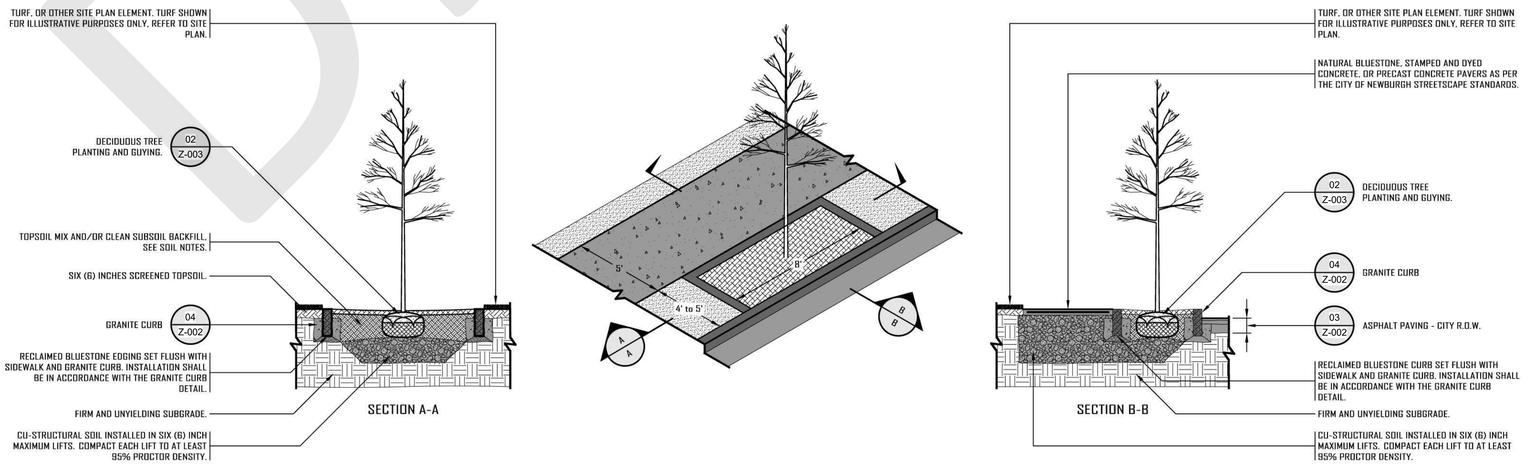
2. PERMANENT SEEDING

   2.1. SPRING OR EARLY FALL
   APPLICATION RATE: FOUR (4) LBS. PER 1,000 SQ.FT

BOTANICAL NAME	COMMON NAME	MIX COMPOSITION'P
Festuca rubra fallax	CHEWING 'S FESCUE	FIFTEEN (15) PERCENT
Festuca rubra rubra	CREEPING RED FESCUE	SIXTY-FIVE (65) PERCENT
Lolium perenne	PERENNIAL RYEGRASS	TWENTY (20) PERCENT



02 DECIDUOUS TREE PLANTING AND GUYING
CITY OF NEWBURGH STANDARD DETAIL — 3/8" = 1'-0"



01 TREE PIT - HISTORIC DISTRICT
CITY OF NEWBURGH STANDARD DETAIL — 1/4" = 1'-0"

Berg+Moss Architects
BMA
BERG + MOSS ARCHITECTS PC
473 MAIN STREET No. 1
BEACON, NY 12508
T: 845 831 1318
INFO@BERGMOSS.COM

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58,60-62 William St.
NEWBURGH, NEW YORK 12550

KEY PLAN

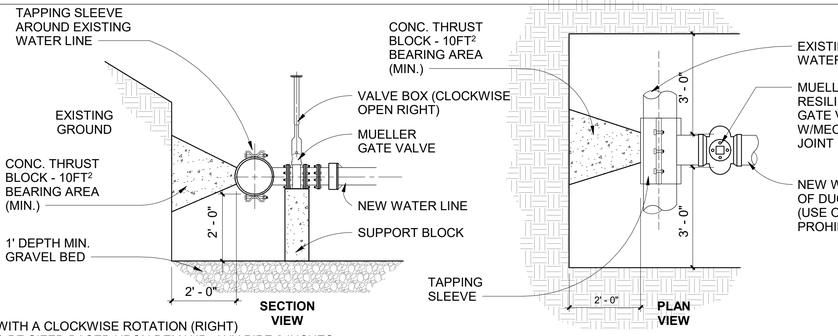
PROJECT NORTH

DRAWING TITLE
Site Plan Details - Tree Planting & Permeable Pavers

DRAWING NO.
Z-004.00

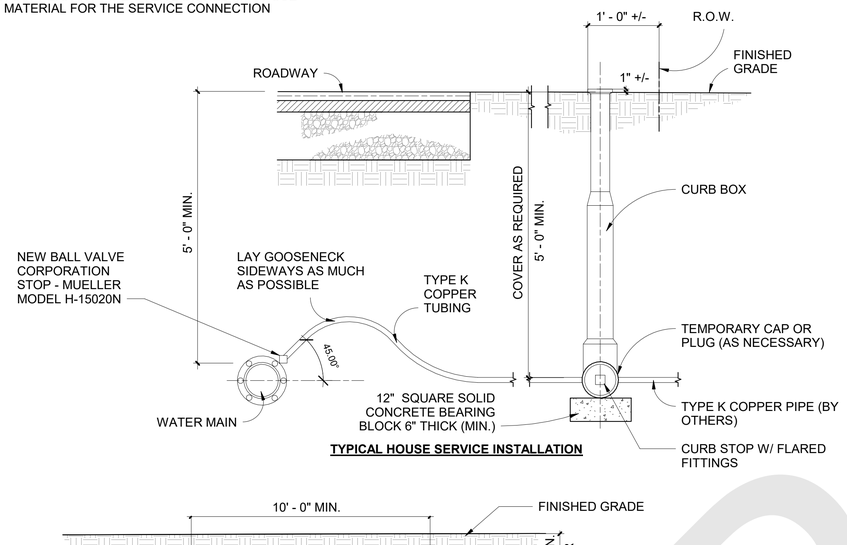
SEAL & SIGNATURE

DATE: 05.30.2024
SCALE:
DWG BY: Author
CHK BY: Checker

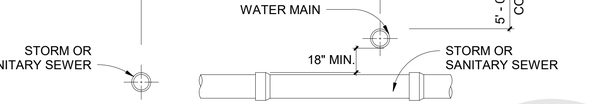


NOTE:
1. VALVE IS TO OPEN WITH A CLOCKWISE ROTATION (RIGHT)
2. NEW WATERLINE TO BE SIZED BASED UPON DEMAND. ANY PIPE 2 INCHES OR LESS TO BE TYPE-K COPPER. ANY PIPE OVER 2 INCHES MUST USE DUCTILE IRON AS THE MATERIAL FOR THE SERVICE CONNECTION

TAPPING SLEEVE AND VALVE



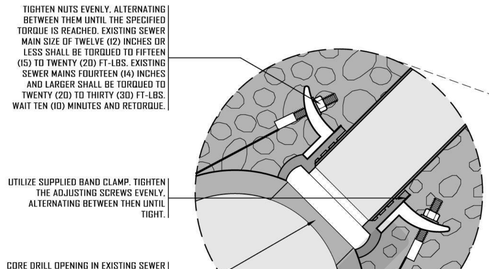
TYPICAL HOUSE SERVICE INSTALLATION



WATER MAIN SEPARATION TO SANITARY/STORM SEWER

Domestic Water Connection Detail 6

6" = 1'-0"

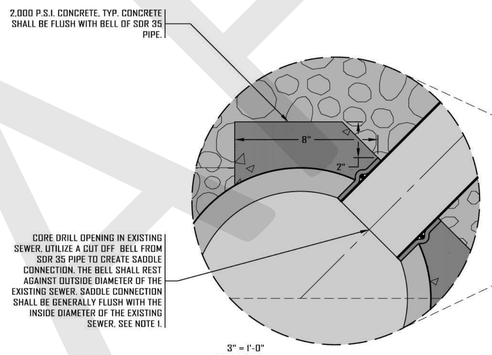


DETAIL NOTES:

1. TAPS THAT INTRUDE INTO THE EXISTING SEWER MAIN PAST THE INSIDE DIAMETER OF THE EXISTING MAIN ARE CONSIDERED INTRUDING TAPS AND ARE NOT PERMITTED TO BE CONSTRUCTED IN THE CITY OF NEWBURGH. INTRUDING TAPS CAN DEVELOP MATERIAL BUILD UP WHICH HAS THE POTENTIAL TO CAUSE PROPERTY DAMAGE UPSTREAM OF THE INTRUDING TAP. ADDITIONALLY, INTRUDING TAPS CAN PREVENT PROPER CLEANING, INSPECTION AND MAINTENANCE OF THE SEWER MAIN. DURING INSTALLATION OF A NEW TAP, THE CONTRACTOR SHALL NOT FORCE THE SEWER LATERAL PAST THE DESIGNED PIPE STOP. CONTRACTOR SHALL VERIFY THAT ANY NEWLY INSTALLED TAPS DO NO INTRUDE INTO THE SEWER MAIN.

03 ROMAC SEWER LATERAL CONNECTION TO PVC, CLAY, AND/OR CONCRETE

CITY OF NEWBURGH STANDARD DETAIL, APPROVED DECEMBER 13, 2022 — 3/4" = 1'-0"

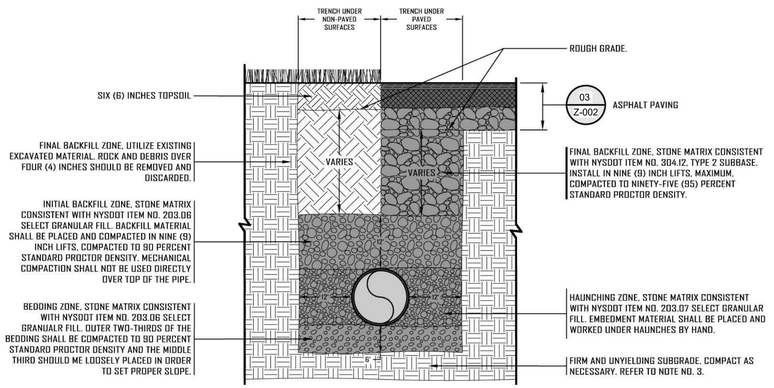


DETAIL NOTES:

1. TAPS THAT INTRUDE INTO THE EXISTING SEWER MAIN PAST THE INSIDE DIAMETER OF THE EXISTING MAIN ARE CONSIDERED INTRUDING TAPS AND ARE NOT PERMITTED TO BE CONSTRUCTED IN THE CITY OF NEWBURGH. INTRUDING TAPS CAN DEVELOP MATERIAL BUILD UP WHICH HAS THE POTENTIAL TO CAUSE PROPERTY DAMAGE UPSTREAM OF THE INTRUDING TAP. ADDITIONALLY, INTRUDING TAPS CAN PREVENT PROPER CLEANING, INSPECTION AND MAINTENANCE OF THE SEWER MAIN. DURING INSTALLATION OF A NEW TAP, THE CONTRACTOR SHALL NOT FORCE THE SEWER LATERAL PAST THE DESIGNED PIPE STOP. CONTRACTOR SHALL VERIFY THAT ANY NEWLY INSTALLED TAPS DO NO INTRUDE INTO THE SEWER MAIN.
2. A FERNCO FLEXIBLE TAP SADDLE WYE MAY BE SUBSTITUTED TO MAKE CONNECTION TO THE EXISTING SEWER MAIN.

02 SEWER LATERAL SADDLE CONNECTION TO BRICK

CITY OF NEWBURGH STANDARD DETAIL, APPROVED DECEMBER 13, 2022 — 3/4" = 1'-0"

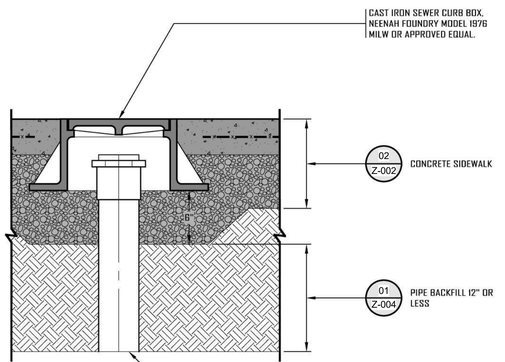


DETAIL NOTES:

1. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321, " STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS". LATEST EDITION.
2. ALL WORK SHALL BE IN ACCORDANCE WITH OSHA REGULATIONS, INCLUDING, BUT NOT LIMITED TO CFR 1926 SUBPART P EXCAVATIONS. EXCAVATIONS SHALL BE PROTECTED FROM CAVE-INS BY AN ADEQUATE PROTECTIVE SYSTEM.
3. MEASURES SHALL BE TAKEN TO PREVENT MIGRATION OF NATIVE FINE MATERIAL INTO BACKFILL MATERIAL WHERE REQUIRED.
4. MATERIAL THAT IS FROZEN SHALL NOT BE PLACED, AND/OR FILL MATERIAL SHALL NOT BE PLACED ON GROUND THAT IS FROZEN TO ANY DEPTH REGARDLESS OF THE DATE.
5. IN LOCATIONS THE BOTTOM IS UNSTABLE, EXCAVATION DEPTH MAY INCREASE TO MAINTAIN A FIRM AND UNYIELDING SUBGRADE. AS AN ALTERNATIVE, THE TRENCH BOTTOM MAY BE STABILIZED USING GEOTEXTILE MATERIAL.

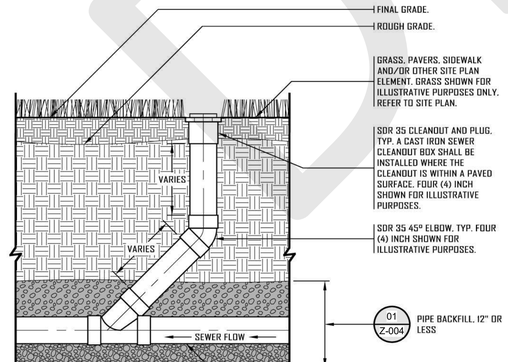
01 PIPE BACKFILL 12" OR LESS

CITY OF NEWBURGH STANDARD DETAIL, APPROVED MARCH 30, 2022 — 3/4" = 1'-0"



05 CAST IRON SEWER CURB BOX

CITY OF NEWBURGH STANDARD DETAIL, APPROVED MARCH 16, 2023 — 1 1/2" = 1'-0"



04 SANITARY SEWER CLEANOUT

CITY OF NEWBURGH STANDARD DETAIL, APPROVED MARCH 16, 2023 — 1" = 1'-0"

Berg+Moss Architects
BMA
BERG + MOSS ARCHITECTS PC
473 MAIN STREET No. 1
BEACON, NY 12508
T: 845 831 1318
INFO@BERGMOSS.COM

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	07.05.2024	Planning Board Filing Set
	08.05.2024	Planning Board Revision

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58,60-62 William St.
NEWBURGH, NEW YORK 12550

KEY PLAN

PROJECT NORTH

DRAWING TITLE
Site Plan Details - Water & Sewer Connections

DRAWING NO.
Z-005.00

SEAL & SIGNATURE

DATE: 05.30.2024
SCALE: 6" = 1'-0"
DWG BY: Author
CHK BY: Checker

APPENDIX D
Construction Health and Safety Plan

DRAFT

HALEY & ALDRICH, INC.
CONSTRUCTION HEALTH AND SAFETY PLAN

FOR

60 William Street Development

58-60 William Street, Newburgh, New York

Project/File No. 0206338

Gensuite EZ Scan®

BI - Developers

DRAFT

Prepared By: Nicole Mooney	**Date: 10/7/2025**
Approvals: The following signatures constitute approval of this Health & Safety Plan.	
Field Safety Manager: Luke J. McCartney, P.G.	**Date: 10/1/2025**
Project Manager: Matthew Levy	**Date: 10/7/2025**
HASP Valid Through: 12/31/2025	

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Note: This HASP has been developed for Haley & Aldrich purposes only and is not for use by others.

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STOP WORK AUTHORITY

In accordance with Haley & Aldrich (Haley & Aldrich) Stop Work Authority Operating Procedure (OP1035), any individual has the right to refuse to perform work that he or she believes to be unsafe without fear of retaliation. He or she also has the authority, obligation, and responsibility to stop others from working in an unsafe manner.

STOP Work Authority is the stop work policy for all personnel and subcontractors on the Site. When work has been stopped due to an unsafe condition, Haley & Aldrich site management (e.g., Project Manager [PM], Site Health & Safety Officer [SHSO], etc.) and the Haley & Aldrich Senior Project Manager (SPM) will be notified immediately.

Reasons for issuing a stop work order include, but are not limited to:

- The belief/perception that injury to personnel or accident causing significant damage to property or equipment is imminent.
- An Haley & Aldrich subcontractor is in breach of site safety requirements and/or their own site HASP.
- Identifying a substandard condition (e.g., severe weather) or activity that creates an unacceptable safety risk as determined by a qualified person.

Work will not resume until the unsafe act has been stopped OR sufficient safety precautions have been taken to remove or mitigate the risk to an acceptable degree. Stop work orders will be documented as part of an on-site stop work log, on daily field reports to include the activity/activities stopped, the duration, person stopping work, person in-charge of stopped activity/activities, and the corrective action agreed to and/or taken. Once work has been stopped, only the Haley & Aldrich SPM or SHSO can give the order to resume work. Haley & Aldrich senior management is committed to support anyone who exercises his or her “Stop Work” authority.

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Note: This HASP has been developed for Haley & Aldrich purposes only and is not for use by others.

ISSUANCE AND COMPLIANCE

This HASP has been prepared in accordance with Occupational Safety and Health Administration (OSHA) regulations (CFR 29, Parts 1904, 1910, and 1926) if such are applicable.

The specific requirements of this HASP include precautions for hazards that exist during this project and may be revised as new information is received or as site conditions change.

- This HASP must be signed by all Haley & Aldrich personnel involved in implementation of the SOW (Section 2 of this HASP).
- This HASP, or a current signed copy, must be retained at all times when Haley & Aldrich staff are present.
- Revisions to this HASP must be outlined within the contents of the HASP. If immediate or minor changes are necessary, the Field Safety Manager (FSM), Haley & Aldrich, SSO and/or Project Manager (PM) may use Attachment 1 (HASP Amendment Form), presented at the end of this HASP. Any revision to the HASP requires employees and subcontractors to be informed of the changes so that they understand the requirements of the change.
- Deviations from this HASP are permitted with approval from the Haley & Aldrich FSM, PM, or Senior Health & Safety Manager (SHSM). Unauthorized deviations may constitute a violation of Haley & Aldrich company procedures/policies and may result in disciplinary action.
- This HASP will be relied upon by Haley & Aldrich's subcontractors and visitors to the site. Haley & Aldrich's subcontractors must have their own HASP which will address hazards specific to their trade that is not included in this HASP. This HASP will be made available for review to Haley & Aldrich's subcontractors and other interested parties (e.g. Facility personnel and regulatory agencies) to ensure that Haley & Aldrich has properly informed our subcontractors and others of the potential hazards associated with the implementation of the SOW to the extent that Haley &Aldrich is aware.

This site-specific HASP provides only site-specific descriptions and work procedures. General safety and health compliance programs in support of this HASP (e.g., injury reporting, medical surveillance, personal protective equipment (PPE) selection, etc.) are described in detail in the Haley &Aldrich Corporate Health and Safety Program Manual and within Haley & Aldrich's Standard Operating Procedures Both the manual and SOPs can be located on the Haley & Aldrich's Company Intranet. When appropriate, users of this HASP should always refer to these resources and incorporate to the extent possible. The manual and SOPs are available to clients and regulators upon request.

DRAFT

Note: This HASP is developed for Haley & Aldrich purposes only and not for use by others.

EMERGENCY EVENT PROCEDURES

1 - ASSESS THE SCENE

- **STOP WORK**
- Review the situation and ascertain if it's safe to enter the area.
- Evacuate the site if the conditions are unsafe.

2 - EVALUATE THE EMERGENCY

- **Call 911, or designated emergency number, if required.**
- **Provide first aid for the victim if qualified and safe to do so.**
  - First aid will be addressed using the onsite first aid kit. *
    - If providing first aid, remember to use proper first aid universal precautions if blood or bodily fluids are present.
- **If exposure to hazardous substance is suspected, immediately vacate the contaminated area.**
  - Remove any contaminated clothing and/or equipment.
  - Wash any affected dermal/ocular area(s) with water for at least 15 minutes.
  - Seek immediate medical assistance if any exposure symptoms are present.

** Note: Haley & Aldrich employees are not required or expected to administer first aid / CPR to any Haley & Aldrich staff member, Contractor, or Civilian personnel at any time; it is Haley & Aldrich´s position that those who do are doing so on their own behalf and not as a function of their job.*

3 - SECURE THE AREA

- **Cordon off the incident area, if possible.**
  - Notify any security personnel, if required.
  - Escort all non-essential personnel out of the area, if able.

4 - REPORT ON-SITE ACCIDENTS / INCIDENTS TO PM / SSO

- **Notify the PM and SSO as soon as it is safe to do so.**
  - Assist PM and SSO in completing any additional tasks, as required.

5 - INVESTIGATE / REPORT THE INCIDENT

- **Record details of the incident for input to the Gensuite.**
  - Complete any additional forms as requested by the PM and SSO.

6 - TAKE CORRECTIVE ACTION

- **Implement corrective actions per the PM following root cause analysis.**
  - Complete Lessons Learned form.

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Note: This HASP is developed for Haley & Aldrich purposes only and not for use by others.

PROJECT INFORMATION AND CONTACTS	
Project Name: 60 William Street Development	**Haley & Aldrich File No.:** 0206338
Location: 58-60 William Street, Newburgh, New York 12550	
Client/Site Contact: Phone Number:	Hershy Weinstock 845.662.4735
Haley & Aldrich Field Representative: Phone Number: Emergency Phone Number:	Owen Hennigan 646.568.9393 929.729.1243
Haley & Aldrich Project Manager: Phone Number: Emergency Phone Number:	Matthew Levy 646.893.4733 516.666.5382
Field Safety Manager: Phone Number: Emergency Phone Number:	Brian Ferguson 617.886.7439 617.908.2761
Nearest Hospital: Address: (see map on next page) Phone Number:	Montefiore St. Luke's Cornwall 70 Dubois St Newburgh, NY 12550 845.561.4400
Nearest Occ. Health Clinic: http://www.talispoint.com/liberty/ext/ Address: (see map on next page) Phone Number:	**CALL WORKCARE (1-888-449-7787)**
Liberty Mutual Claim Policy	**WC6Z11254100035**
Emergency Response Number:	**911**
Other Local Emergency Response Number:	N/A
Other Ambulance, Fire, Police, or Environmental Emergency Resources:	911

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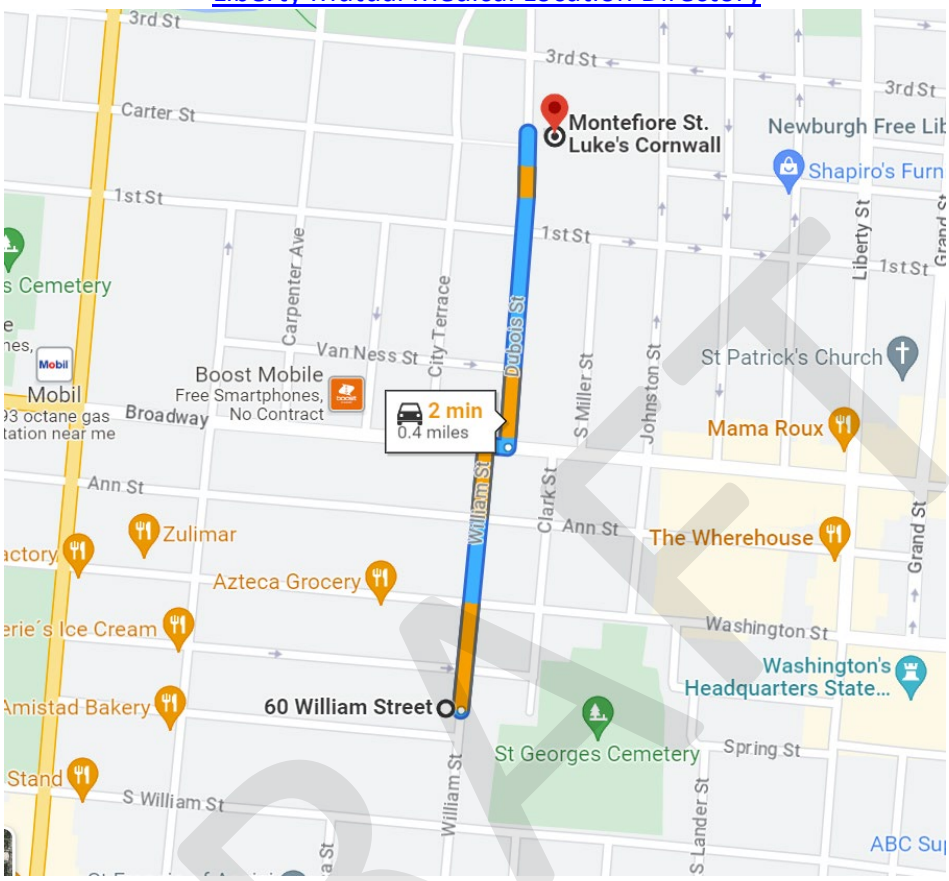
Note: This HASP is developed for Haley & Aldrich purposes only and not for use by others.

DIRECTIONS TO THE NEAREST HOSPITAL

Liberty Mutual Medical Location Directory



Directions to the Nearest Hospital:

60 William St
Newburgh, NY 12550

↑ Head north on William St toward W Parmenter St
0.2 mi

↱ Turn right onto Broadway
82 ft

↰ Turn left onto Dubois St
ⓘ Destination will be on the right
0.2 mi

Montefiore St Luke's Cornwall
70 Dubois St, Newburgh, NY 12550

DRAFT

Note: This HASP is developed for Haley & Aldrich purposes only and not for use by others.

DIRECTIONS TO THE NEAREST URGENT CARE

Liberty Mutual Medical Location Directory

Directions to the Nearest Occupational Clinic:

CALL WORKCARE (1-888-449-7787)

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Note: This HASP is developed for Haley & Aldrich purposes only and not for use by others.

1. WORK SCOPE

This Site-Specific Health and Safety Plan addresses the health and safety practices and procedures that will be exercised by all Haley & Aldrich employees participating in all work on the Project Site. This plan is based on an assessment of the site-specific health and safety risks available to Haley & Aldrich and Haley & Aldrich's experience with other similar project sites. The scope of work includes the following:

Remedial Oversight, Soil Sampling, Groundwater Sampling (Dewatering), & Soil Vapor Sampling (if required)

Project Task Breakdown

Task No.	Task Description	Employee(s) Assigned	Work Date(s) or Duration
1.	Remedial Oversight	Owen Hennigan	3 to 4 months
2.	Soil Sampling	Owen Hennigan	3 to 4 months
3.	Groundwater Sampling (Dewatering)	Owen Hennigan	3 to 4 months
4.	Soil Vapor Sampling (if required)	Owen Hennigan	3 to 4 months

Subcontractor(s) Tasks

Firm Name	Work Activity	Work Date(s) or Duration
N/A	Enter task description.	Enter dates/duration.

Projected Start Date: 12/1/2025

Projected Completion Date: 4/1/2026

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Note: This HASP has been developed for Haley & Aldrich purposes only and is not for use by others.

2. SITE OVERVIEW / DESCRIPTION

Site Classification

Residential/Commercial

Site Description

The Site is approximately 7,755 square feet and is comprised of two tax lots, Lot 31 (58 William Street) and Lot 32 (60 William Street), pending a lot merger. Lot 31 is a rectangular shaped lot developed with one vacant two-story residential building. Lot 32 is an irregular shaped undeveloped vacant lot. The Site was previously utilized as dwellings, a blacksmith, and a repair shop and service station. Two underground storage tanks (USTs) are present on Lot 32. One UST is located in the southern portion and the other in the northeast corner, bordering Lot 31.

Background and Historic Site Usage

Based on a Phase I Environmental Site Assessment (ESA) prepared by Haley & Aldrich of New York (Haley & Aldrich) for the Site on 30 December 2022, the Site was developed with a shed and a two-story dwelling on Lot 32, and a dwelling was developed on Lot 31 by 1884. By 1890, the dwelling on Lot 32 appears to have been divided into two separate three-story dwellings. By 1913, the dwellings on Lot 32 were labeled as "flats," and an operating blacksmith was depicted on the northeast corner of Lot 32, while a shed appears to have been added on to the western end of the dwelling on Lot 31 and another shed built on the southwestern portion of Lot 31. In the 1957 Sanborn map, gasoline tanks are depicted on the southeast corner of Lot 32 and in the northeast corner of Lot 32 bordering Lot 31. The gasoline tanks are present on Sanborn maps from 1957 to 1971. By the late 1960s, the flats previously depicted on Lot 32 were shown as an auto repair shop and service station, operating as "Sam & Irv's Service Station," while the rest of the Site remained relatively unchanged. It is unknown how long the service station remained in operation; however, the buildings on Lot 32 were depicted as demolished by 1987. Lot 32 and the Site building located on Lot 31 are currently vacant, and the structure remains unchanged since at least 1913.

Site Status

Indicate current activity status and describe operations at the site:

Inactive

Site Plan

Is a site plan or sketch available? Yes

Work Areas

List and identify each specific work areas(s) on the job site and indicate its location(s) on the site plan:

Entire Site

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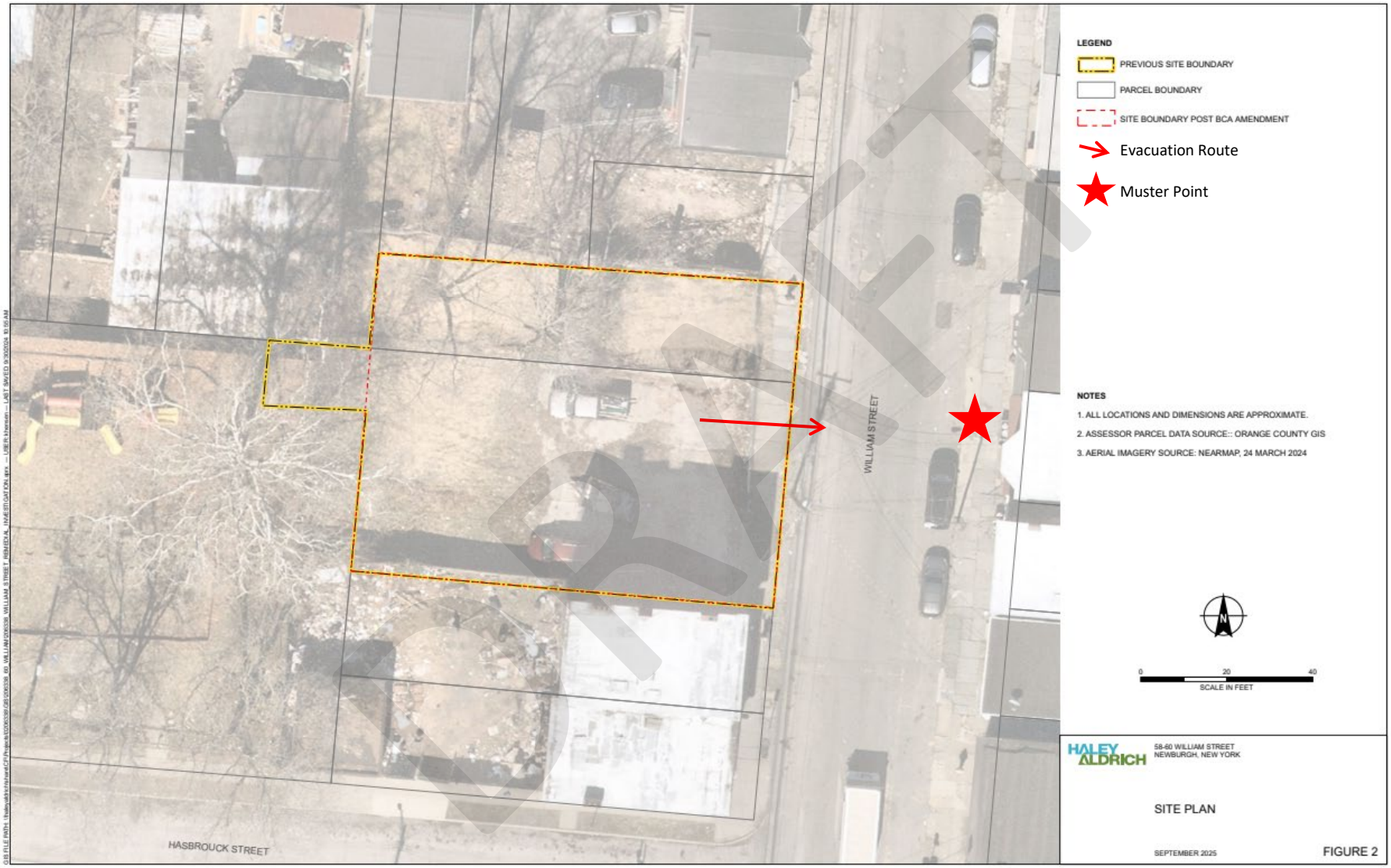
Site Plan



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3. HAZARD ASSESSMENT

Indicate all hazards that may be present at the site and for each task. If any of these potential hazards are checked, it is the Project Manager's responsibility to determine how to eliminate / minimize the hazard to protect onsite personnel.

Site Chemical Hazards

Is this Site impacted with chemical contamination? Yes

Source of information about contaminants: Previous Investigation

Contaminant of Concern	Location/Media	Concentration	Units
Urban Fill	**Soil**	**-**	**mg/kg**
Polycyclic aromatic hydrocarbons (PAHs)	**Soil**	**8.4**	**ug/kg**
Arsenic	**Soil**	**48.9**	**mg/kg**
Barium	**Soil**	**535**	**mg/kg**
Copper	**Soil**	**475**	**mg/kg**
Lead	**Soil**	**3,540**	**mg/kg**
Mercury	**Soil**	**4.2**	**mg/kg**
Zinc	**Soil**	**818**	**mg/kg**
Per- and Polyfluoroalkyl Substances	**Soil**	**-**	**ug/kg**
Volatile Organic Compounds (VOCs)	**Groundwater**	**-**	**ug/L**
Total/Dissolved Metals	**Groundwater**	**-**	**ug/L**
Arsenic	**Groundwater**	**33.2**	**ug/L**
Per- and Polyfluoroalkyl Substances	**Groundwater**	**1,120**	**Other (ng/L)**
BTEX/VOCs	**Soil Vapor**	**4,143**	**ug/m3**
Volatile Organic Compounds (VOCs)	**Soil Vapor**	**4,330**	**ug/m3**
Tetrachloroethylene	**Soil Vapor**	**35.3**	**ug/m3**

Urban Fill: can be numerous things such as natural soils that have been moved by humans, construction debris, material dredged from waterways, coal ash, municipal solid waste, and/or any

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combination of the above. Chemicals such as lead and asbestos can be part of urban fill and pose health risks to workers.

Polycyclic aromatic hydrocarbons (PAHs): are a class of chemicals that occur naturally in coal, crude oil, and gasoline. They also are produced when coal, oil, gas, wood, garbage, and tobacco are burned. PAHs generated from these sources can bind to or form small particles in the air. High-temperature cooking will form PAHs in meat and in other foods. Naphthalene is a PAH that is produced commercially in the United States to make other chemicals and mothballs. Cigarette smoke contains many PAHs.

Arsenic: The Occupational Safety and Health Administration has set limits of 10 microgram arsenic per cubic meter of workplace air (10 µg/m3) for 8 hour shifts and 40 hour work weeks. Several studies have shown that inorganic arsenic can increase the risk of lung cancer, skin cancer, bladder cancer, liver cancer, kidney cancer, and prostate cancer. The World Health Organization (WHO), the Department of Health and Human Services (DHHS), and the EPA have determined that inorganic arsenic is a human carcinogen.

Breathing high levels of inorganic arsenic can give you a sore throat or irritated lungs. Ingesting high levels of inorganic arsenic can result in death. Lower levels of arsenic can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet.

Barium: is a soft, silvery metal that rapidly tarnishes in air and reacts with water. It is mostly used in drilling fluids for oil and gas wells and used in paint and in glassmaking. All barium compounds are toxic; however, barium sulfate is insoluble and so can be safely swallowed. A suspension of barium sulfate is sometimes given to patients suffering from digestive disorders.

Barium has no known biological role, although barium sulfate has been found in one type of algae. Barium is toxic, as are its water- or acid-soluble compounds. Barium occurs only in combination with other elements. The major ores are barite (barium sulfate) and witherite (barium carbonate). Barium metal can be prepared by electrolysis of molten barium chloride, or by heating barium oxide with aluminum powder.

Copper: is a reddish, lustrous, malleable, odorless solid. It can be inhaled or ingested. Contact may cause irritation to the skin and/or eyes. Fume or dust inhalation may cause irritation in the nose or throat. Symptoms of exposure include eye, nose and/or throat irritation, nasal septum perforation, metallic taste, and dermatitis. Target organs include the eyes, skin, respiratory system, liver, and kidneys. The PEL is 1 mg/m^3 averaged over an 8-hour shift.

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

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Mercury: is an odorless, silver metallic liquid. It can be inhaled or absorbed through the skin. Contact may cause irritation to the skin or eyes. Toxic if ingested. Fume inhalation may cause irritation in the nose, throat or lungs. This is a corrosive chemical. Symptoms of poisoning include, muscle tremors, loss of appetite, and nausea. Long-term exposure may have effects on the central nervous system and kidneys. The PEL is 0.1 mg/m^3 averaged over an 8 hour shift.

Zinc: is an odorless, bluish-white powder. It is typically used in paints and can be mixed with other metals to make bass and other types of alloys. Zinc can produce flammable gases when in contact with water, sometimes creating vigorous or explosive reactions. It can also create gaseous hydrogen in contact with water or moist air. Inhalation will cause irritation to eyes and respiratory system. Exposures cause flu-like symptoms, called “metal fume fever”, which can sometimes be delayed up to 48 hours after initial exposure.

Per- and Polyfluoroalkyl Substances: Per- and polyfluoroalkyl substances (PFAS) are a group of chemicals used in some industries and consumer products. Per- and polyfluoroalkyl substances (PFAS) are a group of over 14,000 synthetic chemicals that have been used in industry and consumer products, worldwide, for over 70 years. This includes compounds such as perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), and Hexafluoropropylene Oxide Dimer Acid (also known as "GenX"). PFAS as a class have a wide variety of distinct chemical properties and toxicities; for example, some PFAS can bioaccumulate and persist in the human body and the environment, while others transform relatively quickly. The PFAS that do transform, however, will become one or more other PFAS because the carbon–fluorine bond they contain does not break naturally. It is for this reason that PFAS are termed “forever chemicals.” A large number of studies have examined possible relationships between levels of PFAS in blood and harmful health effects in people. Long term exposure may have reproductive, immune system, kidney, testicular, and metabolic effects. NIOSH have been conducting studies since 2004, focusing on occupational exposures to PFAS, including toxicological assessments and health impacts in workers. Current research include assessing exposure to various sectors, such as manufacturing and firefighting, and developing analytical methods for measuring PFAS exposure in the workplace.

VOCs: include all organic compounds (substances made up of predominantly carbon and hydrogen) with boiling temperatures in the range of 50-260 degrees C, excluding pesticides. This means that they are likely to be present as a vapor or gas in normal ambient temperatures. Substances which are included in the VOC category include aliphatic hydrocarbons (such as hexane), aldehydes, aromatic hydrocarbons (such as benzene, toluene, and the xylenes or BTEX), and oxygenated compounds (such as acetone and similar ketones). The term VOC often is used in a legal or regulatory context and in such cases the precise definition is a matter of law.

VOCs are released from oil and gasoline refining, storage and combustion as well as from a wide range of industrial processes. Processes involving fuels, solvents, paints or the use of chemicals are the most significant sources. VOCs may also be emitted from cleaning products, degreasing products, fabrics, carpets, plastic products, glues, printed material, varnishes, wax, disinfectants, and cosmetics.

Typically, VOCs are present in gas or vapor and will enter the body by breathing contaminated air. Higher concentrations of VOCs may occur in areas of poor ventilation.

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BTEX/VOCs: BTEX is an acronym for benzene, toluene, ethylbenzene and xylenes. These compounds are VOCs, are common in petroleum-related products (e.g., oil, gasoline, coal-tar DNAPL, etc.), and frequently co-occur at hazardous waste sites. Benzene, toluene, ethylbenzene, and xylenes have acute and chronic harmful effects on the central nervous system. Benzene is classified as a carcinogen. Short-term health effects of low-level BTEX exposure include drowsiness, dizziness, accelerated heart rate, headaches, tremors, confusion, and unconsciousness.

Tetrachloroethylene: is a colorless liquid with a sharp sweet odor. Tetrachloroethylene vapor is heavier than air and will be found in low lying areas.

Site Hazards Checklist			
Weather			
Cold Temperatures	Hot Temperatures	High Winds	Lightning Storms

Cold Temperatures

Cold stress may occur at any time work is being performed at low ambient temperatures and high velocity winds. Because cold stress is common and has potentially serious illnesses associated with outdoor work during cold seasons, regular monitoring and other preventative measures are vital.

Refer to OP1003-Cold Stress for additional information and mitigation controls.

Hot Temperatures

Heat stress may occur at any time work is being performed at elevated ambient temperatures. Because heat stress is one of the most common and potentially serious illnesses associated with outdoor work during hot seasons, regular monitoring and other preventative measures are vital. Site workers must learn to recognize and treat the various forms of heat stress. The best approach is preventative heat stress management.

H&A employees and their subcontractors should be aware of potential health effects and/or physical hazards of working when there are hot temperatures or a high heat index. Refer OP1015-Heat Stress for a discussion on hot weather hazards.

High Winds

While high winds are commonly associated with severe thunderstorms and hurricanes they may also occur as a result of differences in air pressures, such as when a cold front passes across the area. They can cause downed trees and power lines, and flying debris (such as dust or larger debris), which adds additional risks and could lead to power outages, transportation disruptions, damage to buildings and vehicles, and serious injury.

Wind Advisory are issued for sustained winds 25 to 39 mph and/or gusts to 57 mph. High Wind warnings are issued by the National Weather Service when high wind speeds may pose a hazard or is life threatening. The criteria for this warning will varies by state. The Beaufort Wind Scale is a helpful tool to when dealing with high winds.

Lightning Storms

Where the threat of electrical storms and the hazard of lightning exist staff shall ensure site procedures exist to: (1) detect when lightning is in the near vicinity and when there is a potential for lightning and

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(2) to notify appropriate site personnel of these conditions and (3) implement protocols to stop work and seek shelter.

The 30-30 Rule states that if time between seeing the lightning and hearing the thunder is less than 30 seconds, you are in danger and must seek shelter. You must also stay indoors for more than 30 minutes after hearing the last clap of thunder.

Biological			
Mosquitoes	Large/Small Mammals	Poisonous Plants	Stinging Insects
Ticks	Venomous Spiders	Wildlife Droppings	Choose an item.

Mosquitos

Work outdoors with temperatures above freezing will likely bring staff into contact with mosquitos. There are a variety of mosquito species that can transmit a range of diseases. Birds act as reservoirs for the viruses that can be collected by the mosquito and transmitted to a person. Majority of mosquitos are mainly a nuisance but staff need to take appropriate precautions to minimize the potential transmission of a virus that can result in one of the following diseases: West Nile, Eastern Equine Encephalitides and Western Encephalitides. Knowing some key steps that can minimize the risk of mosquito bites is, therefore, important in reducing the risks. Workers working outdoors should be aware that the use of PPE techniques is essential to preventing mosquito bites especially when working at sites where mosquitoes may be active and biting.

Use repellents containing DEET, picaridin, IR3535, and some oil of lemon eucalyptus and para-menthane-diol products provide longer-lasting protection. To optimize safety and effectiveness, repellents should be used according to the label instructions. Cover as much of your skin as possible by wearing shirts with long-sleeves, long pants, and socks whenever possible. Avoid use of perfumes and colognes when working outdoors during peak times when mosquitoes may be active; mosquitoes may be more attracted to individuals wearing perfumes and colognes.

Small Mammals

Rodents, are the most abundant order of mammals. There are hundreds of species of rats; the most common are the black and brown rat. Other rodents you may encounter are mice, beavers, squirrels, guinea pigs, capybaras and coypu.

The Brown Rat has small ears, blunt nose, and short hair. It is approximately 14-18” long (with tail). They frequently infest garbage/rubbish, slaughterhouses, domestic dwellings, warehouses, and supermarkets. They also frequent any space with an easy meal and potential nesting sites. The Black Rat is identified by its tail, that is always longer than the length from the head to the body. It is also slimmer and more agile than the Brown rat. Its size varies according to its environment and food supply.

The House Mouse has the amazing ability to adapt and can frequently be found in human dwellings. In buildings, mice will live anywhere and difficult to keep out. Mice are omnivorous, they will eat anything. Rats and mice often become a serious problem in cold winter months when they seek food and warmth inside buildings. They may suddenly appear in large numbers when excavation work disturbs their in-

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ground nesting locations or their food source is changed.

Some major problems caused by rats and mice are contaminating the food they eat with urine and excrement. Gnawing into materials such as paper, wood, or upholstery, to use as nest material. Also gnawing plastic, cement, soft metals such as lead and aluminum, and wiring, which may cause a fire hazard. Occasionally biting people and may kill small animals. They, or the parasites they carry, like fleas, mites and worms, spread many diseases such as salmonella, trichinosis, rat bite fever, hantavirus, Weil's disease, and bubonic plague. They damage ornamental plants by burrowing among the roots or feeding on new growth. They also eat garden vegetables, such as corn and squash. These rodents have been a problem for centuries, because of their incredible ability to survive and are so difficult to eliminate. In addition, they are extremely compatible with human behavior and needs.

Avoid contact with rodents, if possible. Avoid contact with rodent excrement. Do not eat food or water that may have encountered rodent excrement. If exposed, wash hands and avoid touching your face with your hands.

Large Mammals

When working in remote locations staff may come near wild or stray dogs, coyotes, foxes or other large animals. It is important that staff avoid contact with these animals.

There are increasing reports of wild dog attacks on household pets, attacks on human are uncommon and rare or infrequent at best. However, attacks by individual or small groups of domestic dogs occur frequently resulting in injury or a fatality on rare occasion. Wild dogs may become skilled at hunting in groups for small game and large game from rabbits and hares to deer and moose. The impact of wild dogs, on livestock and wildlife, varies by location and is influenced by factors such as availability of other food, number of dogs, and competition by other predators. Wild dogs kill house cats and may injure or kill domestic dogs. Areas where people have not hunted and trapped wild dogs, a fear of humans may not have developed and in such dogs may attack people and children. This can be a serious problem in areas where feral dogs feed at and live around garbage dumps near human dwellings. Such situations occur most frequently around small remote towns. In urban settings domestic dogs can be territorial and exhibit aggressive behavior such as barking and snarling when their area is encroached. It is not uncommon for domestic dogs to travel in small packs.

If the pack displays aggressive behavior and charges do not run or turn your back. When confronted by one or more dog it is important not to run or exhibit any behavior that may be construed as a challenge (e.g., looking the dog in the eyes, showing your teeth, or attempting to pet the dog).Stand still and place your work bag between you and the dog and then begin to move slowly away from the dog(s) while not turning your back. If you see a stray dog approaching from a distance, look for a place that's secure. Step inside a fenced area, enter a place of business, or knock on a neighbor's door. It is always better to be safe than risk a potentially dangerous situation.

Poisonous Plants

When working on vegetated sites, staff may encounter poisonous plants that can pose serious health risks if touched or ingested. Poison ivy is characterized by three shiny green leaves and can cause a red,

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itchy rash upon contact with the skin. Poison oak is similar in appearance to poison ivy but may have rounded edges, contact with poison oak can cause a rash and blisters. Poison sumac typically grows in wet or swampy areas and has clusters of seven to thirteen smooth-edged leaflets, contact with poison sumac can cause a severe rash.

To avoid exposure to poisonous plants while working on sites with vegetation: learn to identify poisonous plants and familiarize yourself with their common habitats. Avoid contact with any plant if you're uncertain about its identity; wear appropriate clothing, including long sleeves, pants, and gloves, to minimize skin exposure when working in areas where poisonous plants may be present; use barrier creams or wipes designed to protect the skin from plant oils before heading out into the field; wash your hands and exposed skin thoroughly with soap and water immediately after working in areas where poisonous plants may be present. This can help remove any plant oils and reduce the risk of rash development, be mindful of pets or equipment that may come into contact with poisonous plants. Wash any pet's fur or equipment that may have been exposed to poisonous plants to prevent indirect contact.

If you suspect you've come into contact with a poisonous plant: Wash the affected area with soap and water as soon as possible to remove plant oils from the skin; avoid scratching or rubbing the rash, as this can lead to further irritation and potential infection; apply calamine lotion or hydrocortisone cream to relieve itching and discomfort; If the rash is severe or spreads to a large area of the body, seek medical attention promptly.

Stinging Insects

Stinging Insects fall into two major groups: Apidae (honeybees and bumblebees) and vespids (wasps, yellow jackets, and hornets). Apidae are docile and usually do not sting unless provoked. The stinger of the honeybee has multiple barbs, which usually detach after a sting. Vespids have few barbs and can inflict multiple stings.

There are several kinds of stinging insects that might be encountered on the project site. Most stings will only result in a temporary injury. However, sometimes the effects can be more severe, even life-threatening depending on where you are stung and what allergies you have. Being stung in the throat area of the neck may cause edema (swelling caused by fluid build-up in the tissues) around the throat and may make breathing difficult.

In rare cases, a severe allergic reaction can occur. This can cause "anaphylaxis" or anaphylactic shock with symptoms appearing immediately or up to 30 minutes later. Symptoms include; Hives, itching and swelling in areas other than the sting site, swollen eyes/eyelids, wheezing, chest tightness, difficulty breathing, hoarse voice, swelling of the tongue, dizziness or sharp drop in blood pressure, shock, unconsciousness or cardiac arrest. Reactions can occur the first time you are stung or with subsequent stings. If you see any signs of reaction, or are unsure, call or have a co-worker call emergency medical services (e.g., 911) right away. Get medical help for stings near the eyes, nose or throat. Stay with the person who has been stung to monitor their reaction.

Staff who are allergic to bee stings are encouraged to inform their staff/project manager. If staff member carries an Epi-pen (i.e., epinephrine autoinjector) they are encouraged to inform their colleagues in case they are stung and are incapable of administering the injection. Examine site for any

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signs of activity or a hive/nest. If you see several insects flying around, see if they are entering/exiting from the same place. Most will not sting unless startled or attacked. Do not swat, let insects fly away on their own. If you must, walk away slowly or gently "blow" them away. If a nest is disturbed and you hear "wild" buzzing, protect your face with your hands and run from the area immediately. Wear long sleeves, long pants, and closed-toed boots. Wear light colored clothes such as khakis. Avoid brightly colored, patterned, or black clothing. Tie back long hair to avoid bees or wasps from entanglement. Do not wear perfumes, colognes or scented soaps as they contain fragrances that are attractive. If bee or wasp is found in your car, stop and leave windows open.

Ticks

Ticks are generally found in wooded, brushy, or grassy areas. They favor moist, shaded areas with fallen leaves and low vegetation, often sitting on the tips of tall grass or on shrubs waiting for a host to pass. Adult ticks are approximately the size of sesame seeds and are most active from March to mid-May and mid-August to November. Both nymphs and adults can transmit Lyme disease. Ticks can be active any time the temperature is above freezing. Ticks burrow into the host's skin to position themselves to withdraw blood. Infected ticks pass pathogens to the host through the bloodstream. Once imbedded, they may remain on the host for days. On humans, they frequently crawl to fleshy parts of the body and into difficult to reach spots such as the groin, armpit, or scalp.

A fine-tipped tweezer is recommended for tick removal tool and should be in the first-aid kit. Follow these steps: Pull upward with steady, even pressure. Do not twist or jerk the tick; this can cause mouth parts to break off and remain in the skin. If this happens, remove the parts with tweezers. If unable to remove easily with tweezers, leave them alone and let the skin heal.

After removing the tick, thoroughly clean the bite area and hands with rubbing alcohol, iodine scrub, or soap & water. Dispose of live ticks by submersal in alcohol, placing it in a sealed bag/container, wrap it tightly in tape or flush it down the toilet. Never crush ticks with your fingers. Do not attempt to use nail polish remover, petroleum jelly, lotion or heat to try to get the tick to exit skin. Swift removal is key.

Wear light-colored clothing so ticks stand out and long-sleeved shirts and long pants to reduce skin exposure. Tuck your shirt into your pants and tuck your pants into your socks to close gaps. Use repellent containing 20-30% DEET (N, N-diethyl-m-toluamide) on exposed skin and clothing. Avoid hands, eyes and mouth and wash off repellent when back indoors. Treat clothing with or purchase clothing with products containing 0.5% permethrin. It remains protective through several washings. Conduct frequent tick checks on clothing and skin. Have others check your back, scalp, and behind your ears and check gear for "hitchhikers". As soon as returning indoors, take a bath or shower and do a full-body inspection using a mirror. Wash field clothes and tumble dry on high to kill any ticks that may be hidden. If working in an area of significant tick habitat PPE may need to be upgraded to a Tyvek suit. Implementation of controls is crucial to minimize or eliminate the possibility of a tick bite. Should a staff member find an embedded tick they need to report it immediately to Corporate H&S. If a staff member has been bitten contact Corporate H&S and Work Care at 888-449-7787 to initiate the Tick Management Protocol. Once bitten, it takes approximately 48 hours to transmit Lyme Disease.

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Venomous Spiders

Venomous spiders found in the United States include the black widow and the brown recluse. These spiders occasionally find their way inside structures or buildings and can also present a risk to indoor workers including machine operators and janitors. Spiders are usually not aggressive, and most bites occur because a spider is trapped or unintentionally contacted.

Symptoms associated with spider bites can vary from minor to severe. Although extremely rare, death can occur in the most severe cases. Possible symptoms resulting from a spider bite include the following:

Black Widow are found throughout the tropics, U.S., and Canada and are not usually and only the female is venomous. The female is shiny black, usually with a reddish hourglass shape on the underside of her spherical abdomen. Her body is about 1.5" long, while the male is approximately half that. The spider's span ranges from 1-3". Adult males are harmless, have longer legs, and usually yellow and red bands and spots over their back, while the young black widows are colored orange and white. The bite of a black widow is often not painful and may go unnoticed. However, the poison injected by the spider's bite can cause severe reactions in certain individuals.
Symptoms include abdominal pain, profuse sweating, swelling of the eyelids, pains to muscles or soles of the feet, salivation and dry-mouth (alternating), and paralysis of the diaphragm. If a person is bitten, they should seek immediate medical attention. Clean the area of the bite with soap and water. Apply a cool compress to the bite location. Keep effected limb elevated to about heart level. Ask a doctor if Tylenol or aspirin can be taken to relieve minor symptoms.

Brown recluse spiders are usually light brown in color, but in some instances can be darker. Brown recluse spiders are highly venomous spiders, native to the United States, found coast to coast. The brown recluse varies in size, but some can obtain bodies of 5/8" in length with a leg span of 1-½" in diameter. They can be identified by their three pairs of eyes along the head area and their fiddle shaped markings on the back. Most brown recluse bites are defensive rather than offensive. They generally only bite if they feel threatened.

If bitten by a brown recluse, an individual may experience open, ulcerated sores, which when left untreated may become infected and cause tissue necrosis. If an individual believes a spider has bitten them, they need to seek medical attention as soon as possible.

Inspect or shake out any clothing, shoes, towels, or equipment before use. Wear protective clothing such as a long-sleeved shirt and long pants, hat, gloves, and boots when handling stacked or undisturbed piles of materials. Minimize the empty spaces between stacked materials. Remove and reduce debris and rubble from around the outdoor work areas. Trim or eliminate tall grasses from outdoor work areas. Store apparel and outdoor equipment in tightly closed bags. Keep tetanus boosters up-to-date (every 10 years). Spider bites can become infected with tetanus spores. Additional information in the case of bites can be obtained from the Poison Center (1-800-222-1222).

Wildlife Droppings

Project sites involving abandoned buildings may bring staff into contact with animal droppings. There are many diseases that one can be exposed to from a variety of animals.

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Mice and Rats
Hantavirus is transmitted to humans from dried droppings, urine, or saliva of mice and rats. The disease begins as a flu-like illness with fever, chills, and muscle aches, but can rapidly progress to a life-threatening condition marked by respiratory failure as fluids fill the lungs. Persons working in infested buildings are at increased risk to this disease, particularly during dusty clean-up activities.

Birds and Bats
Large populations of roosting birds may present a disease risk. The most serious health risks arise from disease organisms that grow in the nutrient-rich accumulations of bird droppings, feathers and debris under a roost, particularly if roosts have been active for years.

Histoplasmosis and Cryptococcosis are the most common fungal diseases associated with bird and bat dropping. Infection occurs when spores, carried by the air, are inhaled, especially after a roost has been disturbed. The active and inactive roosts of blackbirds, starlings and cowbirds have also been found to be heavily contaminated with fungus spores. Most infections are mild and produce either no symptoms or a minor influenza-like illness. Occasionally the disease can cause high fever, blood abnormalities, pneumonia and even death.

Do not touch droppings with unprotected hands. Avoid disturbing the droppings and generating dust. Employee work practices and dust control measures that eliminate or reduce dust generation during removal of manure from a building will also reduce risks of infection and development of disease. Use an industrial vacuum cleaner with a high-efficiency (HEPA) filter to bag contaminated material.

Location/Terrain			
Slip/Trip/Falls	SIMOPS	Economically Depressed	Choose an item.

Slips, Trips & Falls

Slip and trip injuries are the most frequent injuries to workers. Statistics show most falls happen on the same level resulting from slips and trips. Both slips and trips result from unintended or unexpected change in the contact between the feet and the ground or walking surface. Good housekeeping, quality of walking surfaces (flooring), awareness of surroundings, selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents.

Site workers will be walking on a variety of irregular surfaces, that may affect their balance. Extra care must be taken to walk cautiously near rivers because the bottom of the riverbed maybe slick and may not be visible. Rocks, gradient changes, sandy bottoms, and debris may be present but not observable.

Take your time and pay attention to where you are going. Adjust your stride to a pace that is suitable for the walking surface and the tasks you are doing. Check the work area to identify hazards - beware of trip hazards such as wet floors, slippery floors, and uneven surfaces or terrain. Establish and utilize a pathway free of slip and trip hazards. Choose a safer walking route. Carry loads you can see over. Keep work areas clean and free of clutter. Communicate hazards to on-site personnel and remove hazards as appropriate.

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SIMOPS

SIMOPS are described as the potential class of activities which could bring about an undesired event or set of circumstances, e.g., safety, environment, damage to assets, schedule, commercial, financial, etc. SIMOPS are defined as performing two or more operations concurrently.

SIMOPS should be identified at an early stage before operations commence to understand issues such as schedule and physical clashes, maintenance activities, failure impacts, interferences between vessels, contracts and third part interfaces and environmental impacts.

Coordinate project with site activities. Identify and understand the hazards associated with the host and client's activities. Integrate site emergency response protocols where appropriate and communicate to all project staff. Integrate site communication protocols and communicate to all project staff.

Economically Depressed Areas

Economically depressed areas may have high crime rates. Projects involving work in and around inactive industrial sites may bring staff into contact with indigent and homeless persons. Staff could be subjected to crime that includes but may not be limited to thievery, vandalism, and violence. Prior to the start of work staff need to understand the work locations and the potential for exposure to low level crime.

Staff members should never work alone in these areas. A buddy system is required. Conduct during daylight hours. Secure equipment and vehicles. If warranted, contact the local police department for a security detail. Leave the work area immediately and contact the local authorities if staff members feel threatened or are threatened.

Miscellaneous			
Extended Shift	Night Work	Choose an item.	Choose an item.

Extended Shift

An extended shift can include extending a workday beyond eight hours. Extended or unusual work shifts may be more stressful physically, mentally, and emotionally. Non-traditional shifts and extended work hours may disrupt the body's regular schedule, leading to increased fatigue, stress, and lack of concentration. This leads to an increased risk of operator error, injuries and/or accidents. The degree to which an individual is exposed to fatigue risk factors depends upon the work schedule. As both the duration of the workday and the number of days worked increase so does the fatigue risk factors. Staff Managers need to be aware of the fatigue risk factors and ensure projects are structured to mitigate these factors. Staff Members also have a responsibility to manage the personal fatigue risk factors that they can control outside of work (e.g, duration and quality of sleep, diet, drugs, and alcohol)

Fatigue is a message to the body to rest and can be eliminated with proper rest. However, if rest is not possible, fatigue can increase and becomes distressing and eventually debilitating. Fatigue symptoms, both mental and physical, vary and depend on the person and degree of overexertion. Examples include: weariness, sleepiness, irritability, reduced alertness, lack of memory, concentration and

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motivation, increased susceptibility to illness, depression, headache, loss of appetite, and digestive problems.

When possible, managers should limit use of extended shifts and increase the number of days worked. Working shifts longer than 8 hours generally result in reduced productivity and alertness. Additional breaks and meals should be provided when working extended shift periods. Tasks requiring heavy physical labor or intense concentration should be performed at the beginning of the shift if possible. This is an important consideration for pre-emergency planning.

Make efforts, when feasible, to ensure that unavoidable extended work shifts and shift changes allow affected employees time for adequate rest and recovery. Project Managers need to plan to have an adequate number of personnel available to enable workers to take breaks, eat meals, relax, and sleep.

Plan for regular and frequent breaks throughout the work shift. If at remote sites, ensure if possible, that there is a quiet, secluded area designated for rest and recuperation. In addition to formal breaks such as lunch or dinner, encourage use of micro breaks to change positions, move about, and shift concentration. Personnel should look to obtain an adequate quantity and quality of sleep.

Night Work

The way work is planned and scheduled can increase the risk of fatigue. Scheduling work in a way that fails to allow staff members enough time for travel to and from work and/or allow for sufficient time for sleep can cause fatigue. Working at times when staff members are biologically programmed to sleep and working for long periods of time can also produce fatigue. Working night shift, including the number of consecutive nights can be a significant fatigue risk factor if not managed properly.

Night shifts may be more stressful physically, mentally, and emotionally. They can disrupt the body's regular schedule, leading to increased fatigue, stress, and lack of concentration. These effects lead to an increased risk of operator error, injuries and/or accidents. The degree which an individual is exposed to fatigue risk factors depends upon the work schedule. As both the duration of the workday and number of days worked increase so does the exposure to fatigue risk factors. Staff Managers need to be aware of the fatigue risk factors and ensure projects are structured to mitigate these risk factors.

Employers must ensure that employees are not exposed to hazardous chemicals or other agents in excess of health standards. Working extended shifts may involve prolonged exposures to hazards which exceed established standards. Employers should implement measures to monitor and limit exposures. Controls may include limiting time employees may remain at the project site; having clean locations for employee rest areas; or rest areas located sufficiently up wind of contaminated sites.

Minimize or redesign routine administrative tasks to ensure staff members can focus on core duties during their night work. Limit consecutive night shifts worked. If a project requiring staff to work beyond four nights requires a fatigue management plan. Ensure that rosters allow for at least two full night's sleep after the last night shift before returning to day shift. Regular and frequent breaks are needed. Comprehensive training on fatigue risk factors for the staff members assigned to the project. Optimal sleeping conditions during the day (e.g., dark/quiet rooms, minimize distractions, light meal prior to sleep).

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Task Hazard Summary

Task 1A – Excavation/Trenching (Remedial Oversight)

There are multiple hazards associated with working in and around excavations and trenches including cave-ins, potential running soils, dislodged excavated soils, lack of proper access and egress. Nonfatal, and even fatal, injuries may occur in association with excavation and trenching activities with a greater frequency than one might expect. Causes of bodily injury, illness, or death include asphyxiation, internal injuries due to physical crushing, falling objects and toxic exposures.

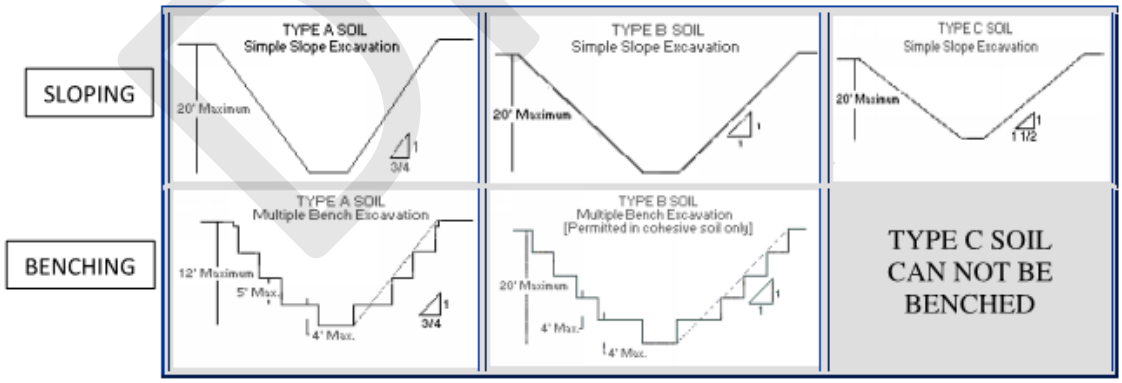
Excavations five (5) feet deep or greater require a protective system unless the excavation is made entirely in stable rock. If the depth is less than five (5) feet deep, a competent person may determine that a protective system is not required. Trenches 20 feet deep or greater require that the protective system be designed by a registered professional engineer or be based on tabulated data prepared and/or approved by a registered professional.

H&A Staff Members shall not enter a trench that is five feet deep or greater unless a protective system is used or the soil(s) have been characterized and benched and/or sloped appropriately.

The following are list identifies the types of protective measures that can be used in the event a staff member is required to enter an excavation or trench.

- **Sloping** involves cutting back the trench wall at an angle inclined away from the excavation.

- **Benching** means a method of protecting workers from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near vertical surfaces between levels. Benching cannot be done in Type C soil. Below is a diagram indicating the appropriate slope angle for both sloping and benching.



- **Shoring** requires installing aluminum hydraulic or other types of supports to prevent soil movement and cave-ins.
- **Shielding** protects workers by using trench boxes or other types of supports to prevent soil cave-ins.

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Designing a protective system can be complex because you must consider many factors: soil classification, depth of cut, water content of soil, changes caused by weather or climate, surcharge loads (e.g., spoil, other materials to be used in the trench) and other operations in the vicinity.

See OP 1001 Excavation and Trenching Safety for more information.

Task 1B - Hauling Soils Off-site (Remedial Oversight)

Hauling Soils Off-site is conducted for a range of services that can include but are not limited to: building, foundation, utility excavation and environmental cleanup. Familiarity with basic heavy construction safety is an essential component of all hauling projects. Potential hazards related to hauling soils off-site operations include, but are not limited to encountering underground or overhead utilities, traffic and heavy equipment, generated waste, and the use or unexpected encountering of toxic or hazardous substances. While staff members do not operate heavy equipment, they may work in close proximity to the equipment and may be exposed to many of the same hazards as the Contractor. Care should be taken during loading of truck/container that the staff is not in the line of fire of the loading equipment (swing radius/traffic pattern) or of the falling spoils/soil from the loading bucket or truck bed. The staff should be aware at all times of subsurface stability as a truck may tip during truck loading and unloading due items such as but not limited to uneven surface, poorly or uncompacted subsurface, thawing soils, saturated soils and proximity to excavation. It is imperative that staff are aware of emergency / communication protocols with the Contractor prior to the start of work.

Task 1C – Stockpiling (Remedial Oversight)

Stockpiling of soils is conducted for a range of services that can include but are not limited to: building, foundation, utility excavation, drilling spoils containment and environmental cleanup. Familiarity with basic heavy construction safety is an essential component of all hauling projects. Potential hazards related to stockpiling operations include, but are not limited to encountering underground or overhead utilities, traffic and heavy equipment, and the use or unexpected encountering of toxic or hazardous substances. While staff members do not operate heavy equipment, they may work in close proximity to the equipment and may be exposed to many of the same hazards as the Contractor. Care should be taken during material stockpiling that the staff is not in the line of fire of the loading equipment (swing radius/traffic pattern). The staff should be aware of any setback requirements of stockpile surcharges near trenches and excavations.

Task 2 – Soil Sampling

Soil sampling by H&A staff on active construction sites can be conducted in conjunction with a wide range activities such as building construction, earthwork and soil management related activities. These activities can include, but are not limited to: drill spoil characterization and management during building foundation element installation, characterization of excavated soils for management/disposal/reuse during earthwork activities, and as part of environmental remedial activities such as delineation and confirmation sampling. Familiarity with basic heavy construction safety, site conditions (geotechnical and environmental), and potential soil contaminants are essential components of soil sampling performed on active sites. Potential hazards related to soil sampling at construction sites include, but

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are not limited to: encountering site vehicle traffic and heavy equipment operations, manual lifting, generated waste, contact or exposure to impacted soil, and encountering unknown toxic or hazardous substances. Although soil sampling is commonly performed within active excavations, from stockpiles, or within trench excavations, sampling locations and situations will vary depending on site conditions. Care should be taken while entering and exiting excavations or trenches, and when accessing (climbing up or down) soil stockpiles, ensuring that the sampling area is not being actively accessed by construction equipment. Care should also be taken with handling of potentially environmentally impacted soil during sampling, with appropriate PPE identified and used. At no time during classification activities are personnel to reach for debris near machinery that is in operation, place any samples in their mouth, or come in contact with the soils without the use of gloves. Staff will have to carry and use a variety of sampling tools, equipment, containers, and potentially heavy sample bags. It is imperative that staff are aware of emergency / communication protocols with the Contractor prior to the start of work.

Task 3 – Water Sampling (Dewatering)

Environmental water sampling could include activities such as groundwater sampling from permanent or temporary wells, or surface water sampling from streams, rivers, lakes, ponds, lagoons, and surface impoundments.

Sampling tasks could involve uncapping, purging (pumping water out of the well), and sampling, and/or monitoring, new or existing monitoring wells. A mechanical pump may be used to purge the wells and can be hand-, gas-, or electric-operated. Water samples taken from the wells are then placed in containers and shipped to an analytical laboratory for analysis. The physical hazards of these operations are primarily associated with the collection methods and procedures used.

When sampling bodies of water containing known or suspected hazardous substances, adequate precautions must be taken to ensure the safety of sampling personnel. The sampling team member collecting the sample should not get too close to the edge, where ground failure or slips, trips or falls may cause him/her to lose his/her balance. The person performing the sampling should have fall restraint or protection for the task. When conducting sampling from a boat in an impoundment or flowing waters, appropriate vessel safety procedures should be followed. Avoid lifting heavy coolers with back muscles; instead, use ergonomic lifting techniques, team lift or mechanical lifts. Wear proper gloves, such as when handling sample containers to avoid contacting any materials that may have spilled out of the sample containers.

Inhalation and absorption of COCs are the primary routes of entry associated with water sampling, due to the manipulation of sample media and equipment, manual transfer of media into sample containers, and proximity of operations to the breathing zone. During this project, several different groundwater sampling methodologies may be used based on equipment accessibility and the types of materials to be sampled. These sampling methods may include hand or mechanical bailing. The primary hazards associated with these specific sampling procedures are not potentially serious; however, other operations in the area or the conditions under which samples must be collected may present chemical and physical hazards. The hazards directly associated with groundwater sampling procedures are generally limited to strains or sprains from hand bailing, and potential eye hazards. Exposure to water containing COCs is also possible. All tools and equipment that will be used at the site must be intrinsically safe (electronics and electrical equipment) and non-sparking or explosion-proof (hand

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tools).

Task 4 – Soil Vapor (if required)

Soil gas sampling is employed as an indirect indicator of contamination in soil or groundwater particularly over and around landfill waste sites, or groundwater plumes. Soil gas sampling points can be installed manually using a slam bar or power driven mechanical devices (e.g., demolition hammer or Geoprobe) may be used based on site conditions (i.e., pavement, frozen ground, very dense clays, etc.). Soil gas samples can be drawn through the probe itself, or through Teflon tubing inserted through the probe and attached to the probe point. Samples are collected and analyzed as described below. Other field air monitoring devices, such as the Combustible Gas Indicator (CGI) and the Organic Vapor Analyzer (OVA), can also be used, depending on specific site conditions.

Because the sample is being drawn from underground, and no contamination is introduced into the breathing zone, soil gas sampling usually occurs in Level D. Nevertheless, ambient air should be constantly monitored to obtain background and breathing zone readings during the sampling procedure in the event the seal around the sampling point is breached. As long as the levels in ambient air do not rise above background, no upgrade of the level of protection is needed. Also, an underground utility search must be performed prior to sampling.

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Task Physical Hazards Checklist				
Potential Task Hazards	**Task 1** **Remedial Oversight**	**Task 2** **Soil Sampling**	**Task 3** **Groundwater Sampling**	**Task 4** **Soil Vapor Sampling (If required)**
Compressed Gas	☒	☒	☒	☒
Congested Area	☒	☒	☒	☒
Ergonomics	☒	☒	☒	☒
Excavation/Trenching	☒	☒	☒	☐
Energized Equipment	☒	☐	☒	☐
Generated Wastes	☒	☒	☒	☐
Ground Disturbance	☒	☒	☐	☐
Hand/Power Tools	☒	☒	☒	☒
Heavy Equipment	☒	☐	☐	☐
Hot Work	☒	☐	☐	☐
Ladders (Portable/Fixed)	☒	☒	☒	☐
Line of Fire	☒	☒	☒	☒
Manual Lifting	☒	☒	☒	☒
Noise	☒	☒	☐	☐
Overhead Utilities	☒	☐	☐	☐
Repetitive Motion	☒	☒	☒	☐
Rotating Equipment	☒	☐	☒	☐
Slippery Surfaces	☒	☒	☒	☒
Sharp Objects	☒	☒	☒	☒
Underground Utilities	☒	☐	☐	☐
Other: Specify	☐	☐	☐	☐

Summary of Physical Hazards & Controls

Compressed Gas

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Hazards associated with compressed gases include oxygen displacement, fires, explosions, and toxic gas exposures, as well as the physical hazards associated with pressurized containers. In most instances, accidents are caused by improper application, misuse of the gas, or its container by inadequately trained personnel. Special storage, use, and handling precautions are necessary to minimize accidents and control these hazards above.

See OP 1048 Compressed Gas Safety for more information.

Controls

- Visually inspect the cylinder prior to and after use for any damage. Report any damage to the vendor for direction.
- Ensure that cylinders are clearly identified. Labels must not be defaced or removed.
- Leave valve protection caps in place (if provided) until cylinders are secured and connected for use.
- Keep cylinder valves closed except when the cylinder is being used.
- When opening a cylinder valve, stand so the valve outlet is pointed away from yourself and all other employees. Open valves slowly.
- Replace protective caps and outlet caps or plugs before returning empty cylinders to the supplier.
- Never tamper with or alter cylinders, valves, or safety relief devices.
- Do not tighten connections or leaking fittings or attempt repairs while the system is under pressure.
- Do not subject cylinders to artificially low temperatures or temperatures above 125 F. Do not place them next to heat sources or allow a flame to contact any part of the cylinder.
- Avoid dragging or sliding cylinders. Do not lift cylinders by the caps.
- Firmly secure the cylinder and move with a suitable hand truck, lift truck, or crane with a cradle or platform.

Storage

- Provide adequate space or segregate by partitions and post a conspicuous sign that identifies the gas or hazard class.
- Storage areas should be dry, well-drained, ventilated, and fire resistant.
- Cylinders can be stored in the open, but they should be protected from the ground or continuous dampness to prevent rusting.
- Cylinders can usually be stored in the sun; but, cylinders must not exceed temperatures >125 F.
- Always refer to the manufacturers' storage requirements and SDSs.
- Storage areas should protect cylinders from damage. Do not store on unprotected platform edges or obstruct walkways or exits.
- Use brackets, chains, or straps around the upper third of the cylinder to secure cylinders in storage or in use.

Transport

- Cylinders must be stored upright, firmly secured, and be capped during transport.

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Congested Areas

Working in congested areas can expose both workers and the public to a wide range of hazards depending upon the specific activities taking place. Staff Members need to understand the work scope, work areas, equipment on-site, and internal traffic patterns to minimize or eliminate exposure potential.

Controls

- Provide barricades, fencing, warning signs/signals and adequate lighting to protect people while working in or around congested areas.
- Vehicles and heavy equipment with restricted views to the rear should have functioning back-up alarms that are audible above the surrounding noise levels. Whenever possible, use a signaler to assist heavy equipment operators and/or drivers in backing up or maneuvering in congested areas.
- Lay out traffic control patterns to eliminate excessive congestion.
- Workers in congested areas should always wear high visibility clothing.
- Be aware of Line of Fire hazards when performing work activities in congested areas.
- Hazards associated with SIMOPs should be discussed daily at Tailgate Safety Meetings.

Ergonomics

Most Work-related Musculoskeletal Disorders (WMSDs) are caused by Ergonomic Stressors. Ergonomic Stressors are caused by poor workplace practices and/or insufficient design, which may present ergonomic risk factors. These stressors include, but not limited to, repetition, force, extreme postures, static postures, quick motions, contact pressure, vibration, and cold temperatures.

WMSDs are injuries to the musculoskeletal system, which involves bones, muscles, tendons, ligaments, and other tissues in the system. Symptoms may include numbness, tightness, tingling, swelling, pain, stiffness, fatigue, and/or redness. WMSD are usually caused by one or more Ergonomic Stressors. There may be individual differences in susceptibility and symptoms among employees performing similar tasks. Any symptoms are to be taken seriously and reported immediately.

See OP1053 Ergonomics for more information.

Controls

- Ensure workstations are ergonomically correct so bad posture is not required to complete tasks.
- Take periodic breaks over the course of the day.
- Stretch during break times.
- Break up tasks that require repetitive motion.
- Contact Corporate H&S with any ergonomic concerns

Excavation & Trenches

There are multiple hazards associated with working in and around excavations and trenches including cave-ins, potential running soils, dislodged excavated soils, lack of proper access and egress. Nonfatal, and even fatal, injuries may occur in association with excavation and trenching activities with a greater frequency than one might expect. Causes of bodily injury, illness, or death include asphyxiation, internal injuries due to physical crushing, falling objects and toxic exposures.

See OP1001 Excavation and Trenching Safety for more information.

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Controls

- Do not enter an exaction unless it has been inspected and has appropriate protective measures in place: shoring, benching, or sloping.
    - Protective measures are required for excavations that are 5 feet or deeper.
- If entry is required verify with the on-site competent person that:
    - no atmospheric hazards exist or have the potential to exist
    - there is no standing water or water removal operations are in place
    - the daily inspection has occurred
    - spoil piles, equipment or other is at least 2 feet from the edge
    - There is safe access and egress to the excavation which can include ladders, steps, ramps or other safe means. The means of access and egress shall be no more than 25' away.
- If there is any doubt about the safety of the excavation personnel will not enter the excavation or trench and will contact the PM and the Regional Safety Manager.
- Do not stand on the long side of the cut. If required ensure there are no tension cracks.

Energized Equipment

Energy sources including electrical, mechanical, hydraulic, pneumatic, or other sources in machines and equipment can be hazardous to workers. During servicing and maintenance of machines and equipment, the unexpected startup or release of stored energy can result in serious injury or death to workers.

Staff members that are required to work on energized equipment must first ensure that the source of energy is isolated and/or de-energized. In addition, any stored energy must also be released. Staff must ensure that the process to de-energize and isolate energy sources is documented and communicated to those who are working on the equipment. Staff must be trained on and understand the procedure.

See OP 1032 Control of Hazardous Energy for more information.

Controls

- Document process to de-energize or isolate energy sources.
- Ensure staff are appropriately trained to conduct work requiring LOTO.
- Affix log or tag to equipment to ensure improper start-up or release of energy.
- Execute an Energy Isolation Permit.

Generated Waste

Activities on environmental sites may generate waste that requires regulated handling and disposal. Excess sample solids, decontamination materials, poly sheeting, used PPE, etc. that are determined to be free of contamination through field or laboratory screening can usually be disposed into client-approved, on-site trash receptacles. Uncontaminated wash water may be discarded onto the ground surface away from surface water bodies in areas where infiltration can occur. Contaminated materials must be segregated into liquids or solids and drummed separately for off-site disposal.

Controls

- Manage waste properly through good work practices.
- Collect, store, containerize waste, and dispose of it properly.
- All wastes generated shall be containerized in an appropriate container (i.e. open or closed top 55-gallon drum, roll-off container, poly tote, cardboard box, etc.) as directed by the PM.

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- Containers should be inspected for damages or defects
- Waste containers should be appropriately labeled indicating the contents, date the container was filled, owner of the material (including address) and any unique identification number, if necessary.
- Upon completion of filling the waste container, the container should be inspected for leaks and an appropriate seal.

Ground Disturbance

Ground disturbance is defined as any activity disturbing the ground. Ground disturbance activities include, but are not limited to, excavating, trenching, drilling (either mechanically or by hand), digging, plowing, grading, tunneling and pounding posts or stakes.

Because of the potential hazards associated with striking an underground utility or structure, the operating procedure for underground utility clearance shall be followed prior to performing any ground disturbance activities.

See OP1020 Working Near Utilities

Controls

Prior to performing ground disturbance activities, the following requirements should be applied:

- Confirm all approvals and agreements (as applicable) either verbal or written have been obtained.
- Request for line location has been registered with the applicable One-Call or Dial Before You Dig organization, when applicable.
    - Whenever possible, ground disturbance areas should be adequately marked or staked prior to the utility locators site visit.
- Notification to underground facility operator/owner(s) that may not be associated with any known public notification systems such as the One-Call Program regarding the intent to cause ground disturbance within the search zone.
- Notifications to landowners and/or tenant, where deemed reasonable and practicable.
- Proximity and Common Right of Way Agreements shall be checked if the line locator information is inconclusive.

Hand and Power Tools

Hand and power tools can expose staff to a wide range of hazards depending upon the tool used. Hazards can include but are not limited to: falling, flying, abrasive, and splashing objects, or harmful dusts, fumes, mists, vapors, or gases.

Serious accidents often occur before steps are taken to evaluate and avoid or eliminate tool-related hazards. Staff must recognize the hazards associated with the different types of tools and the safety precautions necessary to prevent those hazards.

See OP 1026 Hand and Power Tools for more information.

Controls

- Keep all tools in good condition with regular maintenance.
- Use the right tool for the job. Do not use a tool for a task which it was not designed for.
- Examine each tool for damage before use and do not use damaged tools.

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- For tools that are damaged or defective, red tag the tool and take out of service.
- Operate tools per the manufacturers' instructions.
- Use the appropriate personal protective equipment.
- All electrically powered tools will be connected through a ground fault circuit interrupter (GFCI).
- All personnel must be trained on the use of the tool they are utilizing.

Heavy Equipment

Staff must be careful and alert when working around heavy equipment, failure or breakage and limited visibility can lead to accidents and worker injury. Heavy equipment such as cranes, drills, haul trucks, or other can fail during operation increasing chances of worker injury. Equipment of this nature shall be visually inspected and checked for proper working order prior to commencement of field work. Those operating heavy equipment must meet all requirements to operate the equipment. Haley & Aldrich, Inc. staff that supervise projects or are associated with high risk projects that involve digging or drilling should use due diligence when working with a construction firm.

See OP1052 Heavy Equipment for additional information.

Controls

- Only approach equipment once you have confirmed contact with the operator (e.g., operator places the bucket on the ground).
- Always maintain visual contact with operators and keep out of the strike zone whenever possible.
- Always be alert to the position of the equipment around you.
- Always approach heavy equipment with an awareness of the swing radius and traffic routes of all equipment and never go beneath a hoisted load.
- Avoid fumes created by heavy equipment exhaust.

Hot Work

Hot work is any work that could produce a source of ignition or temperature high enough to cause the ignition of flammable gases and combustible materials. Hot work activities include burning, welding, grinding, braising, soldering, using fire or spark-producing tools. The main hazards associated with hot work are getting burned directly by the hot work activity or by fires or explosions that result from an accumulation of combustible materials in the work area.

Performing hot work in Classified and Non-Classified areas are considered a hazardous activity, and a Permit to Work may be required. In general, the Hot Work Permit has five purposes:

- To serve as written permission to do the work;
- To provide a minimum checklist prior to the commencement of hot work;
- To outline the steps necessary for making the work site safe for conducting hot work;
- To alert operating personnel to the hot work in progress; and
- To provide a record of safe work practices performed during the permitted activity.

Work shall be conducted in accordance with OP1034 Hot Work.

Controls

- Hot Work Permit must be completed.
- Conduct a risk assessment of the proposed work area to identify combustible or flammable material.

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- If potential for flammable gases exists in the work area they must be monitored with a gas detector prior to starting any hot work.
- The hot work equipment shall be in satisfactory operating condition and in good repair.
- All combustible and flammable materials shall be relocated at least 35' in all directions from the work site.

If relocating these materials is impractical, the following precautions shall be taken:

- Materials shall be shielded with fire-retardant covers or metal or fire-retardant guards or curtains.
- The edges of covers at the floor shall be tight to prevent the entrance of sparks, including at the point where several covers overlap when a large pile is being protected.
- A fire watch may be required.
- A fully charged and operable fire extinguisher appropriate for the type of potential fire shall be available for use in the work area (20lbs minimum).
- A nonflammable, impervious material shall seal sewer openings, ducts and drains. Where sealing is insecure or impractical, water spray or stream should be directed across openings.
- The location of the hot work relative to combustible and flammable materials and classified areas shall determine the need for a fire watch
- Personnel within the vicinity of the hot work shall be suitably protected against such dangers as heat, sparks, flash and slag.

Ladders (Fixed/Portable)

Working on and around stairways and ladders can be hazardous. They are major sources of injuries and fatalities among construction workers, for example, many of the injuries are serious enough to require time off the job. Rules apply to all stairways and ladders used in construction, alteration, repair, painting, and demolition of worksites.

See OP1027 Ladder Safety for additional information.

Controls

- Always maintain three points of contact when using a ladder.
- Only use ladders on a smooth and level surface.
- Do not exceed the maximum load rating of the ladder.
- Ladders shall always be maintained in good condition.
- Metal bearings of locks, wheels, pulleys, etc., shall be frequently lubricated.
- Frayed or badly worn rope shall be replaced.
- Safety feet and other auxiliary equipment shall be kept in good condition to ensure proper performance.
- Ladders shall be inspected prior to use, any which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous, Do Not Use."
- Rungs should be kept free of grease and oil.
- Fixed ladders that equal or exceed 24 feet must be equipped with ladder safety devices; or self-retracting lifelines and rest platforms at intervals not to exceed 150 feet; or a cage or well and multiple ladder sections with each ladder section not to exceed 50 feet in length.
- Side rails of through or side-step fixed ladders must extend 42 inches above the top level or landing platform served by the ladder

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Line of Fire

Line of fire refers to the path an object will travel. Examples of line of fire situations typically observed on project sites include lifting/hoisting, lines under tension, objects that can fall or roll, pressurized objects or lines, springs or stored energy, work overhead, vehicles and heavy equipment.

Controls

- Never walk under a suspended load.
- Be aware and stay clear of tensioned lines such as cable, chain and rope.
- Be cautious of torque stresses that drilling equipment and truck augers can generate. Equipment can rotate unexpectedly long after applied torque force has been stopped.
- Springs and other items can release tremendous energy if compressed and suddenly released
- Items under tension and pressure can release tremendous energy if it is suddenly released.
- Not all objects may be overhead; be especially mindful of top-heavy items and items being transported by forklift or flatbed.
- Secure objects that can roll such as tools, cylinders, and pipes.
- Stay clear of soil cuttings or soil stockpiles generated during drilling operations and excavations, be aware that chunks of soil, rocks, and debris can fall or roll.

Manual Lifting/Moving

Most materials associated with investigation, remedial, or construction-related activities are moved by hand. The human body is subject to damage in the forms of back injury, muscle strains, and hernia if caution is not observed in the handling process.

Controls

- Under no circumstances should any one person lift more than 49 pounds unassisted.
- Always push, not pull, the object when possible.
- Size up the load before lifting. If it is heavy or clumsy, get a mechanical aid or help from a worker.
- Bend the knees; it is the single most important aspect of lifting.
- When performing the lift:
    - Place your feet close to the object and center yourself over the load.
    - Get a good handhold.
    - Lift straight up, smoothly and let your legs do the work, not your back!
    - Avoid overreaching or stretching to pick up or set down a load.
    - Do not twist or turn your body once you have made the lift.
    - Make sure beforehand that you have a clear path to carry the load.
    - Set the load down properly.

Noise

Working around heavy equipment (drill rigs, excavators, etc.) often creates excessive noise. The effects of noise include physical damage to the ear, pain, and temporary and/or permanent hearing loss. Workers can also be startled, annoyed, or distracted by noise during critical activities. Noise monitoring data that indicates that working within 25 feet of operating heavy equipment result in exposure to hazardous levels of noise (levels greater than 85 dBA).

See OP 1031 Hearing Conservation for additional information.

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Controls

- Personnel are required to use hearing protection (earplugs or earmuffs) within 25 feet of any operating piece of heavy equipment.
- Limit the amount of time spent at a noise source.
- Move to a quiet area to gain relief from hazardous noise sources.
- Increase the distance from the noise source to reduce exposure.

Overhead Utilities

When work is undertaken near overhead electrical lines, the distance maintained from those lines shall also meet the minimum distances for electrical hazards as defined in Table 1 below. Note: utilities other than overhead electrical utilities need to be considered when performing work.

Table 1 Minimal Radial Clearance Distances *

Normal System Voltage Kilovolts (kV)	Required Minimal Radial Clearance Distance (feet/meters)
0 – 50	10/3.05
51 – 100	12/3.66
101 – 200	15/4.57
201 – 300	10/6.1
301 – 500	25/7.62
501 – 750	35/10.67
750 - 1000	45/13.72

* For those locations where the utility has specified more stringent safe distances, those distances shall be observed.

Controls

- To prevent damage, guy wires shall be visibly marked and work barriers or spotters provided in those areas where work is being conducted.
    - When working around guy wires, the minimum radial clearance distances for electrical power shall be observed.
- The PM shall research and determine if the local, responsible utility or client has more restrictive requirements than those stated in Table 1.
- If equipment cannot be positioned in accordance with the requirements established in Table 1 the lines need to be de-energized.

Repetitive Motion

Repetitive Motion or Strain Injuries are injuries effecting muscles, nerves, and tendons by repetitive movement and overuse. Almost any kind of awkward or repetitive motion you make could lead to an injury over time. Actions like bending or twisting of the wrists, reaching for materials, working with your hands above shoulder level, or grasping objects can increase wear and tear on the body. The condition mostly effects the upper body.

Controls

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- Arrange your work zone, supplies and tools as much as possible to avoid reaching, leaning, bending and twisting your waist or wrists.
- During rest breaks, use stretches to loosen up your body.
- Vary tasks if you can so that you are not making the same movement repeatedly over for a long period.

Rotating Equipment

Exposure to rotating parts can occur when working near a drilling rig, or other similar equipment. All rotating parts should be covered with guards to prevent access by workers. When performing maintenance activities that require the rotating parts to be exposed, workers should not allow loose clothing, hands, or tools to approach the rotating parts. Energy isolation procedures must be followed, and guards must be replaced as soon as possible after completing the maintenance task.

Operation of drilling equipment also creates hazards associated with pinch points and rotating equipment. These are hazards where the body and extremities, especially the hands, can be caught in moving equipment and crushed.

Controls

- Evaluate work procedures to avoid placing the body and extremities in the path of rotating equipment and tools to avoid being struck by moving equipment, tools and machinery.
- Evaluate equipment and tool use to identify pinch points and develop procedures to avoid placing body parts in a position where they can be caught in moving equipment, tools and machinery.
- Follow energy isolation procedures if required
- Do not work near rotating equipment with long loose hair, loose clothing or jewelry.

Slippery Surfaces

Both slips and trips result from unintended or unexpected change in the contact between the feet and ground or walking surface. Good housekeeping, quality of walking surfaces, selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents. Slips happen where there is too little friction or traction between the footwear and walking surface.

Common causes of slips are wet or oily surfaces, spills, weather hazards, loose unanchored rugs or mats and flooring or other walking surfaces that do not have same degree of traction in all areas.

Weather-related slips and falls become a serious hazard as winter conditions often make for wet or icy surfaces outdoors. Even wet organic material or mud can create hazardous walking conditions. Spills and leaks can also lead to slips and falls.

Controls

- Evaluate the work area to identify any conditions that may pose a slip hazard.
- Address any spills, drips or leaks immediately.
- Mark areas where slippery conditions exist.
- Select proper footwear or enhance traction with additional PPE.
- Where conditions are uncertain or environmental conditions result in slippery surfaces walk slowly, take small steps, and slide feet on wet or slippery surfaces.

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Sharp Objects

Workers who handle sharp edged objects like sheets of steel or glass are at risk of cuts. Workers who handle sharp edged objects are also at risk of cuts. Injuries may occur to hands, fingers, or legs when they are in the way of the blade, when the blade slips, or if an open blade is handled unexpectedly. Other hazards at job sites include stepping on sharp objects (e.g. wooden boards with protruding nails, sharp work-tools, chisels, etc.) and colliding with sharp and/or protruding objects.

Controls

Always be alert when handling sharps. Never look away or become distracted while handling sharp objects. Use caution when working with tools; use right tool for the job. Keep tools sharp, dull blades are a safety hazard, requiring more force to make cuts which can lead to tool slippage. Wear appropriate PPE and do not handle sharp objects (i.e., broken glass) with bare hands. Use mechanical devices, when possible. Stay away from building debris; avoid handling site debris or placing your hand where you cannot see. Watch out for barbed wire and electrical fences; cover with a car mat or equivalent to cross or walk around; use the buddy system to avoid entanglement; wear gloves. Do not leave unprotected sharps unattended. Use protective shields, cases, styrofoam blocks, etc. Pass a sharp by handing it over carefully by the handle with the blade down or retracted. Fixed open blades are prohibited. Always cut away from the body, making several passes when cutting thicker materials. Make sure blades are fitted properly into the knife. Never cut items with a blade or other sharp object on your lap. Never try to catch a blade or cutting tool that is falling.

Underground Utilities

Various forms of underground/overhead utility lines or conveyance pipes may be encountered during site activities. Prior to the start of intrusive operations, utility clearance is mandated, as well as obtaining authorization from all concerned public utility department offices. Should intrusive operations cause equipment to come into contact with utility lines, the SHSO, Project Manager, and Regional H&S Manager shall be notified immediately. Work will be suspended until the client and applicable utility agency is contacted and the appropriate actions for the situation can be addressed.

See OP1020 Work Near Utilities for complete information.

Controls

- Obtain as-built drawings for the areas being investigated from the property owner;
- Visually review each proposed soil boring locations with the property owner or knowledgeable site representative;
- Perform a geophysical survey to locate utilities;
- Hire a private line locating firm to determine location of utility lines that are present at the property;
- Identifying a no-drill or dig zone;
- Hand dig or use vacuum excavation in the proposed ground disturbance locations if insufficient data is unavailable to accurately determine the location of the utility lines.

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4. PROTECTIVE MEASURES

The personal protective equipment and safety equipment (if listed) is specific to the associated task. The required PPE and equipment listed must be onsite during the task being performed. Work shall not commence unless the required PPE or Safety Equipment is present.

Required Safety & Personal Protective Equipment

Required Personal Protective Equipment (PPE)	**Task 1** Remedial Oversight	**Task 2** Soil Sampling	**Task 3** Groundwater Sampling (Dewatering)	**Task 4** Soil Vapor Sampling (if required)
Hard hat	☒	☒	☒	☒
Safety Glasses	☒	☒	☒	☒
Safety Toed Shoes	☒	☒	☒	☒
Class 2 Safety Vest	☒	☒	☒	☒
Hearing Protection	☒	☒	☐	☐
Nitrile Gloves	☒	☒	☒	☒
Cut Resistant Gloves	☒	☒	☒	☒
Level of protection required	D	D	D	D
Required Safety Equipment				
First Aid Kit	☒	☒	☒	☒

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5. TRAINING REQUIREMENTS

The table below lists the training requirements staff must have respective to their assigned tasks and that are required to access the Site.

Site Specific Training Requirements
HAZWOPER - 40 Hour (Initial), HazMat, DOT RCRA
HAZWOPER - 8 Hour (Annual Refresher)
Site Specific Orientation
Choose an item.

Task Specific Training Requirements				
Required Training Type	**Task 1**	**Task 2**	**Task 3**	**Task 4**
	Remedial Oversight	Soil Sampling	Groundwater Sampling (Dewatering)	Soil Vapor Sampling (if required)
RCRA Haz Waste Generator	☒	☒	☐	☐

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6. AIR MONITORING PLAN AND EQUIPMENT

Exposures to airborne substances shall be fully characterized throughout project operations to ensure that exposure controls are effectively selected and modified as needed.

Is air/exposure monitoring required at this work site for personal protection? Yes

Is perimeter monitoring required for community protection? Yes

Air monitoring plan not applicable No

Air Monitoring/Screening Equipment Requirements

Photo-Ionization Detector (PID) 10.6eV

Dust Monitor (DustTrak or Aeroqual Station)

The required equipment listed above must be on site. Work shall not commence unless the equipment is present and in working order.

Monitoring Plans

Parameter/ Contaminant	Equipment	Action Level	Response Activity
VOCs	PID 10.6 eV	< 10 ppm	Continue work and monitoring.
		>10 ppm for 5 minutes >10 ppm for >5 minutes	Clear Instrument and Re-Monitor the Area. Implement PPE upgrades Evacuate the area and call the FSM and/or PM for further guidance. Implement engineering controls.

Zone Location and Monitoring Interval
Breathing zone and edge of Exclusion Zone.

***If chemical does not have an action level use TLV or REL, whichever is lowest, to be used as an action level. If TLV or REL are the same as PEL, cut the PEL in half for an action level.**

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7. DECONTAMINATION & DISPOSAL METHODS

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities (e.g., avoid sitting or leaning on, walking through, dragging equipment through or over, tracking, or splashing potential or known contaminated/impacted materials.)

Personal Hygiene Safeguards

The following minimum personal hygiene safeguards shall be adhered to:

1. No smoking or tobacco products in any project work areas.
2. No eating or drinking in the exclusion zone.
3. It is required that personnel present on site wash hands before eating, smoking, taking medication, chewing gum/tobacco, using the restroom, or applying cosmetics and before leaving the site for the day.

It is recommended that personnel present on site shower or bathe at home at the end of each day of working on the site.

Decontamination Supplies

All decontamination should be conducted at the project site in designated zones or as dictated by Client requirements. Decontamination should not be performed on Haley & Aldrich owned or leased premises.

☐ Acetone	☒ Distilled Water	☐ Polyethylene Sheeting
☒ Alconox Soap	☒ Drums	☐ Pressure/Steam Cleaner
☐ Brushes	☐ Hexane	☐ Tap Water
☒ Disposal Bags	☐ Methanol	☐ Wash tubs
☒ 5 Gallon Buckets	☒ Paper Towels	☐ Other: Specify

Location of Decontamination Station

Decontamination station location to be coordinated by field lead in a safe area, away from vehicular and pedestrian traffic.

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Standard Personal Decontamination Procedures

Outer gloves and boots should be decontaminated periodically as necessary and at the end of the day. Brush off solids with a hard brush and clean with soap and water or other appropriate cleaner whenever possible. Remove inner gloves carefully by turning them inside out during removal. Wash hands and forearms frequently. It is good practice to wear work-designated clothing while on-site which can be removed as soon as possible. Non-disposable overalls and outer work clothing should be bagged onsite prior to laundering. If gross contamination is encountered on-site contact the Project Manager and Field Safety Manager to discuss proper decontamination procedures.

The steps required for decontamination will depend upon the degree and type of contamination but will generally follow the sequence below.

1. Remove and wipe clean hard hat
2. Rinse boots and gloves of gross contamination
3. Scrub boots and gloves clean
4. Rinse boots and gloves
5. Remove outer boots (if applicable)
6. Remove outer gloves (if applicable)
7. Remove Tyvek coverall (if applicable)
8. Remove respirator, wipe clean and store (if applicable)
9. Remove inner gloves (if outer gloves were used)

PPE that is not grossly contaminated can be bagged and disposed in regular trash receptacles.

Small Equipment Decontamination

Pretreatment of heavily contaminated equipment may be conducted as necessary:

1. Remove gross contamination using a brush or wiping with a paper towel
2. Soak in a solution of Alconox and water (if possible)
3. Wipe off excess contamination with a paper towel

Standard decontamination procedure:

4. Wash using a solution of Alconox and water
5. Rinse with potable water
6. Rinse with methanol (or equivalent)
7. Rinse with distilled/deionized water

Inspect the equipment for any remaining contamination and repeat as necessary.

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Disposal Methods

Procedures for disposal of contaminated materials, decontamination waste, and single use personal protective equipment shall meet applicable client, locate, State, and Federal requirements.

Disposal of Single Use Personal Protective Equipment

PPE that is not grossly contaminated can be bagged and disposed in regular trash receptacles. PPE that is grossly contaminated must be bagged (sealed and field personnel should communicate with the Project Manager to determine proper disposal.

Standard Disposal Methods for Contaminated Materials

- Excess sample solids, decontamination materials, rags, brushes, poly-sheeting, etc. that are determined to be free of contamination through field screening can usually be disposed into client-approved, on-site trash receptacles.
- Uncontaminated wash water may be discarded onto the ground surface away from surface water bodies in areas where infiltration can occur.
- Contaminated materials must be segregated into liquids or solids and containerized separately for offsite disposal.

Disposal Method for Contaminated Soil

- Contaminated soil cuttings and spoils must be containerized for disposal off-site unless otherwise specifically directed.
- Soil cuttings and spoils determined to be free of contamination through field screening can usually be returned to the boreholes or excavations from which they came.

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8. SITE CONTROL

The overall purpose of site control is to minimize potential contamination of workers, protect the public from the site's hazards, and prevent vandalism. Site control is especially important in emergency situations. The degree of site control necessary depends on site characteristics, site size, and the surrounding community. The following information identifies the elements used to control the activities and movements of people and equipment at the project site.

Communication
Internal Haley & Aldrich site personnel will communicate with other Haley & Aldrich staff member and/or subcontractors or contractors with: Face to Face Communication
External H&S site personnel will use the following means to communicate with off-site personnel or emergency services. Cellular Phones
Visitors
Project Site Will visitors be required to check-in prior to accessing the project site? Yes
Visitor Access Authorized visitors that require access to the project site need to be provided with known information with respect to the site operations and hazards as applicable to the purpose of their site visit. Authorized visitors must have the required PPE and appropriate training to access the project site. Site Safety Officer or Field Safety Manager is responsible for facilitating authorized visitor access.
Zoning
Work Zone The work zone will be clearly delineated to ensure that the general public or unauthorized worker access is prevented. The following will be used: Cones Barricades Temporary Fencing

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9. SITE SPECIFIC EMERGENCY RESPONSE PLAN

The Emergency Response Plan addresses potential emergencies at this site, procedures for responding to these emergencies, roles, responsibilities during emergency response, and training. This section also describes the provisions this project has made to coordinate its emergency response with other contractors onsite and with offsite emergency response organizations (as applicable).

During the development of this emergency response plan, local, state, and federal agency disaster, fire, and emergency response organizations were consulted (if required) to ensure that this plan is compatible and integrated with plans of those organizations. Documentation of the dates of these consultations are the names of individuals contacted is kept on file and available upon request.

The site has been evaluated for potential emergency occurrences, based on site hazards, and the major categories of emergencies that could occur during project work are:

- Fire(s)/Combustion
- Hazardous Material Event
- Medical Emergency
- Natural Disaster

A detailed list of emergency types and response actions are summarized in Table X below. Prior to the start of work, the SSO will update the table with any additional site-specific information regarding evacuations, muster points, or additional emergency procedures. The SSO will establish evacuation routes and assembly areas for the Site. All personnel entering the Site will be informed of these routes and assembly areas.

Pre-Emergency Planning

Before the start of field activities, the Project Manager will ensure preparation has been made in anticipation of emergencies. Preparatory actions include the following:

Meeting with the subcontractor/and or client concerning the emergency procedures in the event a person is injured. Appropriate actions for specific scenarios will be reviewed. These scenarios will be discussed, and responses determined before the sampling event commences. A form of emergency communication (i.e.; Cell phone, Air horn, etc.) between the Project Manager and subcontractor and/or client will be agreed on before the work commences.

A training session (i.e., “safety meeting”) given by the Project Manager or their designee informing all field personnel of emergency procedures, locations of emergency equipment and their use, and proper evacuation procedures.

Ensuring field personnel are aware of the existence of the emergency response HASP and ensuring a copy of the HASP accompanies the field team(s).

Onsite Emergency Response Equipment

Emergency procedures may require specialized equipment to facilitate work rescue, contamination control and reduction or post-emergency cleanup. Emergency response equipment stocked

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Table 9.1 Emergency Equipment and Emergency PPE			
Emergency Equipment	**Specific Type**	**Quantity Stocked**	**Location Stored**
First Aid Kit	ANSI	1 Kit	With Haley & Aldrich Staff
Emergency PPE	**Specific Type**	**Quantity Stocked**	**Location Stored**
Gloves	Nitrile	1 box	With Haley & Aldrich Staff

EVACUATION ALARM
Will be communicated during the Onsite Kickoff Meeting
EVACUATION ROUTES
See Figure 2 for Evacuation Routes
EVACUATION MUSTER POINT(S)/ SHELTER AREA(S)
See Figure 2 for Muster Point and Shelter Area
EVACUTION RESPONSE DRILLS
The Site relies on outside emergency responders and a drill is not required.

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Table 9-2 – Emergency Planning

Emergency Type	Notification	Response Action	Evacuation Plan/Route
Chemical Exposure	Report event to SSO immediately	Refer to Safety Data Sheet for required actions	Remove personnel from work zone
Fire - Small	Notify SSO and contact 911	Use fire extinguisher if safe and qualified to do so	Mobilize to *Muster Point*
Fire – Large/Explosion	Notify SSO and contact 911	Evacuate immediately	Mobilize to *Muster Point*
Hazardous Material – Spill/Release	Notify SSO; SSO will contact PM to determine if additional agency notification is	If practicable don PPE and use spill kit and applicable procedures to contain the release	See Evacuation Map for route, move at least 100 ft upwind of spill location
Medical – Bloodborne Pathogen	Notify SSO	If qualified dispose in container or call client or city to notify for further instruction.	None Anticipated
Medical – First Aid	Notify SSO	If qualified perform first aid duties	None Anticipated
Medical – Trauma	If life threatening or transport is required call 911, immediately	Wait at site entrance for ambulance	Noe Anticipated
Security Threat	Notify SSO who will call 911 as warranted	Keep all valuables out of site and work zones delineated.	None Anticipated
Weather – Earthquake/Tsunami's	STOP WORK and evacuate Site upon any earthquake	Turn off equipment and evacuate as soon as is safe to do so	Mobilize to *Shelter Location*
Weather – Lightning Storm	STOP WORK	Work may resume 30 minutes after the last observed lightning.	None Anticipated
Weather – Tornadoes/Hurricanes	Monitor weather conditions STOP WORK and evacuate the site	Evacuate to shelter location or shelter in place immediately	Mobilize to *Shelter Location*
MUSTER POINT Eastern sidewalk on William Street across from the Site.		*SHELTER LOCATION* Will be communicated during the Onsite Kickoff Meeting	
In case of site emergencies, site personnel shall be evacuated per this table and will not participate in emergency response activities. Site emergencies shall be reported to local, state, and federal governmental agencies as required.			

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10. HASP ACKNOWLEDGEMENT FORM

All Haley & Aldrich employees onsite must sign this form prior to entering the site.

I hereby acknowledge receipt of, and briefing on, this HASP prior to the start of on-site work. I declare that I understand and agree to follow the provisions, processes, and procedures set forth herein at all times while working on this site.

Printed Name	Signature	Date

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ATTACHMENT A
HASP AMENDMENT FORM

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HASP AMENDMENT FORM

This form is to be used whenever there is an immediate change in the project scope that will require an amendment to the HASP. For project scope changes associated with "add-on" tasks, the changes must be made in the body of the HASP. Before changes can be made, a review of the potential hazards must be initiated by the Haley & Aldrich Project Manager.

This original form must remain on site with the original HASP. If additional copies of this HASP have been distributed, it is the Project Manager's responsibility to forward a signed copy of this amendment to those who have copies.

Amendment No.	
Site Name	
Work Assignment No.	
Date	
Type of Amendment	
Reason for Amendment	
Alternate Safeguard Procedures	
Required Changes in PPE	

Project Manager Name (Print)	Project Manager Signature	Date

Health & Safety Approver Name (Print)	Health & Safety Approver Signature	Date

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ATTACHMENT B
TRAINING REQUIREMENTS

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TRAINING REQUIREMENTS

Health and Safety Training Requirements

Personnel will not be permitted to supervise or participate in field activities until they have been trained to a level required by their job function and responsibility. Haley & Aldrich staff members, contractors, subcontractors, and consultants who have the potential to be exposed to contaminated materials or physical hazards must complete the training described in the following sections.

The Haley & Aldrich Project Manager/FSM will be responsible for maintaining and providing to the client/site manager documentation of Haley & Aldrich staff members' compliance with required training as requested. Records shall be maintained per OSHA requirements.

40-Hour Health and Safety Training

The 40-Hour Health and Safety Training course provides instruction on the nature of hazardous waste work, protective measures, proper use of personal protective equipment, recognition of signs and symptoms which might indicate exposure to hazardous substances, and decontamination procedures. It is required for all personnel working on-site, such as equipment operators, general laborers, and supervisors, who may be potentially exposed to hazardous substances, health hazards, or safety hazards consistent with 29 CFR 1910.120.

8-hour Annual Refresher Training

Personnel who complete the 40-hour health and safety training are subsequently required to attend an annual 8-hour refresher course to remain current in their training. When required, site personnel must be able to show proof of completion (i.e., certification) at an 8-hour refresher training course within the past 12 months.

8-Hour Supervisor Training

On-site managers and supervisors directly responsible for, or who supervise staff members engaged in hazardous waste operations, should have eight additional hours of Supervisor training in accordance with 29 CFR 1910.120. Supervisor Training includes, but is not limited to, accident reporting/investigation, regulatory compliance, work practice observations, auditing, and emergency response procedures.

Additional Training for Specific Projects

Haley & Aldrich personnel will ensure their personnel have received additional training on specific instrumentation, equipment, confined space entry, construction hazards, etc., as necessary to perform their duties. This specialized training will be provided to personnel before engaging in the specific work activities including:

- Client specific training or orientation
- Competent person excavations
- Confined space entry (entrant, supervisor, and attendant)
- Heavy equipment including aerial lifts and forklifts
- First aid/ CPR
- Use of fall protection
- Use of nuclear density gauges
- Asbestos awareness

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ATTACHMENT C
ROLES AND RESPONSIBILITIES

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SITE ROLES AND RESPONSIBILITIES

Haley & Aldrich Personnel

Field Safety Manager (FSM)

The Haley & Aldrich FSM is a full-time Haley & Aldrich staff member, trained as a safety and health professional, who is responsible for the interpretation and approval of this Safety Plan. Modifications to this Safety Plan cannot be undertaken by the PM or the SSO without the approval of the FSM.

Specific duties of the FSM include:

- Approving and amending the Safety Plan for this project
- Advising the PM and SHSOs on matter relating to health and safety
- Recommending appropriate personal protective equipment (PPE) and air monitoring instrumentation
- Maintaining regular contact with the PM and SSO to evaluate the conditions at the property and new information which might require modifications to the HASP and
- Reviewing and approving JSAs developed for the site-specific hazards.

Project Manager (PM)

The Haley & Aldrich PM is responsible for ensuring that the requirements of this HASP are implemented at that project location. Some of the PM´s specific responsibilities include:

- Assuring that all personnel to whom this HASP applies have received a copy of it;
- Providing the FSM with updated information regarding environmental conditions at the site and the scope of site work;
- Providing adequate authority and resources to the on-site SHSO to allow for the successful implementation of all necessary safety procedures;
- Supporting the decisions made by the SHSO;
- Maintaining regular communications with the SHSO and, if necessary, the FSM;
- Coordinating the activities of all subcontractors and ensuring that they are aware of the pertinent health and safety requirements for this project;
- Providing project scheduling and planning activities; and
- Providing guidance to field personnel in the development of appropriate Job Safety Analysis (JSA) relative to the site conditions and hazard assessment.

Site Health & Safety Officer (SHSO)

The SHSO is responsible for field implementation of this HASP and enforcement of safety rules and regulations. SHSO functions may include some or all of the following:

- Act as Haley & Aldrich´s liaison for health and safety issues with client, staff, subcontractors, and agencies.
- Verify that utility clearance has been performed by Haley & Aldrich subcontractors.
- Oversee day-to-day implementation of the Safety Plan by Haley & Aldrich personnel on site.

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- Interact with subcontractor project personnel on health and safety matters.
- Verify use of required PPE as outlined in the safety plan.
- Inspect and maintain Haley & Aldrich safety equipment, including calibration of air monitoring instrumentation used by Haley & Aldrich.
- Perform changes to HASP and document in Appendix A of the HASP as needed and notify appropriate persons of changes.
- Investigate and report on-site accidents and incidents involving Haley & Aldrich and its subcontractors.
- Verify that site personnel are familiar with site safety requirements (e.g., the hospital route and emergency contact numbers).
- Report accidents, injuries, and near misses to the Haley & Aldrich PM and FSM as needed.

The SHSO will conduct initial site safety orientations with site personnel (including subcontractors) and conduct toolbox and safety meetings thereafter with Haley & Aldrich employees and Haley & Aldrich subcontractors at regular intervals and in accordance with Haley & Aldrich policy and contractual obligations. The SHSO will track the attendance of site personnel at Haley & Aldrich orientations, toolbox talks, and safety meetings.

Field Personnel

Haley & Aldrich personnel are responsible for following the health and safety procedures specified in this HASP and for performing their work in a safe and responsible manner. Some of the specific responsibilities of the field personnel are as follows:

- Reading the HASP in its entirety prior to the start of on-site work;
- Submitting a completed Safety Plan Acceptance Form and documentation of medical surveillance and training to the SHSO prior to the start of work;
- Attending the pre-entry briefing prior to beginning on-site work;
- Bringing forth any questions or concerns regarding the content of the Safety Plan to the PM or the SHSO prior to the start of work;
- Stopping work when it is not believed it can be performed safely;
- Reporting all accidents, injuries and illnesses, regardless of their severity, to the SHSO;
- Complying with the requirements of this safety plan and the requests of the SHSO; and
- Reviewing the established JSAs for the site-specific hazards on a daily basis and prior to each shift change, if applicable.

Visitors

Authorized visitors (e.g., Client Representatives, Regulators, Haley & Aldrich management staff, etc.) requiring entry to any work location on the site will be briefed by the Site Supervisor on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer´s health and safety policies. In addition, this safety plan specifies the minimum acceptable qualifications, training and personal protective equipment which are required for entry to any controlled work area; visitors must comply with these

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requirements at all times. Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

SUBCONTRACTOR PERSONNEL

Subcontractor Site Representative

Each contractor and subcontractor shall designate a Contractor Site Representative. The Contractor Site Representative will interface directly with Insert Staff Name Here, the Subcontractor Site Safety Manager, with regards to all areas that relate to this safety plan and safety performance of work conducted by the contractor and/or subcontractor workforce. Contractor Site Representatives for this site are listed in the Contact Summary Table at the beginning of the Safety Plan.

Subcontractor Site Safety Manager

Each contractor / subcontractor will provide a qualified representative who will act as their Site Safety Manager (Sub-SSM). This person will be responsible for the planning, coordination, and safe execution of subcontractor tasks, including preparation of job hazard analyses (JHA), performing daily safety planning, and coordinating directly with the Haley & Aldrich SHSO for other site safety activities. This person will play a lead role in safety planning for Subcontractor tasks, and in ensuring that all their employees and lower tier subcontractors are in adherence with applicable local, state, and/or federal regulations, and/or industry and project specific safety standards or best management practices.

General contractors / subcontractors are responsible for preparing a site-specific HASP and/or other task specific safety documents (e.g., JHAs), which are, at a minimum, in compliance with local, state, and/or federal other regulations, and/or industry and project specific safety standards or best management practices. The contractor(s)/subcontractor(s) safety documentation will be at least as stringent as the health and safety requirements of the Haley & Aldrich Project specific HASP.

Safety requirements include, but are not limited to: legal requirements, contractual obligations and industry best practices. Contractors/subcontractors will identify a site safety representative during times when contractor/subcontractor personnel are on the Site. All contractor/subcontractor personnel will undergo a field safety orientation conducted by the Haley & Aldrich SHSO and/or PM prior to commencing site work activities. All contractors / subcontractors will participate in Haley & Aldrich site safety meetings and their personnel will be subject to training and monitoring requirements identified in this Safety Plan. If the contractors / subcontractors means and methods deviate from the scope of work described in Section 1 of this Safety Plan, the alternate means and methods must be submitted, reviewed and approved by the Haley & Aldrich SHSO and/or PM prior to the commencement of the work task. Once approved by the Haley & Aldrich SHSO and/or PM, the alternate means and methods submittal will be attached to this Safety Plan as an Addendum.

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ATTACHMENT D
JOB SAFETY ANALYSES

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60 WILLIAM STREET DEVELOPMENT

KEY TASK - TASK 1: Remedial Oversight		
Subtask Category	**Potential Hazards**	**Controls**
Excavation/Trenching	General Site Hazards	• Tailgate meeting prior to beginning work • Discussion of daily hazards including slips trips falls, weather, hydration, loud noises, etc. • Before entering site, visually assess any site hazards using your energy wheel • Avoid any hazardous areas or activities while on site, keep a safe distance relative to the hazards
Excavation/Trenching	Heavy Equipment	• Personal protective equipment, licensed excavator operators • Maintain distance from any heavy equipment • If needed, approach heavy equipment from the front, get the drivers attention and approval to proceed • Never walk along the sides or rear of any heavy equipment and always stay clear of any swing radii
Excavation/Trenching	Utility locators and underground hazards	• Personal protective equipment • One-Call • Utility Clearance Checklist • Conduct thorough site assessment and risk analysis • Develop emergency response plan • Maintain safe buffer distance from marked utilities during drilling • GPR survey • Continuous monitoring of signs for gas leaks, water intrusion, or electrical hazards.
Excavation/Trenching	Noise reduction	• Establish work perimeter to reduce amount of workers susceptible to high noise conditions

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		• Maintain machinery regularly to reduce excess noise from worn-out parts • Use ear plugs
Excavation/Trenching	Weather-related hazards	• Monitor weather forecasts regularly and plan accordingly • Establish bad weather response plan • Identify and secure shelter locations for workers • Ensure proper drainage and erosion control • Have emergency communication channels in place
Excavation/Trenching	Other (Heavy Lifting)	• Ensure all workers are trained in proper lifting techniques and equipment use • Inspect equipment • Establish clear communication signals between operators and ground workers • Identify and mark proper walk ways to keep unauthorized personnel away
Excavation/Trenching	Site security	• Establish perimeter using barricades, warning signs, and site access points • Restrict access to authorized personnel only • Implement a sign-in/sign-out log for all workers and site visitors • Require workers to wear identification via high -visibility vests, hard hat stickers
Excavation/Trenching	Cold Stress	• Understand the signs of cold stress • Prepare for the weather and wear warm clothing that retains your body heat • Take breaks as needed in heated areas
Excavation/Trenching	Slips, Trips, and Falls	• Before walking through the site, identify potential slips, trips, and falls • Maintain an even walking pace and do not drag your feet; do not run • Avoid excavation edges and observe from a distance
Excavation/Trenching	Poisonous Plants	• Identify any potential poisonous plants • Do not walk through heavily vegetated areas • Avoid heavily vegetated areas and poisonous plants by maintaining distance

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Excavation/Trenching	Large Mammals	• Maintain a safe distance from any stray animals • Do not approach stray animals • If needed, seek a safe place further away from any stray animals, preferably indoors
Excavation/Trenching	Insect Bites/Stings	• Maintain a safe distance from any stinging/biting insects • Do not approach stinging/biting insects • If needed, seek a safe place further away from any stinging/biting insects, preferably indoors
Excavation/Trenching	Rodents	• Maintain a safe distance from any rodents • Do not approach rodents • If needed, seek a safe place further away from any rodents, preferably indoors
Excavation/Trenching	Spiders	• Maintain a safe distance from any spiders • Do not approach spiders • If needed, seek a safe place further away from any spiders, preferably indoors
Hauling Soils Off-Site	Vehicle traffic/safety	• Alternate walkways where possible. • Use of the local police to direct traffic. • Use of an air horn to alert drivers or other workers • Maintain good housekeeping and clean the area as work is completed. • Use the ´buddy´ or ´watchperson´ system while performing work • Use a spotter for backing tight maneuvers and bin/tank/equipment drop-offs. • Use traffic control devices, field vehicles and barricades and avoid the use of caution tape. • Park all vehicles (with wheels in a safe direction away from fieldwork) to block traffic with a flashing yellow light. Also, park so that access to the vehicle is away from oncoming traffic while you are working. • When parking a vehicle and equipment utilized a ´first move forward´ driving practice.

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		• Work in an upright position, facing traffic when possible. • Make eye contact with vehicle drivers so that they can recognize your presence.
Hauling Soils Off-Site	Slips, trips, and falls	• Before walking through the site, identify potential slips, trips, and falls • Maintain an even walking pace and do not drag your feet; do not run • Avoid excavation edges and observe from a distance
KEY TASKS 2, 3, 4 – Soil, Groundwater, Soil Vapor Sampling		
Soil Sampling, Groundwater Sampling, and Soil Vapor Sampling (if required)	General Site Hazards	• Tailgate meeting prior to beginning work • Discussion of daily hazards including slips trips falls, weather, hydration, loud noises, etc. • Before entering site, visually assess any site hazards using your energy wheel • Avoid any hazardous areas or activities while on site, keep a safe distance relative to the hazards
Soil Sampling, Groundwater Sampling, and Soil Vapor Sampling (if required)	Slips, trips, and falls	• Take your time and pay attention to where you are going • Adjust your stride to a pace that is suitable for the walking surface and the tasks you are doing • Check the work area to identify hazards – beware of trip hazards such as wet floors, icy surfaces, and uneven terrain • Establish and utilize a pathway free of slip and trip hazards • Choose a safer walking route • Carry loads you can see over • Keep work areas clean and free of clutter • Communicate hazards to on-site personnel – remove hazards as appropriate
Soil Sampling, Groundwater Sampling, and Soil Vapor Sampling (if required)	Heavy Equipment	• Personal protective equipment, licensed excavator operators • Maintain distance from any heavy equipment • If needed, approach heavy equipment from the front, get the drivers attention and approval to proceed

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		• Never walk along the sides or rear of any heavy equipment and always stay clear of any swing radii
Excavation/Trenching	Weather-related hazards	• Monitor weather forecasts regularly and plan accordingly • Establish bad weather response plan • Identify and secure shelter locations for workers • Ensure proper drainage and erosion control • Have emergency communication channels in place
Excavation/Trenching	Noise reduction	• Establish work perimeter to reduce amount of workers susceptible to high noise conditions • Maintain machinery regularly to reduce excess noise from worn-out parts • Use ear plugs
Excavation/Trenching	Cold Stress	• Understand the signs of cold stress • Prepare for the weather and wear warm clothing that retains your body heat • Take breaks as needed in heated areas
Excavation/Trenching	Poisonous Plants	• Identify any potential poisonous plants • Do not walk through heavily vegetated areas • Avoid heavily vegetated areas and poisonous plants by maintaining distance
Excavation/Trenching	Large Mammals	• Maintain a safe distance from any stray animals • Do not approach stray animals • If needed, seek a safe place further away from any stray animals, preferably indoors
Excavation/Trenching	Insect Bites/Stings	• Maintain a safe distance from any stinging/biting insects • Do not approach stinging/biting insects • If needed, seek a safe place further away from any stinging/biting insects, preferably indoors
Excavation/Trenching	Rodents	• Maintain a safe distance from any rodents • Do not approach rodents

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		• If needed, seek a safe place further away from any rodents, preferably indoors
Excavation/Trenching	Spiders	• Maintain a safe distance from any spiders • Do not approach spiders • If needed, seek a safe place further away from any spiders, preferably indoors
Hauling Soils Off-Site	Vehicle traffic/safety	• Alternate walkways where possible. • Use of the local police to direct traffic. • Use of an air horn to alert drivers or other workers • Maintain good housekeeping and clean the area as work is completed. • Use the ´buddy´ or ´watchperson´ system while performing work • Use a spotter for backing tight maneuvers and bin/tank/equipment drop-offs. • Use traffic control devices, field vehicles and barricades and avoid the use of caution tape. • Park all vehicles (with wheels in a safe direction away from fieldwork) to block traffic with a flashing yellow light. Also, park so that access to the vehicle is away from oncoming traffic while you are working. • When parking a vehicle and equipment utilized a ´first move forward´ driving practice. • Work in an upright position, facing traffic when possible. • Make eye contact with vehicle drivers so that they can recognize your presence.

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ATTACHMENT E
PROJECT SITE FORMS

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Subsurface Clearance Field Checklist

PROJECT INFORMATION

Site Name:		Project Manager:	
Location:		Client Leader/LSRP:	
Client Name:		Scope of Work:	
Project Number:		Date of SSC Event:	

PROJECT BASICS (Completed prior to the start of field activities)

Site Contact Person Identified? Circle one: Yes No			
Contact Person/Company Name/Phone Number:			
Subcontractor & On-Site Representatives:			
Have the subsurface activities been explained to the subcontractor? Circle one: Yes No			
Public utility mark-out completed? Circle one: Yes No			
Public Mark-out/called in by Company/Representative:		Date:	
Ticket Number:		Utilities Notified and Response received:	

PRE-CLEARANCE (Completed prior to breaking ground or determining final locations)

Private Utility Mark-out completed? Circle one: Yes No		Date:	
Work area and each intrusive location scanned for all utilities? Circle one: Yes No			
Private Mark-out completed by Subcontractor & Representative:			
Depth of accuracy (feet):		Limitations:	
Type of equipment used:			

Utility Identified & Marked-out	Depth (ft)	Yes	No	Utility Identified & Marked-out	Depth (ft)	Yes	No
Electricity (Red)				Sewer (Green)			
Gas (Yellow)				Telephone Data (Orange)			
Water (Blue)				Fuel/Oil			
Reclaimed H_2O/Irrigation (Purple)				Proposed excavation (white)			

SCOPE OF WORK

Scope of Work provided to subcontractors? Circle one: Yes No					
Number of intrusive locations:		Targeted depth (feet):		Diameter of Borehole (inches):	
Proposed intrusive locations within 10 feet of marked and/or known utility? Circle one: Yes No					
Final locations confirmed at least 10 feet away from all utilities? Circle one: Yes No					

FIELD OBSERVATIONS

Other Utilities & Visual Clues Observed	Yes	No	Other Utilities & Visual Clues Observed	Yes	No
Natural gas meters			Fire suppression		
Water meters			Fire hydrants		
Cable markers			Fire sprinkler lines		
Sewer drains/cleanouts			Sprinkler/irrigation systems		
Overhead lines (give 15' x 15' of clearance)			Utility poles with conduit leading to the ground		
Pipeline and pipeline markers			Utility boxes		
Underground storage tank (UST)			Manholes		
UST fill ports and vent pipes			Pavement scarring		
Lights			Remote buildings with no visible utilities		
Signage			Other (specify):		
Steam lines			Other (specify):		

Any mitigations taken if points cannot be obtained or site type was not listed:_____

_____

Mitigations taken by whom: _____

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Subsurface Clearance Field Checklist

Utility Point System: Gain points to protect against utility strike

Site Description	Minimum Points Needed
Combination of 2 or more Site Types	5
Commercial/Office Park	5
Downtown/Urban Development	5
Manufacturing/Active	5
Manufacturing/Non-Active	5
Mine	5
Rail	5
Residential	5
Roadway (right-of-way, highway, and secondary routes)	5
Roadway (right-of-way, rural route)	5
Universities/Government Campus/Airports	5
Abandoned/Non-Active/Vacant	3
Remote (field, woods, undisturbed)	2
Work over water	2
Site Type Not Listed Above	Consult with the PM, Utility Specialist, and Project Team
Cannot Gain Minimum Points	Perform hand clearing/soft dig/vacuum excavation

1 Point Value (2 Maximum from this Category)
Facility/contact supplied information (GIS figure with photo overlay; extensive client records and drawings)
The utilities have been marked using GPS or surveyed (with minimum accuracy of 0.1 foot)
A review of the work scope with a knowledgeable site contact (client contact, site manager, maintenance manager or other site personnel) about the site's history and utility locations/conditions (with a utility site drawing). **A knowledgeable site contact is someone who has regular responsibilities for managing site infrastructure, construction activities, and/or retaining site drawings/figures.**
A visual inspection of the site to verify that the utilities match the drawings and figures (completed after the State One Call Subsurface Clearance Checklist)
Confirmation of the low density of subsurface utilities (based on site maps, previous private utility locates)
Shallow boring advancement (<2 feet below ground surface (bgs) with non-mechanical drilling techniques)

2 Point Values
As-built drawings (plot plans, as-builts, pipeline or facilities maps, and/or lease drawings), reviewed and verified by client for updated changes
Confirmation that utilities cut off at street and align with drawings and figures
Drawing/figure (measured to scale, shows site utilities as visually verified during site walk); includes any new or repaired lines that match site (e.g., pavement scarring); depth and diameter of utilities; and recent (includes any new construction activity)
Survey data and figures produced by Haley & Aldrich and/or Haley & Aldrich site utility experience with additional site inspection
Site drawing and figures from prior private utility locate created by Haley & Aldrich (drawing must include GPS coordinates and utilities are to scale)
GPR/EM Cable location by private utility locate directly above proposed ground disturbance/borehole location

3 Point Values	3 Point Values (Open Excavations Only)
Hand Clearing/Soft Dig/Vacuum Excavation to 5 feet bgs using the following soft dig clearance methods listed from least invasive to most: • Probing • Hand Digging • Hand Auguring • Vacuum Extraction • Air/Water Knife with Vacuum Extraction	Hand Clearing/Soft Dig/Vacuum Excavation using the following soft dig clearance methods to confirm location of known utilities prior to using mechanical excavation: • Probing • Hand Digging • Vacuum Extraction

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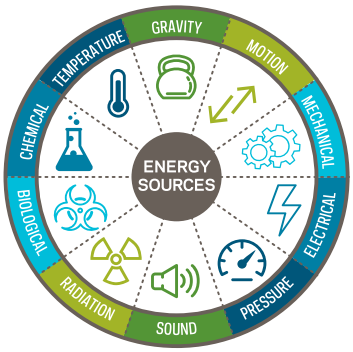
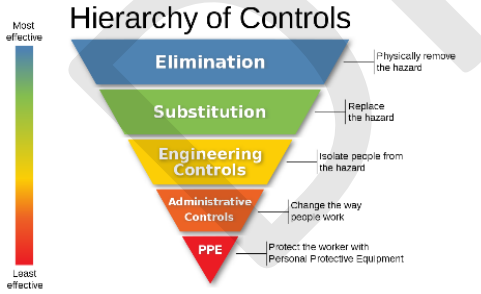
HEALTH & SAFETY TAILGATE MEETING FORM

Staff members at meeting:	Click or tap here to enter text.	**Meeting date:** Click or tap to enter a date.

What tasks are being performed today? *List the tasks being performed today and review JHAs. Do JHAs correspond with tasks? Are any subcontractors performing the work we are responsible for?*	Click or tap here to enter text.
What hazards do you anticipate today?  *Consider not just the hazards of tasks you are performing, but also the hazards present around you (e.g., weather, simultaneous operations, ticks or insects, slips, trips, falls, repetitive motion, etc.).*	Click or tap here to enter text.
What risk do these hazards present? *How likely are the hazards you have identified to impact you? What do you need to be most concerned about today? Have these hazards changed since you performed work yesterday?*	Click or tap here to enter text.
What controls are you using?  *Discuss how you are mitigating the hazards you have identified. Use your JHA as a resource, but ensure you have mitigated changed conditions (e.g., weather, SIMOPS, etc.) that were not identified in the original plans.*	Click or tap here to enter text.

Everyone has Stop Work Authority	Use identified PPE from JHAs	Review emergency procedures	Share experiences through reporting

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APPENDIX E
NYSDEC Request to Import Reuse Form

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NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e) and 6NYCRR Part 360.13. Use of this form is not a substitute for reading the applicable regulations and Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is: Choose an item

Have Ecological Resources been identified? Choose an item

Is this soil originating from the site? Choose an item

How many cubic yards of soil will be imported/reused? Choose an item

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone? Choose an item

Does it contain less than 10%, by weight, material that passes a size 100 sieve? Choose an item

Is this virgin material from a permitted mine or quarry? Choose an item

Is this material recycled concrete or brick from a DEC registered processing facility? Choose an item

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.4(e)5 (other material), no chemical testing needed.

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SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

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The information provided on this form is accurate and complete.

_____ _____

Signature Date

_____

Print Name

_____

Firm

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APPENDIX F
Citizen Participation Plan

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NEW YORK STATE | Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan
for
60 William Street Development

July 2024

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C336098
58-60 William Street
Newburgh, New York 12550

Contents

Section	Page Number
1. What is New York's Brownfield Cleanup Program?	3
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3. Major Issues of Public Concern	9
4. Site Information	9
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Appendix A - Project Contacts and Locations of Reports and Information	15
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Appendix D - Brownfield Cleanup Program Process	19

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Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

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Applicant: **60 William St. LLC ("Applicant")**
Site Name: **60 William Street Development ("Site")**
Site Address: **58-60 William Street, Newburgh, NY 12550**
Site County: **Orange County**
Site Number: **C336098**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at:
http://www.dec.ny.gov/chemical/8450.html .

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

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- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision-making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

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Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.
The site contact list includes, at a minimum:

- chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- residents, owners, and occupants of the site and properties adjacent to the site;
- the public water supplier which services the area in which the site is located;
- any person who has requested to be placed on the site contact list;
- the administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See http://www.dec.ny.gov/chemical/61092.html .

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation

and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the site had not yet been made.

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To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in Appendix A.

For more information about TAGs, go online at
http://www.dec.ny.gov/regulations/2590.html

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

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Citizen Participation Activities	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repository(ies)	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when possible if there is not a delay in issuing the COC.

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3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

Previous investigations conducted at the Site identified the presence of elevated concentrations of semi-volatile organic compounds (SVOCs), metals, and petroleum-related volatile organic compounds (VOCs) in soils and elevated concentrations of VOCs, including chlorinated VOCs and petroleum-related VOCs, in soil vapor. Additionally, two underground storage tanks were identified on-site during previous investigations. These findings will require additional investigation and sampling to ascertain and delineate any onsite source(s) of the VOCs and urban fill containing SVOCs and metals, and to comprehensively understand the extent of contamination at the Site.

The Site is located on William Street in a mixed-use commercial and residential area in Newburgh, NY. There is one sensitive receptor that is within a 500 foot radius of the Site: 10 Hasbrouck Street, Newburgh, NY 12550, listed as a municipal park. The area surrounding the Site has primarily been used for drycleaning, storage, hardware and paint stores, offices, single- to multiple-story dwellings, and various commercial uses. These operations may have included the use, storage, and disposal of hazardous materials and/or petroleum products.

The Site is located in a Potential Environmental Justice Area. Future fact sheets will be translated into Spanish and/or other languages as necessary.

Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

For additional information, visit: https://statisticalatlas.com/place/New-York/Newburgh/Race-and-Ethnicity

In addition, there may be other concerns regarding odor, noise and truck-related traffic.

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

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The site is located within a mixed-use commercial and residential area characterized by single to multiple-story commercial and residential buildings. The Site, identified as Section 38, Block 3, Lots 31 and 32 is approximately 9,375 square feet (sq ft) and is currently improved with one vacant two-story residential building on Lot 31 while Lot 32 is vacant and undeveloped. According to previous reports, Lot 32 was previously occupied by an auto repair and retail fuel sales facility with two underground storage tanks that were left in place.

Section	Block	Lot	Official Address	Acreage
38	3	31	58 William Street	0.052
38	3	32	60 William Street	0.126

The Site is located in Newburgh, NY. Adjacent properties include:

Direction	Adjoining Property	Surrounding Properties
North	Multi-story residential buildings.	Commercial/residential buildings
South	Vacant mixed-use commercial and residential buildings.	Commercial/residential buildings
East	William Street followed by mixed-use commercial, office, and residential buildings.	Commercial/residential buildings
West	Recreational Park	Commercial/residential buildings

History of Site Use, Investigation, and Cleanup

Based on a Phase I Environmental Site Assessment (ESA) completed by Haley & Aldrich in December 2022, the Site was developed with a shed and a two-story dwelling on Lot 32 by 1884, and a dwelling and shed were developed on Lot 31. By 1890, the dwelling on Lot 32 was divided into two separate three-story dwellings. By 1913, the dwellings on Lot 32 were labeled as “flats,” and a blacksmith operated on the northeast corner of Lot 32. A dwelling and store were present on Lot 31. In the 1957 Sanborn map, a gasoline tank is present on the southeast corner of Lot 32 and in the northeast corner of Lot 32 bordering Lot 31. The gasoline tanks are present on Sanborn maps from 1957 to 1971. By the late 1960s, the flats on Lot 32 were converted to an auto repair shop and service station, operating as “Sam & Irv’s Service Station,” while the rest of the subject property remained relatively unchanged. It is unknown how long the service station remained in operation; however, the buildings on Lot 32 were demolished in 1987 and the subject property is currently vacant.

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One Recognized environmental condition (REC), one historical recognized environmental condition (HREC), and two Other Findings associated with the Site were identified in the Phase I ESA. The REC indicated that the subject property, specifically Lot 32, formerly operated as a service station in the early 1960s and as an auto repair facility from the late 1960s to early 1970s. Auto repair facilities utilize hazardous materials, including petroleum products and solvents. Potential or undocumented releases of petroleum products, solvents, and/or other hazardous materials may have adversely affected subsurface conditions at the subject property.

A limited subsurface investigation was completed by Smit Environmental Services in May 2022. Two anomalies suspected to be underground storage tanks were identified at the Site and soil borings were advanced within the vicinity of the anomalies to evaluate subsurface conditions. The results of the investigation indicated elevated concentrations of petroleum-related VOCs.

A Limited Phase II Environmental Site Investigation was completed and summarized in a report prepared by Haley & Aldrich in April 2023. Based on the results of the 2022 and 2023 investigations, the primary contaminants of concern for the Site are SVOCs and metals in soil and elevated concentrations of VOCs, including chlorinated VOCs and petroleum-related VOCs, in soil vapor. A Remedial Investigation Work Plan (RIWP) has been submitted to NYSDEC. The results of the Remedial Investigation (RI) will be used to confirm the results of the previous Site characterization activities, delineate any on-Site source(s), and determine a course for remedial action.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination on-site, and must conduct a "qualitative exposure assessment," a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has migrated from the site.

The Applicant in its Application proposes to remediate the Site using remedial measures designed to protect human health and the environment, and then redevelop the site for mixed use and will be consistent with the current zoning.

To achieve this goal, the Applicant will conduct any remaining investigation and cleanup activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup

Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant will conduct an investigation of the site officially called a “remedial investigation” (RI). This investigation will be performed with NYSDEC oversight. The Applicant must develop a remedial investigation workplan, which is subject to public comment.

The site investigation has several goals:

1) define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) identify the source(s) of the contamination;
3) assess the impact of the contamination on public health and the environment; and
4) provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

The Applicant submits a draft “Remedial Investigation Work Plan” to NYSDEC for review and approval. NYSDEC makes the draft plan available to the public review during a 30-day public comment period.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a “significant threat,” it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

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Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a "Certificate of Completion" (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a "Remedial Work Plan". The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the site.

When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the site Decision Document.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a Final Engineering Report (FER) that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the FER. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been

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achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An *institutional control* is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An *engineering control* is a physical barrier or method to manage contamination. Examples include caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that pumps and treats groundwater. Site management continues until NYSDEC determines that it is no longer needed.

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Appendix A -
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

John Miller
Project Manager
NYSDEC
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
john.miller@dec.ny.gov

Stephanie Mossey
Citizen Participation Specialist
NYSDEC
Region 3
21 South Putt Corners Rd
New Paltz, NY 12561
R3Admin@dec.ny.gov

New York State Department of Health (NYSDOH):

Christine Vooris
Project Manager
NYSDOH
Bureau of Environmental Exposure Investigation
Empire State Plaza
Corning Tower Room 1787
Albany, NY 12237
beei@health.ny.gov

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents.

Newburgh Free Library
124 Grand Street, Newburgh, NY 12550
Attn: Patty Sussman
Phone: 845-563-3600
Email: psussman@rcls.org

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Appendix B - Site Contact List

Owners, Residents, Occupants:

The Site is currently vacant with no occupants or residents.

Owner	Contact Name	Phone	Mailing Address	Email
60 William St. LLC	Hershy Weinstock	(845) 662-4735	175 Hooper Street Brooklyn, NY 11211	hershy@grcgny.com

Executive:

Role	Name	Phone	Mailing Address	Email / Contact
City of Newburgh Mayor	Mayor Torrance Harvey	845-569-7305	83 Broadway Newburgh, NY 12550	https://www.cityofnewburgh-ny.gov/formcenter/Contact-Us-4/City-Council-Contact-Form-59
Newburgh Planning Board Chairperson	Lisa Daily	845-569-7383	83 Broadway, Newburgh, NY 12550	https://www.cityofnewburgh-ny.gov/formcenter/Contact-Us-4/Planning-Development-Contact-Form-57
NY Senate District 39 Senator	Rob Rolison	845-229-0106	3 Neptune Road, Suite N22, Poughkeepsie, NY 12601	rolison@nysenate.gov
NY State Assembly District 104 Member	Jonathan G. Jacobson	845-562-0888	436 Robinson Avenue, Suite B, Newburgh, NY 12550	jacobsonj@nyassembly.gov

Adjacent Properties:

Owner/Entity Name	Property Address	Contact Name	Owner Mailing Address	Site Use
Nava Properties LLC	56 William Street	Not Available	55 Heinsman Lane, Wallkill, NY 12589	Vacant Building
Nava Properties LLC	105 West Parmenter Street	Not Available	55 Heinsman Lane, Wallkill, NY 12589	Multi-Family Residential
Juan Antonio, Juan G Mendoza	111 West Parmenter Street	Juan Antonio, Juan G Mendoza	375 The Fenway, River Edge, NJ 07661	Multi-Family Residential
Newburgh Ventures Corp.	113 West Parmenter Street	Not Available	P.O. Box 533, Wallkill, NY 12589	Storage
City of Newburgh	10 Hasbrouck Street	Not Available	83 Broadway, Newburgh, NY 12550	Municipal Park
Edward Brown	57 William Street	Edward Brown	81 Hilltop Road, Millington, NJ 07946	Commercial & Residential Building
Newburgh Ventures Corp.	59 William Street	Not Available	P.O. Box 533, Wallkill, NY 12589	Commercial & Residential Building
Newburgh Ventures Corp.	61 William Street	Not Available	P.O. Box 533, Wallkill, NY 12589	Commercial & Residential Building
Newburgh SHG 38 LLC	64 William Street	Not Available	1274 49th Street, Suite 433, Brooklyn, NY 11219	Commercial & Residential Building

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Local News and Media:

Owner/Entity Name	Type	Address	Phone	Website
The Newburgh News	Online Media	436 Blooming Grove Turnpike, Suite 4749 New Windsor, NY 12553	N/A	https://newburghnews.press/
Mid-Hudson Times	Print Newspaper, Online Media	500 Stony Brook Court, Suite 2, Newburgh, NY 12550	845-561-0170	https://www.timeshudsonvalley.com/mid-hudson-times/

School or Day Care Located on or Proximal to the Site:

The following schools are located within ½-mile radius of the Site:

School/Day Care Name	Administrator	Phone	Address
South Middle School	President/Executive Director/Principal	845-563-7000	33-63 Monument Street, Newburgh, NY 12550
San Miguel Academy of Newburgh	President/Executive Director/Principal	845-561-2822	245 Renwick Street, Newburgh, NY 12550
St Patrick's School	President/Executive Director/Principal	845-561-6470	55 Grand Street, Newburgh, NY 12550
Orange County Community College Newburgh Campus (SUNY Orange)	President/Executive Director/Principal	845-344-6222	One Washington Center, Newburgh, NY 12550
Nora Cronin Presentation Academy	President/Executive Director/Principal	845-567-0708	69 Bay View Terrace, Newburgh, NY 12550

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Appendix C - Site Location Map

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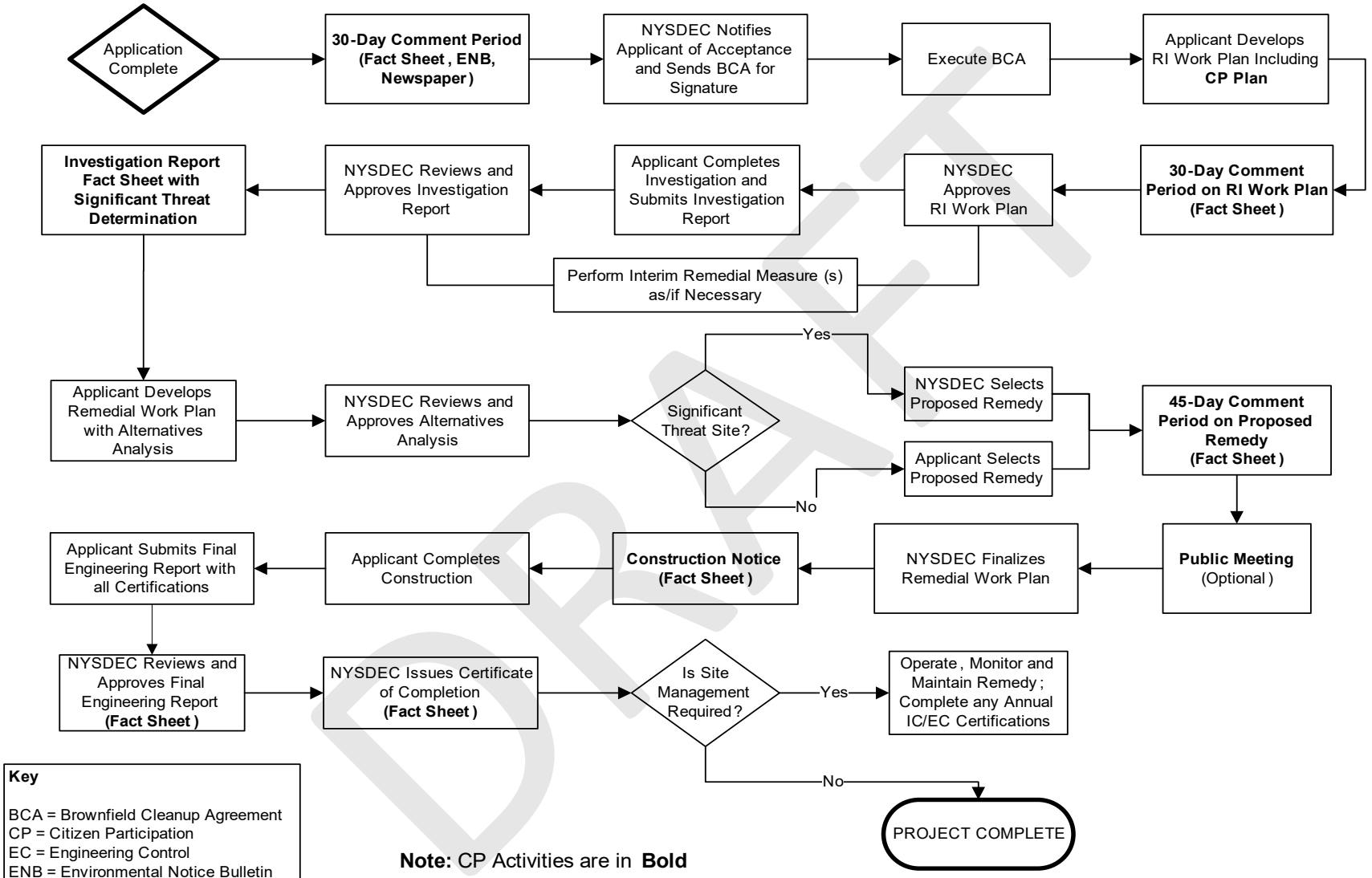
Appendix D– Brownfield Cleanup Program Process



Key

BCA = Brownfield Cleanup Agreement
CP = Citizen Participation
EC = Engineering Control
ENB = Environmental Notice Bulletin
IC = Institutional Control
RI = Remedial Investigation

Note: CP Activities are in **Bold**

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NEW YORK STATE OF OPPORTUNITY. | Department of Environmental Conservation

Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern

Instructions

This Scoping Sheet assesses major issues of public concern; impacts of the site and its remedial program on the community; community interest in the site; information the public needs; and information needed from the public.

The information generated helps to plan and conduct required citizen participation (CP) activities, and to choose and conduct additional CP activities, if appropriate. The scoping sheet can be revisited and updated as appropriate during the site's remedial process to more effectively implement the site's CP program.

Note: Use the information as an aid to prepare and update the Major Issues of Public Concern section of the site CP Plan.

General Instructions

- When to prepare: During preparation of the CP Plan for the site. It can be revisited and updated anytime during the site remedial process.
- Fill in site name and other information as appropriate.
- The Scoping Sheet may be prepared by DEC or a remedial party, but must be reviewed and approved by the DER site project manager or his/her designee.

Instructions for Numbered Parts

Consider the bulleted issues and questions below and any others that may be unique or appropriate to the site and the community to help complete the five Parts of this Scoping Sheet. Identify the issue stakeholders in Parts 1 through 3 and adjust the site's contact list accordingly.

Part 1. List Major Issues of Public Concern and Information the Community Wants.

- Is our health being impacted? (e.g. Are there problems with our drinking water or air? Are you going to test our water, yards, sumps, basements? Have health studies been done?)
- There are odors in the neighborhood. Do they come from the site and are they hazardous?
- Are there restrictions on what we may do (e.g. Can our children play outside? Can we garden? Must we avoid certain areas? Can we recreate (fish, hunt, hike, etc. on/around the site?)
- How and when were the site's contamination problems created?
- What contaminants are of concern and why? How will you look for contamination and find out where it is going? What is the schedule for doing that?
- The site is affecting our property values!
- How can we get more information (e.g. who are the project contacts?)
- How will we be kept informed and involved during the site remedial process?
- Who has been contacted in the community about site remedial activities?
- What has been done to this point? What happens next and when?
- The site is going to be cleaned up for restricted use. What does that mean? We don't want redevelopment on a "dirty" site.

Part 2. List Important Information Needed From the Community, if Applicable.

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- Can the community supplement knowledge about past/current uses of the site?
- Does the community have knowledge that the site may be significantly impacting nearby people, properties, natural resources, etc.?
- Are activities currently taking place at the site or at nearby properties that may need to be restricted?
- Who may be interested or affected by the site that has not yet been identified?
- Are there unique community characteristics that could affect how information is exchanged?
- Does the community and/or individuals have any concerns they want monitored?
- Does the community have information about other sources in the area for the contamination?

Part 3. List Major Issues and Information That Need to be Communicated <u>to</u> the Community.

- Specific site investigation or remediation activities currently underway, or that will begin in the near future.
- The process and general schedule to investigate, remediate and, if applicable, redevelop the site.
- Current understanding about the site contamination and effects, if any, on public health and the environment.
- Site impacts on the community and any restrictions on the public's use of the site and/or nearby properties.
- Planned CP activities, their schedule, and how they relate to the site's remedial process.
- Ways for the community to obtain/provide information (document repositories, contacts, etc.).

Part 4. Community Characteristics

a. - e. Obtain information from local officials, property owners and residents, site reports, site visits, "windshield surveys," other staff, etc.

f. Has the affected community experienced other **significant** present or past environmental problems unrelated to this site? Such experiences could significantly affect public concerns and perspectives about the site; how the community will relate to project staff; the image and credibility of project staff within the community; and the ways in which project staff communicate with the community.

g. In its remedial programs, DER seeks to integrate, and be consistent with, environmental justice principles set forth in *DEC Commissioner Policy 29 on Environmental Justice* and *DER 23 – Citizen Participation Handbook for Remedial Programs*. Is the site and/or affected community wholly or partly in an Environmental Justice (EJ) Area? Use the Search feature on DEC's public web site for "environmental justice". DEC's EJ pages define an EJ area, and link to county maps to help determine if the site and/or community are in an EJ area.

h. Consider factors such as:

- Is English the primary language of the affected community? If not, provisions should be considered regarding public outreach activities such as fact sheets, meetings, door-to-door visits and other activities to ensure their effectiveness.
- The age demographics of the community. For example, is there a significant number of senior citizens in the community? It may be difficult for some to attend public meetings and use document repositories. This may suggest adopting more direct interaction with the community with activities such as door-to-door visits, additional fact sheets, visits to community and church centers, nursing homes, etc.
- How do people travel about the community? Would most people drive to a public meeting or document repository? Is there adequate public transportation?

Part 5. Affected/Interested Public.

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Individuals and organizations who need or want information and input can change during the site's remedial process. This need is influenced by real, potential, or perceived impacts of the site or the remedial process. Some people may want information and input throughout the remedial process. Others may participate only during specific remedial stages, or may only be interested in particular issues.

It is important to revisit this question when reviewing this scoping sheet. Knowing who is interested in the site – and the issues that are important to them – will help to select and conduct appropriate outreach activities, and to identify their timing and the information to be exchanged.

Check all affected/interested parties that apply to the site. **Note: Adjust the site's contact list appropriately.** The following are some ways to identify affected/interested parties:

- Tax maps of adjacent property owners
- Attendees at public meetings
- Telephone discussions
- Letters and e-mails to DER, the remedial party, and other agencies
- Political jurisdictions and boundaries
- Media coverage
- Current/proposed uses of site and/or nearby properties (recreational, commercial, industrial)
- Discussions with community organizations: grass roots organizations, local environmental groups, environmental justice groups, churches, and neighborhood advisory groups

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Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern (see instructions)

Site Name: 60 William Street Development

Site Number: C336098

Site Address and County: 58-60 William Street, Newburgh, NY 12550, Orange County

Remedial Party(ies): 60 William St. LLC

Note: For Parts 1. – 3. the individuals, groups, organizations, businesses and units of government identified should be added to the site contact list as appropriate.

Part 1. List major issues of public concern and information the community wants. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and information needs. **Use this information as an aid to prepare or update the Major Issues of Public Concern section of the site Citizen Participation Plan.**
The Site is located in a Potential Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

The primary contaminants of concern for the Site are SVOCs, metals, and petroleum-related VOCs in soil and elevated concentrations of VOCs, including chlorinated VOCs and petroleum-related VOCs, in soil vapor. Issues of concern would be in regard to the nearby local residents and property owners. During ground intrusive activities, the community will be protected from contamination migration using air monitoring protocols and management of investigation derived waste.

How were these issues and/or information needs identified?
These issues were identified through the previous Limited Phase II results and correspondence with NYSDEC.

Part 2. List important information needed **from** the community, if applicable. Identify individuals, groups, organizations, businesses and/or units of government related to the information needed.
The sources of the contaminants of concern detailed in Part 1 were not fully characterized and identified during the previous investigations completed at the Site.

How were these information needs identified?
This information was identified through review of the results of the previous Limited Phase II.

Part 3. List major issues and information that need to be communicated **to** the community. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and/or information.
Following acceptance into the BC and approval of the RIWP, the Remedial Investigation will commence. Following implementation of the RIWP, a Remedial Investigation Report will be prepared and will describe the nature and extent of contamination at the Site. A Remedial Action Work Plan (RAWP) will then be developed to describe the preferred remedy and alternatives analysis. The RAWP will be subject to a 45-day public comment period prior to NYSDEC approval. Following NYSDEC approval of the RAWP, the remedial contractor will mobilize to the Site to begin implementation of the NYSDEC-approved remedy.

How were these issues and/or information needs identified?

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These issues were identified through the previous subsurface investigation results and correspondence with NYSDEC.

Part 4. Identify the following characteristics of the affected/interested community. This knowledge will help to identify and understand issues and information important to the community, and ways to effectively develop and implement the site citizen participation plan (mark all that apply):

a. Land use/zoning at and around site:
☒ **Residential** ☐ **Agricultural** ☐ **Recreational** ☒ **Commercial** ☐ **Industrial**

b. Residential type around site:
☒ **Urban** ☐ **Suburban** ☐ **Rural**

c. Population density around site:
☒ **High** ☐ **Medium** ☐ **Low**

d. Water supply of nearby residences:
☒ **Public** ☐ **Private Wells** ☐ **Mixed**

e. Is part or all of the water supply of the affected/interested community currently impacted by the site?
☐ **Yes** ☒ **No**

Provide details if appropriate:
Click here to enter text.

f. Other environmental issues significantly impacted/impacting the affected community?
☐ **Yes** ☒ **No**

Provide details if appropriate:
Click here to enter text.

g. Is the site and/or the affected/interested community wholly or partly in an Environmental Justice Area?
☒ **Yes** ☐ **No**

h. Special considerations:
☒ **Language** ☐ **Age** ☐ **Transportation** ☐ **Other**

Explain any marked categories in **h:**
The Site is located in an area with a sizable Hispanic-American population nearby. Therefore, all future fact sheets will be translated into Spanish.

Part 5. The site contact list must include, at a minimum, the individuals, groups, and organizations identified in Part 2. of the Citizen Participation Plan under 'Site Contact List'. Are *other* individuals, groups, organizations, and units of government affected by, or interested in, the site, or its remedial program? (Mark and identify all that apply, then adjust the site contact list as appropriate.)

☐ **Non-Adjacent Residents/Property Owners:** Click here to enter text.

☒ **Local Officials:** Click here to enter text.

☒ **Media:** Click here to enter text.

☒ **Business/Commercial Interests:** 60 William St. LLC

☐ **Labor Group(s)/Employees:** Click here to enter text.

☐ **Indian Nation:** Click here to enter text.

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☒ **Citizens/Community Group(s):** Click here to enter text.

☒ **Environmental Justice Group(s):** Click here to enter text.

☒ **Environmental Group(s):** Click here to enter text.

☒ **Civic Group(s):** Newburgh Free Library

☐ **Recreational Group(s):** Click here to enter text.

☐ **Other(s):** Click here to enter text.

Prepared/Updated By: Nicole Mooney **Date:** 27 February 2024

Reviewed Approved By: Mari Conlon **Date:** 9 July 2024

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APPENDIX G
Environmental Footprint Analyses

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H & A OF NEW YORK ENGINEERING
AND GEOLOGY, LLP
213 W. 35th Street
7th Floor
New York, NY 10001
646.277.5685

October 7, 2025
File No. 0206338

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

Attention: John Miller

Subject: Green Site Remediation
60 William Street Development
58-60 William Street
Newburgh, New York
NYSDEC Site C336098

H & A of New York Engineering and Geology, LLP (Haley & Aldrich of New York) presents the following environmental footprint analysis[1] in accordance with U.S. Environmental Protection Agency (EPA) 542-R-12-002 for the preferred Track 1 Remedy of the above-referenced site at 58-60 William Street, Newburgh, New York (Site).

60 WILLIAM STREET DEVELOPMENT SITE REMEDY – TRACK 1 CLEANUP

The preferred remedy will result in estimated totals of:

- 2,343.33 Metric Million British Thermal Units (MMBtus) of energy used;
- 177.02 tons of total greenhouse gas emissions (CO2e [includes consideration of carbon dioxide, methane, and nitrous oxide emissions]);
  5,021.2 pounds (lbs) of nitrogen oxides (NOx) + sulfur oxides (SOx) + particulate matter (PM) emissions; and
- 30.8 lbs of hazardous air pollutant (HAP) emissions.

Energy

- 755.75 MMBtus used for on-Site activities, such as excavation;
- 176.83 MMBtus used for grid electricity generation;
- 252.76 MMBtus used for transportation of personnel, remedy materials, and waste disposal; and
- 1,157.99 MMBtus used for off-Site activities.

[1] *Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019.*

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Greenhouse Gas Emissions (CO2e)

- 53.50 tons of CO2e are estimated to be produced from on-Site activities, such as excavation;
- 14.34 tons of CO2e are estimated to be produced from grid electricity generation;
- 20.44 tons of CO2e are estimated to be produced from transportation of personnel, remedy materials, and waste disposal; and
- 88.74 tons are estimated to be produced from off-Site activities.

Water Usage

- 96,360 gallons of water are estimated to be used to wash down trucks and tires on an imported gravel truck wash pad, and produced during dewatering activities.

The preferred Track 1 remedy will result in an estimated increase of 224.03 MMBtus, 46.62 tons of CO2e, and 1,488.8 lbs of NOx, SOx, and PM emissions compared to the alternative Track 2 remedy due to increased excavation as a means to achieve greater overall protection of human health and the environment. The preferred Track 1 remedy will result in an approximately 63.3 lbs of HAP emissions less than the alternative Track 2 remedy due to a decreased number of endpoint samples and the lack of need for a composite cover as part of the Track 1 remedy.

Roughly 32 percent of the energy use and 30 percent of CO2e generation will originate from on-Site activities for the Track 1 remedy. Overall, the footprint of the Site remedy is relatively even between on-Site and off-Site activities, of which diesel use is the largest contributor to each category.

Sincerely yours,
H & A OF NEW YORK ENGINEERING AND GEOLOGY, LLP

Nicole A. Mooney
Assistant Project Manager

Matthew Levy
Senior Project Manager

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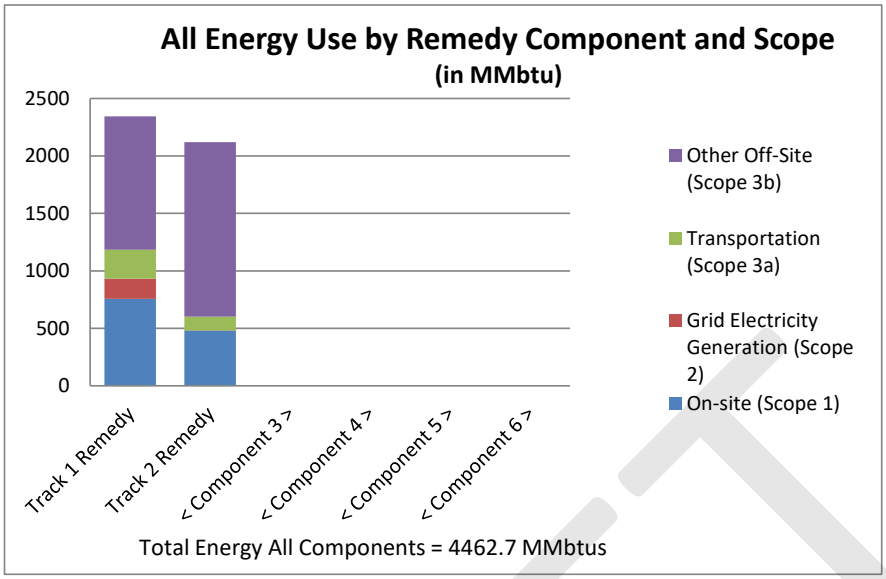
Environmental Footprint Summary

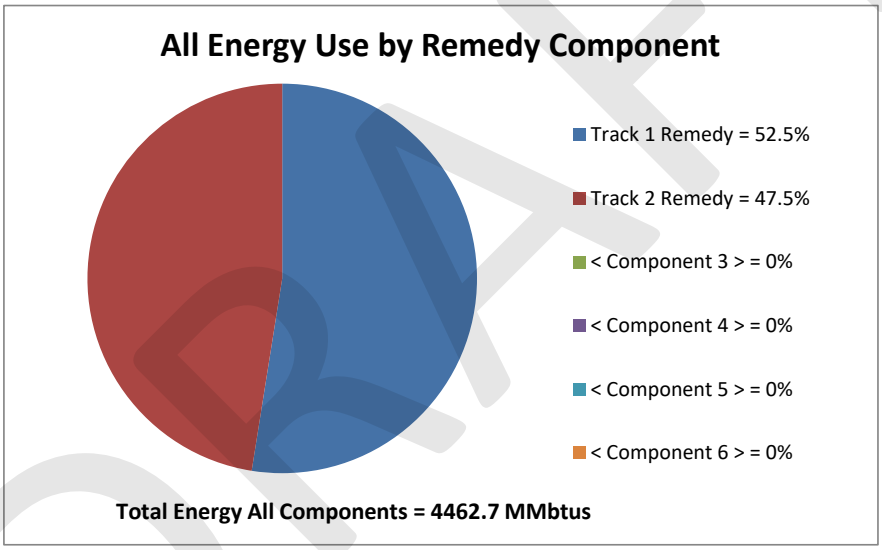
Core Element	Metric		Unit of Measure	Footprint						
				Track 1 Remedy	Track 2 Remedy	< Component 3 >	< Component 4 >	< Component 5 >	< Component 6 >	Total
Materials & Waste	M&W-1	Refined materials used on-site	Tons	90.4	474.0	0.0	0.0	0.0	0.0	564.4
	M&W-2	% of refined materials from recycled or reused material	%	0.0%	0.0%					0.0%
	M&W-3	Unrefined materials used on-site	Tons	0.000	0.000	0.000	0.000	0.000	0.000	0.0
	M&W-4	% of unrefined materials from recycled or reused material	%							
	M&W-5	On-site hazardous waste disposed of off-site	Tons	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	M&W-6	On-site non-hazardous waste disposed of off-site	Tons	5,851.2	1,951.0	0.0	0.0	0.0	0.0	7,802.2
	M&W-7	Recycled or reused waste	Tons	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	M&W-8	% of total potential waste recycled or reused	%	0.0%	0.0%					0.0%
Water (used on-site)	W-1	Public water use	MG	0.00636	0.00219	0.0	0.0	0.0	0.0	0.00855
	W-2	Groundwater use	MG	0.0900	0.0000	0.0	0.0	0.0	0.0	0.09000
	W-3	Surface water use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-4	Reclaimed water use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-5	Storm water use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-6	User-defined water resource #1	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-7	User-defined water resource #2	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-8	Wastewater generated	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy	E-1	Total energy used (on-site and off-site)	MMBtu	2,343.33	2,119.3	0.0	0.0	0.0	0.0	4,462.7
	E-2	Energy voluntarily derived from renewable resources								
	E-2A	On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-2B	Voluntary purchase of renewable electricity	MWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-3	Voluntary purchase of RECs	MWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-4	On-site grid electricity use	MWh	25.521	0.025	0.000	0.000	0.000	0.000	25.5
Air	A-1	On-site NOx, SOx, and PM emissions	Pounds	543.2	381.2	0.0	0.0	0.0	0.0	924.4
	A-2	On-site HAP emissions	Pounds	0.2	0.1	0.0	0.0	0.0	0.0	0.3
	A-3	Total NOx, SOx, and PM emissions	Pounds	5,021.2	3,532.4	0.0	0.0	0.0	0.0	8,553.6
	A-3A	Total NOx emissions	Pounds	1,762.0	1,321.5	0.0	0.0	0.0	0.0	3,083.5
	A-3B	Total SOx emissions	Pounds	846.5	1,085.3	0.0	0.0	0.0	0.0	1,931.7
	A-3C	Total PM emissions	Pounds	2,412.8	1,125.7	0.0	0.0	0.0	0.0	3,538.5
	A-4	Total HAP emissions	Pounds	30.8	94.1	0.0	0.0	0.0	0.0	124.9
	A-5	Total greenhouse gas emissions	Tons CO2e*	177.02	130.4	0.0	0.0	0.0	0.0	307.4
Land & Ecosystems	Qualitative Description									

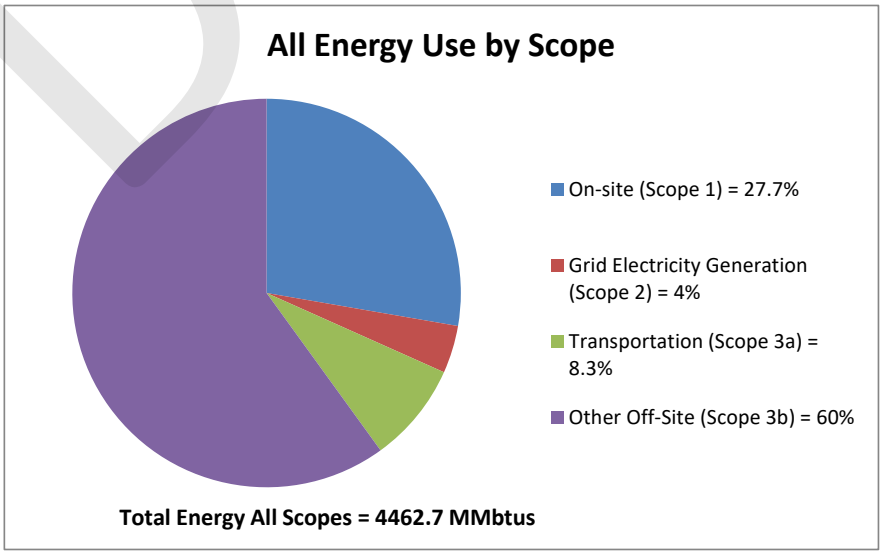
** Total greenhouse gases emissions (in CO2e) include consideration of CO2, CH4, and N2O (Nitrous oxide) emissions.*
"MMBtu" = millions of Btus
"MG" = millions of gallons
"CO2e" = carbon dioxide equivalents of global warming potential
"MWh" = megawatt hours (i.e., thousands of kilowatt-hours or millions of Watt-hours)
"Tons" = short tons (2,000 pounds)

The above metrics are consistent with EPA's Methodology for Understanding and Reducing a Project's Environmental Footprint (EPA 542-R-12-002), February 2012

Notes:


All Energy Use by Remedy Component and Scope
(in MMbtu)
2500
2000
1500
1000
500
0
Track 1 Remedy
Track 2 Remedy
< Component 3 >
< Component 4 >
< Component 5 >
< Component 6 >
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
Total Energy All Components = 4462.7 MMbtus


All Energy Use by Remedy Component
Track 1 Remedy = 52.5%
Track 2 Remedy = 47.5%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%
Total Energy All Components = 4462.7 MMbtus


All Energy Use by Scope
On-site (Scope 1) = 27.7%
Grid Electricity Generation (Scope 2) = 4%
Transportation (Scope 3a) = 8.3%
Other Off-Site (Scope 3b) = 60%
Total Energy All Scopes = 4462.7 MMbtus

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Total Energy MMbtus	Track 1 Re	Track 2 Re	< Compon	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	755.7	481.2	0.0	0.0	0.0	0.0	1,237.0	
Generation (Scope 2)	176.8	0.2	0.0	0.0	0.0	0.0	177.0	d Electricity
nsportation (Scope 3a)	252.8	119.4	0.0	0.0	0.0	0.0	372.1	Tran
ner Off-Site (Scope 3b)	1,158.0	1,518.6	0.0	0.0	0.0	0.0	2,676.5	Oth
Total	2,343.3	2,119.3	0.0	0.0	0.0	0.0	4,462.7	

Track 1 Remedy = 52.5%
Track 2 Remedy = 47.5%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

On-site (Scope 1) = 27.7%
Grid Electricity Generation (Scope 2) = 4%
Transportation (Scope 3a) = 8.3%
Other Off-Site (Scope 3b) = 60%

Total Energy All Components = 4462.7 MMbtus
Total Energy All Scopes = 4462.7 MMbtus

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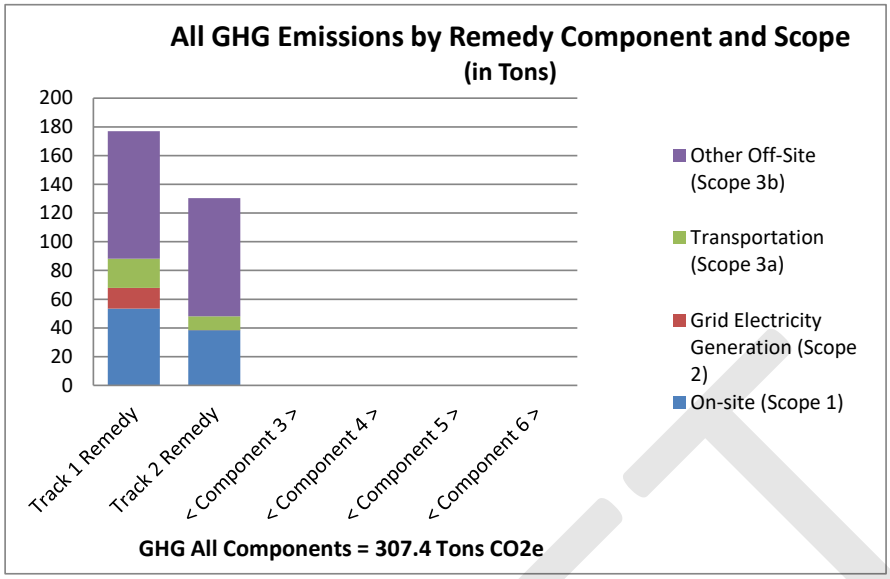
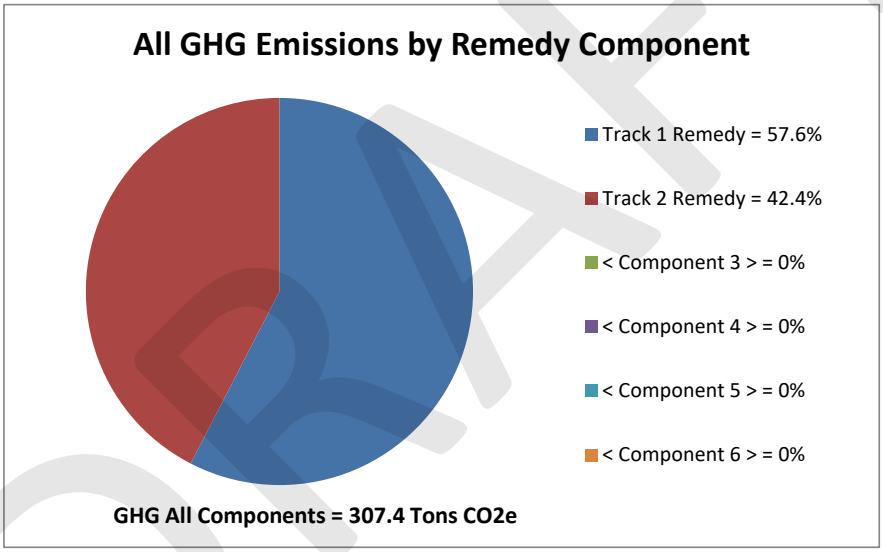
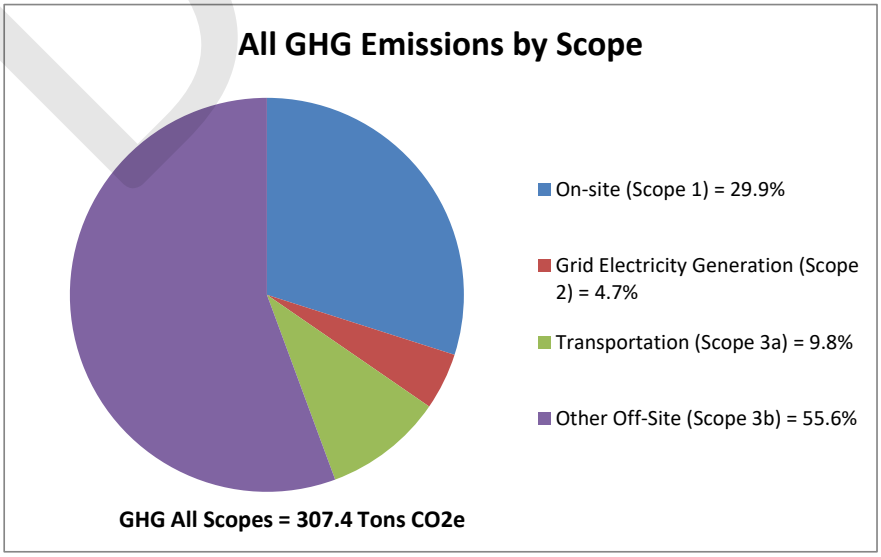

All GHG Emissions by Remedy Component and Scope
(in Tons)
200
180
160
140
120
100
80
60
40
20
0
Track 1 Remedy
Track 2 Remedy
< Component 3 >
< Component 4 >
< Component 5 >
< Component 6 >
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
GHG All Components = 307.4 Tons CO2e


All GHG Emissions by Remedy Component
Track 1 Remedy = 57.6%
Track 2 Remedy = 42.4%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%
GHG All Components = 307.4 Tons CO2e


All GHG Emissions by Scope
On-site (Scope 1) = 29.9%
Grid Electricity Generation (Scope 2) = 4.7%
Transportation (Scope 3a) = 9.8%
Other Off-Site (Scope 3b) = 55.6%
GHG All Scopes = 307.4 Tons CO2e

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GHG Tons CO2e	Track 1 Rei	Track 2 Rei	< Compon	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	53.5	38.5	0.0	0.0	0.0	0.0	92.0	
Generation (Scope 2)	14.3	0.0	0.0	0.0	0.0	0.0	14.4	l Electricity
ısportation (Scope 3a)	20.4	9.6	0.0	0.0	0.0	0.0	30.1	Tran
ıer Off-Site (Scope 3b)	88.7	82.3	0.0	0.0	0.0	0.0	171.0	Oth
Total	177.0	130.4	0.0	0.0	0.0	0.0	307.4	

Track 1 Remedy = 57.6%
Track 2 Remedy = 42.4%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

On-site (Scope 1) = 29.9%
Grid Electricity Generation (Scope 2) = 4.7%
Transportation (Scope 3a) = 9.8%
Other Off-Site (Scope 3b) = 55.6%

GHG All Components = 307.4 Tons CO2e
GHG All Scopes = 307.4 Tons CO2e

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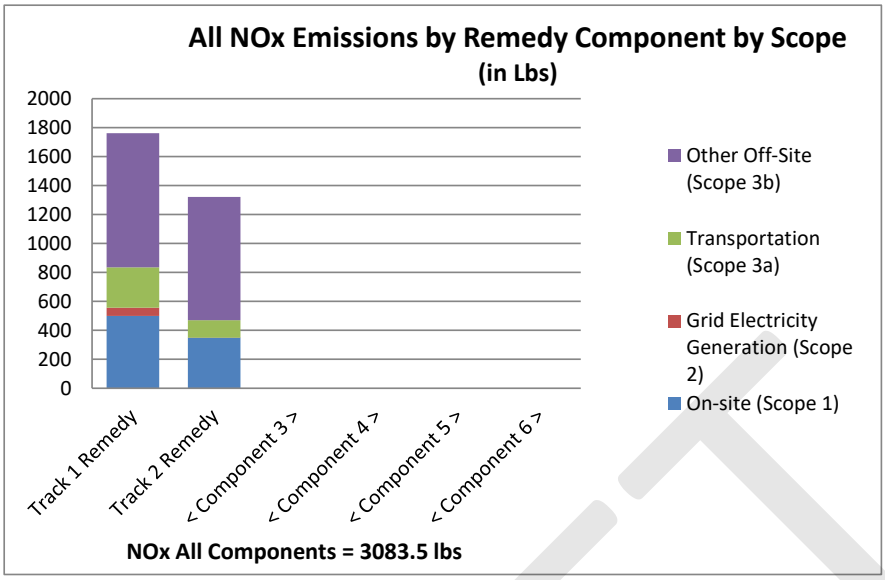
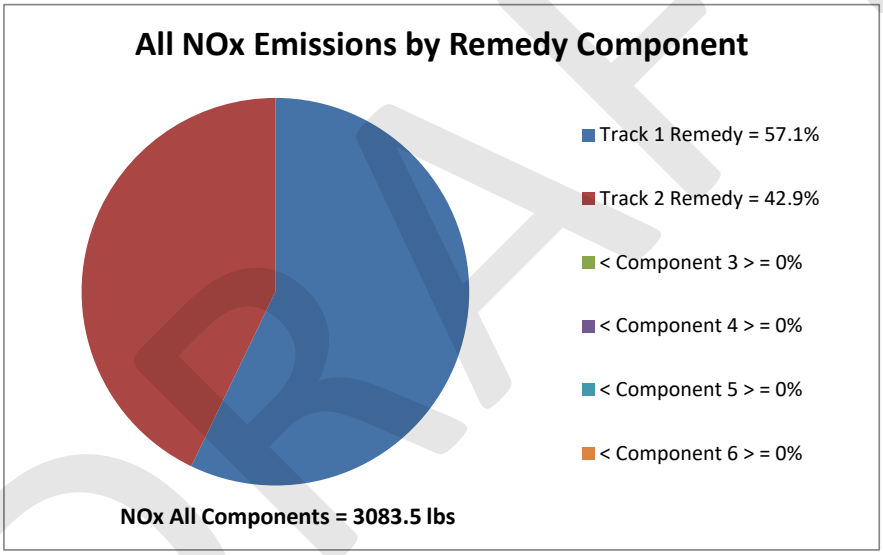
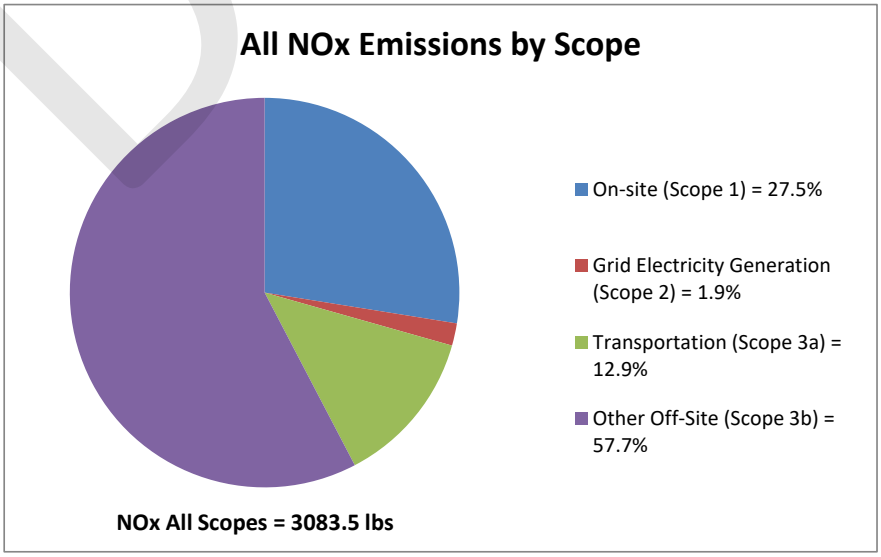

All NOx Emissions by Remedy Component by Scope
(in Lbs)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Track 1 Remedy
Track 2 Remedy
< Component 3 >
< Component 4 >
< Component 5 >
< Component 6 >
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
NOx All Components = 3083.5 lbs


All NOx Emissions by Remedy Component
Track 1 Remedy = 57.1%
Track 2 Remedy = 42.9%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%
NOx All Components = 3083.5 lbs


All NOx Emissions by Scope
On-site (Scope 1) = 27.5%
Grid Electricity Generation (Scope 2) = 1.9%
Transportation (Scope 3a) = 12.9%
Other Off-Site (Scope 3b) = 57.7%
NOx All Scopes = 3083.5 lbs

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NOx lbs	Track 1 Rel	Track 2 Rel	< Compon	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	499.3	349.6	0.0	0.0	0.0	0.0	848.9	
Generation (Scope 2)	57.2	0.0	0.0	0.0	0.0	0.0	57.3	d Electricity
ısportation (Scope 3a)	278.0	121.3	0.0	0.0	0.0	0.0	399.3	Tran
ıer Off-Site (Scope 3b)	927.4	850.6	0.0	0.0	0.0	0.0	1,778.0	Oth
Total	1,762.0	1,321.5	0.0	0.0	0.0	0.0	3,083.5	

Track 1 Remedy = 57.1%
Track 2 Remedy = 42.9%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

NOx All Components = 3083.5 lbs
NOx All Scopes = 3083.5 lbs

On-site (Scope 1) = 27.5%
Grid Electricity Generation (Scope 2) = 1.9%
Transportation (Scope 3a) = 12.9%
Other Off-Site (Scope 3b) = 57.7%

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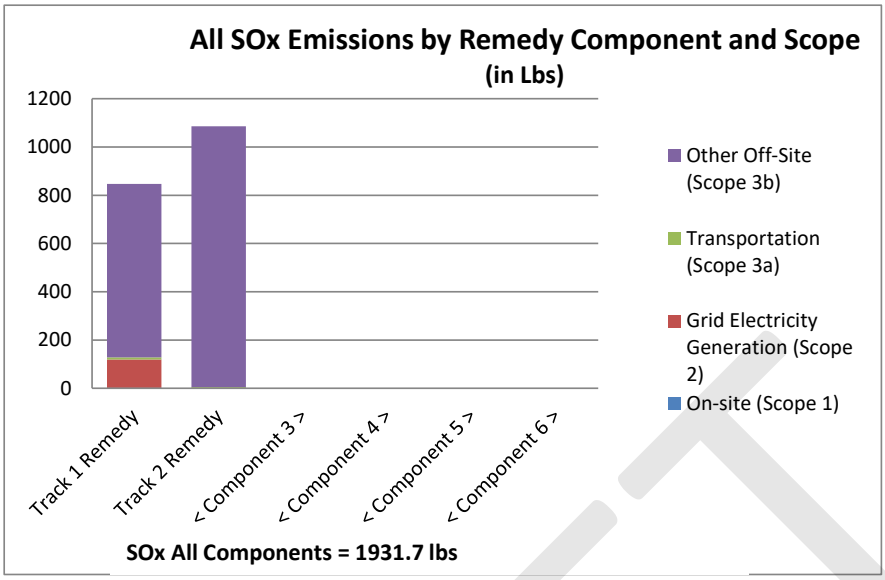
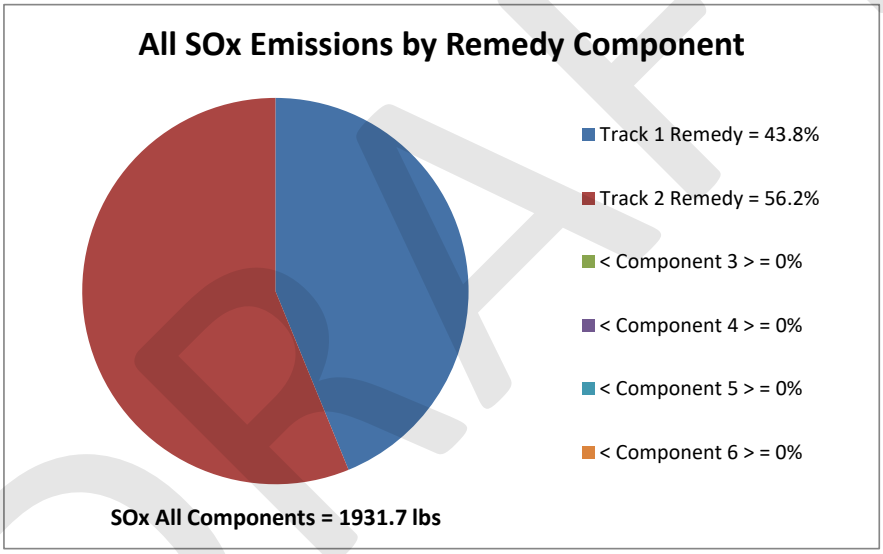
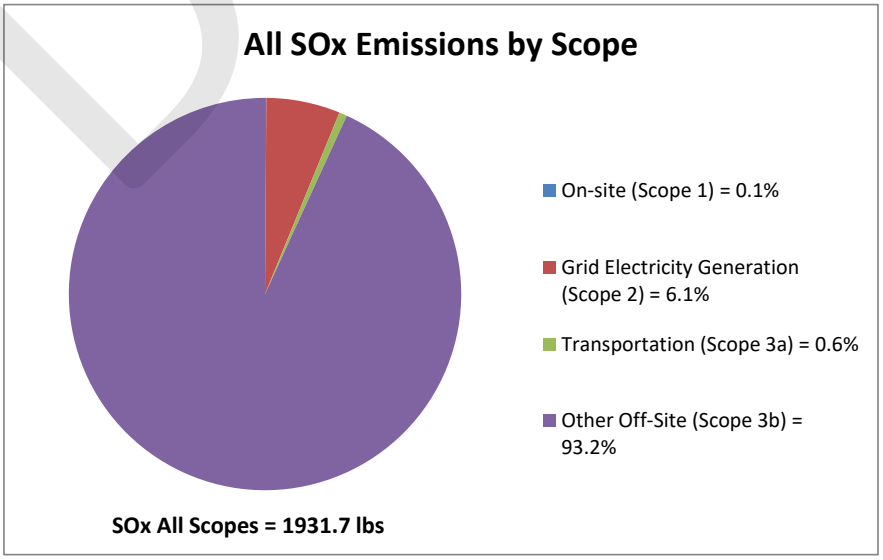

All SOx Emissions by Remedy Component and Scope
(in Lbs)
1200
1000
800
600
400
200
0
Track 1 Remedy
Track 2 Remedy
< Component 3 >
< Component 4 >
< Component 5 >
< Component 6 >
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
SOx All Components = 1931.7 lbs


All SOx Emissions by Remedy Component
Track 1 Remedy = 43.8%
Track 2 Remedy = 56.2%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%
SOx All Components = 1931.7 lbs


All SOx Emissions by Scope
On-site (Scope 1) = 0.1%
Grid Electricity Generation (Scope 2) = 6.1%
Transportation (Scope 3a) = 0.6%
Other Off-Site (Scope 3b) = 93.2%
SOx All Scopes = 1931.7 lbs

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SOx lbs	Track 1 Rei	Track 2 Rei	< Compon	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	1.7	0.5	0.0	0.0	0.0	0.0	2.1	
Generation (Scope 2)	117.6	0.0	0.0	0.0	0.0	0.0	117.6	d Electricity
ısportation (Scope 3a)	8.7	3.8	0.0	0.0	0.0	0.0	12.5	Tran
ıer Off-Site (Scope 3b)	718.5	1,081.0	0.0	0.0	0.0	0.0	1,799.5	Oth
Total	846.5	1,085.3	0.0	0.0	0.0	0.0	1,931.7	

Track 1 Remedy = 43.8%
Track 2 Remedy = 56.2%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

SOx All Components = 1931.7 lbs
SOx All Scopes = 1931.7 lbs

On-site (Scope 1) = 0.1%
Grid Electricity Generation (Scope 2) = 6.1%
Transportation (Scope 3a) = 0.6%
Other Off-Site (Scope 3b) = 93.2%

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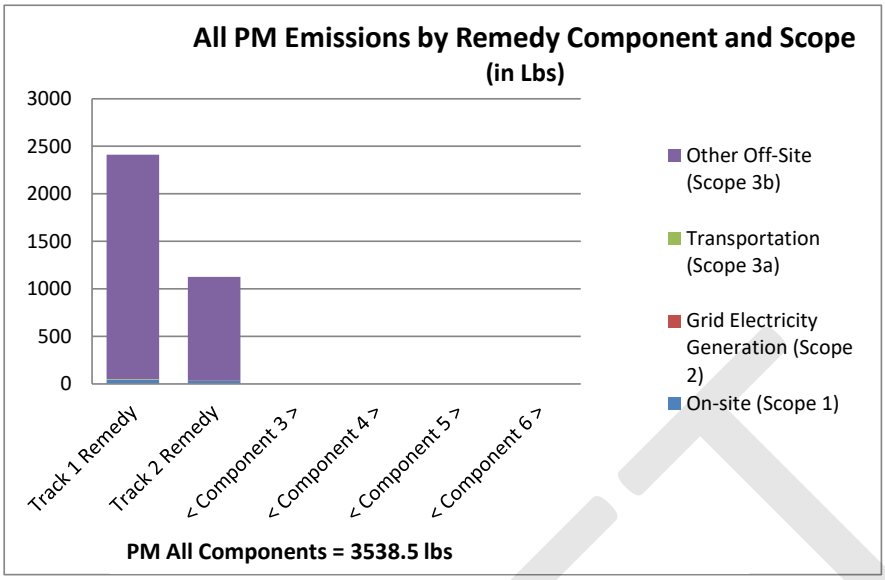
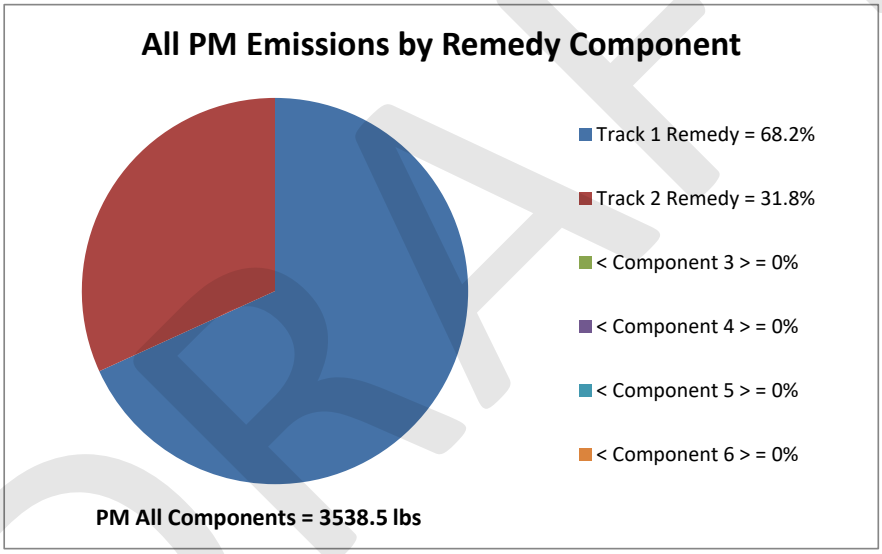
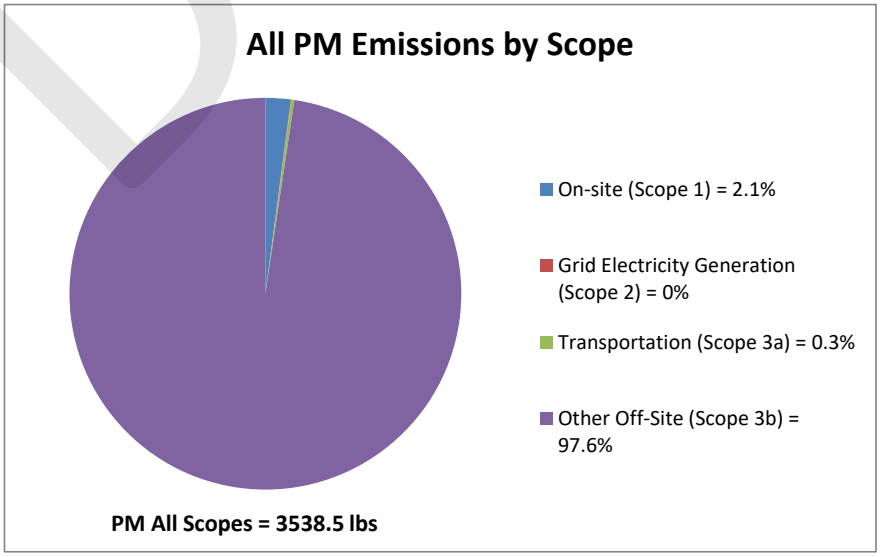

All PM Emissions by Remedy Component and Scope
(in Lbs)
3000
2500
2000
1500
1000
500
0
Track 1 Remedy
Track 2 Remedy
< Component 3 >
< Component 4 >
< Component 5 >
< Component 6 >
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
PM All Components = 3538.5 lbs


All PM Emissions by Remedy Component
Track 1 Remedy = 68.2%
Track 2 Remedy = 31.8%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%
PM All Components = 3538.5 lbs


All PM Emissions by Scope
On-site (Scope 1) = 2.1%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 0.3%
Other Off-Site (Scope 3b) = 97.6%
PM All Scopes = 3538.5 lbs

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PM
lbs

	Track 1 Rei	Track 2 Rei	< Compon	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	42.2	31.2	0.0	0.0	0.0	0.0	73.4	
Generation (Scope 2)	1.5	0.0	0.0	0.0	0.0	0.0	1.5	d Electricity
ısportation (Scope 3a)	6.2	2.9	0.0	0.0	0.0	0.0	9.1	Tran
ıer Off-Site (Scope 3b)	2,363.0	1,091.6	0.0	0.0	0.0	0.0	3,454.6	Oth
Total	2,412.8	1,125.7	0.0	0.0	0.0	0.0	3,538.5	

Track 1 Remedy = 68.2%
Track 2 Remedy = 31.8%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

PM All Components = 3538.5 lbs
PM All Scopes = 3538.5 lbs

On-site (Scope 1) = 2.1%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 0.3%
Other Off-Site (Scope 3b) = 97.6%

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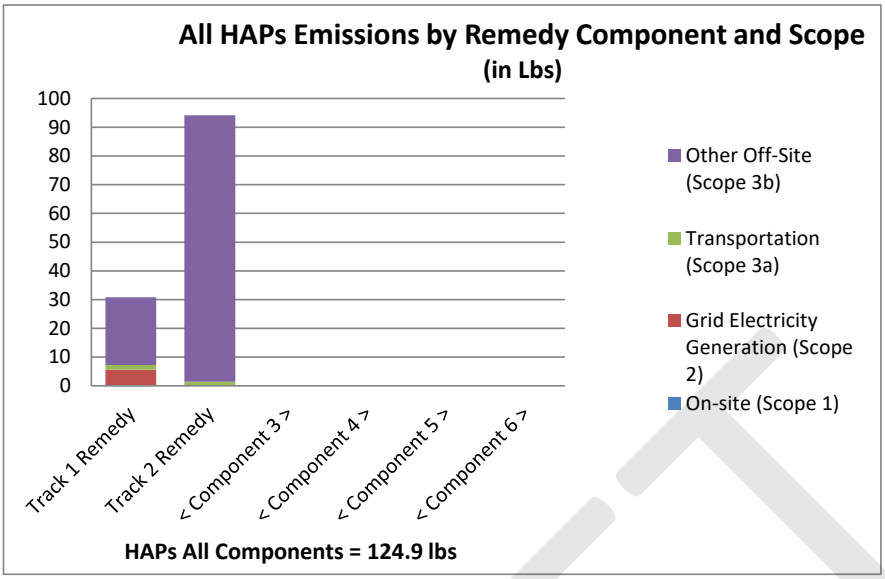
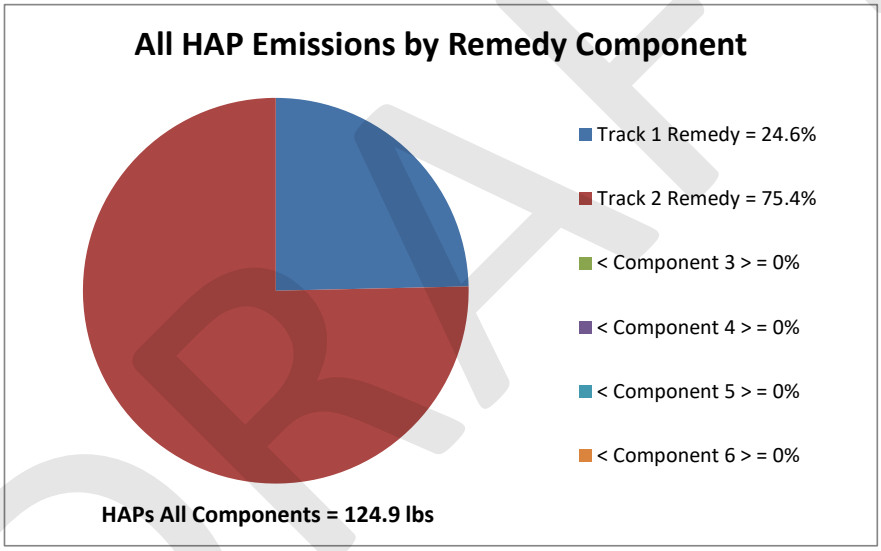
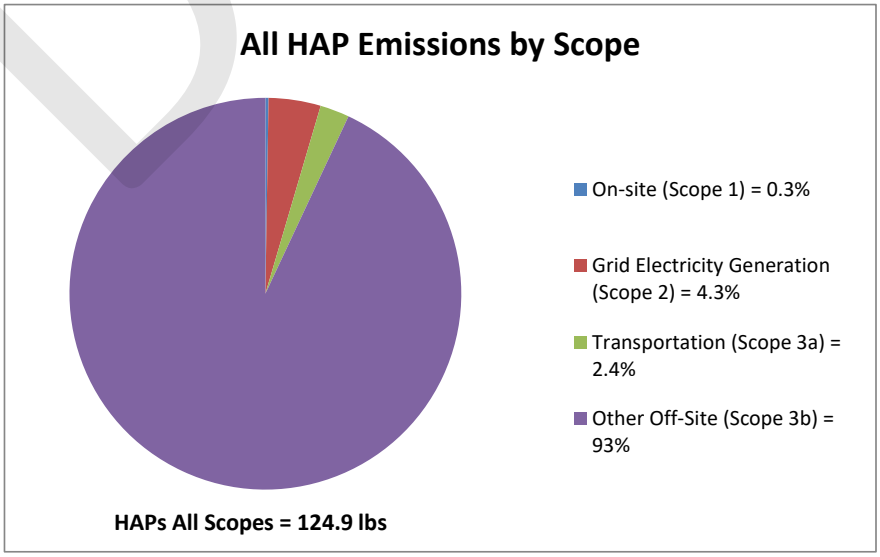

All HAPs Emissions by Remedy Component and Scope
(in Lbs)
100
90
80
70
60
50
40
30
20
10
0
Track 1 Remedy
Track 2 Remedy
< Component 3 >
< Component 4 >
< Component 5 >
< Component 6 >
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
HAPs All Components = 124.9 lbs


All HAP Emissions by Remedy Component
Track 1 Remedy = 24.6%
Track 2 Remedy = 75.4%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%
HAPs All Components = 124.9 lbs


All HAP Emissions by Scope
On-site (Scope 1) = 0.3%
Grid Electricity Generation (Scope 2) = 4.3%
Transportation (Scope 3a) = 2.4%
Other Off-Site (Scope 3b) = 93%
HAPs All Scopes = 124.9 lbs

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HAPs
lbs

	Track 1 Rel	Track 2 Rel	< Compon	< Compon	< Compon	< Compon	Total
On-site (Scope 1)	0.2	0.1	0.0	0.0	0.0	0.0	0.3
Generation (Scope 2)	5.4	0.0	0.0	0.0	0.0	0.0	5.4
ısportation (Scope 3a)	1.7	1.3	0.0	0.0	0.0	0.0	3.0
ıer Off-Site (Scope 3b)	23.5	92.7	0.0	0.0	0.0	0.0	116.2
Total	30.8	94.1	0.0	0.0	0.0	0.0	124.9

Track 1 Remedy = 24.6%
Track 2 Remedy = 75.4%
< Component 3 > = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

HAPs All Components = 124.9 lbs
HAPs All Scopes = 124.9 lbs

On-site (Scope 1) = 0.3%
Grid Electricity Generation (Scope 2) = 4.3%
Transportation (Scope 3a) = 2.4%
Other Off-Site (Scope 3b) = 93%

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Input Summary

Remedy Component Number →		1	2	3	4	5	6									Remedy Component Subtotals						
		Column headings in Row 6 must match the name of "Input" tabs in this workbook for Columns C - P in this table to be populated ("0" in Row 4 means "Input" tab is turned Off and will not be grouped to a Remedy Component (Columns Q - V) or used in subsequent calculations)																				
Item		Track 1	Track 2	Input Template (3)	Input Template (4)	Input Template (5)	Input Template (6)	Input Template (7)	Input Template (8)	Input Template (9)	Input Template (10)	Input Template (11)	Input Template (12)	Input Template (13)	Input Template (14)	1	2	3	4	5	6	Total
On-Site																						
On-site Renewable Energy																						
Renewable electricity generated on-site	MWh	0	0													0	0	0	0	0	0	0
Landfill gas combusted on-site for energy use	ccf CH_4	0	0													0	0	0	0	0	0	0
On-site biodiesel use	gal	0	0													0	0	0	0	0	0	0
On-site biodiesel use - Other	gal	0	0													0	0	0	0	0	0	0
User-defined on-site renewable energy use #1	TBD	0	0													0	0	0	0	0	0	0
User-defined on-site renewable energy use #2	TBD	0	0													0	0	0	0	0	0	0
On-Site Conventional Energy																						
Grid electricity	MWh	25.52096	0.02472													25.52096	0.02472	0	0	0	0	25.54568
On-site diesel use - Other	Gal	195	0													195	0	0	0	0	0	195
On-site diesel use <75 hp	Gal	0	0													0	0	0	0	0	0	0
On-site diesel use 75<hp<750	Gal	4615.3846	3461.5385													4615.3846	3461.5385	0	0	0	0	8076.9231
On-site diesel use >750 hp	Gal	0	0													0	0	0	0	0	0	0
On-site gasoline use - Other	Gal	0	0													0	0	0	0	0	0	0
On-site gasoline use <25 hp	Gal	0	0													0	0	0	0	0	0	0
On-site gasoline use >25 hp	Gal	0	0													0	0	0	0	0	0	0
On-site natural gas use	ccf	0	0													0	0	0	0	0	0	0
On-site compressed natural gas use - Other	ccf	0	0													0	0	0	0	0	0	0
On-site compressed natural gas use	ccf	0	0													0	0	0	0	0	0	0
On-site liquified petroleum gas use - Other	gal	0	0													0	0	0	0	0	0	0
On-site liquified petroleum gas use	gal	0	0													0	0	0	0	0	0	0
Other forms of on-site conventional energy use #1	TBD	0	0													0	0	0	0	0	0	0
Other forms of on-site conventional energy use #2	TBD	0	0													0	0	0	0	0	0	0
Other On-site Emissions																						
On-site HAP process emissions	Lbs	0	0													0	0	0	0	0	0	0
On-site GHG emissions	Lbs CO2e	0	0													0	0	0	0	0	0	0
On-site carbon storage	Lbs CO2e	0	0													0	0	0	0	0	0	0
GHG avoided by flaring on-site landfill methane	ccf CH4	0	0													0	0	0	0	0	0	0
Other on-site NOx emissions or reductions	Lbs	0	0													0	0	0	0	0	0	0
Other on-site SOx emissions or reductions	Lbs	0	0													0	0	0	0	0	0	0
Other on-site PM emissions or reductions	Lbs	0	0													0	0	0	0	0	0	0
Electricity Generation																						
Grid electricity	MWh	25.52096	0.02472													25.52096	0.02472	0	0	0	0	25.54568
Voluntary purchase of renewable electricity	MWh	0	0													0	0	0	0	0	0	0
Voluntary purchase of RECs	MWh	0	0													0	0	0	0	0	0	0
Transportation																						
Transportation Fuel Use Breakdown																						
Biodiesel use - Personnel Transport	gal	0	0													0	0	0	0	0	0	0
Biodiesel use - Personnel Transport - User Defined	gal	0	0													0	0	0	0	0	0	0
Biodiesel use - Equipment Transport	gal	0	0													0	0	0	0	0	0	0
Biodiesel use - Equipment Transport - User Defined	gal	0	0													0	0	0	0	0	0	0
Biodiesel use - Material Transport	gal	0	0													0	0	0	0	0	0	0
Biodiesel use - Material Transport - User Defined	gal	0	0													0	0	0	0	0	0	0
Biodiesel use - Waste Transport	gal	0	0													0	0	0	0	0	0	0
Biodiesel use - Waste Transport - User Defined	gal	0	0													0	0	0	0	0	0	0
Diesel use - Personnel Transport - other vehicles	gal	34.4	34.4													34.4	34.4	0	0	0	0	68.8
Diesel use - Personnel Transport - car	gal	0	0													0	0	0	0	0	0	0
Diesel use - Personnel Transport - passenger truck	gal	0	0													0	0	0	0	0	0	0
Diesel use - Personnel Transport - User Defined	gal	0	0													0	0	0	0	0	0	0
Diesel use - Equipment Transport	gal	19.3	8.3													19.3	8.3	0	0	0	0	27.6
Diesel use - Equipment Transport - User Defined	gal	0	0													0	0	0	0	0	0	0
Diesel use - Material Transport	gal	33.5	110.001													33.5	110.001	0	0	0	0	143.501
Diesel use - Material Transport - User Defined	gal	0	0													0	0	0	0	0	0	0
Diesel use - Waste Transport	gal	1506.5	529.3													1506.5	529.3	0	0	0	0	2035.8
Diesel use - Waste Transport - User Defined	gal	0	0													0	0	0	0	0	0	0
Gasoline use - Personnel Transport - other vehicles	gal	0	0													0	0	0	0	0	0	0
Gasoline use - Personnel Transport - car	gal	217	198.2													217	198.2	0	0	0	0	415.2
Gasoline use - Personnel Transport - passenger truck	gal	34.9	0													34.9	0	0	0	0	0	34.9
Gasoline use - Personnel Transport - User Defined	gal	0	0													0	0	0	0	0	0	0
Gasoline use - Equipment Transport	gal	0	0													0	0	0	0	0	0	0
Gasoline use - Equipment Transport - User Defined	gal	0	0													0	0	0	0	0	0	0
Natural Gas use - Personnel Transport	ccf	0	0													0	0	0	0	0	0	0
Natural Gas use - Personnel Transport - User Defined	ccf	0	0													0	0	0	0	0	0	0
Natural Gas use - Equipment Transport	ccf	0	0													0	0	0	0	0	0	0

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Input Summary

Remedy Component Number →		1	2	3	4	5	6									Remedy Component Subtotals						
		Column headings in Row 6 must match the name of "Input" tabs in this workbook for Columns C - P in this table to be populated ("0" in Row 4 means "Input" tab is turned Off and will not be grouped to a Remedy Component (Columns Q - V) or used in subsequent calculations)																				
Item		Track 1	Track 2	Input Template (3)	Input Template (4)	Input Template (5)	Input Template (6)	Input Template (7)	Input Template (8)	Input Template (9)	Input Template (10)	Input Template (11)	Input Template (12)	Input Template (13)	Input Template (14)	1	2	3	4	5	6	Total
Conventional Energy																						
Transportation diesel use	gal	1593.7	682.001													1593.7	682.001	0	0	0	0	2275.701
Transportation gasoline use	gal	251.9	198.2													251.9	198.2	0	0	0	0	450.1
Transportation natural gas use	ccf	0	0													0	0	0	0	0	0	0
User-defined conventional energy transportation #1	TBD	10	0													10	0	0	0	0	0	10
User-defined conventional energy transportation #2	TBD	0	0													0	0	0	0	0	0	0
Renewable Energy																						
Transportation biodiesel use	gal	0	0													0	0	0	0	0	0	0
User-defined renewable energy transportation #1	TBD	0	0													0	0	0	0	0	0	0
User-defined renewable energy transportation #2	TBD	0	0													0	0	0	0	0	0	0
Off-Site																						
Construction Materials																						
Aluminum, Rolled Sheet	lb	0	0													0	0	0	0	0	0	0
Asphalt, mastic	lb	0	0													0	0	0	0	0	0	0
Asphalt, paving-grade	lb	0	0													0	0	0	0	0	0	0
Ethanol, Corn, 95%	lb	0	0													0	0	0	0	0	0	0
Ethanol, Corn, 99.7%	lb	0	0													0	0	0	0	0	0	0
Ethanol, Petroleum, 99.7%	lb	0	0													0	0	0	0	0	0	0
Gravel/Sand Mix, 65% Gravel	lb	0	0													0	0	0	0	0	0	0
Gravel/sand/clay	lb	0	0													0	0	0	0	0	0	0
HDPE	lb	0	152													0	152	0	0	0	0	152
Photovoltaic system (installed)	W	0	0													0	0	0	0	0	0	0
PVC	lb	380	0													380	0	0	0	0	0	380
Portland cement, US average	lb	0	0																			
Ready-mixed concrete, 20 MPa	ft3	0	4890													0	4890	0	0	0	0	4890
Round Gravel	lb	180000	580000													180000	580000	0	0	0	0	760000
Sand	lb	0	0													0	0	0	0	0	0	0
Stainless Steel	lb	0	0													0	0	0	0	0	0	0
Steel	lb	0	0													0	0	0	0	0	0	0
Other refined construction materials	lb	0	1150													0	1150	0	0	0	0	1150
Other unrefined construction materials	lb	0	0													0	0	0	0	0	0	0
Treatment Materials & Chemicals																						
Cheese Whey	lbs	0	0													0	0	0	0	0	0	0
Emulsified vegetable oil	lbs	0	0													0	0	0	0	0	0	0
Granular activated carbon, primary	lbs	340	0													340	0	0	0	0	0	340
Granular activated carbon, regenerated	lbs	0	0													0	0	0	0	0	0	0
Hydrogen Peroxide, 50% in H2O	lbs	0	0													0	0	0	0	0	0	0
Iron (II) Sulfate	lbs	0	0													0	0	0	0	0	0	0
Lime, Hydrated, Packed	lbs	0	0													0	0	0	0	0	0	0
Molasses	lbs	0	0													0	0	0	0	0	0	0
Phosphoric Acid, 70% in H2O	lbs	0	0													0	0	0	0	0	0	0
Potassium Permanganate	lbs	0	0													0	0	0	0	0	0	0
Sodium Hydroxide, 50% in H2O	lbs	0	0													0	0	0	0	0	0	0
Other Treatment Chemicals & Materials	lbs	0	0													0	0	0	0	0	0	0
Material Type																						
Total Virgin Refined Materials	tons	90.36	474.026													90.36	474.026	0	0	0	0	564.386
Total Recycled Refined Materials	tons	0	0													0	0	0	0	0	0	0
Total Reused Refined Materials	tons	0	0													0	0	0	0	0	0	0
Total Refined Material	tons	90.36	474.026													90.36	474.026	0	0	0	0	564.386
Total Virgin Unrefined Materials	tons	0	0													0	0	0	0	0	0	0
Total Recycled Unrefined Materials	tons	0	0													0	0	0	0	0	0	0
Total Reused Unrefined Materials	tons	0	0													0	0	0	0	0	0	0
Total Unrefined Material	tons	0	0													0	0	0	0	0	0	0
Fuel Processing																						
Biodiesel produced	gal	0	0													0	0	0	0	0	0	0
Diesel produced	gal	6404.0846	4143.5395													6404.0846	4143.5395	0	0	0	0	10547.624
Gasoline produced	gal	251.9	198.2													251.9	198.2	0	0	0	0	450.1
Compressed natural gas produced	ccf	0	0													0	0	0	0	0	0	0
Liquified petroleum gas produced	gal	0	0													0	0	0	0	0	0	0
Natural gas produced	ccf	0	0													0	0	0	0	0	0	0
Water Use																						
Public Water Supply	gal x 1000	6.36	2.19													6.36	2.19	0	0	0	0	8.55
Extracted Groundwater	gal x 1000	90	0													90	0	0	0	0	0	90
Surface Water	gal x 1000	0	0													0	0	0	0	0	0	0
Reclaimed Water	gal x 1000	0	0													0	0	0	0	0	0	0
Collected/Diverted Storm Water	gal x 1000	0	0													0	0	0	0	0	0	0
User-defined water resource #1	gal x 1000	0	0													0	0	0	0	0	0	0
User-defined water resource #2	gal x 1000	0	0													0	0	0	0	0	0	0

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Input Summary

Remedy Component Number →		1	2	3	4	5	6									Remedy Component Subtotals						
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Item		Track 1	Track 2	Input Template (3)	Input Template (4)	Input Template (5)	Input Template (6)	Input Template (7)	Input Template (8)	Input Template (9)	Input Template (10)	Input Template (11)	Input Template (12)	Input Template (13)	Input Template (14)	1	2	3	4	5	6	Total
Waste/Recycle Handling																						
Hazardous waste incineration	lbs	0	0													0	0	0	0	0	0	0
Off-site waste water treatment (POTW)	gal x 1000	0	0													0	0	0	0	0	0	0
Off-site non-hazardous waste landfill	tons	5851.19	1951													5851.19	1951	0	0	0	0	7802.19
Off-site hazardous waste landfill	tons	0	0													0	0	0	0	0	0	0
Recycled/Reused On-Site	tons	0	0													0	0	0	0	0	0	0
Recycled/Reused Off-Site	tons	0	0													0	0	0	0	0	0	0
Solid Waste Totals																						
Total Non-Hazardous Waste	tons	5851.19	1951													5851.19	1951	0	0	0	0	7802.19
Total Hazardous Waste	tons	0	0													0	0	0	0	0	0	0
Total Recycled/Reused	tons	0	0													0	0	0	0	0	0	0
Total Waste (all types)	tons	5851.19	1951													5851.19	1951	0	0	0	0	7802.19
Lab Services																						
Off-site Laboratory Analysis - Other	sample	55	100													55	100	0	0	0	0	155
Off-site Laboratory Analysis - Metals	sample	20	50													20	50	0	0	0	0	70
Off-site Laboratory Analysis - Mercury	sample	0	0													0	0	0	0	0	0	0
Off-site Laboratory Analysis - Inorganic Anions	sample	0	0													0	0	0	0	0	0	0
Off-site Laboratory Analysis - Alkalinity	sample	0	0													0	0	0	0	0	0	0
Off-site Laboratory Analysis - Perchlorate	sample	0	0													0	0	0	0	0	0	0
Off-site Laboratory Analysis - Nitrogen/Nitrate	sample	0	0													0	0	0	0	0	0	0
Off-site Laboratory Analysis - Sulfate	sample	0	0													0	0	0	0	0	0	0
Off-site Laboratory Analysis - PCBs	sample	20	50													20	50	0	0	0	0	70
Off-site Laboratory Analysis - VOCs	sample	35	60													35	60	0	0	0	0	95
Off-site Laboratory Analysis - SVOCs	sample	20	50													20	50	0	0	0	0	70
Resource Extraction for Electricity																						
Coal extraction and processing	MWh	7.7838928	0.0014832													7.7838928	0.0014832	0	0	0	0	7.785376
Natural gas extraction and processing	MWh	8.6516054	0.002472													8.6516054	0.002472	0	0	0	0	8.6540774
Nuclear fuel extraction and processing	MWh	5.0531501	0.0004944													5.0531501	0.0004944	0	0	0	0	5.0536445
Oil extraction and processing	MWh	0.1786467	0.001236													0.1786467	0.001236	0	0	0	0	0.1798827
Other fuel extraction and processing	MWh	0.025521	0													0.025521	0	0	0	0	0	0.025521
Electricity Transmission																						
Transmission and distribution losses	MWh	25.52096	0.02472													25.52096	0.02472	0	0	0	0	25.54568

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Input Summary

Remedy Component Number →		1	2	3	4	5	6									Remedy Component Subtotals						
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Item		Track 1	Track 2	Input Template (3)	Input Template (4)	Input Template (5)	Input Template (6)	Input Template (7)	Input Template (8)	Input Template (9)	Input Template (10)	Input Template (11)	Input Template (12)	Input Template (13)	Input Template (14)	1	2	3	4	5	6	Total
Other																						
User-defined material #1	TBD	0	0													0	0	0	0	0	0	0
User-defined material #2	TBD	0	0													0	0	0	0	0	0	0
User-defined material #3	TBD	0	0													0	0	0	0	0	0	0
User-defined material #4	TBD	0	0													0	0	0	0	0	0	0
User-defined material #5	TBD	0	0													0	0	0	0	0	0	0
User-defined material #6	TBD	0	0													0	0	0	0	0	0	0
User-defined material #7	TBD	0	0													0	0	0	0	0	0	0
User-defined material #8	TBD	0	0													0	0	0	0	0	0	0
User-defined material #9	TBD	0	0													0	0	0	0	0	0	0
User-defined material #10	TBD	0	0													0	0	0	0	0	0	0
User-defined material #11	TBD	0	0													0	0	0	0	0	0	0
User-defined material #12	TBD	0	0													0	0	0	0	0	0	0
User-defined material #13	TBD	0	0													0	0	0	0	0	0	0
User-defined material #14	TBD	0	0													0	0	0	0	0	0	0
User-defined material #15	TBD	0	0													0	0	0	0	0	0	0
User-defined material #16	TBD	0	0													0	0	0	0	0	0	0
User-defined material #17	TBD	0	0													0	0	0	0	0	0	0
User-defined material #18	TBD	0	0													0	0	0	0	0	0	0
User-defined material #19	TBD	0	0													0	0	0	0	0	0	0
User-defined material #20	TBD	0	0													0	0	0	0	0	0	0
User-defined Waste Destinations																						
User-defined recycled/reused on-site #1	TBD	0	0													0	0	0	0	0	0	0
User-defined recycled/reused on-site #2	TBD	0	0													0	0	0	0	0	0	0
User-defined recycled/reused on-site #3	TBD	0	0													0	0	0	0	0	0	0
User-defined recycled/reused off-site #1	TBD	0	0													0	0	0	0	0	0	0
User-defined recycled/reused off-site #2	TBD	0	0													0	0	0	0	0	0	0
User-defined recycled/reused off-site #3	TBD	0	0													0	0	0	0	0	0	0
User-defined non-hazardous waste destination #1	TBD	0	0													0	0	0	0	0	0	0
User-defined non-hazardous waste destination #2	TBD	0	0													0	0	0	0	0	0	0
User-defined non-hazardous waste destination #3	TBD	0	0													0	0	0	0	0	0	0
User-defined hazardous waste destination #1	TBD	0	0													0	0	0	0	0	0	0
User-defined hazardous waste destination #2	TBD	0	0													0	0	0	0	0	0	0
User-defined hazardous waste destination #3	TBD	0	0													0	0	0	0	0	0	0

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Track 1 Remedy - On-Site Footprint (Scope 1)

Contributors to Footprints	Units	Usage	Energy		GHG		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
On-Site														
On-site Renewable Energy														
Renewable electricity generated on-site	MWh	0	3.413	0										
Landfill gas combusted on-site for energy use	ccf CH4	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
On-site biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
On-site biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
User-defined on-site renewable energy use #1	gal	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined on-site renewable energy use #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
On-site Renewable Energy Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
On-site Conventional Energy														
On-site grid electricity	MWh	25.52096	3.413	87.103036										
On-site diesel use - Other	Gal	195	0.139	27.105	22.5	4387.5	0.17	33.15	0.0054	1.053	0.0034	0.663	0.0000052	0.001014
On-site diesel use <75 hp	Gal	0	0.139	0	22.21	0	0.1565	0	0.000145	0	0.0145	0	0.00004	0
On-site diesel use 75<hp<750	Gal	4615.3846	0.139	641.53846	22.24	102646.15	0.101	466.15385	0.00013	0.6	0.009	41.538462	0.00004	0.1846154
On-site diesel use >750 hp	Gal	0	0.139	0	22.24	0	0.149	0	0.00013	0	0.006	0	0.00004	0
On-site gasoline use - Other	Gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
On-site gasoline use <25 hp	Gal	0	0.124	0	17.48	0	0.037	0	0.00025	0	0.165	0	0.00008	0
On-site gasoline use >25 hp	Gal	0	0.124	0	19.93	0	0.032	0	0.00029	0	0.002	0	0.00009	0
On-site natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
On-site compressed natural gas use - Other	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site compressed natural gas use	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site liquified petroleum gas use - Other	gal	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
On-site liquified petroleum gas use	gal	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
Other forms of on-site conventional energy use #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Other forms of on-site conventional energy use #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
On-site Conventional Energy Subtotals				**756**		**107,034**		**499**		**2**		**42**		**0**
Notes:														
Other On-site Emissions														
On-site HAP process emissions	lbs	0											1	0
On-site GHG emissions	lbs CO2e	0			1	0								
On-site carbon storage	lbs CO2e	0			1	0								
GHG avoided by flaring on-site landfill methane	Lbs	0			-262	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Other on-site NOx emissions or reductions	lbs	0					1	0						
Other on-site SOx emissions or reductions	lbs	0							1	0				
Other on-site PM emissions or reductions	lbs	0									1	0		
User-defined recycled/reused on-site #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused on-site #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
On-site Totals				**755.75**		**107,034**		**499**		**1.653**		**42.201**		**0.186**

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Track 1 Remedy - Electricity Generation Footprint (Scope 2)

Contributors to Footprints	Units	Usage	Energy		GHG		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Electricity Generation														
Grid electricity	MWh	25.52096	6.929	176.83473	1124.3	28693.215	2.2421	57.220544	4.6078874	117.59771	0.057518	1.4679146	0.2102371	5.3654524
Voluntary purchase of renewable electricity	MWh	0												
Voluntary purchase of RECs	MWh	0												
Notes:														

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Track 1 Remedy - Transportation Footprint (Scope 3a)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Conventional Energy														
Transportation diesel use	gal	1593.7	0.139	221.5243	22.5	35858.25	0.17	270.929	0.0054	8.60598	0.0034	5.41858	0.0000052	0.0082872
Transportation diesel use - car	gal	0	0.139	0	22.57	0	0.015	0	0.0002	0	0.003	0	0.00252	0
Transportation diesel use - passenger truck	gal	0	0.139	0	22.545	0	0.0585	0	0.0002	0	0.007	0	0.002605	0
Transportation diesel use - User Defined	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
Transportation gasoline use	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation gasoline use - car	gal	217	0.124	26.908	19.77	4290.09	0.027	5.859	0.00036	0.07812	0.003	0.651	0.0067	1.4539
Transportation gasoline use - passenger truck	gal	34.9	0.124	4.3276	19.79	690.671	0.035	1.2215	0.00036	0.012564	0.003	0.1047	0.00661	0.230689
Transportation gasoline use - User Defined	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use - User Defined	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
User-defined conventional energy transportation #1	TBD	10	0	0	0	0	0	0	0	0	0	0	0	0
User-defined conventional energy transportation #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Conventional Energy Subtotals				**253**		**40,839**		**278**		**9**		**6**		**2**
Notes:														
Renewable Energy														
Transportation biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
User-defined renewable energy transportation #1	TBD	0	Biodiesel		0	0	0	0	0	0	0	0	Ref.	
User-defined renewable energy transportation #2	TBD	0	mpg or pmp		0	0	0	0	0	0	0	0	0	0
Renewable Energy Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
Transportation Totals				**253**		**40839**		**278**		**8.697**		**6.174**		**1.693**

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Track 1 Remedy - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Construction Materials														
Aluminum, Rolled Sheet	lb	0	0.0633	0	9.15	0	0.0148	0	0.0283	0	0.0088	0	0.00102	0
Asphalt, mastic	lb	0	0.0412	0	0.85	0	0.00271	0	0.00798	0	0.000766	0	0.00107	0
Asphalt, paving-grade	lb	0	0.5	0	8.58	0	0.0299	0	0.0969	0	0.0091	0	0.0133	0
Ethanol, Corn, 95%	lb	0	0.0318	0	-0.0199	0	0.00425	0	0.00303	0	0.000469	0	0.0000846	0
Ethanol, Corn, 99.7%	lb	0	0.0324	0	0.0591	0	0.00431	0	0.0031	0	0.000472	0	0.000087	0
Ethanol, Petroleum, 99.7%	lb	0	0.0205	0	1.25	0	0.00199	0	0.00214	0	0.000277	0	0.0000589	0
Gravel/Sand Mix, 65% Gravel	lb	0	0.0000248	0	0.0024	0	0.000018	0	4.52E-06	0	2.61E-06	0	3.08E-07	0
Gravel/sand/clay	lb	0	0.000028	0	0.00335	0	0.0000165	0	0.000015	0	0.000002	0	2.05E-10	0
HDPE	lb	0	0.0332	0	1.94	0	0.00325	0	0.00409	0	0.000439	0	0.0000641	0
Photovoltaic system (installed)	W	0	0.0336	0	4.47	0	0.015	0	0.032	0	0.00063	0	0.0000029	0
PVC	lb	380	0.0262	9.956	2.02	767.6	0.004	1.52	0.00274	1.0412	0.000372	0.14136	0.000375	0.1425
Portland cement, US average	lb	0	0.0139	0	1.34	0	0.00654	0	0.0104	0	0.00378	0	0.00097	0
Ready-mixed concrete, 20 MPa	ft3	0	0.217	0	19.5	0	0.0975	0	0.154	0	0.057	0	0.0141	0
Round Gravel	lb	180000	0.0000248	4.464	0.0024	432	0.000018	3.24	4.52E-06	0.8136	2.61E-06	0.4698	3.08E-07	0.05544
Sand	lb	0	0.0000248	0	0.0024	0	0.000018	0	4.52E-06	0	2.61E-06	0	3.08E-07	0
Stainless Steel	lb	0	0.0116	0	3.4	0	0.0075	0	0.012	0	0.0044	0	0.000144	0
Steel	lb	0	0.0044	0	1.1	0	0.0014	0	0.0017	0	0.00056	0	0.000067	0
Other refined construction materials	lb	0	0.01885	0	2.115	0	0.0040375	0	0.0051325	0	0.0014428	0	0.0001625	0
Other unrefined construction materials	lb	0	0.000028	0	0.00335	0	0.0000165	0	0.000015	0	0.000002	0	2.05E-10	0

Notes:

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Track 1 Remedy - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Treatment Materials & Chemicals														
Cheese Whey	lbs	0	0.0025	0	0.031	0	0.000062	0	0.000033	0	0.000002	0	NP	
Emulsified vegetable oil	lbs	0	0.0077	0	3.44	0	0.0066	0	0.0019	0	0.000033	0	NP	
Granular activated carbon, primary	lbs	340	0.0356	12.104	4.82	1638.8	0.0793	26.962	0.128	43.52	0.000987	0.33558	0.000657	0.22338
Granular activated carbon, regenerated	lbs	0	0.00873	0	1.7	0	0.00733	0	0.0129	0	0.000886	0	0.000671	0
Hydrogen Peroxide, 50% in H2O	lbs	0	0.00979	0	1.19	0	0.00142	0	0.0024	0	0.000308	0	0.0000629	0
Iron (II) Sulfate	lbs	0	0.00147	0	0.167	0	0.000316	0	0.000589	0	0.000103	0	0.000023	0
Lime, Hydrated, Packed	lbs	0	0.00206	0	0.762	0	0.000513	0	0.000358	0	0.00013	0	6.57E-06	0
Molasses	lbs	0	0.0044	0	0.48	0	0.0011	0	0.00024	0	0.0000041	0	NP	
Phosphoric Acid, 70% in H2O	lbs	0	0.0067	0	0.882	0	0.00282	0	0.0294	0	0.00171	0	0.000163	0
Potassium Permanganate	lbs	0	0.00981	0	1.16	0	0.00234	0	0.0032	0	0.000422	0	0.000122	0
Sodium Hydroxide, 50% in H2O	lbs	0	0.00977	0	1.09	0	0.00194	0	0.00352	0	0.000403	0	0.000129	0
Other Treatment Chemicals & Materials	lbs	0	0.015	0	1.67	0	0.003	0	0.0065	0	0.00061	0	0.000016	0
Notes:														
Fuel Processing														
Biodiesel produced	gal	0	0.029	0	-16.8	0	0.018	0	0.033	0	0.00082	0	NP	
Diesel produced	gal	6404.0846	0.017	108.86944	3.02	19340.336	0.0051	32.660832	0.0062	39.705325	0.0017	10.886944	0.0011	7.0444931
Gasoline produced	gal	251.9	0.033	8.3127	2.8	705.32	0.0046	1.15874	0.005	1.2595	0.0015	0.37785	0.001	0.2519
Liquefied Petroleum Gas Produced	gal	0	0.088	0	1.47	0	0.0016	0	0.0024	0	0.0007	0	0.0003	0
Natural Gas - Compressed Produced	ccf	0	19.983	0	343.92	0	0.4732	0	2.1651	0	0.1846	0	0.2895	0
Natural Gas Produced	ccf	0	0.0052	0	2.2	0	0.0037	0	0.0046	0	0.000072	0	0.0000061	0
Fuel Processing Subtotals				**117.18214**		**20045.656**		**33.819572**		**40.964825**		**11.264794**		**7.2963931**
Notes:														
Public water	gal x 1000	6.36	0.0092	0.058512	5	31.8	0.0097	0.061692	0.0059	0.037524	0.016	0.10176	0.000015	0.0000954
User-defined water resource #1	gal x 1000	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined water resource #2	gal x 1000	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														

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Track 1 Remedy - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Off-Site Services														
Hazardous waste incineration	lb	0	0.00609	0	2.43	0	0.0016	0	0.00167	0	0.000209	0	0.000087	0
Off-site waste water treatment (POTW)	gal x 1000	0	0.015	0	4.4	0	0.016	0	0.015	0	NP		NP	
Off-site non-hazardous waste landfill	ton	5851.19	0.16	936.1904	25	146279.75	0.14	819.1666	0.075	438.83925	0.4	2340.476	0.0014	8.191666
Off-site hazardous waste landfill	ton	0	0.18	0	27.5	0	0.154	0	0.0825	0	0.44	0	0.00154	0
Off-site Laboratory Analysis - Other	sample	55	0.058071	3.1939066	6.8534384	376.93911	0.131402	7.2271077	0.3038758	16.713167	0.0455698	2.5063403	0.0330165	1.8159091
Off-site Laboratory Analysis - Metals	sample	20	0.212	4.24	27.4693	549.386	0.6423	12.846	1.5072	30.144	0.2264	4.528	0.1643	3.286
Off-site Laboratory Analysis - Mercury	sample	0	0.0731715	0	9.325458	0	0.2127439	0	0.4982396	0	0.0747359	0	0.0542332	0
Off-site Laboratory Analysis - Inorganic Anions	sample	0	0.0074025	0	0.6459478	0	0.0067681	0	0.0147929	0	0.0022024	0	0.0015542	0
Off-site Laboratory Analysis - Alkalinity	sample	0	0.0174398	0	1.3381922	0	0.0070106	0	0.0132496	0	0.00194	0	0.0012831	0
Off-site Laboratory Analysis - Perchlorate	sample	0	0.023885	0	1.8717054	0	0.0079807	0	0.0141535	0	0.0020547	0	0.0012875	0
Off-site Laboratory Analysis - Nitrogen/Nitrate	sample	0	0.0336475	0	4.29897	0	0.0954592	0	0.2226646	0	0.0335099	0	0.0242506	0
Off-site Laboratory Analysis - Sulfate	sample	0	0.0141225	0	1.4726728	0	0.0079807	0	0.0136024	0	0.0019797	0	0.0012015	0
Off-site Laboratory Analysis - PCBs	sample	20	0.0512769	1.025538	5.224902	104.49804	0.0833339	1.6666776	0.1904774	3.8095488	0.0284393	0.5687868	0.0212083	0.424165
Off-site Laboratory Analysis - VOCs	sample	35	0.0762045	2.667157	9.016814	315.58849	0.104498	3.6574314	0.2270738	7.947583	0.0339508	1.1882794	0.0235892	0.8256227
Off-site Laboratory Analysis - SVOCs	sample	20	0.0715602	1.4312037	7.870422	157.40844	0.1459445	2.9188904	0.3373038	6.746076	0.0504853	1.0097068	0.0372577	0.7451548
Notes:														
Resource Extraction for Electricity														
Coal extraction and processing	MWh	7.7838928	3.1	23.770452	180.0	1401.1007	0.8	5.9935975	0.2	1.1675839	0.0	0.1401101	NP	
Natural gas extraction and processing	MWh	8.6516054	1.6	14.11769	270.0	2335.9335	0.2	1.557289	13.0	112.47087	0.0	0.0614264	NP	
Nuclear fuel extraction and processing	MWh	5.0531501	0.2	0.7856233	25.0	126.32875	0.2	0.7579725	0.5	2.526575	0.0	0.0075797	NP	
Oil extraction and processing	MWh	0.1786467	2.3	0.4100657	270.0	48.234614	1.7	0.3036994	0.1	0.0123266	0.0	0.0075032	NP	
Other fuel extraction and processing	MWh	0.025521	0	0	0	0	0	0	0	0	0	0	0	0
Resource Extraction Subtotals				**39.083831**		**3911.5975**		**8.6125584**		**116.17736**		**0.2166194**		**0**
Notes:														
Electricity Transmission														
Transmission and distribution losses	MWh	25.52096	1.0342	26.393777	112.43	2869.3215	0.22421	5.7220544	0.4607887	11.759771	0.0057518	0.1467915	0.0210237	0.5365452
Notes:														

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Track 1 Remedy - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
User-defined Materials														
User-defined material #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #4	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #5	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #6	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #7	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #8	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #9	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #10	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #11	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #12	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #13	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #14	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #15	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #16	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #17	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #18	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #19	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #20	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
User-defined Waste Destinations														
User-defined recycled/reused off-site #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #3	TBD	0	y(MMBtu/u		(lbs CO2e/u		Ox(lbs/unit)		Ox(lbs/unit)		M(lbs/unit)		APs(lbs/unit	
User-defined non-hazardous waste destination #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined non-hazardous waste destination #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined non-hazardous waste destination #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
Off-site Totals				**1157.9905**		**177480.34**		**927.42058**		**718.5139**		**2362.9538**		**23.542871**

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Track 1 Remedy - Intermediate Totals

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Total Grid Electricity Footprint														
On-site grid electricity	MWh	25.52096	3.413	87.103036										
Electricity Generation														
Grid electricity	MWh	25.52096	6.929	176.83473	1124.3	28693.215	2.2421	57.220544	4.6078874	117.59771	0.057518	1.4679146	0.2102371	5.3654524
Resource Extraction for Electricity														
Coal extraction and processing	MWh	7.7838928	3.1	23.770452	180.0	1401.1007	0.8	5.9935975	0.2	1.1675839	0.0	0.1401101	NP	
Natural gas extraction and processing	MWh	8.6516054	1.6	14.11769	270.0	2335.9335	0.2	1.557289	13.0	112.47087	0.0	0.0614264	NP	
Nuclear fuel extraction and processing	MWh	5.0531501	0.2	0.7856233	25.0	126.32875	0.2	0.7579725	0.5	2.526575	0.0	0.0075797	NP	
Oil extraction and processing	MWh	0.1786467	2.3	0.4100657	270.0	48.234614	1.7	0.3036994	0.1	0.0123266	0.0	0.0075032	NP	
Other fuel extraction and processing	MWh	0.025521	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Electricity Transmission														
Transmission and distribution losses	MWh	25.52096	1.0342	26.393777	112.43	2869.3215	0.22421	5.7220544	0.4607887	11.759771	0.0057518	0.1467915	0.0210237	0.5365452
Total Grid Electricity Footprint				**329**		**35474**		**72**		**246**		**2**		**6**
Total Fuel Footprints														
Total Gasoline Footprint														
On-site gasoline use - Other	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
On-site gasoline use <25 hp	gal	0	0.124	0	17.48	0	0.037	0	0.00025	0	0.165	0	0.00008	0
On-site gasoline use >25 hp	gal	0	0.124	0	19.93	0	0.032	0	0.00029	0	0.002	0	0.00009	0
Transportation gasoline use	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation gasoline use - car	gal	217	0.124	26.908	19.77	4290.09	0.027	5.859	0.00036	0.07812	0.003	0.651	0.0067	1.4539
Transportation gasoline use - passenger truck	gal	34.9	0.124	4.3276	19.79	690.671	0.035	1.2215	0.00036	0.012564	0.003	0.1047	0.00661	0.230689
Transportation gasoline use - User Defined	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Gasoline produced	gal	251.9	0.033	8.3127	2.8	705.32	0.0046	1.15874	0.005	1.2595	0.0015	0.37785	0.001	0.2519
Total Gasoline Footprint		**251.9**		**39.5483**		**5686.081**		**8.23924**		**1.350184**		**1.13355**		**1.936489**
Total Diesel Footprint														
On-site diesel use - Other	gal	195	0.139	27.105	22.5	4387.5	0.17	33.15	0.0054	1.053	0.0034	0.663	0.0000052	0.001014
On-site diesel use <75 hp	gal	0	0.139	0	22.21	0	0.1565	0	0.000145	0	0.0145	0	0.00004	0
On-site diesel use 75<hp<750	gal	4615.3846	0.139	641.53846	22.24	102646.15	0.101	466.15385	0.00013	0.6	0.009	41.538462	0.00004	0.1846154
On-site diesel use >750 hp	gal	0	0.139	0	22.24	0	0.149	0	0.00013	0	0.006	0	0.00004	0
Transportation diesel use	gal	1593.7	0.139	221.5243	22.5	35858.25	0.17	270.929	0.0054	8.60598	0.0034	5.41858	0.0000052	0.0082872
Transportation diesel use - car	gal	0	0.139	0	22.57	0	0.015	0	0.0002	0	0.003	0	0.00252	0
Transportation diesel use - passenger truck	gal	0	0.139	0	22.545	0	0.0585	0	0.0002	0	0.007	0	0.002605	0
Transportation diesel use - User Defined	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
Diesel produced	gal	6404.0846	0.017	108.86944	3.02	19340.336	0.0051	32.660832	0.0062	39.705325	0.0017	10.886944	0.0011	7.0444931
Total Diesel Footprint		**6404.0846**		**999,0372**		**162232.24**		**802.89368**		**49.964305**		**58.506985**		**7.2384097**
Total Biodiesel Footprint														
On-site biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
On-site biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Biodiesel produced	gal	0	0.029	0	-16.8	0	0.018	0	0.033	0	0.00082	0	NP	
Total Biodiesel Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Natural Gas Footprint														
On-site natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use - User Defined	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Natural gas produced	ccf	0	0.0052	0	2.2	0	0.0037	0	0.0046	0	0.000072	0	0.0000061	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Liquified Petroleum Gas Footprint														
On-site liquified petroleum gas use - Other	ccf	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
On-site liquified petroleum gas use	ccf	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
Liquified petroleum gas produced	ccf	0	0.088	0	1.47	0	0.0016	0	0.0024	0	0.0007	0	0.0003	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Compressed Gas Footprint														
On-site compressed gas use - Other	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site compressed gas use	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
Compressed gas produced	ccf	0	19.983	0	343.92	0	0.4732	0	2.1651	0	0.1846	0	0.2895	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**

Notes:

Note: Please refer to the "Default Conversions" tab for references for the default conversion factors used on this calculation sheet.

Space below available for notes and calculations:

Track 2 Remedy - On-Site Footprint (Scope 1)

Contributors to Footprints	Units	Usage	Energy		GHG		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
On-Site														
On-site Renewable Energy														
Renewable electricity generated on-site	MWh	0	3.413	0										
Landfill gas combusted on-site for energy use	ccf CH4	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
On-site biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
On-site biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
User-defined on-site renewable energy use #1	gal	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined on-site renewable energy use #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
On-site Renewable Energy Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
On-site Conventional Energy														
On-site grid electricity	MWh	0.02472	3.413	0.0843694										
On-site diesel use - Other	Gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
On-site diesel use <75 hp	Gal	0	0.139	0	22.21	0	0.1565	0	0.000145	0	0.0145	0	0.00004	0
On-site diesel use 75<hp<750	Gal	3461.5385	0.139	481.15385	22.24	76984.615	0.101	349.61538	0.00013	0.45	0.009	31.153846	0.00004	0.1384615
On-site diesel use >750 hp	Gal	0	0.139	0	22.24	0	0.149	0	0.00013	0	0.006	0	0.00004	0
On-site gasoline use - Other	Gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
On-site gasoline use <25 hp	Gal	0	0.124	0	17.48	0	0.037	0	0.00025	0	0.165	0	0.00008	0
On-site gasoline use >25 hp	Gal	0	0.124	0	19.93	0	0.032	0	0.00029	0	0.002	0	0.00009	0
On-site natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
On-site compressed natural gas use - Other	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site compressed natural gas use	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site liquified petroleum gas use - Other	gal	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
On-site liquified petroleum gas use	gal	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
Other forms of on-site conventional energy use #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Other forms of on-site conventional energy use #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
On-site Conventional Energy Subtotals				**481**		**76.985**		**350**		**0**		**31**		**0**
Notes:														
Other On-site Emissions														
On-site HAP process emissions	lbs	0											1	0
On-site GHG emissions	lbs CO2e	0			1	0								
On-site carbon storage	lbs CO2e	0			1	0								
GHG avoided by flaring on-site landfill methane	Lbs	0			-262	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Other on-site NOx emissions or reductions	lbs	0					1	0						
Other on-site SOx emissions or reductions	lbs	0							1	0				
Other on-site PM emissions or reductions	lbs	0									1	0		
User-defined recycled/reused on-site #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused on-site #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
On-site Totals				**481.24**		**76.985**		**350**		**0.450**		**31.15**		**0.138**

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Track 2 Remedy - Electricity Generation Footprint (Scope 2)

Contributors to Footprints	Units	Usage	Energy		GHG		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Electricity Generation														
Grid electricity	MWh	0.02472	6.929	0.1712849	352	8.70144	1.504	0.0371789	1.46966	0.03633	0.07546	0.0018654	0.0454035	0.0011224
Voluntary purchase of renewable electricity	MWh	0												
Voluntary purchase of RECs	MWh	0												
Notes:														

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Track 2 Remedy - Transportation Footprint (Scope 3a)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Conventional Energy														
Transportation diesel use	gal	682.001	0.139	94.798139	22.5	15345.023	0.17	115.94017	0.0054	3.6828054	0.0034	2.3188034	0.0000052	0.0035464
Transportation diesel use - car	gal	0	0.139	0	22.57	0	0.015	0	0.0002	0	0.003	0	0.00252	0
Transportation diesel use - passenger truck	gal	0	0.139	0	22.545	0	0.0585	0	0.0002	0	0.007	0	0.002605	0
Transportation diesel use - User Defined	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
Transportation gasoline use	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation gasoline use - car	gal	198.2	0.124	24.5768	19.77	3918.414	0.027	5.3514	0.00036	0.071352	0.003	0.5946	0.0067	1.32794
Transportation gasoline use - passenger truck	gal	0	0.124	0	19.79	0	0.035	0	0.00036	0	0.003	0	0.00661	0
Transportation gasoline use - User Defined	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use - User Defined	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
User-defined conventional energy transportation #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined conventional energy transportation #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Conventional Energy Subtotals				**119**		**19,263**		**121**		**4**		**3**		**1**
Notes:														
Renewable Energy														
Transportation biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
User-defined renewable energy transportation #1	TBD	0	Biodiesel		0	0	0	0	0	0	0	0	Ref.	
User-defined renewable energy transportation #2	TBD	0	mpg or pmp		0	0	0	0	0	0	0	0	0	0
Renewable Energy Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
Transportation Totals				**119**		**19263**		**121**		**3.754**		**2.913**		**1.331**

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Track 2 Remedy - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Construction Materials														
Aluminum, Rolled Sheet	lb	0	0.0633	0	9.15	0	0.0148	0	0.0283	0	0.0088	0	0.00102	0
Asphalt, mastic	lb	0	0.0412	0	0.85	0	0.00271	0	0.00798	0	0.000766	0	0.00107	0
Asphalt, paving-grade	lb	0	0.5	0	8.58	0	0.0299	0	0.0969	0	0.0091	0	0.0133	0
Ethanol, Corn, 95%	lb	0	0.0318	0	-0.0199	0	0.00425	0	0.00303	0	0.000469	0	0.0000846	0
Ethanol, Corn, 99.7%	lb	0	0.0324	0	0.0591	0	0.00431	0	0.0031	0	0.000472	0	0.000087	0
Ethanol, Petroleum, 99.7%	lb	0	0.0205	0	1.25	0	0.00199	0	0.00214	0	0.000277	0	0.0000589	0
Gravel/Sand Mix, 65% Gravel	lb	0	0.0000248	0	0.0024	0	0.000018	0	4.52E-06	0	2.61E-06	0	3.08E-07	0
Gravel/sand/clay	lb	0	0.000028	0	0.00335	0	0.0000165	0	0.000015	0	0.000002	0	2.05E-10	0
HDPE	lb	152	0.0332	5.0464	1.94	294.88	0.00325	0.494	0.00409	0.62168	0.000439	0.066728	0.0000641	0.0097432
Photovoltaic system (installed)	W	0	0.0336	0	4.47	0	0.015	0	0.032	0	0.00063	0	0.0000029	0
PVC	lb	0	0.0262	0	2.02	0	0.004	0	0.00274	0	0.000372	0	0.000375	0
Portland cement, US average	lb	0	0.0139	0	1.34	0	0.00654	0	0.0104	0	0.00378	0	0.00097	0
Ready-mixed concrete, 20 MPa	ft3	4890	0.217	1061.13	19.5	95355	0.0975	476.775	0.154	753.06	0.057	278.73	0.0141	68.949
Round Gravel	lb	580000	0.0000248	14.384	0.0024	1392	0.000018	10.44	4.52E-06	2.6216	2.61E-06	1.5138	3.08E-07	0.17864
Sand	lb	0	0.0000248	0	0.0024	0	0.000018	0	4.52E-06	0	2.61E-06	0	3.08E-07	0
Stainless Steel	lb	0	0.0116	0	3.4	0	0.0075	0	0.012	0	0.0044	0	0.000144	0
Steel	lb	0	0.0044	0	1.1	0	0.0014	0	0.0017	0	0.00056	0	0.000067	0
Other refined construction materials	lb	1150	0.01885	21.6775	2.115	2432.25	0.0040375	4.643125	0.0051325	5.902375	0.0014428	1.6591625	0.0001625	0.1869038
Other unrefined construction materials	lb	0	0.000028	0	0.00335	0	0.0000165	0	0.000015	0	0.000002	0	2.05E-10	0

Notes:

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Track 2 Remedy - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Treatment Materials & Chemicals														
Cheese Whey	lbs	0	0.0025	0	0.031	0	0.000062	0	0.000033	0	0.000002	0	NP	
Emulsified vegetable oil	lbs	0	0.0077	0	3.44	0	0.0066	0	0.0019	0	0.000033	0	NP	
Granular activated carbon, primary	lbs	0	0.0356	0	4.82	0	0.0793	0	0.128	0	0.000987	0	0.000657	0
Granular activated carbon, regenerated	lbs	0	0.00873	0	1.7	0	0.00733	0	0.0129	0	0.000886	0	0.000671	0
Hydrogen Peroxide, 50% in H2O	lbs	0	0.00979	0	1.19	0	0.00142	0	0.0024	0	0.000308	0	0.0000629	0
Iron (II) Sulfate	lbs	0	0.00147	0	0.167	0	0.000316	0	0.000589	0	0.000103	0	0.000023	0
Lime, Hydrated, Packed	lbs	0	0.00206	0	0.762	0	0.000513	0	0.000358	0	0.00013	0	6.57E-06	0
Molasses	lbs	0	0.0044	0	0.48	0	0.0011	0	0.00024	0	0.0000041	0	NP	
Phosphoric Acid, 70% in H2O	lbs	0	0.0067	0	0.882	0	0.00282	0	0.0294	0	0.00171	0	0.000163	0
Potassium Permanganate	lbs	0	0.00981	0	1.16	0	0.00234	0	0.0032	0	0.000422	0	0.000122	0
Sodium Hydroxide, 50% in H2O	lbs	0	0.00977	0	1.09	0	0.00194	0	0.00352	0	0.000403	0	0.000129	0
Other Treatment Chemicals & Materials	lbs	0	0.015	0	1.67	0	0.003	0	0.0065	0	0.00061	0	0.000016	0
Notes:														
Fuel Processing														
Biodiesel produced	gal	0	0.029	0	-16.8	0	0.018	0	0.033	0	0.00082	0	NP	
Diesel produced	gal	4143.5395	0.017	70.440171	3.02	12513.489	0.0051	21.132051	0.0062	25.689945	0.0017	7.0440171	0.0011	4.5578934
Gasoline produced	gal	198.2	0.033	6.5406	2.8	554.96	0.0046	0.91172	0.005	0.991	0.0015	0.2973	0.001	0.1982
Liquefied Petroleum Gas Produced	gal	0	0.088	0	1.47	0	0.0016	0	0.0024	0	0.0007	0	0.0003	0
Natural Gas - Compressed Produced	ccf	0	19.983	0	343.92	0	0.4732	0	2.1651	0	0.1846	0	0.2895	0
Natural Gas Produced	ccf	0	0.0052	0	2.2	0	0.0037	0	0.0046	0	0.000072	0	0.0000061	0
Fuel Processing Subtotals				**76.980771**		**13068.449**		**22.043771**		**26.680945**		**7.3413171**		**4.7560934**
Notes:														
Public water	gal x 1000	2.19	0.0092	0.020148	5	10.95	0.0097	0.021243	0.0059	0.012921	0.016	0.03504	0.000015	3.285E-05
User-defined water resource #1	gal x 1000	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined water resource #2	gal x 1000	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														

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Track 2 Remedy - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Off-Site Services														
Hazardous waste incineration	lb	0	0.00609	0	2.43	0	0.0016	0	0.00167	0	0.000209	0	0.000087	0
Off-site waste water treatment (POTW)	gal x 1000	0	0.015	0	4.4	0	0.016	0	0.015	0	NP		NP	
Off-site non-hazardous waste landfill	ton	1951	0.16	312.16	25	48775	0.14	273.14	0.075	146.325	0.4	780.4	0.0014	2.7314
Off-site hazardous waste landfill	ton	0	0.18	0	27.5	0	0.154	0	0.0825	0	0.44	0	0.00154	0
Off-site Laboratory Analysis - Other	sample	100	0.058071	5.8071029	6.8534384	685.34384	0.131402	13.140196	0.3038758	30.387577	0.0455698	4.5569824	0.0330165	3.3016529
Off-site Laboratory Analysis - Metals	sample	50	0.212	10.6	27.4693	1373.465	0.6423	32.115	1.5072	75.36	0.2264	11.32	0.1643	8.215
Off-site Laboratory Analysis - Mercury	sample	0	0.0731715	0	9.325458	0	0.2127439	0	0.4982396	0	0.0747359	0	0.0542332	0
Off-site Laboratory Analysis - Inorganic Anions	sample	0	0.0074025	0	0.6459478	0	0.0067681	0	0.0147929	0	0.0022024	0	0.0015542	0
Off-site Laboratory Analysis - Alkalinity	sample	0	0.0174398	0	1.3381922	0	0.0070106	0	0.0132496	0	0.00194	0	0.0012831	0
Off-site Laboratory Analysis - Perchlorate	sample	0	0.023885	0	1.8717054	0	0.0079807	0	0.0141535	0	0.0020547	0	0.0012875	0
Off-site Laboratory Analysis - Nitrogen/Nitrate	sample	0	0.0336475	0	4.29897	0	0.0954592	0	0.2226646	0	0.0335099	0	0.0242506	0
Off-site Laboratory Analysis - Sulfate	sample	0	0.0141225	0	1.4726728	0	0.0079807	0	0.0136024	0	0.0019797	0	0.0012015	0
Off-site Laboratory Analysis - PCBs	sample	50	0.0512769	2.563845	5.224902	261.2451	0.0833339	4.166694	0.1904774	9.523872	0.0284393	1.421967	0.0212083	1.0604126
Off-site Laboratory Analysis - VOCs	sample	60	0.0762045	4.5722692	9.016814	541.00884	0.104498	6.2698824	0.2270738	13.624428	0.0339508	2.0370504	0.0235892	1.4153532
Off-site Laboratory Analysis - SVOCs	sample	50	0.0715602	3.5780092	7.870422	393.5211	0.1459445	7.297226	0.3373038	16.86519	0.0504853	2.524267	0.0372577	1.862887
Notes:														
Resource Extraction for Electricity														
Coal extraction and processing	MWh	0.0014832	3.1	0.0045294	180.0	0.266976	0.8	0.0011421	0.2	0.0002225	0.0	2.67E-05	NP	
Natural gas extraction and processing	MWh	0.002472	1.6	0.0040338	270.0	0.66744	0.2	0.000445	13.0	0.032136	0.0	1.755E-05	NP	
Nuclear fuel extraction and processing	MWh	0.0004944	0.2	7.687E-05	25.0	0.01236	0.2	7.416E-05	0.5	0.0002472	0.0	7.416E-07	NP	
Oil extraction and processing	MWh	0.001236	2.3	0.0028371	270.0	0.33372	1.7	0.0021012	0.1	8.528E-05	0.0	5.191E-05	NP	
Other fuel extraction and processing	MWh	0	0	0	0	0	0	0	0	0	0	0	0	0
Resource Extraction Subtotals				**0.0114772**		**1.280496**		**0.0037624**		**0.032691**		**9.69E-05**		**0**
Notes:														
Electricity Transmission														
Transmission and distribution losses	MWh	0.02472	1.0342	0.0255654	35.2	0.870144	0.1504	0.0037179	0.146966	0.003633	0.007546	0.0001865	0.0045403	0.0001122
Notes:														

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Track 2 Remedy - Off-Site Footprint (Scope 3b)

			Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
Category	Units	Usage	Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
User-defined Materials														
User-defined material #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #4	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #5	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #6	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #7	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #8	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #9	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #10	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #11	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #12	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #13	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #14	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #15	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #16	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #17	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #18	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #19	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
User-defined Waste Destinations														
User-defined recycled/reused off-site #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #3	TBD	0	y(MMBtu/u		(lbs CO2e/u		Ox(lbs/unit)		Ox(lbs/unit)		M(lbs/unit)		APs(lbs/unit	
User-defined non-hazardous waste destination #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined non-hazardous waste destination #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined non-hazardous waste destination #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
Off-site Totals				**1518.5571**		**164585.26**		**850.55362**		**1081.0219**		**1091.6066**		**92.667231**

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Track 2 Remedy - Intermediate Totals

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Total Grid Electricity Footprint														
On-site grid electricity	MWh	0.02472	3.413	0.0843694										
Electricity Generation														
Grid electricity	MWh	0.02472	6.929	0.1712849	1124.3	27.792696	2.2421	0.0554247	4.6078874	0.113907	0.057518	0.0014218	0.2102371	0.0051971
Resource Extraction for Electricity														
Coal extraction and processing	MWh	0.0014832	3.1	0.0045294	180.0	0.266976	0.8	0.0011421	0.2	0.0002225	0.0	2.67E-05	NP	
Natural gas extraction and processing	MWh	0.002472	1.6	0.0040338	270.0	0.66744	0.2	0.000445	13.0	0.032136	0.0	1.755E-05	NP	
Nuclear fuel extraction and processing	MWh	0.0004944	0.2	7.687E-05	25.0	0.01236	0.2	7.416E-05	0.5	0.0002472	0.0	7.416E-07	NP	
Oil extraction and processing	MWh	0.001236	2.3	0.0028371	270.0	0.33372	1.7	0.0021012	0.1	8.528E-05	0.0	5.191E-05	NP	
Other fuel extraction and processing	MWh	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Electricity Transmission														
Transmission and distribution losses	MWh	0.02472	1.0342	0.0255654	112.43	2.7792696	0.22421	0.0055425	0.4607887	0.0113907	0.0057518	0.0001422	0.0210237	0.0005197
Total Grid Electricity Footprint				**0**		**32**		**0**		**0**		**0**		**0**
Total Fuel Footprints														
Total Gasoline Footprint														
On-site gasoline use - Other	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
On-site gasoline use <25 hp	gal	0	0.124	0	17.48	0	0.037	0	0.00025	0	0.165	0	0.00008	0
On-site gasoline use >25 hp	gal	0	0.124	0	19.93	0	0.032	0	0.00029	0	0.002	0	0.00009	0
Transportation gasoline use	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation gasoline use - car	gal	198.2	0.124	24.5768	19.77	3918.414	0.027	5.3514	0.00036	0.071352	0.003	0.5946	0.0067	1.32794
Transportation gasoline use - passenger truck	gal	0	0.124	0	19.79	0	0.035	0	0.00036	0	0.003	0	0.00661	0
Transportation gasoline use - User Defined	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Gasoline produced	gal	198.2	0.033	6.5406	2.8	554.96	0.0046	0.91172	0.005	0.991	0.0015	0.2973	0.001	0.1982
Total Gasoline Footprint		**198.2**		**31.1174**		**4473.374**		**6.26312**		**1.062352**		**0.8919**		**1.52614**
Total Diesel Footprint														
On-site diesel use - Other	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
On-site diesel use <75 hp	gal	0	0.139	0	22.21	0	0.1565	0	0.000145	0	0.0145	0	0.00004	0
On-site diesel use 75<hp<750	gal	3461.5385	0.139	481.15385	22.24	76984.615	0.101	349.61538	0.00013	0.45	0.009	31.153846	0.00004	0.1384615
On-site diesel use >750 hp	gal	0	0.139	0	22.24	0	0.149	0	0.00013	0	0.006	0	0.00004	0
Transportation diesel use	gal	682.001	0.139	94.798139	22.5	15345.023	0.17	115.94017	0.0054	3.6828054	0.0034	2.3188034	0.0000052	0.0035464
Transportation diesel use - car	gal	0	0.139	0	22.57	0	0.015	0	0.0002	0	0.003	0	0.00252	0
Transportation diesel use - passenger truck	gal	0	0.139	0	22.545	0	0.0585	0	0.0002	0	0.007	0	0.002605	0
Transportation diesel use - User Defined	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
Diesel produced	gal	4143.5395	0.017	70.440171	3.02	12513.489	0.0051	21.132051	0.0062	25.689945	0.0017	7.0440171	0.0011	4.5578934
Total Diesel Footprint		**4143.5395**		**646.39216**		**104843.13**		**486.68761**		**29.82275**		**40.516667**		**4.6999014**
Total Biodiesel Footprint														
On-site biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
On-site biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Biodiesel produced	gal	0	0.029	0	-16.8	0	0.018	0	0.033	0	0.00082	0	NP	
Total Biodiesel Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Natural Gas Footprint														
On-site natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use - User Defined	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Natural gas produced	ccf	0	0.0052	0	2.2	0	0.0037	0	0.0046	0	0.000072	0	0.0000061	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Liquified Petroleum Gas Footprint														
On-site liquified petroleum gas use - Other	ccf	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
On-site liquified petroleum gas use	ccf	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
Liquified petroleum gas produced	ccf	0	0.088	0	1.47	0	0.0016	0	0.0024	0	0.0007	0	0.0003	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Compressed Gas Footprint														
On-site compressed gas use - Other	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site compressed gas use	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
Compressed gas produced	ccf	0	19.983	0	343.92	0	0.4732	0	2.1651	0	0.1846	0	0.2895	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**

Notes:

Note: Please refer to the "Default Conversions" tab for references for the default conversion factors used on this calculation sheet.

Space below available for notes and calculations:

All Components - On-Site Footprint (Scope 1)

Contributors to Footprints	Units	Usage	Energy		GHG		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
On-Site														
On-site Renewable Energy														
Renewable electricity generated on-site	MWh	0	3.413	0										
Landfill gas combusted on-site for energy use	ccf CH4	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
On-site biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
On-site biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
User-defined on-site renewable energy use #1	gal	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined on-site renewable energy use #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
On-site Renewable Energy Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
On-site Conventional Energy														
On-site grid electricity	MWh	25.54568	3.413	87.187406										
On-site diesel use - Other	Gal	195	0.139	27.105	22.5	4387.5	0.17	33.15	0.0054	1.053	0.0034	0.663	0.0000052	0.001014
On-site diesel use <75 hp	Gal	0	0.139	0	22.21	0	0.1565	0	0.000145	0	0.0145	0	0.00004	0
On-site diesel use 75<hp<750	Gal	8076.9231	0.139	1122.6923	22.24	179630.77	0.101	815.76923	0.00013	1.05	0.009	72.692308	0.00004	0.3230769
On-site diesel use >750 hp	Gal	0	0.139	0	22.24	0	0.149	0	0.00013	0	0.006	0	0.00004	0
On-site gasoline use - Other	Gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
On-site gasoline use <25 hp	Gal	0	0.124	0	17.48	0	0.037	0	0.00025	0	0.165	0	0.00008	0
On-site gasoline use >25 hp	Gal	0	0.124	0	19.93	0	0.032	0	0.00029	0	0.002	0	0.00009	0
On-site natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
On-site compressed natural gas use - Other	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site compressed natural gas use	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site liquified petroleum gas use - Other	gal	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
On-site liquified petroleum gas use	gal	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
Other forms of on-site conventional energy use #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Other forms of on-site conventional energy use #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
On-site Conventional Energy Subtotals				**1,237**		**184,018**		**849**		**2**		**73**		**0**
Notes:														
Other On-site Emissions														
On-site HAP process emissions	lbs	0											1	0
On-site GHG emissions	lbs CO2e	0			1	0								
On-site carbon storage	lbs CO2e	0			1	0								
GHG avoided by flaring on-site landfill methane	Lbs	0			-262	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Other on-site NOx emissions or reductions	lbs	0					1	0						
Other on-site SOx emissions or reductions	lbs	0							1	0				
Other on-site PM emissions or reductions	lbs	0									1	0		
User-defined recycled/reused on-site #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused on-site #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
On-site Totals				**1,236.98**		**184,018**		**849**		**2.10**		**73.36**		**0.32**

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All Components - Electricity Generation Footprint (Scope 2)

Contributors to Footprints	Units	Usage	Energy		GHG		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Electricity Generation														
Grid electricity	MWh	25.54568	6.929	177.00602	N/A*	28701.917	N/A*	57.257723	N/A*	117.63404	N/A*	1.4697799	N/A*	5.3665747
**** Conversion factors are not applied to grid electricity in the "All Components" tab since multiple fuel mixes may be used. The value for each cell shaded yellow in Row 51 is the sum of values from Components 1 - 6.***														
Voluntary purchase of renewable electricity	MWh	0												
Voluntary purchase of RECs	MWh	0												
Notes:														

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All Components - Transportation Footprint (Scope 3a)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Conventional Energy														
Transportation diesel use	gal	2275.701	0.139	316.32244	22.5	51203.273	0.17	386.86917	0.0054	12.288785	0.0034	7.7373834	0.0000052	0.0118336
Transportation diesel use - car	gal	0	0.139	0	22.57	0	0.015	0	0.0002	0	0.003	0	0.00252	0
Transportation diesel use - passenger truck	gal	0	0.139	0	22.545	0	0.0585	0	0.0002	0	0.007	0	0.002605	0
Transportation diesel use - User Defined	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
Transportation gasoline use	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation gasoline use - car	gal	415.2	0.124	51.4848	19.77	8208.504	0.027	11.2104	0.00036	0.149472	0.003	1.2456	0.0067	2.78184
Transportation gasoline use - passenger truck	gal	34.9	0.124	4.3276	19.79	690.671	0.035	1.2215	0.00036	0.012564	0.003	0.1047	0.00661	0.230689
Transportation gasoline use - User Defined	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use - User Defined	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
User-defined conventional energy transportation #1	TBD	10	0	0	0	0	0	0	0	0	0	0	0	0
User-defined conventional energy transportation #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Conventional Energy Subtotals				**372**		**60,102**		**399**		**12**		**9**		**3**
Notes:														
Renewable Energy														
Transportation biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
User-defined renewable energy transportation #1	TBD	0	Biodiesel		0	0	0	0	0	0	0	0	Ref.	
User-defined renewable energy transportation #2	TBD	0	mpg or pmp		0	0	0	0	0	0	0	0	0	0
Renewable Energy Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
Transportation Totals				**372**		**60102**		**399**		**12.45**		**9.09**		**3.02**

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All Components - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Construction Materials														
Aluminum, Rolled Sheet	lb	0	0.0633	0	9.15	0	0.0148	0	0.0283	0	0.0088	0	0.00102	0
Asphalt, mastic	lb	0	0.0412	0	0.85	0	0.00271	0	0.00798	0	0.000766	0	0.00107	0
Asphalt, paving-grade	lb	0	0.5	0	8.58	0	0.0299	0	0.0969	0	0.0091	0	0.0133	0
Ethanol, Corn, 95%	lb	0	0.0318	0	-0.0199	0	0.00425	0	0.00303	0	0.000469	0	0.0000846	0
Ethanol, Corn, 99.7%	lb	0	0.0324	0	0.0591	0	0.00431	0	0.0031	0	0.000472	0	0.000087	0
Ethanol, Petroleum, 99.7%	lb	0	0.0205	0	1.25	0	0.00199	0	0.00214	0	0.000277	0	0.0000589	0
Gravel/Sand Mix, 65% Gravel	lb	0	0.0000248	0	0.0024	0	0.000018	0	4.52E-06	0	2.61E-06	0	3.08E-07	0
Gravel/sand/clay	lb	0	0.000028	0	0.00335	0	0.0000165	0	0.000015	0	0.000002	0	2.05E-10	0
HDPE	lb	152	0.0332	5.0464	1.94	294.88	0.00325	0.494	0.00409	0.62168	0.000439	0.066728	0.0000641	0.0097432
Photovoltaic system (installed)	W	0	0.0336	0	4.47	0	0.015	0	0.032	0	0.00063	0	0.0000029	0
PVC	lb	380	0.0262	9.956	2.02	767.6	0.004	1.52	0.00274	1.0412	0.000372	0.14136	0.000375	0.1425
Portland cement, US average	lb	0	0.0139	0	1.34	0	0.00654	0	0.0104	0	0.00378	0	0.00097	0
Ready-mixed concrete, 20 MPa	ft3	4890	0.217	1061.13	19.5	95355	0.0975	476.775	0.154	753.06	0.057	278.73	0.0141	68.949
Round Gravel	lb	760000	0.0000248	18.848	0.0024	1824	0.000018	13.68	4.52E-06	3.4352	2.61E-06	1.9836	3.08E-07	0.23408
Sand	lb	0	0.0000248	0	0.0024	0	0.000018	0	4.52E-06	0	2.61E-06	0	3.08E-07	0
Stainless Steel	lb	0	0.0116	0	3.4	0	0.0075	0	0.012	0	0.0044	0	0.000144	0
Steel	lb	0	0.0044	0	1.1	0	0.0014	0	0.0017	0	0.00056	0	0.000067	0
Other refined construction materials	lb	1150	0.01885	21.6775	2.115	2432.25	0.0040375	4.643125	0.0051325	5.902375	0.0014428	1.6591625	0.0001625	0.1869038
Other unrefined construction materials	lb	0	0.000028	0	0.00335	0	0.0000165	0	0.000015	0	0.000002	0	2.05E-10	0

Notes:

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All Components - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Treatment Materials & Chemicals														
Cheese Whey	lbs	0	0.0025	0	0.031	0	0.000062	0	0.000033	0	0.000002	0	NP	
Emulsified vegetable oil	lbs	0	0.0077	0	3.44	0	0.0066	0	0.0019	0	0.000033	0	NP	
Granular activated carbon, primary	lbs	340	0.0356	12.104	4.82	1638.8	0.0793	26.962	0.128	43.52	0.000987	0.33558	0.000657	0.22338
Granular activated carbon, regenerated	lbs	0	0.00873	0	1.7	0	0.00733	0	0.0129	0	0.000886	0	0.000671	0
Hydrogen Peroxide, 50% in H2O	lbs	0	0.00979	0	1.19	0	0.00142	0	0.0024	0	0.000308	0	0.0000629	0
Iron (II) Sulfate	lbs	0	0.00147	0	0.167	0	0.000316	0	0.000589	0	0.000103	0	0.000023	0
Lime, Hydrated, Packed	lbs	0	0.00206	0	0.762	0	0.000513	0	0.000358	0	0.00013	0	6.57E-06	0
Molasses	lbs	0	0.0044	0	0.48	0	0.0011	0	0.00024	0	0.0000041	0	NP	
Phosphoric Acid, 70% in H2O	lbs	0	0.0067	0	0.882	0	0.00282	0	0.0294	0	0.00171	0	0.000163	0
Potassium Permanganate	lbs	0	0.00981	0	1.16	0	0.00234	0	0.0032	0	0.000422	0	0.000122	0
Sodium Hydroxide, 50% in H2O	lbs	0	0.00977	0	1.09	0	0.00194	0	0.00352	0	0.000403	0	0.000129	0
Other Treatment Chemicals & Materials	lbs	0	0.015	0	1.67	0	0.003	0	0.0065	0	0.00061	0	0.000016	0
Notes:														
Fuel Processing														
Biodiesel produced	gal	0	0.029	0	-16.8	0	0.018	0	0.033	0	0.00082	0	NP	
Diesel produced	gal	10547.624	0.017	179.30961	3.02	31853.825	0.0051	53.792883	0.0062	65.395269	0.0017	17.930961	0.0011	11.602386
Gasoline produced	gal	450.1	0.033	14.8533	2.8	1260.28	0.0046	2.07046	0.005	2.2505	0.0015	0.67515	0.001	0.4501
Liquefied Petroleum Gas Produced	gal	0	0.088	0	1.47	0	0.0016	0	0.0024	0	0.0007	0	0.0003	0
Natural Gas - Compressed Produced	ccf	0	19.983	0	343.92	0	0.4732	0	2.1651	0	0.1846	0	0.2895	0
Natural Gas Produced	ccf	0	0.0052	0	2.2	0	0.0037	0	0.0046	0	0.000072	0	0.0000061	0
Fuel Processing Subtotals				**194.16291**		**33114.105**		**55.863343**		**67.645769**		**18.606111**		**12.052486**
Notes:														
Public water	gal x 1000	8.55	0.0092	0.07866	5	42.75	0.0097	0.082935	0.0059	0.050445	0.016	0.1368	0.000015	0.0001283
User-defined water resource #1	gal x 1000	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined water resource #2	gal x 1000	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														

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All Components - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Off-Site Services														
Hazardous waste incineration	lb	0	0.00609	0	2.43	0	0.0016	0	0.00167	0	0.000209	0	0.000087	0
Off-site waste water treatment (POTW)	gal x 1000	0	0.015	0	4.4	0	0.016	0	0.015	0	NP		NP	
Off-site non-hazardous waste landfill	ton	7802.19	0.16	1248.3504	25	195054.75	0.14	1092.3066	0.075	585.16425	0.4	3120.876	0.0014	10.923066
Off-site hazardous waste landfill	ton	0	0.18	0	27.5	0	0.154	0	0.0825	0	0.44	0	0.00154	0
Off-site Laboratory Analysis - Other	sample	155	0.058071	9.0010095	6.8534384	1062.283	0.131402	20.367303	0.3038758	47.100744	0.0455698	7.0633227	0.0330165	5.1175619
Off-site Laboratory Analysis - Metals	sample	70	0.212	14.84	27.4693	1922.851	0.6423	44.961	1.5072	105.504	0.2264	15.848	0.1643	11.501
Off-site Laboratory Analysis - Mercury	sample	0	0.0731715	0	9.325458	0	0.2127439	0	0.4982396	0	0.0747359	0	0.0542332	0
Off-site Laboratory Analysis - Inorganic Anions	sample	0	0.0074025	0	0.6459478	0	0.0067681	0	0.0147929	0	0.0022024	0	0.0015542	0
Off-site Laboratory Analysis - Alkalinity	sample	0	0.0174398	0	1.3381922	0	0.0070106	0	0.0132496	0	0.00194	0	0.0012831	0
Off-site Laboratory Analysis - Perchlorate	sample	0	0.023885	0	1.8717054	0	0.0079807	0	0.0141535	0	0.0020547	0	0.0012875	0
Off-site Laboratory Analysis - Nitrogen/Nitrate	sample	0	0.0336475	0	4.29897	0	0.0954592	0	0.2226646	0	0.0335099	0	0.0242506	0
Off-site Laboratory Analysis - Sulfate	sample	0	0.0141225	0	1.4726728	0	0.0079807	0	0.0136024	0	0.0019797	0	0.0012015	0
Off-site Laboratory Analysis - PCBs	sample	70	0.0512769	3.589383	5.224902	365.74314	0.0833339	5.8333716	0.1904774	13.333421	0.0284393	1.9907538	0.0212083	1.4845776
Off-site Laboratory Analysis - VOCs	sample	95	0.0762045	7.2394262	9.016814	856.59733	0.104498	9.9273138	0.2270738	21.572011	0.0339508	3.2253298	0.0235892	2.2409759
Off-site Laboratory Analysis - SVOCs	sample	70	0.0715602	5.0092128	7.870422	550.92954	0.1459445	10.216116	0.3373038	23.611266	0.0504853	3.5339738	0.0372577	2.6080418
Notes:														
Resource Extraction for Electricity														
Coal extraction and processing	MWh	7.785376	3.1	23.774981	180.0	1401.3677	0.8	5.9947395	0.2	1.1678064	0.0	0.1401368	NP	
Natural gas extraction and processing	MWh	8.6540774	1.6	14.121724	270.0	2336.6009	0.2	1.5577339	13.0	112.50301	0.0	0.0614439	NP	
Nuclear fuel extraction and processing	MWh	5.0536445	0.2	0.7857002	25.0	126.34111	0.2	0.7580467	0.5	2.5268222	0.0	0.0075805	NP	
Oil extraction and processing	MWh	0.1798827	2.3	0.4129028	270.0	48.568334	1.7	0.3058006	0.1	0.0124119	0.0	0.0075551	NP	
Other fuel extraction and processing	MWh	0.025521	0	0	0	0	0	0	0	0	0	0	0	0
Resource Extraction Subtotals				**39.095308**		**3912.878**		**8.6163208**		**116.21005**		**0.2167163**		**0**
Notes:														
Electricity Transmission														
Transmission and distribution losses	MWh	25.54568	1.0342	26.419342										
Notes:														

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All Components - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
User-defined Materials														
User-defined material #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #4	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #5	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #6	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #7	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #8	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #9	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #10	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #11	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #12	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #13	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #14	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #15	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #16	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #17	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #18	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #19	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #20	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
User-defined Waste Destinations														
User-defined recycled/reused off-site #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #3	TBD	0	y(MMBtu/u		(lbs CO2e/u		Ox(lbs/unit		Ox(lbs/unit)		M(lbs/unit)		APs(lbs/unit	
User-defined non-hazardous waste destination #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined non-hazardous waste destination #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined non-hazardous waste destination #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
Off-site Totals				**2676.5476**		**339195.42**		**1772.2484**		**1787.7724**		**3454.4134**		**115.67344**

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All Components - Intermediate Totals

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Total Grid Electricity Footprint														
On-site grid electricity	MWh	25.54568	3.413	87.187406										
Electricity Generation														
Grid electricity	MWh	25.54568	6.929	177.00602	1124.3	28721.008	2.2421	57.275969	4.6078874	117.71162	0.057518	1.4693364	0.2102371	5.3706494
Resource Extraction for Electricity														
Coal extraction and processing	MWh	7.785376	3.1	23.774981	180.0	1401.3677	0.8	5.9947395	0.2	1.1678064	0.0	0.1401368	NP	
Natural gas extraction and processing	MWh	8.6540774	1.6	14.121724	270.0	2336.6009	0.2	1.5577339	13.0	112.50301	0.0	0.0614439	NP	
Nuclear fuel extraction and processing	MWh	5.0536445	0.2	0.7857002	25.0	126.34111	0.2	0.7580467	0.5	2.5268222	0.0	0.0075805	NP	
Oil extraction and processing	MWh	0.1798827	2.3	0.4129028	270.0	48.568334	1.7	0.3058006	0.1	0.0124119	0.0	0.0075551	NP	
Other fuel extraction and processing	MWh	0.025521	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Electricity Transmission														
Transmission and distribution losses	MWh	25.54568	1.0342	26.419342	112.43	2872.1008	0.22421	5.7275969	0.4607887	11.771162	0.0057518	0.1469336	0.0210237	0.5370649
Total Grid Electricity Footprint				**330**		**35506**		**72**		**246**		**2**		**6**
Total Fuel Footprints														
Total Gasoline Footprint														
On-site gasoline use - Other	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
On-site gasoline use <25 hp	gal	0	0.124	0	17.48	0	0.037	0	0.00025	0	0.165	0	0.00008	0
On-site gasoline use >25 hp	gal	0	0.124	0	19.93	0	0.032	0	0.00029	0	0.002	0	0.00009	0
Transportation gasoline use	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation gasoline use - car	gal	415.2	0.124	51.4848	19.77	8208.504	0.027	11.2104	0.00036	0.149472	0.003	1.2456	0.0067	2.78184
Transportation gasoline use - passenger truck	gal	34.9	0.124	4.3276	19.79	690.671	0.035	1.2215	0.00036	0.012564	0.003	0.1047	0.00661	0.230689
Transportation gasoline use - User Defined	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Gasoline produced	gal	450.1	0.033	14.8533	2.8	1260.28	0.0046	2.07046	0.005	2.2505	0.0015	0.67515	0.001	0.4501
Total Gasoline Footprint		**450.1**		**70.6657**		**10159.455**		**14.50236**		**2.412536**		**2.02545**		**3.462629**
Total Diesel Footprint														
On-site diesel use - Other	gal	195	0.139	27.105	22.5	4387.5	0.17	33.15	0.0054	1.053	0.0034	0.663	0.0000052	0.001014
On-site diesel use <75 hp	gal	0	0.139	0	22.21	0	0.1565	0	0.000145	0	0.0145	0	0.00004	0
On-site diesel use 75<hp<750	gal	8076.9231	0.139	1122.6923	22.24	179630.77	0.101	815.76923	0.00013	1.05	0.009	72.692308	0.00004	0.3230769
On-site diesel use >750 hp	gal	0	0.139	0	22.24	0	0.149	0	0.00013	0	0.006	0	0.00004	0
Transportation diesel use	gal	2275.701	0.139	316.32244	22.5	51203.273	0.17	386.86917	0.0054	12.288785	0.0034	7.7373834	0.0000052	0.0118336
Transportation diesel use - car	gal	0	0.139	0	22.57	0	0.015	0	0.0002	0	0.003	0	0.00252	0
Transportation diesel use - passenger truck	gal	0	0.139	0	22.545	0	0.0585	0	0.0002	0	0.007	0	0.002605	0
Transportation diesel use - User Defined	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
Diesel produced	gal	10547.624	0.017	179.30961	3.02	31853.825	0.0051	53.792883	0.0062	65.395269	0.0017	17.930961	0.0011	11.602386
Total Diesel Footprint		**10547.624**		**1645.4294**		**267075.37**		**1289.5813**		**79.787055**		**99.023652**		**11.938311**
Total Biodiesel Footprint														
On-site biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
On-site biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Biodiesel produced	gal	0	0.029	0	-16.8	0	0.018	0	0.033	0	0.00082	0	NP	
Total Biodiesel Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Natural Gas Footprint														
On-site natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use - User Defined	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Natural gas produced	ccf	0	0.0052	0	2.2	0	0.0037	0	0.0046	0	0.000072	0	0.0000061	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Liquified Petroleum Gas Footprint														
On-site liquified petroleum gas use - Other	ccf	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
On-site liquified petroleum gas use	ccf	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
Liquified petroleum gas produced	ccf	0	0.088	0	1.47	0	0.0016	0	0.0024	0	0.0007	0	0.0003	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Compressed Gas Footprint														
On-site compressed gas use - Other	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site compressed gas use	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
Compressed gas produced	ccf	0	19.983	0	343.92	0	0.4732	0	2.1651	0	0.1846	0	0.2895	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**

Notes:

Note: Please refer to the "Default Conversions" tab for references for the default conversion factors used on this calculation sheet.

Space below available for notes and calculations:

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APPENDIX H
Project Personnel Resumes

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SCOTT A. UNDERHILL, PE

Principal | Senior Environmental Remediation Engineer

EDUCATION

MS, Environmental Engineering, State University of New York
BS, Civil Engineering, State University of New York

PROFESSIONAL REGISTRATIONS

1998/ NY: Professional Engineer (PE Reg. No. 075332)

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)
8-Hour Hazardous Waste Operations and Emergency Response Supervisor Training
Project Management Training
8-Hour Hazardous Waste Operations and Emergency Response Refresher

Scott has more than 25 years of experience as an environmental engineer. His diverse background includes the investigation, design, installation, and operation of remediation systems for soil, water, and air; design of water and wastewater treatment facilities; energy studies; and numerical modeling of environmental media. Scott has worked for federal, state and industrial clients throughout the United States, most recently working on the remediation of contaminated sites, such as manufactured gas plant (MGP) and chlorinated solvent, in the Northeast and Midwest.

RELEVANT PROJECT EXPERIENCE

NiSource, former MGP remediation, Michigan City, Indiana. Scott was the lead design engineer for remediation at a former MGP that consists of the installation of two soil mix walls as a support of excavation to protect adjacent active gas and railroads; ISS of 10,000 cubic yards of soil to depths of 16 feet; and removal and off-site disposal of 4,000 cubic yards of impacted soils. Engineering services included developing a full set of design drawings and specifications and providing oversight during construction; working to develop engineering solutions to changes in field conditions; and documenting remediation activities in a construction completion report.

New York State Electric and Gas (NYSEG), former MGP remediation, Seneca Falls, New York. Scott was the engineer-of-record for the remedial design of a former MGP that consists of the removal and off-site disposal of 2,100 cubic yards of impacted sediment from the Seneca River, ISS of 4,000 cubic yards of impacted upland soil, removal and off-site disposal of 3,600 cubic yards of impacted soil, installing a soil cover system, dewatering during excavation, and restoration of site including sediment and riverbank replacement. Engineering services also included obtaining permits for work such as river work permits from the U.S. Army Corps of Engineers and New York State Department of Environmental Conservation (NYSDEC) and providing technical support to the client during public meetings and the bid phase.

New Jersey Natural Gas, Former MGP Remediation, Toms River, New Jersey. Construction project manager for the construction inspection oversight of a former MGP that consists of the removal and off-site disposal of 6,800 cubic yards of impacted soils, dewatering during excavation that produced over 12,000,000 gallons of water to handle, treat and dispose, and in situ solidification (ISS) of 85,000 cubic yards of soil to depths of 45 feet. Engineering oversight services provided during construction included attending weekly meetings, reviewing contractor submittals, issuing field orders and work change directives, reviewing and responding to change order requests, developing change orders, responding to request for information, and documenting remediation activities in a remedial action report.

Duke Energy, Former MGP Remediation, Cincinnati, Ohio. Lead design engineer for a design/build remediation project at a former MGP that consists of the removal and off-site disposal of 75,000 cubic yards of impacted soils, dewatering during excavations, and ISS of over 150,000 cubic yards of soil to depths of 60 feet below ground surface. Engineering services provided during construction included weekly engineering calls, working with contractor to

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develop engineering solutions to changes in field conditions, reviewing contractor submittals, issuing field orders, developing change orders, and documenting remediation activities in a construction completion report.

AEP, Former MGP Remediation, Three Rivers, Michigan. Lead design engineer for a design/build remediation project at a former manufactured gas plant (MGP) that consists of the installation of a four-cell sheeting system, installation and operation of a dewatering system that removed and discharged 420,000 gallons of water, and removal and off-site disposal of 5,400 cubic yards of impacted soils. Engineering services included developing full set of design drawings and specifications and provided engineering oversight during construction included weekly engineering calls, working to develop engineering solutions to changes in field conditions, and documenting remediation activities in a construction completion report.

American Electric Power, Former MGP Remediation, Dowagiac, Michigan. Lead design engineer for a design/build remediation project at a former manufactured gas plant (MGP) that consists of the removal and off-site disposal of 1,000 tons of impacted soils. Engineering services included developing full set of design drawings and specifications and provided engineering oversight during construction included weekly engineering calls, working to develop engineering solutions to changes in field conditions, and documenting remediation activities in a construction completion report.

New York State Energy and Gas, Former MGP Remediation, Lockport, New York. Project manager for the remedial design of a former MGP that consists of the removal of 4,000 cubic yards of impacted soils, overburden non-aqueous phase liquid (NAPL) collection trench, 600 linear feet of bedrock grout wall, bedrock NAPL collection wells and the removal of 1,200 cubic yards of impacted sediment from the NYS Barge Canal. Design required submission of work plan, pilot test for grout wall implementation, and New York State Department of Environmental Conservation (NYSDEC) approval of final design drawing, report and specifications. Program director for the engineering oversight services provided during construction which included attending weekly meetings, reviewing contractor submittals, reviewing and approving change orders, responding to request for information, and certifying the construction completion report.

New York State Energy and Gas, Former MGP Remediation, Norwich, New York. Project manager for design and construction management, including design of an ISS system of 52,000 cubic yards of soil and NAPL recovery, in situ chemical oxidation (ISCO) and enhanced in situ bioremediation systems for the off-site groundwater plume. Scott managed preparation of work plans for submission to the NYSDEC and on-site construction management services during remediation of the on-site ISS services. Scott managed the operation and maintenance of the NAPL recovery system from 2009-2016 which resulted in the recovery of almost 100,000 gallons of total fluids or 40,000 gallons of NAPL. Due to the large quantities of NAPL encountered off-site, initiated and obtained NYSDEC approval in 2015 for a modification to the Record of Decision to all for ISS of the off-site soils rather than NAPL recovery and ISCO. Program director for the design package for the ISS treatment of 11,500 cubic yards of soil and NAPL.

New York State Energy and Gas, Former MGP Remediation, Ithaca, New York. Project manager for remedial design of a former MGP plant that consisted of the removal of 11,000 tons of impacted soils within sheet piling down to a depth of 18 feet, temporary relocation of a sewer main, and three injection events for in situ chemical oxidation (ISCO) treatment of coal tar stringers. Design requires submission of work plan, pilot test for ISCO implementation, and NYSDEC approval of final design drawing, report and specifications. Program director for the engineering oversight services provided during construction which included attending weekly meetings, reviewing contractor submittals, reviewing and approving change orders, responding to request for information, and certifying the construction completion report.

New York State Department of Environmental Conservation, New York. Program manager of three standby engineering services contracts issued by the NYSDEC for the investigation, design, construction oversight, and site management of inactive hazardous waste sites within New York. Responsible for overall program management, including budgeting, schedule and quality deliverable to the NYSDEC for over 100 individual work assignments valued at over $35,000,000, which was managed by a team of over 12 project managers. As required, acted as engineer-of-

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record for many sites, which required approval of feasibility studies, remedial designs, construction completion reports, and periodic review reports.

United States Army Corps of Engineers, Former Scotia Naval Depot, Scotia, New York. Project manager for the design and installation of a 900-foot-long, 45-foot-high and 0.25-foot-thick permeable reactive barrier (PRB) wall containing zero valent iron. The PRB was installed to treat a chlorinated solvent groundwater plume. In addition, four large commercial buildings (80,000 square feet) over a portion of the groundwater plume were fitted with sub-slab depressurization systems to mitigate indoor air concerns. As project manager, Scott was responsible for project deliverables, costs, schedule and quality for the $10MM remediation project.

New York State Department of Environmental Conservation, Scotia New York. Remedial design lead and engineer of record for the development and issuance of two feasibility studies (on-site and off-site) for a large, complex inactive hazardous waste site. An estimated 7,000 gallons of tetrachloroethylene (PCE) released to the environment created a groundwater plume almost ¾ mile in length and impacting numerous residential supply wells. The on-site feasibility study evaluated remedial technologies selecting excavation and in situ thermal treatment for a present worth cost of $14,000,000. The off-site feasibility study selected ISCO/bioremediation and downgradient permeable reactive barrier wall to treat the plume with concentrations greater than 100 μg/L with a present worth cost of $13,000,000. Also designed an aeration system as an interim remedial measure to treat PCE impacts to local surface water detention pond and stream.

New York State Department of Environmental Conservation, Scotia New York. Project manager for the design and construction oversight of the installation of water line to a residential neighborhood affected by a PCE plume. The design consisted of engineering calculations, basis of design, drawings, and specifications for the installation of 8,800 linear feet of water main and 100 residential connections. Construction services included reviewing contractor submittals and invoices, overseeing contractor work, responding to request for information and attending weekly construction meetings.

New York State Energy and Gas, Former MGP Remediation, Homer, New York. Project manager for design and construction management, including design of a permanent watertight barrier wall system, in situ stabilization system within the utility corridor and a temporary water treatment plant as part of the remediation of 25,000 cubic yards of soil. Scott managed preparation of work plans for submission to the NYSDEC and on-site construction management services during remediation. Scott managed air monitoring, scheduling of trucks for off-site disposal of impacted soil, and preparation of daily reports and a final closure report.

New York State Energy and Gas, Former MGP Remediation, Mechanicville, New York. Project manager for design and construction management, including the design of a temporary watertight barrier wall system and temporary water treatment system as part of a remediation of 10,000 cubic yards of soil. The project also included the evaluation and development of alternatives for the recovery of coal tar contamination in the fractured bedrock underlying the site, which included performing multiple long-term NAPL recovery pump tests. Project manager for the engineering oversight services provided during construction which included attending weekly meetings, reviewing contractor submittals, reviewing and approving change orders, responding to request for information, and certifying the construction completion report.

New York State Department of Environmental Conservation, Poughkeepsie, New York. Engineer of record for the design and construction oversight of the thermal treatment of soil and groundwater at an inactive hazardous waste site impacted with chlorinated solvents. The design consisted of engineering calculations, basis of design, drawings, and specifications for the installation 100 electrodes to treat the 0.5-acre plume. Construction services included reviewing contractor submittals and invoices, overseeing contractor work, responding to request for information and attending regular construction meetings.

New York State Department of Environmental Conservation, Poughkeepsie, New York. Project engineer for the design and implementation of a full-scale pilot test of in situ enhanced bioremediation to treatment of soil and

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groundwater at an inactive hazardous waste site impacted with chlorinated solvents. The pilot study consisted of direct injection of approximately 4,150 gallons of 60% edible vegetable oil (EVO) and 7,825 pounds zero-valent iron (ZVI) at 75 points. Scott managed development of design and bid package, selected and oversaw injection contractor, and reviewed follow-on sampling reports.

United States Army Corps of Engineers, Griffiss Air Force Base, Rome, New York. Project engineer for land farming treatment of over 50,000 cubic yards of petroleum impacted soils. Activities included design of a land farming approach in a performance based contract to successfully remediate the soils within a three-year contract period. Due to an aggressive remediation approach, all soils were remediated within two years.

New York State Electric and Gas, Cortland Homer Manufactured Gas Plant Demolition Procurement, Homer, New York. Project manager for procuring a contractor to demolish the southern portion of the MGP building as defined by the demolition drawings. Work included developing a request for proposal with final demolition drawings, specifications, and bid schedule and overseeing successful completion of the building demolition.

New York State Energy and Gas, Former MGP Remediation, Oneonta, New York. Project engineer for the design of temporary water treatment system as part of the remediation of a former MGP site.

US Air National Guard, Site Management and Project Close-Out for Site 2 – Pesticide Burial Pit, Stewart ANGB, Newburg, New York. Project manager for preparation of a site management plan (SMP) and periodic review report (PRR) for Site 2 - Pesticide Burial Pit Area at the 105th Airlift Wing (AW), New York Air National Guard (ANG), and Stewart International Airport. Due to negotiations with the NYSDEC, Site 2 was delisted.

US Air National Guard, Remedial Design and Remedial Action, Site 15, Hancock ANGB, New York. Project engineer for the bioremediation of a petroleum groundwater plume. The project included the design, installation and operation of a 15 well biosparing system for the on-site source area and the injection of calcium peroxide for the downgradient plume. Responsible for the remedial action work plan, construction completion report and annual periodic review reports.

US Air National Guard, Interim Remedial Action and Focused Feasibility Study, Sites 3 and 6, Stratton ANGB, New York. Project manager for an interim remedial measure and focused feasibility study at Site 3 contaminated with chlorinated solvents, and Site 6 contaminated with petroleum hydrocarbons. At Site 6, managed removal of 6,200 tons of contaminated soil, installation of a horizontal well network below the water table, and injection of a substrate into the groundwater to enhance biodegradation of the contaminants. At Site 3, managing removal of 600 tons of contaminated soils from four hot spots, delineation of the nature and extent of groundwater contamination by installing and sampling new wells.

BP, Pilot-Scale Soil Thermal Treatment, Rumaila, Iraq. Primary author of a pilot scale work plan for the treatment of heavily-impacted soils at the Rumaila Well Field. Work plan included the evaluation of several thermal desorption units capable of being shipped to the location, transportation logistics, compound design for placement of the unit and utility requirements to operate the TDU.

Confidential Client, Lagoon Biocell Design, Maybrook, New York. Project engineer for the design of a membrane lined biocell for the treatment of 25,000 cubic yards of soils impacted with petroleum and pyridine compounds associated with former waste lagoons. Design also included the use of enhanced bioremediation for the contaminants of concern in groundwater. Scott managed development of a design in accordance with the remedial design and remedial action framework developed by the United States Environmental Protection Agency (USEPA).

Chevron, Malabalay Remediation Project, Philippines. Project engineer for remedial design sub-slab depressurization system and vapor barrier for the redevelopment of a gasoline station for a Jolibee Store in Malabalay. Project was completed within budget and on-time given challenging field conditions.

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Confidential Client, Solid Waste Disposal Area, Kisladag, Turkey. Project engineer responsible for the development of a feasibility study to evaluate 1,250 cubic meters of petroleum impacted soil as a waste storage area at an active mining facility in Turkey. Remedial alternatives evaluated included land farming, windrow composting, bioremediation in piles, in situ solidification, and capping.

Chevron, Remedial Design and construction Oversight, Service Station/Residential House, Manila, Philippines. Project engineer for the design and implementation of a sub-slab barrier system and vapor collection system at a residential home downgradient from a gas station. Travelled to site to oversee installation and quality control of the first sub-slab barrier system to be installed in the Philippines. Project was recognized by Chevron for being completed with zero accidents.

BEM Systems, Remedial Design and Remedial Action, Site 6, Schenectady ANGB, New York. Project manager for the design and implementation of the in situ chemical oxidation of chlorinated hydrocarbon impacted groundwater at Site 6. Project included supporting the development and issuance of the Record of Decision (ROD), submission and approval of the remedial design and implementation of the injection of sodium permanganate to treat the residual groundwater plume at Site 6.

Navy, Light Non-Aqueous Phase Liquid (LNAPL) Modeling Effort, Pearl Harbor, HI. Provided technical support for investigation and modeling of several large LNAPL plumes at the Shipyard GSA at Pearl Harbor. The modeling effort included applying the van Genuchten method to properly estimating the LNAPL plume size, volume, distribution, transport, and potential release to the harbor.

New York State Department of Environmental Conservation, Remediation System Installation, National Heatset Printing, East Farmingdale, New York. Project engineer supporting the installation and evaluation of a pilot study evaluating the use of an innovative technology - density driven convection (DDC) and in-well stripping – for the treatment of a large chlorinated solvent plume in a sandy aquifer on Long Island.

NYSDEC, Remedial Design and Construction Oversight, North East Alloy and Metals Site, Utica, New York. Project engineer for the design of a sub-slab depressurization system (SSDS) at a residential house above a chlorinated solvent plume. The design utilized two fans and six vacuum points installed over a concrete slab. Oversaw contractor's installation of the system including sealing of the concrete floor cracks and documented installed system met the performance requirements of the design.

Confidential Client, Remediation System Pilot Study and Evaluation, Schenectady, New York. Project engineer responsible for technical evaluation and comparison of a traditional and an innovative thermal enhanced soil vapor extraction system below a concrete slab. The innovative thermal enhanced soil vapor extraction (TESVE) system removed over 99.99% of the volatile compounds and over 96% of the semi volatile compounds in the unsaturated zone and outperformed the traditional TESVE system.

NYSDEC, Remedial Design and Construction Oversight, Utility Manufacturing Site, New Hampstead, New York. Project engineer for the design of nine SSDSs at three industrial buildings above a chlorinated solvent plume. The design utilized 30 fans and 30 vacuum points installed over a concrete slab. Oversaw contractor's installation of the system and documented that the installed system met the performance requirements of the design.

NYSDEC, Remediation System Optimization, Multiple Sites, New York. Provided technical support for the optimization and improvements of a number of remediation systems currently operated under the NYSDEC contract (D004445). System evaluations and improvements included the Becker Electronic pump-and treat system; NOW Corporation pump-and-treat system; SMS Industries biosparge (PhoSTER) system; Kingsbury Landfill pump and treat system, Fort Edward phytoremediation system; and Korkay soil vapor extraction/air sparging system.

NYSDEC, Site Management, Multiple Sites, New York. Provided technical support, final review and engineering certification for periodic reviews on the following sites: Armonk; Becker Electronics; Dzus Fasteners; Fort Edward Landfill; Kingsbury Landfill; Korkay; Liberty Industries; Now Corporation; Old Agway; ServeAll; and SMS Industries.

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NYSDEC, Remedial Design, BB&S Treated Lumber Site, Southampton, New York. Project engineer reviewing preliminary design concepts of the groundwater remedy selected in the ROD for this former wood pressure treating site. The site was contaminated primarily with chromium, which was associated with the former wood preservative chromated copper arsenate (CCA). Using results from the pre-design investigations, prepared a Supplemental Feasibility Study (FS) that formed the basis for NYSDEC to amend the ROD for the site. The Amended ROD revised the groundwater remedy for the site from groundwater pump and treat to providing an alternative water-supply to authorized homes and businesses, and ongoing monitoring of plume attenuation.

New York State Department of Environmental Conservation, Construction Oversight, Freeman's Bridge Site, Scotia, New York. Quality assurance/quality control (QA/QC) manager for the certification report of completion for the remediation of contaminated soils using low-temperature thermal desorption at the 34 Freeman's Bridge Road site.

New York State Office of General Services (NYSOGS), Remediation System Optimization, Multiple Sites, New York. Provided technical support for optimization and improvements of a number of remediation systems operated under the NYSOGS contract. System evaluations and improvements included the Bedford Hills pump-and-treat system and the Highland Residential pump-and-treat system.

Bank of New York, Brownfield Remediation Monthly Site Visits, Flushing, New York. Project manager for periodic site visits to review progress of work performed by Creamer Environmental, Inc., the remedial contractor working on behalf of Muss Development. Scott managed the review of the remedial progress in relation to the proposed schedule, budget, and New York State Department of Environmental Conservation approved work plans. Scott managed preparation of a site observation report with information pertaining to construction status; permits, tests, and certifications; subcontracts; change orders; and contractor's completion schedule.

Remediation System Design, Fort Drum Military Reservation, New York. Scott designed a 150-well multiphase extraction and air sparging system for remediation of a 200,000-gallon gasoline-contaminated area and oversaw installation, start-up, and operation of the complex remedial systems.

Solvent Site Remediation, Batavia, New York. Scott designed and implemented injection of whey powder solution for the bioremediation of a chlorinated solvent site.

Railyard, Oneonta, New York. Scott designed, installed, and operated two 8-well soil vapor extraction and air sparging system at an industrial facility.

Railyard Site, North Creek, New York. Scott implemented an innovative application of Fenton's reagent to remediate diesel-contaminated soil at a historic railyard. Was awarded an Engineering Excellence Award by the American Consulting Engineering Council.

Toluene Site, Pittsburgh, Pennsylvania. Scott optimized a 20-well soil vapor extraction and air sparge system at an industrial facility in an urban area.

Town of Windham, Wastewater Treatment Plant, Windham, New York. Scott designed a new 250,000-gpd wastewater treatment plant that used tertiary filtration, microfiltration, and ultraviolet disinfection.

Ski Windham, Wastewater Treatment Plant, Windham, New York. Scott designed tertiary filtration, microfiltration, and ultraviolet disinfection for a treatment plant upgrade.

Wastewater Treatment Plant Upgrade, Endicott, New York. Scott designed solids contact tanks, secondary clarifiers, ultraviolet disinfection system, and pumping station as part of the upgrade of the 10-mgd wastewater treatment plant.

New York State, Gas-to-Energy Studies, New York. Scott evaluated the potential of using landfill gas from Colonie Landfill at Mohawk Paper mills boilers.

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New York State, Sludge-to-Energy Study, Glens Falls, New York. Scott evaluated the potential of using dried paper sludge from a paper manufacturer as feed material and energy source at a cement kiln.

Groundwater and Soil Vapor Treatment, Pease AFB, NH, and Loring AFB, Maine. Scott designed, installed, and operated in-situ treatment systems at the former bases, including two groundwater pump-and-treat systems, four soil vapor extraction and air sparging systems, and 16 bioventing systems.

Hydrocarbon Cleanup, Pease AFB, New Hampshire. Scott evaluated and implemented the use of natural attenuation to remediate more than 60 petroleum hydrocarbon plumes.

Remedial Action, Loring AFB, Maine. Field engineer responsible for eight remedial actions including oversight of three subcontractors.

Oak Ridge National Laboratory, RI Report, Oak Ridge, Tennessee. Scott prepared remedial investigation report for a radioactive waste burial.

Radioactive Waste Disposal Sitting Study, Nebraska. Scott provided hydrologic modeling support for the safety analysis and license application permit for siting a low-level radioactive waste disposal site.

PUBLICATIONS

"Subsurface Solution," with C.H. Floess, T. Blazicek, M. Thorpe, S. McDonough and R. Doshi, *American Society of Civil Engineering Magazine*, pp. 76-81,86. September 2012.

"In Situ Chemical Oxidation of Saturated and Unsaturated Petroleum-Containing Soils at a Historic Railroad Site," with A.R. Vitolins, B.R. Nelson, L.M. Thomas, *Contaminated Soil Sediment and Water, International Issue*, pp. 38-40, 2001.

"Development and Application of a Geographically-Based Groundwater Flow and Solute Transport Model," Master's Thesis, State University of New York at Buffalo, 1993.

INVITED LECTURER OR SPEAKER

"Developing a Water Supply System in Rural Haiti," Albany, New York Celebration of Engineer's Week. February 16, 2012.

"Remediation of a Former MGP Site in Norwich, New York: A Case Study," with C. Floess and T. Blazicek, 27th Annual Conference on Contaminated Soils, Amherst, Massachusetts, October 17-20, 2011.

"Developing a Water Supply System in Rural Zimbabwe,". Albany, 7 June 2016, New York Celebration of Engineer's Week. February 15, 2008.

"Remediation of Petroleum-Containing Soil and Groundwater at a Former Rail Yard Locomotive Fueling Area," with S. Compston, B.R. Nelson, L.M. Thomas, 20th Annual Conference on Contaminated Soils, Amherst, Massachusetts, October 18-21, 2004.

"Optimization of an LNAPL Recovery System Based on the Observational Approach," with S. Taylor and A. Ditto, ASCE International Water Resources Engineering Conference in Seattle, Washington, August 8-11, 1999.

"Natural Attenuation of 60 Petroleum Groundwater Plumes at Pease Air Force Base, New Hampshire, USA," with S. Szojka and J. Flagg, 6th FZK/TNO International Conference on Contaminated Soils, Edinburgh, Scotland. May 17-21, 1998.

"Bioremediation of Petroleum Contaminated Soils at Loring Air Force Base, Maine," with P. Forbes and J.A. Mueller, Fourth International Conference on Bioremediation, New Orleans, Louisiana, April 28-May 2, 1997.

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"Expedited CERCLA Removal Actions at Loring AFB," with T.R. Wood, D. St. Peter, D.S. Hopkins and J.A. Mueller, Maine. 11th Annual Conference on Contaminated Soils, Amherst, Massachusetts, October 21-24, 1996.

"Innovative Investigative Technique for Characterization of Radioactive Disposal Trenches," with J.B. Cange and S.A. Blair, Superfund XVI Conference, Washington D.C., November 6-8, 1995.

"Development of a Geographically Based Groundwater Flow and Solute Transport Model," with S.W. Taylor and J.V. DePinto, ASCE International Groundwater Symposium, San Antonio, Texas, August 14-18, 1995.

"Modeling Surface Water Flow and Contaminant Flux from a Mixed Waste Burial Ground," with R.A. Lambert and J.B. Cange, 21st Environmental Symposium. San Diego, California, April 18-21, 1995.

"Who's Taking Out the Garbage?", ASCE Environmental Engineering Division Conference. Reno, Nevada, July 6-10, 1991.

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MARI C. CONLON

Senior Client Account Manager

EDUCATION

MS, Geology, Boston College

BS, Geology with a minor in Economics and Business, Lafayette College

PROFESSIONAL REGISTRATIONS

NY: Professional Geologist (License No. 000769)

PROFESSIONAL SOCIETIES

Big Apple Brownfield Awards, Co-Chair, 2018-2022

Big Apple Brownfield Awards Nomination Committee, 2016-2025

New York City Brownfield Partnership Executive Board, 2021-2025

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)

10-Hour OSHA Construction Safety

8-Hour OSHA Supervisor of Hazardous Waste (29 CFR 1910.120 & 29 CFR 1926.65)

Mari is a senior client account manager with experience in soil, groundwater and soil vapor investigation and a focus on remedial design and implementation. She is also experienced in completion of numerous Phase I Environmental Site Assessments and Phase II Environmental Site Investigations, site characterization, hazardous materials analysis, regulatory closure reports as well as remedial design and implementation.

Mari has experience in composing site closure documentation including Remedial Closure Reports and Noise Installation Reports reviewed by the Office of Environmental Remediation as well as Final Engineering Reports and Site Management Plans reviewed by the New York State Department of Environmental Conservation. Mari has also worked on city rezoning proposals by performing work associated with and composing the Hazardous Materials Analysis chapter included in Final Environmental Impact Statements published by New York City Department of Planning. Analysis methods were performed in accordance with the City Environmental Quality Review (CEQR) guidelines for neighborhoods including East New York, Brooklyn, Jerome Avenue, Brooklyn, Inwood, and Manhattan.

Mari has managed the investigation, remedial design, remediation and closeout of multiple inactive Resource Conservation and Recovery Act (RCRA) hazardous waste sites, New York State Superfund sites and petroleum spill case sites. Her background includes developing and complying with approved site management plans overseeing the operation and maintenance of on-site engineering controls, such as soil vapor extraction systems, sub-slab depressurization systems, product recovery systems, etc., and ensuring the protection of human health and the environment.

RELEVANT PROJECT EXPERIENCE

State and City Agencies

School Construction Authority, Waste Characterization and Excavation Materials Disposal Plan, Brooklyn, New York. Project manager for consulting services for New York Public School 127. Services included composition of an Excavated Materials Disposal Plan, collection of waste characterization samples and preparation of and preparation of a findings and recommendations report.

Department of City Planning, Rezoning Environmental Impact Statement, Bronx, New York. Project lead for analysis and composing the Hazardous Materials Chapter as per City Environmental Quality Review (CEQR) Technical Manual guidelines included in the Final Environmental Impact Statement (FEIS) for an approximately 92-block area primarily along Jerome Avenue and its east-west commercial corridors in the Bronx. The review assessed the potential for the

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presence of hazardous materials in soil and/or groundwater at both the projected and potential development sites identified in the reasonable worst-case development scenario under the proposed East New York Rezoning Proposal. Procedures involved site inspections and review of historic Sanborn fire insurance maps, city directories and city/state regulatory databases. The assessment identified that each of the 146 projected and potential development sites has some associated concern regarding environmental conditions. As a result, the proposed zoning map actions include (E) designations (E-366) for all privately-held projected and potential development sites.

Department of City Planning, Rezoning Environmental Impact Statement, Brooklyn, New York. Project lead for performance analysis and composing the Hazardous Materials Chapter as per CEQR Technical Manual guidelines included in the FEIS for an approximately 190-block area of East New York, Cypress Hills, and Ocean Hill neighborhoods of Brooklyn, New York. The review assessed the potential for the presence of hazardous materials in soil and/or groundwater at both the projected and potential development sites identified in the reasonable worst-case development scenario under the proposed East New York Rezoning Proposal. Procedures involved site inspections and review of historic Sanborn fire insurance maps, city directories and city/state regulatory databases. The assessment identified that each of the 186 projected and potential development sites has some associated concern regarding environmental conditions. As a result, the proposed zoning map actions include (E) designations (E-366) for all privately-held projected and potential development sites.

Redevelopment and Remediation

Titan Equity Group, Hotel Redevelopment, Bronx, New York. Project manager for a hotel redevelopment in the south Bronx. The site has been assigned New York City Office of Environmental Remediation (NYC OER) E-Designation status for hazardous materials, noise, and air quality. Services included completion of a remedial investigation, composition of a Remedial Investigation Report and development of Hazardous Material Remedial Action Work Plan and Air Quality/Noise Remedial Action Plan as per NYC OER requirements.

The Related Companies, Chelsea Mixed-Use Redevelopment, New York, New York. Field geologist for oversight of the remediation of a mixed-use residential and commercial building, the second of a two-building development on 30th Street. Contaminants of concern included volatile and semi-volatile organic compounds associated with historic operations and underground storage tanks (USTs) located on the Site. The Site was given an E-designation (E-142) for hazardous materials and noise as part of the Highline/West Chelsea rezoning proposal. To satisfy the requirements of the E-designation program, soil was excavated to at least 12 feet below grade and bottom endpoint collected showing no contaminants of concern exceeding the New York State Department of Environmental Conservation (NYSDEC) Unrestricted Use Soil Cleanup Objectives (SCO). By achieving Unrestricted Use SCOs, no engineering controls were necessary, although the building slab was included as part of development, and removal of the hazardous materials E-designation was requested.

Tishman Speyer, Long Island City Residential Development, Long Island City, New York. Field geologist for remedial oversight and implementation of a Community Air Monitoring Program during concurrent remediation and development of three Brownfield Cleanup Program (BCP) sites located in Long Island City, New York. The Sites were grossly contaminated with creosote, a carcinogenic chemical formed from the distillation of various tars. Remediation strategies included soil excavation and in-situ soil stabilization. To prevent migration of groundwater off-site, a temporary and later a permanent capture well system was installed on the western boundary of the property. The BCP site located on the western portion of the property left residual contamination in place requiring installation of a sub-slab depressurization system.

Queens West Development Corporation, Queens Waterfront Development, Long Island City, New York. Field geologist for performance of site management post remedial action. Services included annual groundwater monitoring, evaluation of engineering and institutional controls completion and Period Review Reports. In addition to conducting annual site management activities, responsibilities included composing a work plan to evaluate the transition from active sub-slab depressurization systems to passive. Upon NYSDEC approval, active systems were shut down for 30 days prior to a sub-slab vapor sampling event evaluation soil vapor, indoor and outdoor air conditions for

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potential vapor intrusion risk. As results indicated no evidence of vapor intrusion, continued pressure monitoring was conducted for from the existing monitoring ports for one year assessing whether negative pressure was held by the existing slab by stack-effect or other passive processes.

Jim Beam Brands Co., Brownfield Cleanup Program Remediation Site, Long Island City, New York. Field geologist for oversight of the installation of an Electrical Resistive Heating (ERH) system implemented in order to remediate trichloroethylene groundwater plumes in shallow/intermediate and deep groundwater on- and off-site. The Site, a former stapler manufacturing facility, underwent various remedies, including a Soil Vapor Extraction system, air sparging, ozone injection and chemical oxidation using potassium permanganate injections, which resulted in little reduction to contamination levels and rebounding chlorinated solvents. Components of the ERH system installed included electrodes for delivery of steam, vapor recovery wells, and groundwater monitoring wells. The site is currently under remediation in the state BCP program.

Due Diligence and Site Characterization

Manufacturing Plants, Multiple Investors, Environmental and Compliance Assessment Portfolio United States. Project lead for completion of Phase I Environmental Site Assessments (ESAs) and Limited Compliance Reviews for multiple auto parts manufacturing facilities throughout the United States. Services included completion of Phase I ESAs in accordance with the American Society for Testing and Materials E1527-13 requirements and a limited review of each facility's compliance liabilities including issues pertaining to the Resource Conservation and Recovery Act, Greenhouse Gas Emission Standards and Tier II Emergency and Hazardous Chemical Inventory reporting requirements.

ARM Parking, Environmental Site Assessment and Subsurface Investigation, Brooklyn, New York. Project manager for site assessment and subsurface investigation of parking facility in Sunset Park neighborhood, Brooklyn, New York. Services included ground penetrating radar survey for former and current petroleum USTs, completion of a subsurface investigation of soils and composition of Limited Subsurface Investigation Report.

Spill Consulting

The Trump Organization, Spill Consulting Services, New York, New York. Project manager for consulting services provided after incidental release of calcium carbonate ice rink paint to the Central Park Pond from Wollman Rink. Services included liaising with NYSDEC regarding violations, consent order and required corrective action. Corrective action included designing alterations to the existing on-site drainage plans and routing all meltwater containing paint into the combined sewer system. Coordination was required with property owner, operations personnel, New York City Department of Parks and NYSDEC.

Richmond Gardens Apartments, Spill Management and Closure Services, Staten Island, New York. Project lead responsible for spill closure activities and reporting for Spill 1105661 located at the Richmond Gardens Apartment Complex in the Richmond neighborhood of Staten Island, New York. The spill was opened in 2011 when several underground storage tanks were identified adjacent to the apartments at Jersey Street and Hendricks Avenue. The tanks were cleaned and removed and impacted soils surrounding the tank area excavated to the extent possible. Excavation of all impacted material was not feasible due to the proximity of the tanks to the apartment buildings. Residual contamination in soil and groundwater remained and was monitored through 2016. Upon reviewing the groundwater monitoring data from over 12 consecutive quarters, it was apparent monitored natural attenuation was not a feasible option and an in situ chemical oxidation (ISCO) remedy was approved by NYSDEC. Due to success of the pilot test, the ISCO injection event was implemented utilizing pressure pulse technology to deliver the alkaline activated persulfate solution to the subsurface.

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MATTHEW J. LEVY

Senior Project Manager | Environmental Scientist

EDUCATION

BS, Biochemistry and Environmental Science, Muhlenberg College

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)
8-Hour OSHA Hazardous Waste Worker Refresher Training (29 CFR 1910.120)
30-Hour OSHA Construction
NYSDEC Erosion and Sediment Control Inspector
American Red Cross First Aid Training and CPR Course

Matthew is a project manager with over 12 years of experience in soil, groundwater and soil vapor investigation, specializing in remedial design and implementation. During his time at Haley & Aldrich, Matthew's focus has been serving the environmental and real estate markets. He is experienced in Phase I Environmental Site Assessments, Phase II Environmental Site Investigations, site characterization, hazardous materials analysis, regulatory closure reports as well as remedial design and implementation.

Matthew has experience in composing site closure documentation including Remedial Closure Reports reviewed by the Office of Environmental Remediation as well as Final Engineering Reports reviewed by the New York State Department of Environmental Conservation. His background includes the development of and compliance with regulator-approved site management plans, overseeing the operation and maintenance of on-site engineering controls and ensuring the protection of human health and the environment.

Matthew has also worked on city rezoning proposals by performing work associated with and composing the Hazardous Materials Analysis chapter included in Final Environmental Impact Statements published by New York City Department of Planning. Analysis methods were performed in accordance with the City Environmental Quality Review (CEQR) guidelines for neighborhoods including East Harlem, Manhattan and Gowanus, Brooklyn as well as Industry City, Brooklyn.

RELEVANT PROJECT EXPERIENCE

Redevelopment and Remediation

The Jay Group, Brownfield Cleanup Program Remediation Site, 101 Fleet Place, Brooklyn, New York. Project manager for environmental consulting services during the redevelopment of a former childcare center into a mixed-use commercial and residential high-rise. The Site has been assigned New York City Office of Environmental Remediation (NYC OER) E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion (COC) for remedial work completed in the New York State Brownfield Cleanup Program (NYS BCP). OER Services included the development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a remedial investigation (RI), composition of a Remedial Investigation Report (RIR), development of a BCP Remedial Action Work Plan (RAWP), Remedial Oversight during the implementation of the RAWP, composition of the Site Management Plan (SMP) and composition of the Final Engineering Report (FER). The remedy included the excavation and disposal of hazardous waste, PFAS-contaminated soil, and the design and implementation of an active SSDS, achieving a conditional Track 1 remedy.

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The Jay Group, Brownfield Cleanup Program Remediation Site, 401 West 207th Street, New York, New York. Project manager for environmental consulting services during the redevelopment of a former gas station into a mixed-use commercial and residential high-rise. The Site has been assigned NYC OER E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion for remedial work completed in the NYS BCP. OER Services development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a RI, development and implementation of an Intermediate Remedial Measure Work Plan (IRMWP) composition of a RIR and Construction Completion Report (CCR), development of a BCP RAWP, Remedial Oversight during the implementation of the RAWP, composition of the FER. Services also included the management and closure of NYSDEC Spill Number 2304082. The remedy included the excavation and disposal of petroleum-contaminated soil, the treatment and removal of over 12 million gallons of groundwater, achieving a conditional Track 1 remedy.

The Jay Group, Brownfield Cleanup Program Remediation Site, 1885 Atlantic Avenue, Brooklyn, New York. Project manager for environmental consulting services during the redevelopment of a former gas station into a mixed-use commercial and residential high-rise. The Site has been assigned NYC OER E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion for remedial work completed in the NYS BCP. OER Services development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a RI, development and implementation of an IRMWP, completion of a supplemental RI to delineate deep VOC contamination in soil, composition of a RIR, supplemental RIR, and CCR, development of a BCP RAWP, Remedial Oversight during the implementation of the RAWP, composition of the FER and SMP. The remedy included in-situ chemical oxidation (ISCO) injections to treat groundwater contamination, the excavation and disposal of petroleum-contaminated soil, the management and closure of NYSDEC Spill Number 2306185, the installation of a soil vapor extraction (SVE) system do remediate deep VOC contamination, and the design and implementation of an active SSDS, achieving a Track 2 remedy.

The Jay Group, Brownfield Cleanup Program Remediation Site, 2864 Atlantic Avenue, Brooklyn, New York. Project manager for environmental consulting services during the redevelopment of a former gas station into a mixed-use commercial and residential high-rise. The Site has been assigned NYC OER E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion for remedial work completed in the NYS BCP. OER Services development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a RI, development and implementation of an IRMWP, composition of a RIR and CCR, development of a BCP RAWP, Remedial Oversight during the implementation of the RAWP, composition of the FER and SMP. The remedy included in-situ chemical oxidation (ISCO) injections to treat groundwater contamination and the excavation and disposal of hazardous waste, achieving a conditional Track 1 remedy.

The Jay Group, Brownfield Cleanup Program Remediation Site, 210 Greenpoint Avenue, Brooklyn, New York. Project manager for environmental consulting services during the redevelopment of a former gas station into a mixed-use commercial and residential high-rise. The Site has been assigned NYC OER E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion for remedial work completed in the NYS BCP. OER Services development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a RI, development and implementation of an IRMWP, composition of a RIR and CCR, development of a BCP RAWP, Remedial Oversight during the implementation of the RAWP, composition of the FER. The remedy included the excavation and disposal of hazardous and petroleum-contaminated wastes, and the treatment and disposal of over 17 million gallons of groundwater, achieving a Track 1 remedy.

Manhattan Management, Brownfield Cleanup Program Remediation Site, Bedford Beverly Redevelopment, Brooklyn York, New York. Project manager for environmental consulting services during the redevelopment of a former auto service center, landmark commercial building and associated parking lots into a development renovating the landmarked building and redeveloping the surrounding space into four mixed-use commercial and residential buildings. The Site was remediated to a combination of Track 1 and Track 4 under the NYS BCP. NYS BCP services included completion of a RI, composition of a RIR, development of a BCP RAWP, Remedial Oversight during the implementation

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of the RAWP, composition of the FER and SMP, and coordination of the Certificate of Completion. The remedy included the management of non-hazardous and hazardous wastes, the design and oversight of ISCO and zero valent iron (ZVI) groundwater injections.

295 W Holdings LLC, 295-297 Wallabout Street, Brooklyn, New York. Project manager for environmental consulting services during the redevelopment of a former woodworking and plastics manufacturer into a mixed-use commercial and residential high-rise. The Site has been assigned NYC OER E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion for remedial work completed in the NYS BCP. OER Services development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a RI, composition of a RIR, development of a BCP RAWP, Remedial Oversight during the implementation of the RAWP, composition of the FER and SMP. The remedy included the excavation and disposal of non-hazardous and hazardous wastes, the design and oversight of *in situ* chemical reductant (ISCR) groundwater treatment, and the treatment and disposal of approximately 1 million gallons of groundwater, achieving a conditional Track 1 remedy.

Titan Equity Group, Hotel Redevelopment, Bronx, New York. Project manager for a hotel redevelopment in the south Bronx. The site has been assigned NYS OER E-Designation status for hazardous materials, noise, and air quality. Services included completion of a remedial investigation, composition of a Remedial Investigation Report and development of Hazardous Material Remedial Action Work Plan and Air Quality/Noise Remedial Action Plan as per NYC OER requirements.

Private Developer, Mixed-Use Redevelopment, Queens, New York. Project manager for a mixed-use residential and commercial redevelopment in Queens being remediated under a consent order as an inactive hazardous waste facility for chlorinated VOC and petroleum contamination. Services include a review of historical reports, conducting a Limited Phase II ESI, development of a Site Characterization Work Plan, completion of the Site Characterization and development of an IRMWP. Remediation is ongoing.

Private Developer, Mixed-Use Redevelopment, Bronx, New York. Project manager for a mixed-use residential and commercial redevelopment in the Bronx being remediated under a consent order as an inactive hazardous waste facility for chlorinated VOC contamination within bedrock. Services include a review of historical reports, development of a Supplemental Site Characterization Work Plan including the installation of groundwater monitoring wells installed at various depths within bedrock to horizontally and vertically delineate CVOC contamination across the Site, completion of the Supplemental Site Characterization and development of an IRMWP. Remediation is ongoing.

Private Developer, Mixed-Use Redevelopment, Queens, New York. Project manager for a mixed-use residential and commercial redevelopment in Queens. The Site has been assigned New York City Office of Environmental Remediation (NYC OER) E-Designation status for hazardous materials. Services included completion of a remedial investigation, composition of a Remedial Investigation Report and development of Hazardous Material Remedial Action Work Plan as per NYC OER requirements.

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BRIAN FITZPATRICK, CHMM

Corporate Director, Health and Safety

EDUCATION

M.P.A., Environmental Policy, Syracuse University
B.S., Environmental Science, University of Massachusetts-Amherst
A.S., Chemistry, Valley Forge Military Junior College
Commissioned Officer, United States Army

CERTIFICATIONS

Certified Hazardous Materials Manager (Reg. No. 13454)
Certified Department of Transportation Shipper
Certified International Air Transport Authority Shipper

PROFESSIONAL SOCIETIES

Alliance of Hazardous Materials Professionals
Academy of Certified Hazardous Materials Managers, New England Chapter

SPECIAL STUDIES AND COURSES

Department of Transportation
International Air Transport Authority
Incident Commander
Confined Space Entry and Rescue
Radiation Safety Officer
RCRA Hazardous Waste
Massachusetts Industrial Waste Water Operator Grade 2I (expired)

AWARDS

Presidents Club Award (one million hours worked without a recordable injury), Cabot Corporation
Chancellors Award for Excellence, Syracuse University

Brian ensures the work we do for our clients is done safely – knowing this reduces costs, improves service quality and site conditions, and ultimately protects our clients' reputations. In addition to building the Haley & Aldrich Health & Safety (H&S) culture, Brian is hands-on with clients to help improve their and their partners' safety cultures.

He has extensive expertise in the Occupational Safety and Health Administration (OSHA) general industry, process safety management, and construction safety programs. He is an active member of the Alliance of Hazardous Materials Professionals and the New England chapter of the Academy of Certified Hazardous Materials Managers.

Brian knows an organization's success is predicated on empowering its people to safely work within the complex, living processes in which they operate. He is a student of human factors in the workplace, of the phenomena of human error and drift into failure, and of the safety applications of Lean techniques.

RELEVANT PROJECT EXPERIENCE

Haley & Aldrich, Inc., Burlington, Massachusetts. As Chief Health and Safety Officer, Brian has led and facilitated the development and implementation of corporate health and safety (H&S) improvement plans to enhance compliance and improve H&S performance. In Brian's time with Haley & Aldrich, Inc., the company has realized dramatic improvement on H&S goals and in Key Performance Indicators. Brian is responsible for developing a risk competence culture, where our staff are empowered to look for and engage to address risk before anyone is injured. Brian oversees the development, implementation and continuous improvement of all H&S programs for the company. Additional responsibilities include:

- Developing a safety culture through incident reporting, root cause analysis, behavior-based safety, hazard recognition and risk assessment, communication, and developing leaders;

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- Monitoring proposed and existing SH&E regulations and legislation to determine their impact on operations and to ensure continued compliance;
- Overseeing the safety, industrial hygiene, and toxicology programs for over 600 staff members engaged in remediation, construction, health and safety, consulting, and general office work across 28 offices in the United States and on assignment to international project sites;
- Continuously seeks to improve H&S performance as measured by the OSHA Incident Rating (IR) and Worker's Compensation Experience Modification Rating (EMR), as well as Leading Indicators developed with the management team; and
- Participating in the corporate audit program as an auditor or lead auditor;

Energy Client, California. As Chief Health and Safety Officer, Brian led and facilitated the Alliance Partnership Safety Council in 2017, is still an active contributor to the council, and hosts routine contractor safety forums for the client. Brian is actively involved in the development and implementation of program safety, health, and environmental (SH&E) plans to ensure safe operations on project sites. Brian developed permits and Health and Safety Plans for large projects and routinely audits the site safety. Additional responsibilities include:

- Driving reporting and behavior-based safety initiatives to support our internal safety culture and developing monthly summary reports to illustrate performance to our client.
- Develop, assess and continuously improve site safety plans and practices, including specific safety protocols for working safely over and around water.
- Worked as an extension of the client's organization to provide assurance that the remedy was completed safely and consistent with client-specific requirements.
- Support on-site safety personnel in ensuring the health and safety of the general public, our staff, and our sub-contracted employees.
- Audits and visits sites to ensure compliance with our internal policies and client-specific requirements.

Energy Client, Ohio. As Chief Health and Safety Officer, Brian supports the project team in developing and executing client and project specific health and safety measures, such as a site specific Health and Safety Plan, Job Hazard Analyses, Industrial Hygiene program, and site specific training. Brian also routinely visits the site to assess current practices and condition and to ensure continuous improvement. Additional responsibilities include:

- Develop, assess, and continuously improve site safety plans and practices, including specific safety protocols to comply with supplemental EH&S requirements such as the Duke Health and Safety Handbook, Environmental Supplemental, and EHS Keys to Life.
- Develop, assess, and continuously improve site safety plans and practices to address the risks associated with the work being performed on site, as well as the environmental conditions and simultaneous operations, including trenching and excavation, hot work, work over and near water, heavy equipment, HAZWOPER, etc.
- Worked as an extension of the client's organization to provide assurance that the remedy was completed safely and consistent with client-specific requirements.
- Support on-site safety personnel in ensuring the health and safety of the general public, our staff, and our sub-contracted employees.
- Audits and visits site to ensure compliance with our internal policies and client-specific requirements.

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BRIAN A. FERGUSON

Senior Health & Safety Manager

EDUCATION

MS, Geotechnical Engineering, Tufts University, Medford, Massachusetts
BS, Civil Engineering, State University of New York - Environmental, Science, and Forestry, Syracuse, New York
AS, Applied Science and Technology (Nuclear Engineering), Thomas A. Edison State College, Trenton, New Jersey

CERTIFICATIONS

BCSP Certified Safety Professional (#CSP-45145)
BCSP Associate Safety Professional (#ASP-31270)

PROFESSIONAL SOCIETIES

Associate Safety Professional – 2019
Order of the Engineer – 2000
Boston Society of Civil Engineers (BSCE)
American Society of Civil Engineers (ASCE)

SPECIAL STUDIES AND COURSES

American Concrete Institute – Certified Field Technician Certified Grade 1
Radiation Safety and Operations of Nuclear Testing Equipment – Troxler
40-Hour OSHA Hazardous Waste Operations Training (+ 8-Hour annual refresher)
10-Hour OSHA Construction training
Confined Space Entry Training
16-Hour Asbestos Operations and Maintenance
24-Hour Asbestos Inspector
Asbestos Inspector License (June 2018 and renewed Annually)

ENGINEERING EXPERIENCE

Brian has over 23 years of experience serving as a project engineer on a variety of real estate development projects. His project experience has included monitoring field investigations, performing construction oversight, performing due diligence, engineering analyses, performing geotechnical analyses, developing geotechnical recommendations, and preparing geotechnical reports, and project specifications.

As a project engineer, in addition to providing engineering design support, Brian has managed and participated in many field service activities. Field work has included construction monitoring and documentation of contractors' deep and shallow foundation-related construction, including slurry walls, caissons, pile driving, pile cap installation, earthwork, backfilling and compaction, installation of soldier pile and wood lagging support systems, installation of tie backs and rock anchors, reading inclinometers, conducting in-place field unit weight tests, tie-back load testing, seismograph installation, monitoring, and evaluating, and preparation of footing bearing surfaces. Other responsibilities have included site development activities, including placement of utilities and subgrade preparation for roads; observations and testing to determine that work is completed in compliance with contract documents; on-site soil management; sampling of soil and groundwater for chemical laboratory testing and conducting in situ field screening; maintenance of job records including pile driving logs, results of field density tests, records of caisson and footing installations; preparation of daily field reports; in contact with key personnel; and resolution of field related problems.

RELEVANT PROJECT EXPERIENCE

Fenway Center. Project engineer for the construction of laboratory space constructed over the Massachusetts Turnpike, two residential towers, and the Fenway Area consisting of 8 to 14 stories and multiple levels below grade. Construction responsibilities included coordination of construction monitoring, observing Support of Excavation (SOE) and footing installation, coordination of installation of Slurry Walls, assisting with project management, reviewing

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weekly field construction reports, reviewing, and responding to geotechnical design submittals, and attending project meetings.

Massachusetts Institute of Technology, The Schwarzman College of Computing Project. Project Engineer for a new approximately eight stories above ground and one story below ground building and contains approximately 189,000 gross square feet (gsf) of mixed-use space for: offices, research laboratory, academic, event, collaboration, meetings, café, convening, and associated services. Responsibilities included coordination of construction monitoring, observing SOE, micropile, and Caisson Installation, assisting with project management, reviewing weekly field construction reports, reviewing, and responding to geotechnical design submittals, and attending project meetings. Brian also was the main point of contact for construction-related issues with the project owner and contractors.

Massachusetts Institute of Technology, Graduate Housing Project. Project Engineer for construction of two new five- to eight- story residential buildings with a total gross floor space of approximately 261,000 square feet (sq ft). Responsibilities included coordination of construction monitoring, observing SOE, micropile, and Caisson Installation, assisting with project management, reviewing weekly field construction reports, reviewing and responding to geotechnical design submittals, and attending project meetings. Brian was the main point of contact for construction-related issues with the project owner and contractors and conducted Health & Safety Audits of Haley & Aldrich personnel during construction.

Edwards Vacuum Project. Project Engineer for a new single-level 101,000-sq ft building with a mezzanine located in the south portion of the proposed building. Responsibilities included developing subsurface exploration program coordination, writing the Geotech Report, and coordinating field staff to observe construction activities, including mass excavation of approximately 100,000 cubic yards of soil, installation of spread footing, and construction dewatering. Brian assisted with project management, reviewing weekly field construction reports, reviewing, and responding to geotechnical design submittals, and attending project meetings. Brian was the main point of contact for construction-related issues with the project owner and contractors and conducted Health & Safety Audits of Haley & Aldrich personnel during construction.

St. Elizabeth's Hospital – **West Campus Forensic Evaluations, Washington, D.C.** Project Engineer for forensic evaluations on the adaptive reuse of former hospital buildings. Responsibilities included coordination of a field exploration program, including test borings and test pits to obtain subsurface information for project design and construction, overseeing multiple field personnel and subcontractors, assisting with project management, reviewing subcontractors invoices, reviewing and summarizing subsurface data, and writing data reports.

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NICOLE MOONEY

Assistant Project Manager | Geologist

EDUCATION

B.S., Earth and Environmental Science with a minor in Oceanography, University of Michigan-Ann Arbor

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)
8-Hour OSHA Hazardous Waste Worker Refresher Training (29 CFR 1910.120)
8-Hour OSHA HAZWOPER Supervisor for Construction Training
OSHA 10-Hour Construction Safety
OSHA 30-Hour Construction
NYC SST-307 8-Hour Fall Prevention for Construction
NYC SST-302 2-Hour Drug and Alcohol Awareness for Construction
DOT Hazmat Employee & RCRA Hazardous Waste Generator Training
American Red Cross Adult First Aid/CPR/AED Training and Bloodborne Pathogens Training
USACE Construction Quality Management for Contractors
Level I Antiterrorism Awareness Training

Nicole is a geologist with over four years of experience in site characterization and investigation, subsurface investigations, preparation of technical reports and work plans, and data collection and analysis. She has extensive experience conducting Phase I Environmental Site Assessments (ESAs), Phase II Environmental Site Investigations (ESIs), and other aspects of environmental due diligence. She has experience with preparation and overseeing execution of remedial investigation and actions at sites within the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) and the New York City Mayor's Office of Environmental Remediation (NYCOER). She has performed soil, groundwater, and soil vapor sampling events and has drafted various site investigation plans and reports.

RELEVANT PROJECT EXPERIENCE

Environmental Investigation, Site Characterization, and Remediation

340 Myrtle Development LLC, 340 Myrtle Avenue, Brooklyn, New York. As a project geologist, Nicole coordinated and managed implementation of the Remedial Action Work Plan (RAWP) at the approximately 8,828 square foot site enrolled in the NYSDEC BCP. The remedial action included excavation and off-site disposal of soil, installation of an active sub-slab depressurization system (including cover system), installation of injection wells, and reinstallation of permanent monitoring wells for post-remedy groundwater monitoring. Nicole was responsible for the preparation of the Final Engineering Report (FER) and the Site Management Plan (SMP) which are undergoing review by the NYSDEC. Construction for the new development is currently ongoing and, when completed, the site will be improved with a new eight-story mixed-use commercial and residential building with a full cellar level.

B Contractors Group, LLC, 711-713 East 214th Street, Bronx, New York. As a project geologist, Nicole was responsible for coordinating and managing the implementation of the NYCOER-approved Remedial Action Plan (RAP) and preparing the Remedial Closure Report (RCR) for the approximately 6,252 square foot site. The redevelopment included a new eight-story residential building with a full cellar level.

650 Southern Blvd Bronx LLC, 650 Southern Boulevard, Bronx, New York. As a project geologist, Nicole was responsible for preparation and implementation of the Remedial Investigation Work Plan (RIWP), which included the installation of eleven soil borings, seven permanent groundwater monitoring wells (some of which extended into

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bedrock), and seven soil vapor points, and the collection of soil, groundwater, and soil vapor samples. Nicole was also responsible for preparation of the Citizen Participation Plan (CPP), Remedial Investigation Report (RIR), and RAWP. The site is in the pre-construction phase.

Degraw Holdings LLC, 563 Sackett Street Site, Brooklyn, New York. As a project geologist, Nicole was responsible for due diligence during acquisition, including preparation of the Phase I ESA and Limited Phase II ESI. The initial Limited Phase II ESI and delineation sampling have been completed and the Limited Phase II ESI Delineation Report, Brownfield Cleanup Agreement (BCA) Major Amendment Application, and Supplemental Remedial Investigation Report (SRIR) are being drafted.

291 Wallabout Realty LLC, 291 Wallabout Street, Brooklyn, New York. As a project geologist, Nicole was responsible for the due diligence during acquisition of the property, including preparation of a Phase I ESA, Phase II ESI, BCP Application, and RIWP.

401 West 207th Realty LLC, 401 West 207th Street, New York, New York. As a project geologist, Nicole was responsible for oversight during implementation of the RAWP under the NYSDEC BCP. During remediation, Nicole observed and documented the excavation and proper disposal of on-site soil required for installation of the foundational elements. Nicole oversaw the proper cleaning and removal of two underground storage tanks encountered during excavation.

BCP Applications and Remedial Investigation Work Plans for NYSDEC. Nicole has prepared several BCP Application packages for various clients in New York State, which requires reviewing the site's history, including any previous investigation reports available, to assist with entry into the BCP to be remediated and redeveloped in accordance with applicable NYSDEC requirements. Nicole also prepares an RIWP to be submitted to the NYSDEC either concurrently or following submittal of the BCP Application for full investigation of the site to facilitate proper remedial action.

Excavation Oversight and CAMP Monitoring, Various Sites, Bronx, Brooklyn, and Queens, New York. As a project geologist, Nicole completed remedial oversight for several projects in the NYCOER cleanup program and NYSDEC BCP. Her responsibilities included excavation oversight, air monitoring, truck logging during off-site disposal of excavated materials, collection of endpoint and/or documentation samples, vapor barrier inspection, and oversight of installation of post-remedy groundwater monitoring wells.

Multiple Clients, Phase I ESAs and Due Diligence, Multiple Locations in New York. As a project geologist, Nicole completed several Phase I ESAs for buyers of properties in New York. She has extensive experience completing site reconnaissance and reviewing historical site documentation to identify potential environmental concerns at properties.

Multiple Clients, Phase II ESIs, Multiple Locations in New York. As a project geologist, Nicole conducted several Phase II ESIs for projects in New York, including oversight of the installation of soil borings, groundwater monitoring wells, and soil vapor points and the collection of soil, groundwater, and soil vapor samples. She assisted with the development of sampling plans based on previous environmental investigations and due diligence findings.

Former Grissom Air Force Base, Kokomo, Indiana. As a project geologist, Nicole was responsible for coordinating and performing quarterly groundwater sampling and/or Land Use Control (LUC) inspections in accordance with the deeds and Decision Documents for nine sites (FT001, FT002, SS190, SS035, SS053, SS058, LF003, LF004, and SS049) located on the 2,722-acre former Grissom Air Force Base under the Base Realignment and Closure (BRAC)/Environmental Construction Optimization Services (BECOS) program. Nicole was also responsible for the coordination and implementation of a Data Gap Investigation (DGI) at the SS035, SS053, and SS058 sites and a Site Investigation (SI) at the former Navy Skeet Range (site SR406). Nicole prepared LUC Inspection reports, Annual Groundwater Monitoring Reports, an SI Report, a DGI Report, and the Five-Year Review Report for this work.

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OWEN HENNIGAN

Staff Environmental Engineer

EDUCATION

B.S., Environmental Science, SUNY College of Environmental Science and Forestry

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)
8-Hour OSHA Hazardous Waste Worker Refresher Training (29 CFR 1910.120)
8-Hour OSHA Site Supervisor Training
DOT Hazmat Employee & RCRA Hazardous Waste Generator Training
NYC Site Safety Training (SST)
LIRR Contractor Safety Training
American Red Cross Adult First Aid/CPR/AED Training

Owen is an environmental scientist with six years of professional experience. He brings a broad array of field experience, including performing soil, drinking water, and groundwater sampling; performing site inspections; and managing underground and aboveground storage tanks. He contributes to remedial investigation work plan preparation, implementation, and oversight. Owen also brings brownfields experience, having been involved in the planning, coordination, implementation management, oversight, and reporting for the investigation and remediation of multiple brownfields sites. Owen also has experience preparing standard logs and field forms such as boring logs, daily reports, and chains of custody.

RELEVANT PROJECT EXPERIENCE

New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) applications and Remedial Investigation Work Plans, various locations, New York State. Owen has written and prepared several BCP applications for various clients in New York State. In writing the applications, Owen reviews previous subsurface investigations of the site and historical information to help get underutilized and abandoned contaminated properties into the BCP to be remediated and redeveloped under NYSDEC. After completing the application, he prepares a Remedial Investigation Work Plan to strategically investigate site contamination so proper remedial action can take place.

Excavation oversight and CAMP monitoring, various sites, New York State. Owen served as field geologist for several projects under the New York City Office of Environmental Remediation (NYCOER) program and BCP. His responsibilities included performing excavation oversight, air monitoring, truck logging during off-site disposal of excavated materials, collection of endpoint and/or documentation samples, vapor barrier inspections, and oversight of installation of post-remedy groundwater monitoring wells.

Multiple clients, Phase II Environmental Site Assessments (ESAs), multiple locations, New York State. As field geologist, Owen conducted Phase II ESAs on a variety of different sites. He assisted with the development of sampling plans primarily based off previous environmental investigations and due diligence. Primary responsibilities for Phase II investigations included oversight of the installation of test borings and/or test pits, the installation of groundwater monitoring wells, and soil vapor points.

Multiple clients, Phase I ESAs, multiple locations, New York State. Owen has conducted numerous environmental site assessments. Site assessments include evaluation of environmental liability associated with commercial properties, manufacturing properties, and residential properties.

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TA Realty, Due Diligence Portfolios. Owen assisted TA Realty on potential environmental risks during property acquisitions of commercial, residential, industrial, or vacant properties across the United States by reviewing Phase I ESAs.

NYC Parks - Shirley Chisholm Recreational Center, Brooklyn, New York. Owen was the field engineer responsible for implementing CAMP and facilitating soil disposal efforts during exterior excavations and landscaping activities.

817-819 Bedford Avenue Development, Brooklyn, New York. Owen was the field engineer responsible for implementing the remedial investigation work plan activities which consisted of soil, soil vapor, and groundwater investigations. Owen directed the subcontractors to ensure the successful completion of field activities.

Private developer, Carman Place, Hempstead, Long Island. Owen directed and oversaw the advancement of soil borings and soil sampling of test pits throughout the property. He oversaw the installation of permanent monitoring wells and soil vapor points. He collected groundwater, soil, and soil vapor samples in accordance with NYSDEC policies. He also performed community air monitoring during all ground-intrusive activities.

Procida Development Group, Ebenezer Plaza II brownfield cleanup, Brooklyn, New York. Owen served as the staff geologist and was directly involved with the environmental planning, coordination, implementation management, oversight, and reporting for the investigation and remediation of the Ebenezer Plaza II brownfield cleanup site.

Multiple wetland delineations, throughout New York State. Owen conducted numerous wetland and stream delineations for a variety of solar, utility (gas and electric), and municipal projects throughout New York State. Owen's role consisted of delineating wetland and stream boundaries according to the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. This included identifying, mapping, and justifying the location of wetland and stream boundaries. Owen recorded field notes, took site photographs, and completed data forms for delineation reports and figures.

Habitat and wildlife assessments, throughout New York State. Owen completed numerous habitat assessments for several rare, threatened, and/or endangered species. These surveys involved documenting the presence of all ecological communities on site and making a determination about the potential for threatened and/or endangered species habitat within project areas. Fieldwork included collecting GPS data, collecting site photography, and recording observations of flora and fauna used to determine the Edinger ecological communities on site.

Solar agricultural monitoring, throughout New York State. Owen completed agricultural monitoring for several solar projects across New York State. He was responsible for working with the client and contractors on site to help them remain in compliance with the New York State Department of Agriculture and Markets guidelines for solar construction within agricultural districts.

Invasive species survey, throughout New York State. Owen performed invasive species surveys within wetland mitigation projects across New York State. He was responsible for identifying plant species considered invasive by the NYSDEC and mapping their prevalence throughout a given project area.

Permitting, throughout New York State. Owen contributed to writing the applications for NYSDEC Article 15 and 24 permits related to dredging projects. He also wrote on applications to the USACE for individual take permits related to stream crossings and potential dam reconstruction projects.

Stormwater Pollution Prevention Plan, throughout New York State. Owen conducted stormwater pollution prevention plan inspections for multiple projects to ensure contractor compliance with project-specific stormwater pollution prevention measures.

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APPENDIX I
Quality Assurance Project Plan

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HALEY ALDRICH

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QUALITY ASSURANCE PROJECT PLAN
60 WILLIAM STREET DEVELOPMENT
NEWBURGH, NEW YORK
NYSDEC BCP SITE NO. C336098

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by

H & A of New York Engineering and Geology, LLP
New York, New York

for
60 William St. LLC
Brooklyn, New York

File No. 0206338
October 2025

Executive Summary

This Quality Assurance Project Plan (QAPP) outlines the scope of the quality assurance and quality control (QA/QC) activities associated with the site monitoring activities associated with the Remedial Action Work Plan (RAWP) for the 60 William Street Development Site located at 58-60 William Street, Newburgh, New York (Site).

Protocols for sample collection, sample handling and storage, chain-of-custody procedures, and laboratory and field analyses are described herein or specifically referenced to related project documents.

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1. Project Description

This Quality Assurance Project Plan (QAPP) has been prepared as a component of the Remedial Action Work Plan (RAWP) for the 60 William Street Development Site located at 58-60 William Street in Newburgh, New York (Site).

1.1 PROJECT OBJECTIVES

The primary objective for data collection activities is to collect sufficient data necessary to confirm the results of the previous site characterization activities, potentially identify an on-site source, and to determine a course for remedial action. In addition, a qualitative exposure assessment will be conducted and will consider the nature of populations currently exposed or that have the potential to be exposed to Site-related contaminants both on- and off-site, along with describing the reasonably anticipated future land use of the site and affected off-site areas.

1.2 SITE DESCRIPTION AND HISTORY

The general Site description and Site history are provided in the Site Description and History Summary that accompanies the RAWP for the Site and are incorporated herein by reference.

1.3 LABORATORY PARAMETERS

The laboratory parameters for soil include:

- Target Compound List (TCL) volatile organic compounds (VOCs) using U.S. Environmental Protection Agency (USEPA) Method 8260C;
- TCL semi-volatile organic compounds (SVOCs) using USEPA Method 8270D;
- Total Analyte List (TAL) metals using USEPA Method 6010D;
- TCL pesticides using USEPA Method 8081B;
- Polychlorinated biphenyls (PCBs) using USEPA Method 8082A;
- Per- and polyfluoroalkyl substances (PFAS) using USEPA Method 1633; and,
- 1,4-dioxane using USEPA method 8270 SIM.

The laboratory parameter for groundwater includes:

- PFAS using USEPA method 1633.

Note: PFAS will be collected in accordance with the New York State Department of Environmental Conservation (NYSDEC), Division of Environmental Remediation (DER), Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC Part 375 Remedial Program, April 2023.

During the collection of groundwater samples, pH, specific conductivity, temperature, dissolved oxygen (DO), and oxidation/reduction potential (ORP) will be measured until stabilized.

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Laboratory parameters for disposal samples will be determined by the disposal facility after an approved facility has been determined.

1.4 SAMPLING LOCATIONS

The RAWP provides the locations of soil borings, soil vapor points, indoor air/ambient air locations, and/or groundwater monitoring well locations that may be sampled as part of implementation of the remedy (as applicable).

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2. Project Organization and Responsibilities

This section defines the roles and responsibilities of the individuals who will perform the RAWP monitoring activities. A New York State Department of Health (NYSDOH)-certified analytical laboratory will perform the analyses of environmental samples collected at the Site.

2.1 PROJECT TEAM

The following project personnel are anticipated for oversight of the RAWP implementation. Project team resumes are included in Attachment A.

NYSDEC Case Manager	John Miller
NYSDOH Case Manager	Christopher Budd
Qualified Environmental Professional (QEP)	Mari C. Conlon, P.G.
Project Manager	Matthew Levy
Remedial Engineer (RE)	Scott A. Underhill, P.E.
Haley & Aldrich of New York* Health & Safety Director	Brian Fitzpatrick, CHMM
Health & Safety Officer (HSO)	Brian Ferguson
Quality Assurance Officer	Nicole Mooney
Third-Party Validator	Katherine Miller

**H & A of New York Engineering and Geology LLP (Haley & Aldrich of New York)*

2.2 MANAGEMENT RESPONSIBILITIES

The Project Manager is responsible for managing the implementation of the RAWP and monitoring and coordinating the collection of data. The Project Manager is responsible for technical quality control (QC) and project oversight. The Project Manager's responsibilities include the following:

- Acquire and apply technical and corporate resources as needed to ensure performance within budget and schedule restraints;
- Review work performed to ensure quality, responsiveness, and timeliness;
- Communicate with the client point of contact concerning the progress of the monitoring activities;
- Assure corrective actions are taken for deficiencies cited during audits of RAWP monitoring activities; and
- Assure compliance with the Site Construction Health and Safety Plan (CHASP).

2.3 QUALITY ASSURANCE RESPONSIBILITIES

The Quality Assurance (QA) Team will consist of a QA Officer and the Data Validation Staff. QA responsibilities are described as follows:

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2.3.1 QA Officer

The QA Officer reports directly to the Project Manager and will be responsible for overseeing the review of field and laboratory data. Additional responsibilities include the following:

- Assure the application and effectiveness of the QAPP by the analytical laboratory and the project staff;
- Provide input to the Project Manager as to corrective actions that may be required as a result of the above-mentioned evaluations; and

The QA Officer will be assisted by the Data Validation Staff in the evaluation and validation of field and laboratory-generated data.

2.3.2 Data Validation Staff

The Data Validation Staff will be independent of the laboratory and familiar with the analytical procedures performed. The validation will include a review of each validation criterion as prescribed by the guidelines presented in Section 9.2 of this document and will be presented in a Data Usability Summary Report (DUSR) for submittal to the QA Officer.

2.4 LABORATORY RESPONSIBILITIES

Laboratory services in support of the RAWP monitoring include the following personnel:

2.4.1 Laboratory Project Manager

The Laboratory Project Manager will report directly to the QA Officer and Project Manager and will be responsible for ensuring all resources of the laboratory are available on an as-required basis. The Laboratory Project Manager will also be responsible for the approval of the final analytical reports and adhering to the QAPP.

2.4.2 Laboratory QA Officer

The Laboratory QA Officer will have sole responsibility for the review and validation of the analytical laboratory data generated as part of the investigation. The Laboratory QA Officer will also define appropriate QA procedures, overview QA/QC documentation, and perform audits.

2.4.3 Laboratory Sample Custodian

The Laboratory Sample Custodian will report to the Laboratory Operations Manager and will be responsible for the following:

- Receive and inspect the incoming sample containers;
- Record the condition of the incoming sample containers;
- Sign appropriate documents;
- Verify the chain-of-custody (COC) and its correctness;

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- Notify the Project Manager and Operations Manager of sample receipt and inspection;
- Assign a unique identification number and enter each into the sample receiving log;
- Initiate transfer of samples to laboratory analytical sections; and
- Control and monitor access/storage of samples and extracts.

2.4.4 Laboratory Technical Personnel

The Laboratory Technical Personnel will have the primary responsibility for the performance of sample analysis and the execution of the QA procedures developed to determine the data quality. These activities will include the proper preparation and analysis of the project samples in accordance with the laboratory's Quality Assurance Manual (QAM) and associated Standard Operating Procedures (SOPs).

2.5 FIELD RESPONSIBILITIES

2.5.1 Field Coordinator

The Field Coordinator is responsible for the overall operation of the field team and reports directly to the Project Manager. The Field Coordinator works with the project HSO to conduct operations in compliance with the project Health and Safety Plan (HASP). The Field Coordinator will facilitate communication and coordinate efforts between the Project Manager and the field team members.

Other responsibilities include the following:

- Develop and implement field-related work plans, ensuring schedule compliance, and adhering to management-developed project requirements;
- Coordinate and manage field staff;
- Perform field system audits;
- Oversee QC for technical data provided by the field staff;
- Prepare and approve text and graphics required for field team efforts;
- Coordinate and oversee technical efforts of subcontractors assisting the field team;
- Identify problems in the field, resolve difficulties in consultation with the Project QA Officer and Project Manager, and implement and document corrective action procedures; and
- Participate in preparation of the final reports.

2.5.2 Field Team Personnel

Field Team Personnel will be responsible for the following:

- Perform field activities as detailed in the RAWP and in compliance with the Field Sampling Plan (FSP; Appendix A of the Remedial Investigation Work Plan [RIWP]) and QAPP.
- Immediately report any accidents and/or unsafe conditions to the Site HSO and take reasonable precautions to prevent injury.

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3. Sampling Procedures

The FSP in the NYSDEC-approved RIWP provides the SOPs for sampling required by the RAWP. Sampling will be conducted in general accordance with the NYSDEC Technical Guidance for Site Investigation and Remediation (Division of Environmental Remediation [DER]-10) and the "Sampling, Analysis and Assessment of PFAS under NYSDEC Part 375 Remedial Program" (April 2023) when applicable.

3.1 SAMPLE CONTAINERS

Sample containers for each sampling task will be provided by the laboratory performing the analysis. The containers will be cleaned by the manufacturer to meet or exceed the analyte specifications established in the USEPA's "Specifications and Guidance for Obtaining Contaminant-Free Sample Containers," April 1992, OSWER Directive #9240.0-0.5A.

Certificates of analysis for each lot of sample containers used during the sampling program will be maintained by the laboratory and will be available upon request. The appropriate sample containers, preservation method, maximum holding times, and shipping information for each target parameter and sampling task are provided in Table I.

3.2 SAMPLE LABELING

Each sample will be labeled with a unique sample identifier that will facilitate tracking and cross-referencing of sample information. Field blanks and field duplicate samples also will be numbered with a unique sample identifier to prevent analytical bias of field QC samples.

Refer to the FSP in the NYSDEC-approved RIWP for the sample labeling procedures.

3.3 FIELD QC SAMPLE COLLECTION

3.3.1 Field Duplicate Sample Collection

3.3.1.1 Soil Samples

Soil field duplicates will be collected as specified in the following procedure:

- Soil for VOC analysis will be removed from the sampling device as specified in the FSP provided as Appendix A of the RIWP.
- Soil for non-VOC analysis will be removed from the sampling device and collected into clean laboratory-provided containers.

3.3.1.2 Water Samples

Field duplicate samples will be collected by filling the first sample container to the proper level and sealing and then repeating for the second set of sample containers.

- The samples are properly labeled as specified in Section 3.2.

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- Steps 1 through 4 are repeated for the bottles for each analysis. The samples are collected in order of decreasing analyte volatility as detailed in Section 3.3.1.
- COC documents are executed.
- The samples will be handled as specified in Table I.

3.4 GENERAL DECONTAMINATION PROCEDURES

Care must be taken to minimize the potential for transfer of contaminated materials to the ground or onto other materials. Regardless of the size or nature of the equipment being decontaminated, the process will utilize a series of steps that involve removal of gross material (dirt, grease, oil, etc.), washing with a detergent, and multiple rinsing steps. In lieu of a series of washes and rinse steps, steam cleaning with low-volume, high-pressure equipment (i.e., steam cleaner) is acceptable.

Exploration equipment and all monitoring equipment in contact with the sampling media must be decontaminated prior to initiating Site activities, in between exploration locations to minimize cross-contamination, and prior to mobilizing off Site after completion of Site work.

The following specific decontamination procedure is recommended for sampling equipment and tools:

- Brush loose soil off equipment;
- Wash equipment with laboratory-grade detergent (i.e., Alconox or equivalent);
- Rinse with tap water;
- Rinse equipment with distilled water;
- Allow water to evaporate before reusing equipment; and
- Wrap equipment in aluminum foil when not being used.

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4. Custody Procedures

Custody is one of several factors necessary for the admissibility of environmental data as evidence in a court of law. Custody procedures help to satisfy the two major requirements for admissibility: relevance and authenticity. Sample custody is addressed in three parts: field sample collection, laboratory analysis, and final project files. Final evidence files, including all originals of laboratory reports, are maintained under document control in a secure area.

Custody of a sample begins when it is collected by or transferred to an individual and ends when that individual relinquishes or disposes of the sample. A sample is under custody if:

- The item is in actual possession of a person;
- The item is in the view of the person after being in actual possession of the person;
- The item was in actual possession and subsequently stored to prevent tampering; or
- The item is in a designated and identified secure area.

4.1 FIELD CUSTODY PROCEDURES

Field personnel will be required to keep written records of field activities on applicable pre-printed field forms, in a bound field notebook, or in an electronic format. The records provide the means of recording data collecting activities. Non-electronic records will be written legibly in ink and will contain pertinent field data and observations. Written entry errors or changes will be crossed out with a single line, dated, and initialed by the person making the correction. The records will be periodically reviewed by the Field Coordinator.

Each title page will include the field member's name, project name, project start date, project end date, and unique page number.

The beginning of each entry in the record will contain the following information:

- Date;
- Start time;
- Weather;
- Names of field personnel (including subcontractors);
- Level of personal protection used at the Site; and
- Names of all visitors and the purpose of their visit.

For each measurement and sample collected, the following information will be recorded:

- Detailed description of sample location;
- Equipment used to collect a sample or make a measurement, and the date the equipment was calibrated;
- Time sample was collected;

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- Description of the sample conditions;
- Depth sample was collected (if applicable);
- Volume and number of containers filled with the sample; and
- Sampler's identification.

4.1.1 Field Procedures

The data quality can be affected by sample collection activities. If the integrity of collected samples is questionable, the data, regardless of its analytical quality, will also be questionable. The following procedure describes the process to maintain the integrity of the samples:

- Upon collection, samples are placed in the proper containers. In general, samples collected for organic analysis will be placed in pre-cleaned glass containers, and samples collected for inorganic analysis will be placed in pre-cleaned plastic (polyethylene) bottles. Refer to the FSP in Appendix A of the RIWP for sample packaging procedures.
- Samples will be assigned a unique sample number and will be affixed to a sample label affixed to the sample container. Refer to the FSP in Appendix A of the RIWP for sample labeling procedures.
- Samples will be properly and appropriately preserved by field personnel in order to minimize loss of the constituent(s) of interest due to physical, chemical, or biological mechanisms.
- Appropriate volumes will be collected to ensure that the appropriate reporting limits can be successfully achieved and that the required QC sample analyses can be performed.

4.1.2 Transfer of Custody and Shipment Procedures

- A COC record will be completed at the time of sample collection and will accompany each shipment, identifying the contents of the shipment. The COC record will accompany the samples to the laboratory. The field personnel collecting the samples will be responsible for the custody of the samples until the samples are relinquished to the laboratory. Sample transfer will require the individuals relinquishing and receiving the samples to sign, date, and note the time of sample transfer on the COC record.
- Samples will be shipped or delivered in a timely fashion to the laboratory so that holding times and/or analysis times as prescribed by the methodology can be met.
- Soil and groundwater samples will also be transported in containers (coolers) packed with ice. Samples will be packaged for shipment and shipped to the appropriate laboratory for analysis. The samples will be packed to prevent breakage and movement during shipping. The number of coolers must be written on the COC. Samples in polyethylene containers will be placed upright directly in the sample cooler and limited to one layer of samples per cooler. Additional bubble wrap or packaging material will be added to fill the cooler. Shipping containers may be secured with strapping tape and/or custody tape for shipment to the laboratory.
- When samples are split with a regulatory agency and Site representatives, a separate COC will be prepared and marked to indicate with whom the samples are shared. The person relinquishing the samples to the regulatory agency or the Site will require the representative's signature acknowledging sample receipt.

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- If samples are sent by a commercial carrier, a bill of lading will be used. A copy of the bill of lading will be retained as part of the permanent record. Commercial carriers will not sign the custody record as long as the custody record is sealed inside the sample cooler and the custody tape remains intact.
- Samples will be picked up by a laboratory courier or transported to the laboratory the same day they are collected (and never longer than a one-day delay) unless collected on a weekend or holiday. In these cases, the samples will be stored in a secure location until delivery to the laboratory. Additional ice will be added to the cooler as needed to maintain proper preservation temperatures.

4.2 LABORATORY COC PROCEDURES

A full-time Sample Custodian will be assigned the responsibility of sample control. It will be the responsibility of the Sample Custodian to receive all incoming samples. Once received, the custodian will document that the custody tape on the coolers is unbroken, that each sample is received in good condition (i.e., unbroken, cooled, etc.), that the associated paperwork, such as COC forms, has been completed, and will sign the COC forms. In special cases, the custodian will document from appropriate sub-samples that the COC with proper preservation has been accomplished. The custodian will also document that sufficient sample volume has been received to complete the analytical program. The Sample Custodian will then place the samples into secure, limited-access storage (refrigerated storage, if required). The Sample Custodian will assign a unique number to each incoming sample for use in the laboratory. The unique number will then be entered into the sample-receiving log, with the verified time and date of receipt also noted.

Consistent with the analyses requested on the COC form, analyses by the laboratory's analysts will begin in accordance with the appropriate methodologies. Samples will be removed from secure storage with internal COC sign-out procedures followed.

4.3 STORAGE OF SAMPLES

Sample containers with volume remaining will be returned to secure and limited-access storage. Upon completion of all laboratory analyses for each sample submittal and generation of the laboratory report, samples will be stored by the Sample Custodian. The length of time that samples are held will be at least 30 days after reports have been submitted. Disposal of remaining samples will be completed in compliance with all federal, state, and local requirements.

4.4 FINAL PROJECT FILES CUSTODY PROCEDURES

The final project files will be the central repository for all documents with information relevant to sampling and analysis activities as described in this QAPP. The Haley & Aldrich of New York Project Manager will be the custodian of the project file. The project files, including all relevant records, reports, logs, field notebooks, pictures, subcontractor reports, and data reviews, will be maintained in a secured, limited-access area and under the custody of the Project Director or their designee.

The final project file will include the following:

- Project plans and drawings;

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- Field data records;
- Sample identification documents and soil boring/monitoring well logs;
- All COC documentation;
- Correspondence;
- References, literature;
- Laboratory data deliverables;
- Data validation and assessment reports;
- Progress reports and QA reports; and
- A final report.

The laboratory will be responsible for maintaining analytical logbooks, laboratory data, and sample COC documents, both hard copy and electronic. Raw laboratory data files and copies of hard copy reports will be inventoried and maintained by the laboratory for a period of six years, at which time the laboratory will contact the QA Officer regarding the disposition of the project-related files.

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5. Calibration Procedures and Frequency

This section describes procedures for maintaining the accuracy of all the instruments and measurement equipment, which will be used for conducting field tests and laboratory analyses. These instruments and equipment will be calibrated prior to each use or according to a periodic schedule.

5.1 FIELD INSTRUMENT CALIBRATION PROCEDURES

Field instruments will be used for real-time sample measurement during the sampling of all media and for health and safety monitoring, as described in the CHASP. On-site air monitoring for health and safety purposes may be accomplished using a vapor detection device, such as a photoionization detector (PID).

Field instruments will be calibrated prior to use, and the calibration will be verified, at a minimum, at the beginning of the day and/or the middle of the day.

Satisfactory completion of the pre-operation inspection will be noted on the Field Sampling Record, along with results of each field measurement.

5.2 LABORATORY INSTRUMENT CALIBRATION PROCEDURES

Calibration procedures for a specific laboratory instrument will consist of initial calibration, initial calibration verification, and continuing calibration verification. The Laboratory SOPs present the specific calibration procedures for each method of analysis. The SOP for each analysis performed in the laboratory describes calibration procedures, their frequency, acceptance criteria, and the conditions that will require calibration. In all cases, the initial calibration will be verified using an independently prepared calibration verification solution.

The use of materials of known purity and quality will be utilized for the analysis of environmental samples. The laboratory will carefully monitor the preparation and use of reference materials, including solutions, standards, and reagents, through well-documented procedures.

All solid chemicals and acids/bases used by the laboratory will be rated as “reagent grade” or better. All gases will be “high” purity or better. All Standard Reference Materials (SRMs) or Performance Evaluation (PE) materials will be obtained from approved vendors of the National Institute of Standards and Technology (NIST, formerly National Bureau of Standards), the USEPA Environmental Monitoring Support Laboratories (EMSL), or reliable Cooperative Research and Development Agreement (CRADA)-certified commercial sources.

All materials, including standards or standard solutions, will be dated upon receipt and will be identified by material name, lot number, purity or concentration, supplier, receipt/preparation date, recipient/preparer’s name, expiration date, and all other pertinent information.

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6. Analytical Procedures

Analytical procedures to be utilized for the analysis of environmental samples will be based on referenced USEPA analytical protocols and/or project-specific SOPs.

6.1 FIELD ANALYTICAL PROCEDURES

Field analytical procedures include the measurement of pH, temperature, ORP, DO, and specific conductivity during sampling of groundwater, and the qualitative measurement of VOCs during the collection of soil samples.

6.2 LABORATORY ANALYTICAL PROCEDURES

Laboratory analyses will be based on the USEPA methodology requirements promulgated in:

- "Test Methods for Evaluating Solid Waste," SW-846 EPA, Office of Solid Waste, and promulgated updates, 1986.

6.2.1 List of Project Target Compounds and Laboratory Detection Limits

The method detection limits (MDLs) studies are performed by the laboratories in accordance with the procedures established in the Code of Federal Regulations, Title 40, Part 136.

Laboratory parameters for soil samples are listed in the RAWP. Laboratory parameters for disposal samples will be determined by the disposal facility after an approved facility has been determined.

6.2.2 List of Method-Specific QC Criteria

The laboratory SOPs include a section that presents the minimum QC requirements for the project analyses. Section 7 references the frequency of the associated QC samples for each sampling effort and matrix.

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7. Internal Quality Control Checks

This section presents the internal QC checks that will be employed for field and laboratory measurements.

7.1 FIELD QUALITY CONTROL

Field QC is monitored and enforced by equipment calibration checks, QC samples, a review of QA/QC concerns in the field, and any corrective action(s) required. Haley & Aldrich of New York personnel familiar with the field protocols will perform these tasks. Compliance QC checks will be implemented during the investigations.

Field sampling precision, accuracy, and overall data quality will be evaluated using trip blanks, field blanks, equipment rinsate blanks, and potentially field duplicates and matrix spike (MS)/matrix spike duplicates (MSDs) as necessary.

7.1.1 Field Blanks

Internal QC checks will include analysis of field blanks to validate equipment cleanliness. Whenever possible, dedicated equipment will be employed to reduce the possibility of cross-contamination of samples.

7.1.2 Trip Blanks

Trip blanks will be prepared by the project laboratory using ASTM International (ASTM) Type II or equivalent water placed within pre-cleaned 40-milliliter (mL) VOC vials equipped with Teflon™ septa. Trip blanks will accompany each sample delivery group (SDG) of environmental samples collected for analysis of VOCs.

Trip blank samples will be placed in each cooler that stores and transports project samples that are to be analyzed for VOCs.

7.1.3 Equipment Blanks

Equipment blanks are prepared by pouring analyte-free water into, over, or pumping through the sampling device, collecting in a sample container, and transporting to the laboratory for analysis in the same manner as the environmental samples. Equipment blanks are used to assess the effectiveness of equipment decontamination procedures. One equipment blank sample per type of sampling equipment utilized may be collected at the initiation of each sampling event or when deemed necessary.

7.2 LABORATORY PROCEDURES

Procedures which contribute to maintenance of overall laboratory QA/QC include appropriately cleaned sample containers, proper sample identification and logging, applicable sample preservation, storage and analysis within prescribed holding times, and use of controlled materials.

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7.2.1 Field Duplicate Samples

The precision or reproducibility of the data generated will be monitored through the use of field duplicate samples. Field duplicate analysis will be performed at a frequency of one in 20 project samples.

Precision will be measured in terms of the absolute value of the relative percent difference (RPD) as expressed by the following equation:

$$RPD = [|R1-R2|/[(R1+R2)/2]] \; X \; 100\%$$

Acceptance criteria for duplicate analyses performed on solid matrices will be 100 percent, and aqueous matrices will be 35 percent (or the absolute difference rule was satisfied if detects were less than five times the reporting limit [RL]). RPD values outside these limits will require an evaluation of the sampling and/or analysis procedures by the project QA Officer and/or Laboratory QA Director. Corrective actions may include re-analysis of additional sample aliquots and/or qualification of the data for use.

7.2.2 Matrix Spike Samples

Ten percent of each project sample matrix for each analytical method performed will be spiked with known concentrations of the specific target compounds/analytes.

The amount of the compound recovered from the sample compared to the amount added will be expressed as a percent recovery. The percent recovery of an analyte is an indication of the accuracy of an analysis within the Site-specific sample matrix. Percent recovery will be calculated for MS/MSD samples using the following equation:

$$\%\ Recovery = \frac{Spiked\ Sample - Background}{Known\ Value\ of\ Spike} \; x\,100\%$$

If the QC value falls outside the control limits (Upper Control Limit [UCL] or Lower Control Limit [LCL]) due to sample matrix effects, the results will be reported with appropriate data qualifiers. To determine the effect a non-compliant MS recovery has on the reported results, the recovery data will be evaluated as part of the validation process.

7.2.3 Laboratory Control Sample Analyses

The laboratory will perform laboratory control sample (LCS) analyses prepared from SRMs. The SRMs will be supplied from an independent manufacturer and traceable to NIST materials with known concentrations of each target analyte to be determined by the analytical methods performed. In cases where an independently supplied SRM is not available, the LCS may be prepared by the laboratory from a reagent lot other than that used for instrument calibration.

The laboratory will evaluate LCS analyses in terms of percent recovery using the most recent laboratory-generated control limits.

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LCS recoveries that do not meet acceptance criteria will be deemed invalid. Analysis of project samples will cease until an acceptable LCS analysis has been performed. If sample analysis is performed in association with an out-of-control LCS sample analysis, the data will be deemed invalid.

Corrective actions will be initiated by the Haley & Aldrich of New York QA Officer and/or Laboratory QA Officer to investigate the problem. After the problem has been identified and corrected, the solution will be noted in the instrument run logbook, and re-analysis of project samples will be performed, if possible.

The analytical anomaly will be noted in the SDG Case Narrative and reviewed by the Data Validator. The Data Validator will confirm that appropriate corrective actions were implemented and recommend the applicable use of the affected data.

7.2.4 Surrogate Compound/Internal Standard Recoveries

For VOCs, surrogates will be added to each sample prior to analysis to establish purge and trap efficiency. Quantitation will be accomplished via internal standardization techniques.

The recovery of surrogate compounds and internal standards will be monitored by laboratory personnel to assess possible Site-specific matrix effects on instrument performance.

For SVOC analyses, surrogates will be added to the raw sample to assess extraction efficiency. Internal standards will be added to all sample extracts and instrument calibration standards immediately before analysis for quantitation via internal standardization techniques.

Method-specific QC limits are provided in the attached laboratory method SOPs. Surrogate compound/internal standard recoveries that do not fall within accepted QC limits for the analytical methodology performed will have the analytical results flagged with data qualifiers as appropriate by the laboratory and will not be noted in the laboratory report Case Narrative.

To ascertain the effect non-compliant surrogate compound/internal standard recoveries may have on the reported results, the recovery data will be evaluated as part of the validation process. The Data Validator will provide recommendations for corrective actions, including but not limited to additional data qualification.

7.2.5 Calibration Verification Standards

Calibration verification (CV) standards will be utilized to confirm instrument calibrations and performance throughout the analytical process. CV standards will be prepared as prescribed by the respective analytical protocols. Continuing calibration will be verified by compliance with method-specific criteria prior to additional analysis of project samples.

Non-compliant analysis of CV standards will require immediate corrective action by the project Laboratory QA Officer and/or designated personnel. Corrective action may include a re-analysis of each affected project sample, a detailed description of the problem, the corrective action undertaken, the person who performed the action, and the resolution of the problem.

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7.2.6 Laboratory Method Blank Analyses

Method blank sample analysis will be performed as part of each analytical batch for each methodology performed. If target compounds are detected in the method blank samples, the reported results will be flagged by the laboratory in accordance with SOPs. The Data Validator will provide recommendations for corrective actions, including but not limited to additional data qualification.

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8. Data Quality Objectives

Sampling that will be performed as described in the RAWP is designed to produce data of the quality necessary to achieve the minimum standard requirements of the field and laboratory analytical objectives described below. These data are being obtained with the primary objective of assessing levels of contaminants of concern associated with the Site.

The overall project data quality objective (DQO) is to implement procedures for field data collection, sample collection, handling, and laboratory analysis and reporting that achieve the project objectives. The following section is a general discussion of the criteria that will be used to measure the achievement of the project DQO.

8.1 PRECISION

8.1.1 Definition

Precision is defined as a quantitative measure of the degree to which two or more measurements are in agreement. Precision will be determined by collecting and analyzing field duplicate samples and by creating and analyzing laboratory duplicates from one or more of the field samples. The overall precision of measurement data is a mixture of sampling and analytical factors. The analytical results from the field duplicate samples will provide data on sampling precision. The results from duplicate samples created by the laboratory will provide data on analytical precision. The measurement of precision will be stated in terms of RPD. RPD is defined as the absolute difference of duplicate measurements divided by the mean of these analyses, normalized to a percentage.

8.1.2 Field Precision Sample Objectives

Field precision will be assessed through the collection and measurement of field duplicate samples at a rate of one duplicate per 20 investigative samples. The RPD criteria for the project field duplicate samples will be “plus or minus 100 percent for soil” and “plus or minus 35 percent for groundwater” for parameters of analysis detected at concentrations greater than five times the laboratory RL.

8.1.3 Laboratory Precision Sample Objectives

Laboratory precision will be assessed through the analysis of LCS and laboratory control sample duplicates (LCSD) and MS/MSD samples for groundwater and soil samples, and the analysis of laboratory duplicate samples for air and soil vapor samples. Air and soil vapor laboratory duplicate sample analyses will be performed by analyzing the same Summa® canister twice. The RPD criteria for the air/soil vapor laboratory duplicate samples will be “plus or minus 35 percent” for parameters of analysis detected at concentrations greater than five times the laboratory RL.

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8.2 ACCURACY

8.2.1 Definition

Accuracy relates to the bias in a measurement system. Bias is the difference between the observed and the "true" value. Sources of error are the sampling process, field contamination, preservation techniques, sample handling, sample matrix, sample preparation, and analytical procedure limitations.

8.2.2 Field Accuracy Objectives

Sampling bias will be assessed by evaluating the results of the field equipment rinse and trip blanks. Equipment rinse and trip blanks will be collected as appropriate based on sampling and analytical methods for each sampling effort.

If non-dedicated sampling equipment is used, equipment rinse blanks will be collected by passing ASTM Type II water over and/or through the respective sampling equipment utilized during each sampling effort. One equipment rinse blank will be collected for each type of non-dedicated sampling equipment used for the sampling effort. Equipment rinse blanks will be analyzed for each target parameter for the respective sampling effort for which environmental media have been collected.

Note: If dedicated or disposable sampling equipment is used, equipment rinse samples will not be collected as part of that field effort.

Trip blank samples will be prepared by the laboratory and provided with each shipping container, which includes containers for the collection of groundwater samples for the analysis of VOCs. Trip blank samples will be analyzed for each VOC for which groundwater samples have been collected for analysis.

8.3 LABORATORY ACCURACY OBJECTIVES

Analytical bias will be assessed through the use of LCS and Site-specific MS sample analyses. LCS analyses will be performed with each analytical batch of project samples to determine the accuracy of the analytical system.

One set of MS/MSD analyses will be performed with each batch of 20 project samples collected for analysis to assess the accuracy of the identification and quantification of analytes within the Site-specific sample matrices. Additional sample volume will be collected at sample locations selected for the preparation of MS/MSD samples so that the standard laboratory RLs are achieved.

The accuracy of analyses that include a sample extraction procedure will be evaluated through the use of system monitoring or surrogate compounds. Surrogate compounds will be added to each standard, blank, and QC sample prior to sample preparation and analysis. Surrogate compound percent recoveries will provide information on the effect of the sample matrix on the accuracy of the analyses.

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8.4 REPRESENTATIVENESS

8.4.1 Definition

Representativeness expresses the degree to which sample data represent a characteristic of a population, a parameter variation at a sampling point, or an environmental condition. Representativeness is a qualitative parameter that is dependent upon the design of the sampling program. The representativeness criterion is satisfied through the proper selection of sampling locations, the quantity of samples, and the use of appropriate procedures to collect and analyze the samples.

8.4.2 Measures to Ensure Representativeness of Field Data

Representativeness will be addressed by prescribing sampling techniques and the rationale used to select sampling locations. Sampling locations may be biased (based on existing data, instrument surveys, observations, etc.) or unbiased (completely random or stratified-random approaches).

8.5 COMPLETENESS

8.5.1 Definition

Completeness is a measure of the amount of valid (usable) data obtained from a measuring system compared to the total amount anticipated to be obtained. The completeness goal for all data uses is that a sufficient amount of valid data be generated so that determinations can be made related to the intended data use with a sufficient degree of confidence. Valid data is determined by independent confirmation of compliance with method-specific and project-specific DQOs. The calculation of data set completeness will be performed by the following equation.

$$\frac{Number\ of\ Valid\ Sample\ Results}{Total\ Number\ of\ Samples\ Planned} X\ 100 = \%\ Complete$$

8.5.2 Field Completeness Objectives

Completeness is a measure of the number of valid measurements obtained from measurements taken in this project versus the number planned. The field completeness objective for this project will be greater than 90 percent.

8.5.3 Laboratory Completeness Objectives

The laboratory data completeness objective is a measure of the amount of valid data obtained from laboratory measurements. The evaluation of the data completeness will be performed at the conclusion of each sampling and analysis effort.

The completeness of the data generated will be determined by comparing the amount of valid data, based on independent validation, with the total laboratory data set. The completeness goal will be greater than 90 percent.

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8.6 COMPARABILITY

8.6.1 Definition

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another.

8.6.2 Measures to Ensure Comparability of Laboratory Data

Comparability of laboratory data will be measured from the analysis of SRM obtained from either USEPA CRADA suppliers or NIST. The reported analytical data will also be presented in standard units of mass of contaminant within a known volume of environmental media. The standard units for various sample matrices are as follows:

- Solid Matrices – micrograms per kilogram (µg/kg) for PFAS analyses and milligrams per kilogram (mg/kg) of media (Dry Weight).
- Aqueous Matrices – nanograms per liter (ng/L) for PFAS analyses, micrograms per liter (µg/L) of media for organic analyses, and milligrams per liter (mg/L) for inorganic analyses.

8.7 LEVEL OF QUALITY CONTROL EFFORT

If non-dedicated sampling equipment is used, equipment rinse blanks will be prepared by field personnel and submitted for analysis of target parameters. Equipment rinse blank samples will be analyzed to check for potential cross-contamination between sampling locations that may be introduced during the investigation. One equipment rinse blank will be collected per sampling event to the extent that non-dedicated sampling equipment is used. If necessary, a separate equipment rinse blank sample will be collected for PFAS.

Note: If dedicated or disposable sampling equipment is used, equipment rinse samples will not be collected as part of that field effort.a

Trip blanks will be used to assess the potential for contamination during sample storage and shipment. Trip blanks will be provided with the sample containers to be used for the collection of groundwater samples for the analysis of VOCs. Trip blanks will be preserved and handled in the same manner as the project samples. One trip blank will be included along with each shipping container containing project samples to be analyzed for VOCs.

Method blank samples will be prepared by the laboratory and analyzed concurrently with all project samples to assess potential contamination introduced during the analytical process.

Field duplicate samples will be collected and analyzed to determine sampling and analytical reproducibility. One field duplicate will be collected for every 20 or fewer investigative samples collected for off-site laboratory analysis.

MS samples will provide information to assess the precision and accuracy of the analysis of the target parameters within the environmental media collected. One MS/MSD will be collected for every 20 or fewer investigative samples per sample matrix.

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Note: Soil MS/MSD samples require triple sample volume for VOCs only. Aqueous MS/MSD samples require triple the normal sample volume for VOC analysis and double the volume for the remaining parameters.

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9. Data Reduction, Validation, and Reporting

Data generated by the laboratory operation will be reduced and validated prior to reporting in accordance with the following procedures:

9.1 DATA REDUCTION

9.1.1 Field Data Reduction Procedures

Field data reduction procedures will be minimal in scope compared to those implemented in the laboratory setting. The pH, conductivity, temperature, turbidity, DO, ORP, and breathing zone VOC readings collected in the field will be generated from direct-read instruments. The data will be written into field logbooks immediately after measurements are taken. If errors are made, data will be legibly crossed out, initialed and dated by the field member, and corrected in a space adjacent to the original entry.

9.1.2 Laboratory Data Reduction Procedures

Laboratory data reduction procedures are provided by the appropriate chapter of the USEPA's "Test Methods for Evaluating Solid Waste," SW-846, Third Edition. Errors will be noted and corrections made with the original notations crossed out legibly. Analytical results for soil samples will be calculated and reported on a dry weight basis.

9.1.3 Quality Control Data

QC data (e.g., laboratory duplicates, surrogates, MS, and MSD) will be compared to the method acceptance criteria. Data determined to be acceptable will be entered into the laboratory information management system.

Unacceptable data will be appropriately qualified in the project report. Case Narratives will be prepared, which will include information concerning data that fell outside acceptance limits and any other anomalous conditions encountered during sample analysis.

9.2 DATA VALIDATION

Data validation procedures of the analytical data will be performed by the Haley & Aldrich of New York QA Officer or designee using the following documents as guidance for the review process:

- "U.S. EPA National Functional Guidelines for Organic Data Review," "Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15," "Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances Under NYSDEC's Part 375 Remedial Programs," and the "U.S. EPA National Functional Guidelines for Inorganic Data Review."
- The specific data qualifiers used will be applied to the reported results as presented and defined in the USEPA National Functional Guidelines. Validation will be performed by qualified personnel at the direction of the Haley & Aldrich of New York QA Officer. Tier 1 data validation (the equivalent of USEPA's Stage 2A validation) will be performed to evaluate data quality.

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- The completeness of each data package will be evaluated by the Data Validator. Completeness checks will be administered on all data to determine that the deliverables are consistent with the NYSDEC Analytical Services Protocol (ASP) Category A and Category B data package requirements. The validator will determine whether the required items are present and request copies of missing deliverables (if necessary) from the laboratory.

9.3 DATA REPORTING

Data reporting procedures will be carried out for field and laboratory operations as indicated below:

- Field Data Reporting: Field data reporting will be conducted principally through the transmission of report sheets containing tabulated results of measurements made in the field and documentation of field calibration activities.
- Laboratory Data Reporting: The laboratory data reporting package will enable data validation based on the protocols described above. The final laboratory data report format will include the QA/QC sample analysis deliverables to enable the development of a DUSR based on NYSDEC DER-10 Appendix 2B.

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10. Performance and System Audits

A performance audit is an independent quantitative comparison with data routinely obtained in the field or the laboratory. Performance audits include two separate, independent parts: internal and external audits.

10.1 FIELD PERFORMANCE AND SYSTEM AUDITS

10.1.1 Internal Field Audit Responsibilities

Internal audits of field activities will be initiated at the discretion of the Project Manager and will include the review of sampling and field measurements. The audits will verify that all procedures are being followed. Internal field audits will be conducted periodically during the project. The audits will include an examination of the following:

- Field sampling records, screening results, instrument operating records;
- Sample collection;
- Handling and packaging in compliance with procedures;
- Maintenance of QA procedures; and,
- COC reports.

10.1.2 External Field Audit Responsibilities

External audits may be conducted by the Project Coordinator at any time during the field operations. These audits may or may not be announced and are at the discretion of the NYSDEC. The external field audits can include (but are not limited to) the following:

- Sampling equipment decontamination procedures;
- Sample bottle preparation procedures;
- Sampling procedures;
- Examination of HASPs;
- Procedures for verification of field duplicates; and,
- Field screening practices.

10.2 LABORATORY PERFORMANCE AND SYSTEM AUDITS

10.2.1 Internal Laboratory Audit Responsibilities

The laboratory system audits are typically conducted by the Laboratory QA Officer or designee on an annual basis. The system audit will include an examination of laboratory documentation, including sample receiving logs, sample storage, COC procedures, sample preparation and analysis, and instrument operating records.

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At the conclusion of internal system audits, reports will be provided to the laboratory's operating divisions for appropriate comment and remedial/corrective action where necessary. Records of audits and corrective actions will be maintained by the Laboratory QA Officer.

10.2.2 External Laboratory Audit Responsibilities

External audits will be conducted as required by the NYSDOH or designee. External audits may include any of the following:

- Review of laboratory analytical procedures;
- Laboratory on-site visits; and/or,
- Submission of performance evaluation samples for analysis.

Failure of any of the above audit procedures can lead to laboratory de-certification. An audit may consist of, but not be limited to:

- Sample receipt procedures;
- Custody, sample security, and log-in procedures;
- Review of instrument calibration logs;
- Review of QA procedures;
- Review of log books;
- Review of analytical SOPs; and/or,
- Personnel interviews.

A review of a data package from samples recently analyzed by the laboratory can include (but not be limited to) the following:

- Comparison of the resulting data to the SOP or method;
- Verification of initial and continuing calibrations within control limits;
- Verification of surrogate recoveries and instrument timing results;
- Review of extended quantitation reports for comparisons of library spectra to instrument spectra, where applicable; and/or,
- Assurance that samples are run within holding times.

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11. Preventive Maintenance

11.1 FIELD INSTRUMENT PREVENTIVE MAINTENANCE

The field equipment preventive maintenance program is designed to ensure the effective completion of the sampling effort and to minimize equipment downtime. Program implementation is concentrated in three areas:

- Maintenance responsibilities;
- Maintenance schedules; and,
- Inventory of critical spare parts and equipment.

The maintenance responsibilities for field equipment will be assigned to the task leaders in charge of specific field operations. Field personnel will be responsible for daily field checks and calibrations and for reporting any problems with the equipment. The maintenance schedule will follow the manufacturer's recommendations. In addition, the field personnel will be responsible for determining that an inventory of spare parts will be maintained with the field equipment. The inventory will primarily contain parts that are subject to frequent failure, have limited useful lifetimes, and/or cannot be obtained in a timely manner.

11.2 LABORATORY INSTRUMENT PREVENTIVE MAINTENANCE

Analytical instruments at the laboratory will undergo routine and/or preventive maintenance. The extent of the preventive maintenance will be a function of the complexity of the equipment.

Generally, annual preventive maintenance service will involve cleaning, adjusting, inspecting, and testing procedures designed to reduce instrument failure and/or extend useful instrument life. Between visits, routine operator maintenance and cleaning will be performed according to the manufacturer's specifications by laboratory personnel.

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12. Specific Routine Procedures Used to Assess Data Precision, Accuracy, and Completeness

12.1 FIELD MEASUREMENTS

Field-generated information will be reviewed by the Field Coordinator and typically includes evaluation of bound logbooks/forms, data entry, and calculation checks. Field data will be assessed by the Project Coordinator, who will review the field results for compliance with the established QC criteria that are specified in Sections 7 and 8 of this QAPP. The accuracy of pH and specific conductance will be assessed using daily instrument calibration, calibration checks, and blank data. Accuracy will be measured by determining the percent recovery (% R) of calibration check standards. The precision of the pH and specific conductance measurements will be assessed on the basis of the reproducibility of duplicate readings of a field sample and will be measured by determining the RPD. The accuracy and precision of the soil VOC screening will be determined using duplicate readings of calibration checks. Field data completeness will be calculated using the following equation:

$$Completeness = \frac{Valid\ (usable)\ Data\ Obtained}{Total\ Data\ Planned} \ X\ 100$$

12.2 LABORATORY DATA

Laboratory data will be assessed by the Haley & Aldrich of New York QA Officer or designee, who will review the laboratory results for compliance with the established QC criteria that are specified in Sections 7 and 8 of this QAPP.

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13. Quality Assurance Reports

Critically important to the successful implementation of the QAPP is a reporting system that provides the means by which the program can be reviewed, problems identified, and programmatic changes made to improve the plan.

QA reports to management can include:

- Audit reports, internal and external audits with responses;
- Performance evaluation sample results, internal and external sources; and,
- Daily QA/QC exception reports/corrective actions.

QA/QC corrective action reports will be prepared by the Haley & Aldrich of New York QA Officer when appropriate and presented to the project and/or laboratory management personnel so that performance criteria can be monitored for all analyses from each analytical department. The updated trend/QA charts prepared by the Laboratory QA Personnel will be distributed and reviewed by various levels of the laboratory management.

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3. United States Environmental Protection Agency, (1993). Data Quality Objectives Process for Superfund Interim Final Guidance. U.S. EPA/540/R-93-071, Office of Solid Waste and Emergency Response (OSWER), September 1993.

4. United States Environmental Protection Agency, (1992). Specifications and Guidance for Contaminant-Free Sample Containers. OSWER Directive 9240.0-05A, April 1992.

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8. New York State Department of Environmental Conservation, NYSDEC Analytical Services Protocol (ASP), Bureau of Environmental Investigation, 1991 with updates.

9. New York State Department of Environmental Conservation, NYSDEC, Division of Environmental Remediation, Technical Guidance for Site Investigation and Remediation, DER-10, May 2010.

10. New York State Department of Environmental Conservation, NYSDEC, Division of Environmental Remediation, Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC Part 375 Remedial Program, April 2023.

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TABLE

TABLE I
SUMMARY OF ANALYSIS METHOD, PRESERVATION METHOD, HOLDING TIME, SAMPLE SIZE REQUIREMENTS, AND SAMPLE CONTAINERS
60 WILLIAM STREET DEVELOPMENT
58-60 WILLIAM STREET
NEWBURGH, NEW YORK

Analysis/Method[2]	Sample Type	Preservation	Holding Time	Volume/Weight	Container[3]
Volatile Organic Compounds/8260	Soil	1 - 1 Vial MeOH/2 Vial Water, Cool, 4 ± 2 °C	14 days[1]	120 mL	3 - 40ml glass vials
Semivolatile Organic Compounds/8270	Soil	Cool, 4 ± 2 °C	14 days extraction / 40 days analysis	250 mL	1 - 8 oz Glass
TAL Metals/6010	Soil	Cool, 4 ± 2 °C	180 days	60 mL	1 - 4 oz Glass
Pesticides/8081	Soil	Cool, 4 ± 2 °C	14 days extraction / 40 days analysis	250 mL	1 - 4 oz Glass
Polychlorinated Biphenyls/8082	Soil	Cool, 4 ± 2 °C	14 days extraction / 40 days analysis	250 mL	1 - 4 oz Glass
PFAS/1633	Soil	Cool, 4 ± 2 °C	28 days extraction / 40 days analysis	To be determined by laboratory	1 - HDPE container
1,4-Dioxane/8270 SIM	Soil	Cool, 4 ± 2 °C	14 days extraction / 40 days analysis	250 mL	1 - 8 oz Glass
PFAS/1633	Groundwater	Cool, 4 ± 2 °C	28 days extraction / 28 days analysis	To be determined by laboratory	2 - HDPE container

Notes:

1. Terracores and encores must be frozen within 48 hours of collection

2. Equivalent method can be used.

3. Volume may vary by laboratory and/or equivalent method.

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ATTACHMENT A
Resumes

HALEY ALDRICH

SCOTT A. UNDERHILL, PE

Principal | Senior Environmental Remediation Engineer

EDUCATION

MS, Environmental Engineering, State University of New York
BS, Civil Engineering, State University of New York

PROFESSIONAL REGISTRATIONS

1998/ NY: Professional Engineer (PE Reg. No. 075332)

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)
8-Hour Hazardous Waste Operations and Emergency Response Supervisor Training
Project Management Training
8-Hour Hazardous Waste Operations and Emergency Response Refresher

Scott has more than 25 years of experience as an environmental engineer. His diverse background includes the investigation, design, installation, and operation of remediation systems for soil, water, and air; design of water and wastewater treatment facilities; energy studies; and numerical modeling of environmental media. Scott has worked for federal, state and industrial clients throughout the United States, most recently working on the remediation of contaminated sites, such as manufactured gas plant (MGP) and chlorinated solvent, in the Northeast and Midwest.

RELEVANT PROJECT EXPERIENCE

NiSource, former MGP remediation, Michigan City, Indiana. Scott was the lead design engineer for remediation at a former MGP that consists of the installation of two soil mix walls as a support of excavation to protect adjacent active gas and railroads; ISS of 10,000 cubic yards of soil to depths of 16 feet; and removal and off-site disposal of 4,000 cubic yards of impacted soils. Engineering services included developing a full set of design drawings and specifications and providing oversight during construction; working to develop engineering solutions to changes in field conditions; and documenting remediation activities in a construction completion report.

New York State Electric and Gas (NYSEG), former MGP remediation, Seneca Falls, New York. Scott was the engineer-of-record for the remedial design of a former MGP that consists of the removal and off-site disposal of 2,100 cubic yards of impacted sediment from the Seneca River, ISS of 4,000 cubic yards of impacted upland soil, removal and off-site disposal of 3,600 cubic yards of impacted soil, installing a soil cover system, dewatering during excavation, and restoration of site including sediment and riverbank replacement. Engineering services also included obtaining permits for work such as river work permits from the U.S. Army Corps of Engineers and New York State Department of Environmental Conservation (NYSDEC) and providing technical support to the client during public meetings and the bid phase.

New Jersey Natural Gas, Former MGP Remediation, Toms River, New Jersey. Construction project manager for the construction inspection oversight of a former MGP that consists of the removal and off-site disposal of 6,800 cubic yards of impacted soils, dewatering during excavation that produced over 12,000,000 gallons of water to handle, treat and dispose, and in situ solidification (ISS) of 85,000 cubic yards of soil to depths of 45 feet. Engineering oversight services provided during construction included attending weekly meetings, reviewing contractor submittals, issuing field orders and work change directives, reviewing and responding to change order requests, developing change orders, responding to request for information, and documenting remediation activities in a remedial action report.

Duke Energy, Former MGP Remediation, Cincinnati, Ohio. Lead design engineer for a design/build remediation project at a former MGP that consists of the removal and off-site disposal of 75,000 cubic yards of impacted soils, dewatering during excavations, and ISS of over 150,000 cubic yards of soil to depths of 60 feet below ground surface. Engineering services provided during construction included weekly engineering calls, working with contractor to

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develop engineering solutions to changes in field conditions, reviewing contractor submittals, issuing field orders, developing change orders, and documenting remediation activities in a construction completion report.

AEP, Former MGP Remediation, Three Rivers, Michigan. Lead design engineer for a design/build remediation project at a former manufactured gas plant (MGP) that consists of the installation of a four-cell sheeting system, installation and operation of a dewatering system that removed and discharged 420,000 gallons of water, and removal and off-site disposal of 5,400 cubic yards of impacted soils. Engineering services included developing full set of design drawings and specifications and provided engineering oversight during construction included weekly engineering calls, working to develop engineering solutions to changes in field conditions, and documenting remediation activities in a construction completion report.

American Electric Power, Former MGP Remediation, Dowagiac, Michigan. Lead design engineer for a design/build remediation project at a former manufactured gas plant (MGP) that consists of the removal and off-site disposal of 1,000 tons of impacted soils. Engineering services included developing full set of design drawings and specifications and provided engineering oversight during construction included weekly engineering calls, working to develop engineering solutions to changes in field conditions, and documenting remediation activities in a construction completion report.

New York State Energy and Gas, Former MGP Remediation, Lockport, New York. Project manager for the remedial design of a former MGP that consists of the removal of 4,000 cubic yards of impacted soils, overburden non-aqueous phase liquid (NAPL) collection trench, 600 linear feet of bedrock grout wall, bedrock NAPL collection wells and the removal of 1,200 cubic yards of impacted sediment from the NYS Barge Canal. Design required submission of work plan, pilot test for grout wall implementation, and New York State Department of Environmental Conservation (NYSDEC) approval of final design drawing, report and specifications. Program director for the engineering oversight services provided during construction which included attending weekly meetings, reviewing contractor submittals, reviewing and approving change orders, responding to request for information, and certifying the construction completion report.

New York State Energy and Gas, Former MGP Remediation, Norwich, New York. Project manager for design and construction management, including design of an ISS system of 52,000 cubic yards of soil and NAPL recovery, in situ chemical oxidation (ISCO) and enhanced in situ bioremediation systems for the off-site groundwater plume. Scott managed preparation of work plans for submission to the NYSDEC and on-site construction management services during remediation of the on-site ISS services. Scott managed the operation and maintenance of the NAPL recovery system from 2009-2016 which resulted in the recovery of almost 100,000 gallons of total fluids or 40,000 gallons of NAPL. Due to the large quantities of NAPL encountered off-site, initiated and obtained NYSDEC approval in 2015 for a modification to the Record of Decision to all for ISS of the off-site soils rather than NAPL recovery and ISCO. Program director for the design package for the ISS treatment of 11,500 cubic yards of soil and NAPL.

New York State Energy and Gas, Former MGP Remediation, Ithaca, New York. Project manager for remedial design of a former MGP plant that consisted of the removal of 11,000 tons of impacted soils within sheet piling down to a depth of 18 feet, temporary relocation of a sewer main, and three injection events for in situ chemical oxidation (ISCO) treatment of coal tar stringers. Design requires submission of work plan, pilot test for ISCO implementation, and NYSDEC approval of final design drawing, report and specifications. Program director for the engineering oversight services provided during construction which included attending weekly meetings, reviewing contractor submittals, reviewing and approving change orders, responding to request for information, and certifying the construction completion report.

New York State Department of Environmental Conservation, New York. Program manager of three standby engineering services contracts issued by the NYSDEC for the investigation, design, construction oversight, and site management of inactive hazardous waste sites within New York. Responsible for overall program management, including budgeting, schedule and quality deliverable to the NYSDEC for over 100 individual work assignments valued at over $35,000,000, which was managed by a team of over 12 project managers. As required, acted as engineer-of-

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record for many sites, which required approval of feasibility studies, remedial designs, construction completion reports, and periodic review reports.

United States Army Corps of Engineers, Former Scotia Naval Depot, Scotia, New York. Project manager for the design and installation of a 900-foot-long, 45-foot-high and 0.25-foot-thick permeable reactive barrier (PRB) wall containing zero valent iron. The PRB was installed to treat a chlorinated solvent groundwater plume. In addition, four large commercial buildings (80,000 square feet) over a portion of the groundwater plume were fitted with sub-slab depressurization systems to mitigate indoor air concerns. As project manager, Scott was responsible for project deliverables, costs, schedule and quality for the $10MM remediation project.

New York State Department of Environmental Conservation, Scotia New York. Remedial design lead and engineer of record for the development and issuance of two feasibility studies (on-site and off-site) for a large, complex inactive hazardous waste site. An estimated 7,000 gallons of tetrachloroethylene (PCE) released to the environment created a groundwater plume almost ¾ mile in length and impacting numerous residential supply wells. The on-site feasibility study evaluated remedial technologies selecting excavation and in situ thermal treatment for a present worth cost of $14,000,000. The off-site feasibility study selected ISCO/bioremediation and downgradient permeable reactive barrier wall to treat the plume with concentrations greater than 100 μg/L with a present worth cost of $13,000,000. Also designed an aeration system as an interim remedial measure to treat PCE impacts to local surface water detention pond and stream.

New York State Department of Environmental Conservation, Scotia New York. Project manager for the design and construction oversight of the installation of water line to a residential neighborhood affected by a PCE plume. The design consisted of engineering calculations, basis of design, drawings, and specifications for the installation of 8,800 linear feet of water main and 100 residential connections. Construction services included reviewing contractor submittals and invoices, overseeing contractor work, responding to request for information and attending weekly construction meetings.

New York State Energy and Gas, Former MGP Remediation, Homer, New York. Project manager for design and construction management, including design of a permanent watertight barrier wall system, in situ stabilization system within the utility corridor and a temporary water treatment plant as part of the remediation of 25,000 cubic yards of soil. Scott managed preparation of work plans for submission to the NYSDEC and on-site construction management services during remediation. Scott managed air monitoring, scheduling of trucks for off-site disposal of impacted soil, and preparation of daily reports and a final closure report.

New York State Energy and Gas, Former MGP Remediation, Mechanicville, New York. Project manager for design and construction management, including the design of a temporary watertight barrier wall system and temporary water treatment system as part of a remediation of 10,000 cubic yards of soil. The project also included the evaluation and development of alternatives for the recovery of coal tar contamination in the fractured bedrock underlying the site, which included performing multiple long-term NAPL recovery pump tests. Project manager for the engineering oversight services provided during construction which included attending weekly meetings, reviewing contractor submittals, reviewing and approving change orders, responding to request for information, and certifying the construction completion report.

New York State Department of Environmental Conservation, Poughkeepsie, New York. Engineer of record for the design and construction oversight of the thermal treatment of soil and groundwater at an inactive hazardous waste site impacted with chlorinated solvents. The design consisted of engineering calculations, basis of design, drawings, and specifications for the installation 100 electrodes to treat the 0.5-acre plume. Construction services included reviewing contractor submittals and invoices, overseeing contractor work, responding to request for information and attending regular construction meetings.

New York State Department of Environmental Conservation, Poughkeepsie, New York. Project engineer for the design and implementation of a full-scale pilot test of in situ enhanced bioremediation to treatment of soil and

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groundwater at an inactive hazardous waste site impacted with chlorinated solvents. The pilot study consisted of direct injection of approximately 4,150 gallons of 60% edible vegetable oil (EVO) and 7,825 pounds zero-valent iron (ZVI) at 75 points. Scott managed development of design and bid package, selected and oversaw injection contractor, and reviewed follow-on sampling reports.

United States Army Corps of Engineers, Griffiss Air Force Base, Rome, New York. Project engineer for land farming treatment of over 50,000 cubic yards of petroleum impacted soils. Activities included design of a land farming approach in a performance based contract to successfully remediate the soils within a three-year contract period. Due to an aggressive remediation approach, all soils were remediated within two years.

New York State Electric and Gas, Cortland Homer Manufactured Gas Plant Demolition Procurement, Homer, New York. Project manager for procuring a contractor to demolish the southern portion of the MGP building as defined by the demolition drawings. Work included developing a request for proposal with final demolition drawings, specifications, and bid schedule and overseeing successful completion of the building demolition.

New York State Energy and Gas, Former MGP Remediation, Oneonta, New York. Project engineer for the design of temporary water treatment system as part of the remediation of a former MGP site.

US Air National Guard, Site Management and Project Close-Out for Site 2 – Pesticide Burial Pit, Stewart ANGB, Newburg, New York. Project manager for preparation of a site management plan (SMP) and periodic review report (PRR) for Site 2 - Pesticide Burial Pit Area at the 105th Airlift Wing (AW), New York Air National Guard (ANG), and Stewart International Airport. Due to negotiations with the NYSDEC, Site 2 was delisted.

US Air National Guard, Remedial Design and Remedial Action, Site 15, Hancock ANGB, New York. Project engineer for the bioremediation of a petroleum groundwater plume. The project included the design, installation and operation of a 15 well biosparing system for the on-site source area and the injection of calcium peroxide for the downgradient plume. Responsible for the remedial action work plan, construction completion report and annual periodic review reports.

US Air National Guard, Interim Remedial Action and Focused Feasibility Study, Sites 3 and 6, Stratton ANGB, New York. Project manager for an interim remedial measure and focused feasibility study at Site 3 contaminated with chlorinated solvents, and Site 6 contaminated with petroleum hydrocarbons. At Site 6, managed removal of 6,200 tons of contaminated soil, installation of a horizontal well network below the water table, and injection of a substrate into the groundwater to enhance biodegradation of the contaminants. At Site 3, managing removal of 600 tons of contaminated soils from four hot spots, delineation of the nature and extent of groundwater contamination by installing and sampling new wells.

BP, Pilot-Scale Soil Thermal Treatment, Rumaila, Iraq. Primary author of a pilot scale work plan for the treatment of heavily-impacted soils at the Rumaila Well Field. Work plan included the evaluation of several thermal desorption units capable of being shipped to the location, transportation logistics, compound design for placement of the unit and utility requirements to operate the TDU.

Confidential Client, Lagoon Biocell Design, Maybrook, New York. Project engineer for the design of a membrane lined biocell for the treatment of 25,000 cubic yards of soils impacted with petroleum and pyridine compounds associated with former waste lagoons. Design also included the use of enhanced bioremediation for the contaminants of concern in groundwater. Scott managed development of a design in accordance with the remedial design and remedial action framework developed by the United States Environmental Protection Agency (USEPA).

Chevron, Malabalay Remediation Project, Philippines. Project engineer for remedial design sub-slab depressurization system and vapor barrier for the redevelopment of a gasoline station for a Jolibee Store in Malabalay. Project was completed within budget and on-time given challenging field conditions.

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Confidential Client, Solid Waste Disposal Area, Kisladag, Turkey. Project engineer responsible for the development of a feasibility study to evaluate 1,250 cubic meters of petroleum impacted soil as a waste storage area at an active mining facility in Turkey. Remedial alternatives evaluated included land farming, windrow composting, bioremediation in piles, in situ solidification, and capping.

Chevron, Remedial Design and construction Oversight, Service Station/Residential House, Manila, Philippines. Project engineer for the design and implementation of a sub-slab barrier system and vapor collection system at a residential home downgradient from a gas station. Travelled to site to oversee installation and quality control of the first sub-slab barrier system to be installed in the Philippines. Project was recognized by Chevron for being completed with zero accidents.

BEM Systems, Remedial Design and Remedial Action, Site 6, Schenectady ANGB, New York. Project manager for the design and implementation of the in situ chemical oxidation of chlorinated hydrocarbon impacted groundwater at Site 6. Project included supporting the development and issuance of the Record of Decision (ROD), submission and approval of the remedial design and implementation of the injection of sodium permanganate to treat the residual groundwater plume at Site 6.

Navy, Light Non-Aqueous Phase Liquid (LNAPL) Modeling Effort, Pearl Harbor, HI. Provided technical support for investigation and modeling of several large LNAPL plumes at the Shipyard GSA at Pearl Harbor. The modeling effort included applying the van Genuchten method to properly estimating the LNAPL plume size, volume, distribution, transport, and potential release to the harbor.

New York State Department of Environmental Conservation, Remediation System Installation, National Heatset Printing, East Farmingdale, New York. Project engineer supporting the installation and evaluation of a pilot study evaluating the use of an innovative technology - density driven convection (DDC) and in-well stripping – for the treatment of a large chlorinated solvent plume in a sandy aquifer on Long Island.

NYSDEC, Remedial Design and Construction Oversight, North East Alloy and Metals Site, Utica, New York. Project engineer for the design of a sub-slab depressurization system (SSDS) at a residential house above a chlorinated solvent plume. The design utilized two fans and six vacuum points installed over a concrete slab. Oversaw contractor's installation of the system including sealing of the concrete floor cracks and documented installed system met the performance requirements of the design.

Confidential Client, Remediation System Pilot Study and Evaluation, Schenectady, New York. Project engineer responsible for technical evaluation and comparison of a traditional and an innovative thermal enhanced soil vapor extraction system below a concrete slab. The innovative thermal enhanced soil vapor extraction (TESVE) system removed over 99.99% of the volatile compounds and over 96% of the semi volatile compounds in the unsaturated zone and outperformed the traditional TESVE system.

NYSDEC, Remedial Design and Construction Oversight, Utility Manufacturing Site, New Hampstead, New York. Project engineer for the design of nine SSDSs at three industrial buildings above a chlorinated solvent plume. The design utilized 30 fans and 30 vacuum points installed over a concrete slab. Oversaw contractor's installation of the system and documented that the installed system met the performance requirements of the design.

NYSDEC, Remediation System Optimization, Multiple Sites, New York. Provided technical support for the optimization and improvements of a number of remediation systems currently operated under the NYSDEC contract (D004445). System evaluations and improvements included the Becker Electronic pump-and treat system; NOW Corporation pump-and-treat system; SMS Industries biosparge (PhoSTER) system; Kingsbury Landfill pump and treat system, Fort Edward phytoremediation system; and Korkay soil vapor extraction/air sparging system.

NYSDEC, Site Management, Multiple Sites, New York. Provided technical support, final review and engineering certification for periodic reviews on the following sites: Armonk; Becker Electronics; Dzus Fasteners; Fort Edward Landfill; Kingsbury Landfill; Korkay; Liberty Industries; Now Corporation; Old Agway; ServeAll; and SMS Industries.

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NYSDEC, Remedial Design, BB&S Treated Lumber Site, Southampton, New York. Project engineer reviewing preliminary design concepts of the groundwater remedy selected in the ROD for this former wood pressure treating site. The site was contaminated primarily with chromium, which was associated with the former wood preservative chromated copper arsenate (CCA). Using results from the pre-design investigations, prepared a Supplemental Feasibility Study (FS) that formed the basis for NYSDEC to amend the ROD for the site. The Amended ROD revised the groundwater remedy for the site from groundwater pump and treat to providing an alternative water-supply to authorized homes and businesses, and ongoing monitoring of plume attenuation.

New York State Department of Environmental Conservation, Construction Oversight, Freeman's Bridge Site, Scotia, New York. Quality assurance/quality control (QA/QC) manager for the certification report of completion for the remediation of contaminated soils using low-temperature thermal desorption at the 34 Freeman's Bridge Road site.

New York State Office of General Services (NYSOGS), Remediation System Optimization, Multiple Sites, New York. Provided technical support for optimization and improvements of a number of remediation systems operated under the NYSOGS contract. System evaluations and improvements included the Bedford Hills pump-and-treat system and the Highland Residential pump-and-treat system.

Bank of New York, Brownfield Remediation Monthly Site Visits, Flushing, New York. Project manager for periodic site visits to review progress of work performed by Creamer Environmental, Inc., the remedial contractor working on behalf of Muss Development. Scott managed the review of the remedial progress in relation to the proposed schedule, budget, and New York State Department of Environmental Conservation approved work plans. Scott managed preparation of a site observation report with information pertaining to construction status; permits, tests, and certifications; subcontracts; change orders; and contractor's completion schedule.

Remediation System Design, Fort Drum Military Reservation, New York. Scott designed a 150-well multiphase extraction and air sparging system for remediation of a 200,000-gallon gasoline-contaminated area and oversaw installation, start-up, and operation of the complex remedial systems.

Solvent Site Remediation, Batavia, New York. Scott designed and implemented injection of whey powder solution for the bioremediation of a chlorinated solvent site.

Railyard, Oneonta, New York. Scott designed, installed, and operated two 8-well soil vapor extraction and air sparging system at an industrial facility.

Railyard Site, North Creek, New York. Scott implemented an innovative application of Fenton's reagent to remediate diesel-contaminated soil at a historic railyard. Was awarded an Engineering Excellence Award by the American Consulting Engineering Council.

Toluene Site, Pittsburgh, Pennsylvania. Scott optimized a 20-well soil vapor extraction and air sparge system at an industrial facility in an urban area.

Town of Windham, Wastewater Treatment Plant, Windham, New York. Scott designed a new 250,000-gpd wastewater treatment plant that used tertiary filtration, microfiltration, and ultraviolet disinfection.

Ski Windham, Wastewater Treatment Plant, Windham, New York. Scott designed tertiary filtration, microfiltration, and ultraviolet disinfection for a treatment plant upgrade.

Wastewater Treatment Plant Upgrade, Endicott, New York. Scott designed solids contact tanks, secondary clarifiers, ultraviolet disinfection system, and pumping station as part of the upgrade of the 10-mgd wastewater treatment plant.

New York State, Gas-to-Energy Studies, New York. Scott evaluated the potential of using landfill gas from Colonie Landfill at Mohawk Paper mills boilers.

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New York State, Sludge-to-Energy Study, Glens Falls, New York. Scott evaluated the potential of using dried paper sludge from a paper manufacturer as feed material and energy source at a cement kiln.

Groundwater and Soil Vapor Treatment, Pease AFB, NH, and Loring AFB, Maine. Scott designed, installed, and operated in-situ treatment systems at the former bases, including two groundwater pump-and-treat systems, four soil vapor extraction and air sparging systems, and 16 bioventing systems.

Hydrocarbon Cleanup, Pease AFB, New Hampshire. Scott evaluated and implemented the use of natural attenuation to remediate more than 60 petroleum hydrocarbon plumes.

Remedial Action, Loring AFB, Maine. Field engineer responsible for eight remedial actions including oversight of three subcontractors.

Oak Ridge National Laboratory, RI Report, Oak Ridge, Tennessee. Scott prepared remedial investigation report for a radioactive waste burial.

Radioactive Waste Disposal Sitting Study, Nebraska. Scott provided hydrologic modeling support for the safety analysis and license application permit for siting a low-level radioactive waste disposal site.

PUBLICATIONS

"Subsurface Solution," with C.H. Floess, T. Blazicek, M. Thorpe, S. McDonough and R. Doshi, *American Society of Civil Engineering Magazine*, pp. 76-81,86. September 2012.

"In Situ Chemical Oxidation of Saturated and Unsaturated Petroleum-Containing Soils at a Historic Railroad Site," with A.R. Vitolins, B.R. Nelson, L.M. Thomas, *Contaminated Soil Sediment and Water, International Issue*, pp. 38-40, 2001.

"Development and Application of a Geographically-Based Groundwater Flow and Solute Transport Model," Master's Thesis, State University of New York at Buffalo, 1993.

INVITED LECTURER OR SPEAKER

"Developing a Water Supply System in Rural Haiti," Albany, New York Celebration of Engineer's Week. February 16, 2012.

"Remediation of a Former MGP Site in Norwich, New York: A Case Study," with C. Floess and T. Blazicek, 27th Annual Conference on Contaminated Soils, Amherst, Massachusetts, October 17-20, 2011.

"Developing a Water Supply System in Rural Zimbabwe,". Albany, 7 June 2016, New York Celebration of Engineer's Week. February 15, 2008.

"Remediation of Petroleum-Containing Soil and Groundwater at a Former Rail Yard Locomotive Fueling Area," with S. Compston, B.R. Nelson, L.M. Thomas, 20th Annual Conference on Contaminated Soils, Amherst, Massachusetts, October 18-21, 2004.

"Optimization of an LNAPL Recovery System Based on the Observational Approach," with S. Taylor and A. Ditto, ASCE International Water Resources Engineering Conference in Seattle, Washington, August 8-11, 1999.

"Natural Attenuation of 60 Petroleum Groundwater Plumes at Pease Air Force Base, New Hampshire, USA," with S. Szojka and J. Flagg, 6th FZK/TNO International Conference on Contaminated Soils, Edinburgh, Scotland. May 17-21, 1998.

"Bioremediation of Petroleum Contaminated Soils at Loring Air Force Base, Maine," with P. Forbes and J.A. Mueller, Fourth International Conference on Bioremediation, New Orleans, Louisiana, April 28-May 2, 1997.

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"Expedited CERCLA Removal Actions at Loring AFB," with T.R. Wood, D. St. Peter, D.S. Hopkins and J.A. Mueller, Maine. 11th Annual Conference on Contaminated Soils, Amherst, Massachusetts, October 21-24, 1996.

"Innovative Investigative Technique for Characterization of Radioactive Disposal Trenches," with J.B. Cange and S.A. Blair, Superfund XVI Conference, Washington D.C., November 6-8, 1995.

"Development of a Geographically Based Groundwater Flow and Solute Transport Model," with S.W. Taylor and J.V. DePinto, ASCE International Groundwater Symposium, San Antonio, Texas, August 14-18, 1995.

"Modeling Surface Water Flow and Contaminant Flux from a Mixed Waste Burial Ground," with R.A. Lambert and J.B. Cange, 21st Environmental Symposium. San Diego, California, April 18-21, 1995.

"Who's Taking Out the Garbage?", ASCE Environmental Engineering Division Conference. Reno, Nevada, July 6-10, 1991.

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MARI C. CONLON

Senior Client Account Manager

EDUCATION

MS, Geology, Boston College

BS, Geology with a minor in Economics and Business, Lafayette College

PROFESSIONAL REGISTRATIONS

NY: Professional Geologist (License No. 000769)

PROFESSIONAL SOCIETIES

Big Apple Brownfield Awards, Co-Chair, 2018-2022

Big Apple Brownfield Awards Nomination Committee, 2016-2025

New York City Brownfield Partnership Executive Board, 2021-2025

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)

10-Hour OSHA Construction Safety

8-Hour OSHA Supervisor of Hazardous Waste (29 CFR 1910.120 & 29 CFR 1926.65)

Mari is a senior client account manager with experience in soil, groundwater and soil vapor investigation and a focus on remedial design and implementation. She is also experienced in completion of numerous Phase I Environmental Site Assessments and Phase II Environmental Site Investigations, site characterization, hazardous materials analysis, regulatory closure reports as well as remedial design and implementation.

Mari has experience in composing site closure documentation including Remedial Closure Reports and Noise Installation Reports reviewed by the Office of Environmental Remediation as well as Final Engineering Reports and Site Management Plans reviewed by the New York State Department of Environmental Conservation. Mari has also worked on city rezoning proposals by performing work associated with and composing the Hazardous Materials Analysis chapter included in Final Environmental Impact Statements published by New York City Department of Planning. Analysis methods were performed in accordance with the City Environmental Quality Review (CEQR) guidelines for neighborhoods including East New York, Brooklyn, Jerome Avenue, Brooklyn, Inwood, and Manhattan.

Mari has managed the investigation, remedial design, remediation and closeout of multiple inactive Resource Conservation and Recovery Act (RCRA) hazardous waste sites, New York State Superfund sites and petroleum spill case sites. Her background includes developing and complying with approved site management plans overseeing the operation and maintenance of on-site engineering controls, such as soil vapor extraction systems, sub-slab depressurization systems, product recovery systems, etc., and ensuring the protection of human health and the environment.

RELEVANT PROJECT EXPERIENCE

State and City Agencies

School Construction Authority, Waste Characterization and Excavation Materials Disposal Plan, Brooklyn, New York. Project manager for consulting services for New York Public School 127. Services included composition of an Excavated Materials Disposal Plan, collection of waste characterization samples and preparation of and preparation of a findings and recommendations report.

Department of City Planning, Rezoning Environmental Impact Statement, Bronx, New York. Project lead for analysis and composing the Hazardous Materials Chapter as per City Environmental Quality Review (CEQR) Technical Manual guidelines included in the Final Environmental Impact Statement (FEIS) for an approximately 92-block area primarily along Jerome Avenue and its east-west commercial corridors in the Bronx. The review assessed the potential for the

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presence of hazardous materials in soil and/or groundwater at both the projected and potential development sites identified in the reasonable worst-case development scenario under the proposed East New York Rezoning Proposal. Procedures involved site inspections and review of historic Sanborn fire insurance maps, city directories and city/state regulatory databases. The assessment identified that each of the 146 projected and potential development sites has some associated concern regarding environmental conditions. As a result, the proposed zoning map actions include (E) designations (E-366) for all privately-held projected and potential development sites.

Department of City Planning, Rezoning Environmental Impact Statement, Brooklyn, New York. Project lead for performance analysis and composing the Hazardous Materials Chapter as per CEQR Technical Manual guidelines included in the FEIS for an approximately 190-block area of East New York, Cypress Hills, and Ocean Hill neighborhoods of Brooklyn, New York. The review assessed the potential for the presence of hazardous materials in soil and/or groundwater at both the projected and potential development sites identified in the reasonable worst-case development scenario under the proposed East New York Rezoning Proposal. Procedures involved site inspections and review of historic Sanborn fire insurance maps, city directories and city/state regulatory databases. The assessment identified that each of the 186 projected and potential development sites has some associated concern regarding environmental conditions. As a result, the proposed zoning map actions include (E) designations (E-366) for all privately-held projected and potential development sites.

Redevelopment and Remediation

Titan Equity Group, Hotel Redevelopment, Bronx, New York. Project manager for a hotel redevelopment in the south Bronx. The site has been assigned New York City Office of Environmental Remediation (NYC OER) E-Designation status for hazardous materials, noise, and air quality. Services included completion of a remedial investigation, composition of a Remedial Investigation Report and development of Hazardous Material Remedial Action Work Plan and Air Quality/Noise Remedial Action Plan as per NYC OER requirements.

The Related Companies, Chelsea Mixed-Use Redevelopment, New York, New York. Field geologist for oversight of the remediation of a mixed-use residential and commercial building, the second of a two-building development on 30th Street. Contaminants of concern included volatile and semi-volatile organic compounds associated with historic operations and underground storage tanks (USTs) located on the Site. The Site was given an E-designation (E-142) for hazardous materials and noise as part of the Highline/West Chelsea rezoning proposal. To satisfy the requirements of the E-designation program, soil was excavated to at least 12 feet below grade and bottom endpoint collected showing no contaminants of concern exceeding the New York State Department of Environmental Conservation (NYSDEC) Unrestricted Use Soil Cleanup Objectives (SCO). By achieving Unrestricted Use SCOs, no engineering controls were necessary, although the building slab was included as part of development, and removal of the hazardous materials E-designation was requested.

Tishman Speyer, Long Island City Residential Development, Long Island City, New York. Field geologist for remedial oversight and implementation of a Community Air Monitoring Program during concurrent remediation and development of three Brownfield Cleanup Program (BCP) sites located in Long Island City, New York. The Sites were grossly contaminated with creosote, a carcinogenic chemical formed from the distillation of various tars. Remediation strategies included soil excavation and in-situ soil stabilization. To prevent migration of groundwater off-site, a temporary and later a permanent capture well system was installed on the western boundary of the property. The BCP site located on the western portion of the property left residual contamination in place requiring installation of a sub-slab depressurization system.

Queens West Development Corporation, Queens Waterfront Development, Long Island City, New York. Field geologist for performance of site management post remedial action. Services included annual groundwater monitoring, evaluation of engineering and institutional controls completion and Period Review Reports. In addition to conducting annual site management activities, responsibilities included composing a work plan to evaluate the transition from active sub-slab depressurization systems to passive. Upon NYSDEC approval, active systems were shut down for 30 days prior to a sub-slab vapor sampling event evaluation soil vapor, indoor and outdoor air conditions for

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potential vapor intrusion risk. As results indicated no evidence of vapor intrusion, continued pressure monitoring was conducted for from the existing monitoring ports for one year assessing whether negative pressure was held by the existing slab by stack-effect or other passive processes.

Jim Beam Brands Co., Brownfield Cleanup Program Remediation Site, Long Island City, New York. Field geologist for oversight of the installation of an Electrical Resistive Heating (ERH) system implemented in order to remediate trichloroethylene groundwater plumes in shallow/intermediate and deep groundwater on- and off-site. The Site, a former stapler manufacturing facility, underwent various remedies, including a Soil Vapor Extraction system, air sparging, ozone injection and chemical oxidation using potassium permanganate injections, which resulted in little reduction to contamination levels and rebounding chlorinated solvents. Components of the ERH system installed included electrodes for delivery of steam, vapor recovery wells, and groundwater monitoring wells. The site is currently under remediation in the state BCP program.

Due Diligence and Site Characterization

Manufacturing Plants, Multiple Investors, Environmental and Compliance Assessment Portfolio United States. Project lead for completion of Phase I Environmental Site Assessments (ESAs) and Limited Compliance Reviews for multiple auto parts manufacturing facilities throughout the United States. Services included completion of Phase I ESAs in accordance with the American Society for Testing and Materials E1527-13 requirements and a limited review of each facility's compliance liabilities including issues pertaining to the Resource Conservation and Recovery Act, Greenhouse Gas Emission Standards and Tier II Emergency and Hazardous Chemical Inventory reporting requirements.

ARM Parking, Environmental Site Assessment and Subsurface Investigation, Brooklyn, New York. Project manager for site assessment and subsurface investigation of parking facility in Sunset Park neighborhood, Brooklyn, New York. Services included ground penetrating radar survey for former and current petroleum USTs, completion of a subsurface investigation of soils and composition of Limited Subsurface Investigation Report.

Spill Consulting

The Trump Organization, Spill Consulting Services, New York, New York. Project manager for consulting services provided after incidental release of calcium carbonate ice rink paint to the Central Park Pond from Wollman Rink. Services included liaising with NYSDEC regarding violations, consent order and required corrective action. Corrective action included designing alterations to the existing on-site drainage plans and routing all meltwater containing paint into the combined sewer system. Coordination was required with property owner, operations personnel, New York City Department of Parks and NYSDEC.

Richmond Gardens Apartments, Spill Management and Closure Services, Staten Island, New York. Project lead responsible for spill closure activities and reporting for Spill 1105661 located at the Richmond Gardens Apartment Complex in the Richmond neighborhood of Staten Island, New York. The spill was opened in 2011 when several underground storage tanks were identified adjacent to the apartments at Jersey Street and Hendricks Avenue. The tanks were cleaned and removed and impacted soils surrounding the tank area excavated to the extent possible. Excavation of all impacted material was not feasible due to the proximity of the tanks to the apartment buildings. Residual contamination in soil and groundwater remained and was monitored through 2016. Upon reviewing the groundwater monitoring data from over 12 consecutive quarters, it was apparent monitored natural attenuation was not a feasible option and an in situ chemical oxidation (ISCO) remedy was approved by NYSDEC. Due to success of the pilot test, the ISCO injection event was implemented utilizing pressure pulse technology to deliver the alkaline activated persulfate solution to the subsurface.

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MATTHEW J. LEVY

Senior Project Manager | Environmental Scientist

EDUCATION

BS, Biochemistry and Environmental Science, Muhlenberg College

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)
8-Hour OSHA Hazardous Waste Worker Refresher Training (29 CFR 1910.120)
30-Hour OSHA Construction
NYSDEC Erosion and Sediment Control Inspector
American Red Cross First Aid Training and CPR Course

Matthew is a project manager with over 12 years of experience in soil, groundwater and soil vapor investigation, specializing in remedial design and implementation. During his time at Haley & Aldrich, Matthew's focus has been serving the environmental and real estate markets. He is experienced in Phase I Environmental Site Assessments, Phase II Environmental Site Investigations, site characterization, hazardous materials analysis, regulatory closure reports as well as remedial design and implementation.

Matthew has experience in composing site closure documentation including Remedial Closure Reports reviewed by the Office of Environmental Remediation as well as Final Engineering Reports reviewed by the New York State Department of Environmental Conservation. His background includes the development of and compliance with regulator-approved site management plans, overseeing the operation and maintenance of on-site engineering controls and ensuring the protection of human health and the environment.

Matthew has also worked on city rezoning proposals by performing work associated with and composing the Hazardous Materials Analysis chapter included in Final Environmental Impact Statements published by New York City Department of Planning. Analysis methods were performed in accordance with the City Environmental Quality Review (CEQR) guidelines for neighborhoods including East Harlem, Manhattan and Gowanus, Brooklyn as well as Industry City, Brooklyn.

RELEVANT PROJECT EXPERIENCE

Redevelopment and Remediation

The Jay Group, Brownfield Cleanup Program Remediation Site, 101 Fleet Place, Brooklyn, New York. Project manager for environmental consulting services during the redevelopment of a former childcare center into a mixed-use commercial and residential high-rise. The Site has been assigned New York City Office of Environmental Remediation (NYC OER) E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion (COC) for remedial work completed in the New York State Brownfield Cleanup Program (NYS BCP). OER Services included the development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a remedial investigation (RI), composition of a Remedial Investigation Report (RIR), development of a BCP Remedial Action Work Plan (RAWP), Remedial Oversight during the implementation of the RAWP, composition of the Site Management Plan (SMP) and composition of the Final Engineering Report (FER). The remedy included the excavation and disposal of hazardous waste, PFAS-contaminated soil, and the design and implementation of an active SSDS, achieving a conditional Track 1 remedy.

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The Jay Group, Brownfield Cleanup Program Remediation Site, 401 West 207th Street, New York, New York. Project manager for environmental consulting services during the redevelopment of a former gas station into a mixed-use commercial and residential high-rise. The Site has been assigned NYC OER E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion for remedial work completed in the NYS BCP. OER Services development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a RI, development and implementation of an Intermediate Remedial Measure Work Plan (IRMWP) composition of a RIR and Construction Completion Report (CCR), development of a BCP RAWP, Remedial Oversight during the implementation of the RAWP, composition of the FER. Services also included the management and closure of NYSDEC Spill Number 2304082. The remedy included the excavation and disposal of petroleum-contaminated soil, the treatment and removal of over 12 million gallons of groundwater, achieving a conditional Track 1 remedy.

The Jay Group, Brownfield Cleanup Program Remediation Site, 1885 Atlantic Avenue, Brooklyn, New York. Project manager for environmental consulting services during the redevelopment of a former gas station into a mixed-use commercial and residential high-rise. The Site has been assigned NYC OER E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion for remedial work completed in the NYS BCP. OER Services development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a RI, development and implementation of an IRMWP, completion of a supplemental RI to delineate deep VOC contamination in soil, composition of a RIR, supplemental RIR, and CCR, development of a BCP RAWP, Remedial Oversight during the implementation of the RAWP, composition of the FER and SMP. The remedy included in-situ chemical oxidation (ISCO) injections to treat groundwater contamination, the excavation and disposal of petroleum-contaminated soil, the management and closure of NYSDEC Spill Number 2306185, the installation of a soil vapor extraction (SVE) system do remediate deep VOC contamination, and the design and implementation of an active SSDS, achieving a Track 2 remedy.

The Jay Group, Brownfield Cleanup Program Remediation Site, 2864 Atlantic Avenue, Brooklyn, New York. Project manager for environmental consulting services during the redevelopment of a former gas station into a mixed-use commercial and residential high-rise. The Site has been assigned NYC OER E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion for remedial work completed in the NYS BCP. OER Services development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a RI, development and implementation of an IRMWP, composition of a RIR and CCR, development of a BCP RAWP, Remedial Oversight during the implementation of the RAWP, composition of the FER and SMP. The remedy included in-situ chemical oxidation (ISCO) injections to treat groundwater contamination and the excavation and disposal of hazardous waste, achieving a conditional Track 1 remedy.

The Jay Group, Brownfield Cleanup Program Remediation Site, 210 Greenpoint Avenue, Brooklyn, New York. Project manager for environmental consulting services during the redevelopment of a former gas station into a mixed-use commercial and residential high-rise. The Site has been assigned NYC OER E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion for remedial work completed in the NYS BCP. OER Services development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a RI, development and implementation of an IRMWP, composition of a RIR and CCR, development of a BCP RAWP, Remedial Oversight during the implementation of the RAWP, composition of the FER. The remedy included the excavation and disposal of hazardous and petroleum-contaminated wastes, and the treatment and disposal of over 17 million gallons of groundwater, achieving a Track 1 remedy.

Manhattan Management, Brownfield Cleanup Program Remediation Site, Bedford Beverly Redevelopment, Brooklyn York, New York. Project manager for environmental consulting services during the redevelopment of a former auto service center, landmark commercial building and associated parking lots into a development renovating the landmarked building and redeveloping the surrounding space into four mixed-use commercial and residential buildings. The Site was remediated to a combination of Track 1 and Track 4 under the NYS BCP. NYS BCP services included completion of a RI, composition of a RIR, development of a BCP RAWP, Remedial Oversight during the implementation

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of the RAWP, composition of the FER and SMP, and coordination of the Certificate of Completion. The remedy included the management of non-hazardous and hazardous wastes, the design and oversight of ISCO and zero valent iron (ZVI) groundwater injections.

295 W Holdings LLC, 295-297 Wallabout Street, Brooklyn, New York. Project manager for environmental consulting services during the redevelopment of a former woodworking and plastics manufacturer into a mixed-use commercial and residential high-rise. The Site has been assigned NYC OER E-Designation status for hazardous materials, noise and air quality and has received its Certificate of Completion for remedial work completed in the NYS BCP. OER Services development of an Air Quality/Noise Remedial Action Plan and Installation Report. NYS BCP services included completion of a RI, composition of a RIR, development of a BCP RAWP, Remedial Oversight during the implementation of the RAWP, composition of the FER and SMP. The remedy included the excavation and disposal of non-hazardous and hazardous wastes, the design and oversight of *in situ* chemical reductant (ISCR) groundwater treatment, and the treatment and disposal of approximately 1 million gallons of groundwater, achieving a conditional Track 1 remedy.

Titan Equity Group, Hotel Redevelopment, Bronx, New York. Project manager for a hotel redevelopment in the south Bronx. The site has been assigned NYS OER E-Designation status for hazardous materials, noise, and air quality. Services included completion of a remedial investigation, composition of a Remedial Investigation Report and development of Hazardous Material Remedial Action Work Plan and Air Quality/Noise Remedial Action Plan as per NYC OER requirements.

Private Developer, Mixed-Use Redevelopment, Queens, New York. Project manager for a mixed-use residential and commercial redevelopment in Queens being remediated under a consent order as an inactive hazardous waste facility for chlorinated VOC and petroleum contamination. Services include a review of historical reports, conducting a Limited Phase II ESI, development of a Site Characterization Work Plan, completion of the Site Characterization and development of an IRMWP. Remediation is ongoing.

Private Developer, Mixed-Use Redevelopment, Bronx, New York. Project manager for a mixed-use residential and commercial redevelopment in the Bronx being remediated under a consent order as an inactive hazardous waste facility for chlorinated VOC contamination within bedrock. Services include a review of historical reports, development of a Supplemental Site Characterization Work Plan including the installation of groundwater monitoring wells installed at various depths within bedrock to horizontally and vertically delineate CVOC contamination across the Site, completion of the Supplemental Site Characterization and development of an IRMWP. Remediation is ongoing.

Private Developer, Mixed-Use Redevelopment, Queens, New York. Project manager for a mixed-use residential and commercial redevelopment in Queens. The Site has been assigned New York City Office of Environmental Remediation (NYC OER) E-Designation status for hazardous materials. Services included completion of a remedial investigation, composition of a Remedial Investigation Report and development of Hazardous Material Remedial Action Work Plan as per NYC OER requirements.

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BRIAN FITZPATRICK, CHMM

Corporate Director, Health and Safety

EDUCATION

M.P.A., Environmental Policy, Syracuse University
B.S., Environmental Science, University of Massachusetts-Amherst
A.S., Chemistry, Valley Forge Military Junior College
Commissioned Officer, United States Army

CERTIFICATIONS

Certified Hazardous Materials Manager (Reg. No. 13454)
Certified Department of Transportation Shipper
Certified International Air Transport Authority Shipper

PROFESSIONAL SOCIETIES

Alliance of Hazardous Materials Professionals
Academy of Certified Hazardous Materials Managers, New England Chapter

SPECIAL STUDIES AND COURSES

Department of Transportation
International Air Transport Authority
Incident Commander
Confined Space Entry and Rescue
Radiation Safety Officer
RCRA Hazardous Waste
Massachusetts Industrial Waste Water Operator Grade 2I (expired)

AWARDS

Presidents Club Award (one million hours worked without a recordable injury), Cabot Corporation
Chancellors Award for Excellence, Syracuse University

Brian ensures the work we do for our clients is done safely – knowing this reduces costs, improves service quality and site conditions, and ultimately protects our clients' reputations. In addition to building the Haley & Aldrich Health & Safety (H&S) culture, Brian is hands-on with clients to help improve their and their partners' safety cultures.

He has extensive expertise in the Occupational Safety and Health Administration (OSHA) general industry, process safety management, and construction safety programs. He is an active member of the Alliance of Hazardous Materials Professionals and the New England chapter of the Academy of Certified Hazardous Materials Managers.

Brian knows an organization's success is predicated on empowering its people to safely work within the complex, living processes in which they operate. He is a student of human factors in the workplace, of the phenomena of human error and drift into failure, and of the safety applications of Lean techniques.

RELEVANT PROJECT EXPERIENCE

Haley & Aldrich, Inc., Burlington, Massachusetts. As Chief Health and Safety Officer, Brian has led and facilitated the development and implementation of corporate health and safety (H&S) improvement plans to enhance compliance and improve H&S performance. In Brian's time with Haley & Aldrich, Inc., the company has realized dramatic improvement on H&S goals and in Key Performance Indicators. Brian is responsible for developing a risk competence culture, where our staff are empowered to look for and engage to address risk before anyone is injured. Brian oversees the development, implementation and continuous improvement of all H&S programs for the company. Additional responsibilities include:

- Developing a safety culture through incident reporting, root cause analysis, behavior-based safety, hazard recognition and risk assessment, communication, and developing leaders;

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- Monitoring proposed and existing SH&E regulations and legislation to determine their impact on operations and to ensure continued compliance;
- Overseeing the safety, industrial hygiene, and toxicology programs for over 600 staff members engaged in remediation, construction, health and safety, consulting, and general office work across 28 offices in the United States and on assignment to international project sites;
- Continuously seeks to improve H&S performance as measured by the OSHA Incident Rating (IR) and Worker's Compensation Experience Modification Rating (EMR), as well as Leading Indicators developed with the management team; and
- Participating in the corporate audit program as an auditor or lead auditor;

Energy Client, California. As Chief Health and Safety Officer, Brian led and facilitated the Alliance Partnership Safety Council in 2017, is still an active contributor to the council, and hosts routine contractor safety forums for the client. Brian is actively involved in the development and implementation of program safety, health, and environmental (SH&E) plans to ensure safe operations on project sites. Brian developed permits and Health and Safety Plans for large projects and routinely audits the site safety. Additional responsibilities include:

- Driving reporting and behavior-based safety initiatives to support our internal safety culture and developing monthly summary reports to illustrate performance to our client.
- Develop, assess and continuously improve site safety plans and practices, including specific safety protocols for working safely over and around water.
- Worked as an extension of the client's organization to provide assurance that the remedy was completed safely and consistent with client-specific requirements.
- Support on-site safety personnel in ensuring the health and safety of the general public, our staff, and our sub-contracted employees.
- Audits and visits sites to ensure compliance with our internal policies and client-specific requirements.

Energy Client, Ohio. As Chief Health and Safety Officer, Brian supports the project team in developing and executing client and project specific health and safety measures, such as a site specific Health and Safety Plan, Job Hazard Analyses, Industrial Hygiene program, and site specific training. Brian also routinely visits the site to assess current practices and condition and to ensure continuous improvement. Additional responsibilities include:

- Develop, assess, and continuously improve site safety plans and practices, including specific safety protocols to comply with supplemental EH&S requirements such as the Duke Health and Safety Handbook, Environmental Supplemental, and EHS Keys to Life.
- Develop, assess, and continuously improve site safety plans and practices to address the risks associated with the work being performed on site, as well as the environmental conditions and simultaneous operations, including trenching and excavation, hot work, work over and near water, heavy equipment, HAZWOPER, etc.
- Worked as an extension of the client's organization to provide assurance that the remedy was completed safely and consistent with client-specific requirements.
- Support on-site safety personnel in ensuring the health and safety of the general public, our staff, and our sub-contracted employees.
- Audits and visits site to ensure compliance with our internal policies and client-specific requirements.

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BRIAN A. FERGUSON

Senior Health & Safety Manager

EDUCATION

MS, Geotechnical Engineering, Tufts University, Medford, Massachusetts
BS, Civil Engineering, State University of New York - Environmental, Science, and Forestry, Syracuse, New York
AS, Applied Science and Technology (Nuclear Engineering), Thomas A. Edison State College, Trenton, New Jersey

CERTIFICATIONS

BCSP Certified Safety Professional (#CSP-45145)
BCSP Associate Safety Professional (#ASP-31270)

PROFESSIONAL SOCIETIES

Associate Safety Professional – 2019
Order of the Engineer – 2000
Boston Society of Civil Engineers (BSCE)
American Society of Civil Engineers (ASCE)

SPECIAL STUDIES AND COURSES

American Concrete Institute – Certified Field Technician Certified Grade 1
Radiation Safety and Operations of Nuclear Testing Equipment – Troxler
40-Hour OSHA Hazardous Waste Operations Training (+ 8-Hour annual refresher)
10-Hour OSHA Construction training
Confined Space Entry Training
16-Hour Asbestos Operations and Maintenance
24-Hour Asbestos Inspector
Asbestos Inspector License (June 2018 and renewed Annually)

ENGINEERING EXPERIENCE

Brian has over 23 years of experience serving as a project engineer on a variety of real estate development projects. His project experience has included monitoring field investigations, performing construction oversight, performing due diligence, engineering analyses, performing geotechnical analyses, developing geotechnical recommendations, and preparing geotechnical reports, and project specifications.

As a project engineer, in addition to providing engineering design support, Brian has managed and participated in many field service activities. Field work has included construction monitoring and documentation of contractors' deep and shallow foundation-related construction, including slurry walls, caissons, pile driving, pile cap installation, earthwork, backfilling and compaction, installation of soldier pile and wood lagging support systems, installation of tie backs and rock anchors, reading inclinometers, conducting in-place field unit weight tests, tie-back load testing, seismograph installation, monitoring, and evaluating, and preparation of footing bearing surfaces. Other responsibilities have included site development activities, including placement of utilities and subgrade preparation for roads; observations and testing to determine that work is completed in compliance with contract documents; on-site soil management; sampling of soil and groundwater for chemical laboratory testing and conducting in situ field screening; maintenance of job records including pile driving logs, results of field density tests, records of caisson and footing installations; preparation of daily field reports; in contact with key personnel; and resolution of field related problems.

RELEVANT PROJECT EXPERIENCE

Fenway Center. Project engineer for the construction of laboratory space constructed over the Massachusetts Turnpike, two residential towers, and the Fenway Area consisting of 8 to 14 stories and multiple levels below grade. Construction responsibilities included coordination of construction monitoring, observing Support of Excavation (SOE) and footing installation, coordination of installation of Slurry Walls, assisting with project management, reviewing

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weekly field construction reports, reviewing, and responding to geotechnical design submittals, and attending project meetings.

Massachusetts Institute of Technology, The Schwarzman College of Computing Project. Project Engineer for a new approximately eight stories above ground and one story below ground building and contains approximately 189,000 gross square feet (gsf) of mixed-use space for: offices, research laboratory, academic, event, collaboration, meetings, café, convening, and associated services. Responsibilities included coordination of construction monitoring, observing SOE, micropile, and Caisson Installation, assisting with project management, reviewing weekly field construction reports, reviewing, and responding to geotechnical design submittals, and attending project meetings. Brian also was the main point of contact for construction-related issues with the project owner and contractors.

Massachusetts Institute of Technology, Graduate Housing Project. Project Engineer for construction of two new five- to eight- story residential buildings with a total gross floor space of approximately 261,000 square feet (sq ft). Responsibilities included coordination of construction monitoring, observing SOE, micropile, and Caisson Installation, assisting with project management, reviewing weekly field construction reports, reviewing and responding to geotechnical design submittals, and attending project meetings. Brian was the main point of contact for construction-related issues with the project owner and contractors and conducted Health & Safety Audits of Haley & Aldrich personnel during construction.

Edwards Vacuum Project. Project Engineer for a new single-level 101,000-sq ft building with a mezzanine located in the south portion of the proposed building. Responsibilities included developing subsurface exploration program coordination, writing the Geotech Report, and coordinating field staff to observe construction activities, including mass excavation of approximately 100,000 cubic yards of soil, installation of spread footing, and construction dewatering. Brian assisted with project management, reviewing weekly field construction reports, reviewing, and responding to geotechnical design submittals, and attending project meetings. Brian was the main point of contact for construction-related issues with the project owner and contractors and conducted Health & Safety Audits of Haley & Aldrich personnel during construction.

St. Elizabeth's Hospital – **West Campus Forensic Evaluations, Washington, D.C.** Project Engineer for forensic evaluations on the adaptive reuse of former hospital buildings. Responsibilities included coordination of a field exploration program, including test borings and test pits to obtain subsurface information for project design and construction, overseeing multiple field personnel and subcontractors, assisting with project management, reviewing subcontractors invoices, reviewing and summarizing subsurface data, and writing data reports.

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NICOLE MOONEY

Assistant Project Manager | Geologist

EDUCATION

B.S., Earth and Environmental Science with a minor in Oceanography, University of Michigan-Ann Arbor

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)
8-Hour OSHA Hazardous Waste Worker Refresher Training (29 CFR 1910.120)
8-Hour OSHA HAZWOPER Supervisor for Construction Training
OSHA 10-Hour Construction Safety
OSHA 30-Hour Construction
NYC SST-307 8-Hour Fall Prevention for Construction
NYC SST-302 2-Hour Drug and Alcohol Awareness for Construction
DOT Hazmat Employee & RCRA Hazardous Waste Generator Training
American Red Cross Adult First Aid/CPR/AED Training and Bloodborne Pathogens Training
USACE Construction Quality Management for Contractors
Level I Antiterrorism Awareness Training

Nicole is a geologist with over four years of experience in site characterization and investigation, subsurface investigations, preparation of technical reports and work plans, and data collection and analysis. She has extensive experience conducting Phase I Environmental Site Assessments (ESAs), Phase II Environmental Site Investigations (ESIs), and other aspects of environmental due diligence. She has experience with preparation and overseeing execution of remedial investigation and actions at sites within the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) and the New York City Mayor's Office of Environmental Remediation (NYCOER). She has performed soil, groundwater, and soil vapor sampling events and has drafted various site investigation plans and reports.

RELEVANT PROJECT EXPERIENCE

Environmental Investigation, Site Characterization, and Remediation

340 Myrtle Development LLC, 340 Myrtle Avenue, Brooklyn, New York. As a project geologist, Nicole coordinated and managed implementation of the Remedial Action Work Plan (RAWP) at the approximately 8,828 square foot site enrolled in the NYSDEC BCP. The remedial action included excavation and off-site disposal of soil, installation of an active sub-slab depressurization system (including cover system), installation of injection wells, and reinstallation of permanent monitoring wells for post-remedy groundwater monitoring. Nicole was responsible for the preparation of the Final Engineering Report (FER) and the Site Management Plan (SMP) which are undergoing review by the NYSDEC. Construction for the new development is currently ongoing and, when completed, the site will be improved with a new eight-story mixed-use commercial and residential building with a full cellar level.

B Contractors Group, LLC, 711-713 East 214th Street, Bronx, New York. As a project geologist, Nicole was responsible for coordinating and managing the implementation of the NYCOER-approved Remedial Action Plan (RAP) and preparing the Remedial Closure Report (RCR) for the approximately 6,252 square foot site. The redevelopment included a new eight-story residential building with a full cellar level.

650 Southern Blvd Bronx LLC, 650 Southern Boulevard, Bronx, New York. As a project geologist, Nicole was responsible for preparation and implementation of the Remedial Investigation Work Plan (RIWP), which included the installation of eleven soil borings, seven permanent groundwater monitoring wells (some of which extended into

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bedrock), and seven soil vapor points, and the collection of soil, groundwater, and soil vapor samples. Nicole was also responsible for preparation of the Citizen Participation Plan (CPP), Remedial Investigation Report (RIR), and RAWP. The site is in the pre-construction phase.

Degraw Holdings LLC, 563 Sackett Street Site, Brooklyn, New York. As a project geologist, Nicole was responsible for due diligence during acquisition, including preparation of the Phase I ESA and Limited Phase II ESI. The initial Limited Phase II ESI and delineation sampling have been completed and the Limited Phase II ESI Delineation Report, Brownfield Cleanup Agreement (BCA) Major Amendment Application, and Supplemental Remedial Investigation Report (SRIR) are being drafted.

291 Wallabout Realty LLC, 291 Wallabout Street, Brooklyn, New York. As a project geologist, Nicole was responsible for the due diligence during acquisition of the property, including preparation of a Phase I ESA, Phase II ESI, BCP Application, and RIWP.

401 West 207th Realty LLC, 401 West 207th Street, New York, New York. As a project geologist, Nicole was responsible for oversight during implementation of the RAWP under the NYSDEC BCP. During remediation, Nicole observed and documented the excavation and proper disposal of on-site soil required for installation of the foundational elements. Nicole oversaw the proper cleaning and removal of two underground storage tanks encountered during excavation.

BCP Applications and Remedial Investigation Work Plans for NYSDEC. Nicole has prepared several BCP Application packages for various clients in New York State, which requires reviewing the site's history, including any previous investigation reports available, to assist with entry into the BCP to be remediated and redeveloped in accordance with applicable NYSDEC requirements. Nicole also prepares an RIWP to be submitted to the NYSDEC either concurrently or following submittal of the BCP Application for full investigation of the site to facilitate proper remedial action.

Excavation Oversight and CAMP Monitoring, Various Sites, Bronx, Brooklyn, and Queens, New York. As a project geologist, Nicole completed remedial oversight for several projects in the NYCOER cleanup program and NYSDEC BCP. Her responsibilities included excavation oversight, air monitoring, truck logging during off-site disposal of excavated materials, collection of endpoint and/or documentation samples, vapor barrier inspection, and oversight of installation of post-remedy groundwater monitoring wells.

Multiple Clients, Phase I ESAs and Due Diligence, Multiple Locations in New York. As a project geologist, Nicole completed several Phase I ESAs for buyers of properties in New York. She has extensive experience completing site reconnaissance and reviewing historical site documentation to identify potential environmental concerns at properties.

Multiple Clients, Phase II ESIs, Multiple Locations in New York. As a project geologist, Nicole conducted several Phase II ESIs for projects in New York, including oversight of the installation of soil borings, groundwater monitoring wells, and soil vapor points and the collection of soil, groundwater, and soil vapor samples. She assisted with the development of sampling plans based on previous environmental investigations and due diligence findings.

Former Grissom Air Force Base, Kokomo, Indiana. As a project geologist, Nicole was responsible for coordinating and performing quarterly groundwater sampling and/or Land Use Control (LUC) inspections in accordance with the deeds and Decision Documents for nine sites (FT001, FT002, SS190, SS035, SS053, SS058, LF003, LF004, and SS049) located on the 2,722-acre former Grissom Air Force Base under the Base Realignment and Closure (BRAC)/Environmental Construction Optimization Services (BECOS) program. Nicole was also responsible for the coordination and implementation of a Data Gap Investigation (DGI) at the SS035, SS053, and SS058 sites and a Site Investigation (SI) at the former Navy Skeet Range (site SR406). Nicole prepared LUC Inspection reports, Annual Groundwater Monitoring Reports, an SI Report, a DGI Report, and the Five-Year Review Report for this work.

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KATHERINE R. MILLER

Senior Project Manager

EDUCATION

BS, Chemistry, University of Arizona

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120 and 40 CFR 265.16)
8-Hour OSHA Refresher Training (29 CFR 1910.120)
Level IV Data Validation Training

AWARDS

Pinnacle Award, 2009
Pathfinder Award, 2014

In her 10+ years at Haley & Aldrich, Katherine has worked on soil and groundwater environmental investigations and the preparation of environmental reports for private, industrial, and government-based project clients. She is a qualified Data Validator capable of performing various levels of validation on laboratory water quality data according to US Environmental Protection Agency (EPA) National Functional Guidelines and to U.S. Department of Energy radiochemical guidelines. She also has experience designing and maintaining databases for project-specific needs.

Project management responsibilities for a $1.5 million per year stormwater project include preparation of subcontractor bids and contracts; preparation of cost estimates, proposals, and reports; coordination of field testing programs; and interpretation of chemical testing results. She has interacted with local regulatory agencies.

RELEVANT PROJECT EXPERIENCE

Confidential Aerospace Manufacturer, Groundwater Monitoring, Western U.S. Katherine served as project manager for the comprehensive stormwater management program. Responsibilities included project finance management and data management including quality assurance/quality control (QA/QC) and interpretation of chemical testing results. Evaluated QA/QC of groundwater quality data, prepared reports and managed data for the site. Performed data validation of quarterly water quality data from over 300 locations according to EPA National Functional Guidelines and to DOE radiochemical guidelines over a six-year period. Also, responsible for updating and maintaining the integrity of over 200,000 records during that time period. Assisted with management of sampling, analysis, and reporting of constituents of concern, ensured compliance with post-closure permit monitoring and reporting requirements, Data Management Plan, QAPP, and Environmental Data Management System, and ensured and maintained 100% compliance with the QAPP and Data Management Plan. Additionally, prepared groundwater data summaries for proposed extraction wells including comparisons to site NPDES outfall limits in support of Groundwater Interim Measures planning.

Asarco Hayden Plant Site, Hayden, Arizona. Katherine assisted with field preparation, QA/QC of analytical data, and data validation as part of the Remedial Investigation/Feasibility Work Plan including soil, sediment, air, process water, surface water, and stormwater.

Former MGP Site, California. Katherine assisted with report preparation, QA/QC of soil and/or groundwater quality data, and data validation for the investigation of three large former MGP sites in an urban, residential setting; includes over 200 residential properties.

General Manufacturing, Leitchfield, Kentucky. Katherine assisted with report preparation, QA/QC of soil and/or groundwater quality data, and data validation for a soil and groundwater RCRA site. Groundwater monitoring is conducted annually at more than 50 locations for volatile organic compounds (VOCs), including 1,4-dioxane and semi-volatile organic compound (SVOCs).

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Skyworks Solutions, Inc., Newbury Park, California. Katherine assisted with report preparation, QA/QC of soil and/or groundwater quality data, and data validation at groundwater remediation site. She monitored for VOCs, including 1,4-dioxane, and inorganic chemicals, including hexavalent chromium.

Teledyne Scientific Company, Thousand Oaks, California. Katherine assisted with report preparation for this groundwater assessment site. Monitored natural attenuation has been instituted as the long-term site remedy.

Port of Redwood City, Permitting and Sediment Characterization, California. Katherine assisted with report preparation, QA/QC of sampling data, and data validation.

Kiewit Infrastructure West, Sediment Quality Study, California. Katherine assisted with report preparation, QA/QC of sampling data, and data validation.

Aeolian Yacht Harbor, Permitting, Eel Grass Conservation and Sediment Characterization, California. Katherine assisted with report preparation, QA/QC of sampling data, and data validation.

Marin County, Paradise Cay Permitting and Sediment Characterization, California. Katherine assisted with report preparation, QA/QC of sampling data, and data validation.

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APPENDIX J
Proposed Remedial Action Project Schedule

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ALTERNATIVE I
REMEDIAL ACTION PROJECT SCHEDULE
60 WILLIAM STREET REDEVELOPMENT SITE
NEWBURGH, NEW YORK
BCP PROJECT C336098

PROJECT SCHEDULE		2024				2025												2026											
Task	**Description**	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	Design, Investigation and Permitting																												
2	NYSDEC RAWP Review																												
3	45-Day Public Comment Period																												
4	Implementation of RAWP																												
6	Preparation of FER and SMP (if required)																												
7	SVI Evaluation																												
8	NYSDEC/NYSDOH Review of FER, SMP (if required), SVI Evaluation																												
9	Issuance of COC																												

Notes:

1. Schedule is estimated and subject to change.
2. Implementation of RAWP does not include completion of building construction
3. NYSDEC - New York State Department of Environmental Conservation
4. NYSDOH - New York State Department of Health
5. BCP - Brownfield Cleanup Program
6. RAWP - Remedial Action Work Plan
7. FER - Final Engineering Report
8. SMP - Site Management Plan
10. SVI - Soil Vapor Intrusion
9. COC - Certificate of Completion
10. COC issuance estimated for December 2026

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APPENDIX K
Climate Screening Checklist

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Climate Screening Checklist

Background Information

- Project Manager: Matthew Levy
- Site Name: 60 William Street Development Site (the "Site")
- Site Number: C336098
- Site Location: 58-60 William Street, Newburgh, New York
- Site Elevation (average above sea level): Approximately 149 feet above sea level (Google Earth)

- ClimAID Region (Responding Climate Change in New York State (ClimAID) - NYSERDA): Region 2 – Catskill Mountains and West Hudson River Valley

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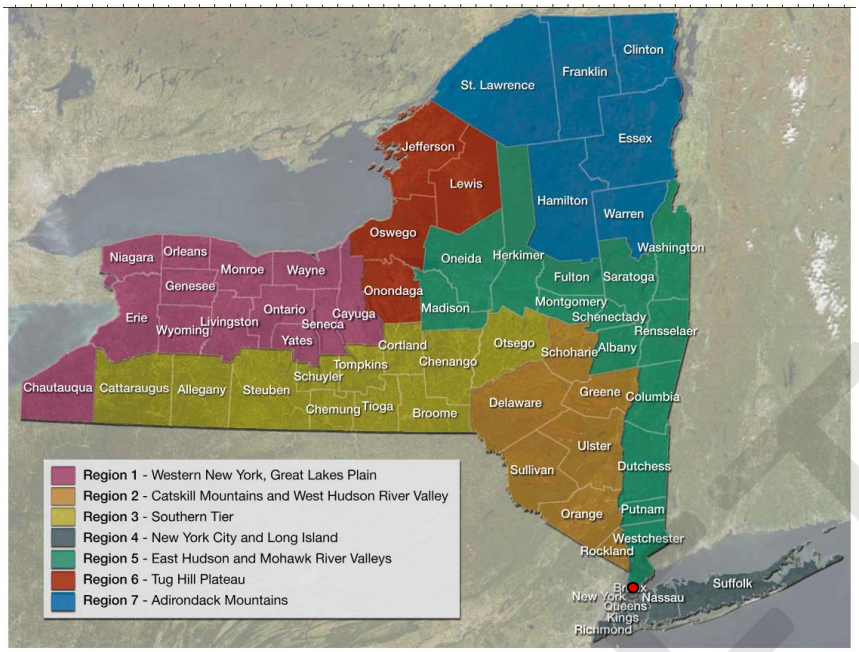

- Remedial Stage/Site Classification: Remediation
- Contamination - Media Impacted/ Contaminants of Concern: Soil - metals, semi-volatile organic compounds (SVOCs), and perfluorooctanoic acid/per- and polyfluoroalkyl substances (PFOA/PFAS); S~~s~~oil ~~v~~Vapor ~~–~~ volatile organic compounds (VOCs); and~~,~~ groundwater – ~~volatile organic compounds (~~VOCs~~)~~, PFOA/PFAS, and total/dissolved metals.
- Proposed/Current Remedy: Track 1 remedy – remedy will consist of excavation, stockpiling, off-Site transport, and disposal of contaminated historical fill material and contaminated soil below the historic fill interval Site-wide that exceeded the Unrestricted Use Soil Cleanup Objectives (UUSCOs); and removal of underground storage tanks (USTs) and/or associated appurtenances, if encountered, ~~and~~ decommissioning, and off-Site disposal.
- What is the predicted timeframe of the remedy? Will components of the remedy still be in place in 10+ years? The predic~~a~~ted timeframe of the remedy is approximately three to four months. If Response Action Objectives (RAOs) are met, achieving a Track 1 cleanup in accordance with the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP), no engineering or institutional controls will be required, and no components of the remedy will be in place in 10+ years.
- Is the site in proximity to any sensitive receptors? (e.g., wetlands, waterbodies, residential properties, hospitals, schools, drinking water supplies, etc.) One sensitive receptor, a recreational park, is located west adjacent to the Site. The Site is not located in close proximity to important federal, state, or local natural resources, including waterways, wildlife refuges, wetlands, and critical habitats of endangered or threatened species. Surrounding properties include commercial and residential buildings.

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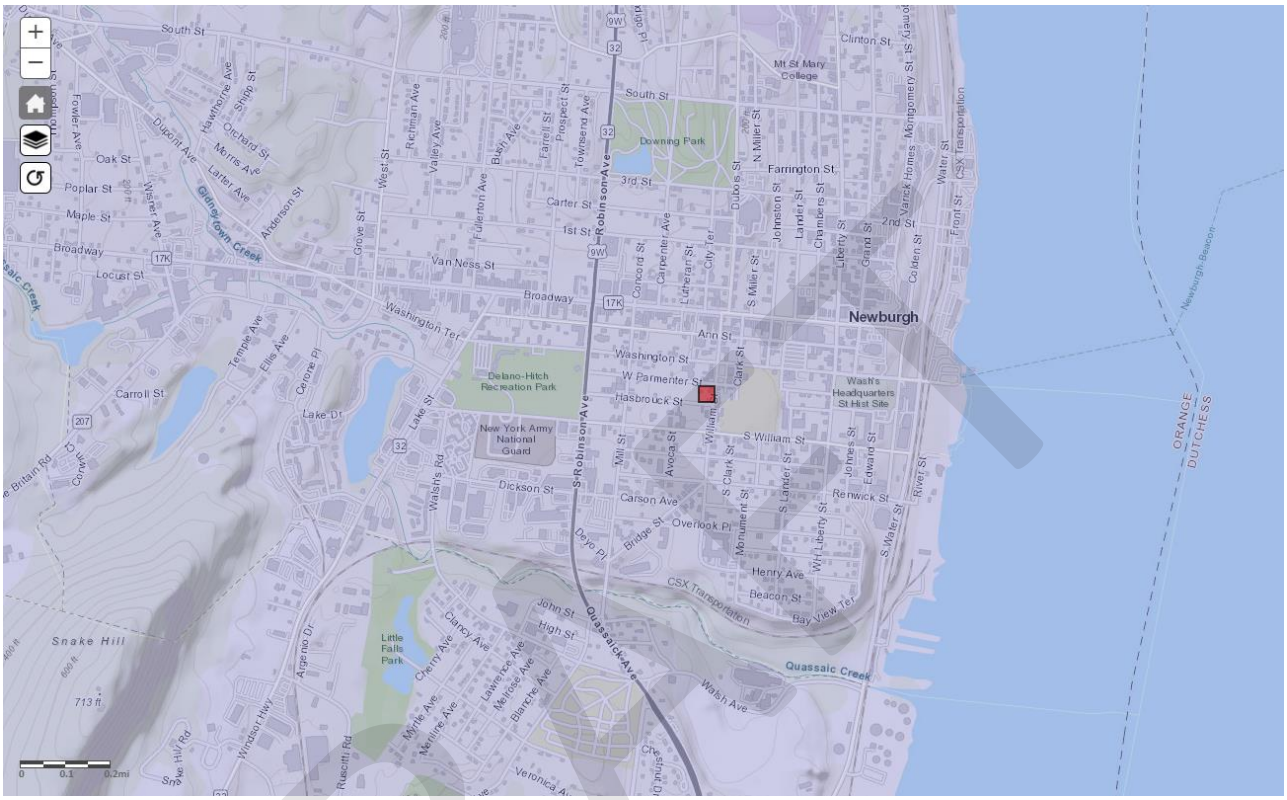
Is the site in a disadvantaged community (DAC) or potential environmental justice area (PEJA) (Use DECinfolocator: DECinfo Locator (ny.gov)?

X Yes ☐ No



If the site is in a DAC or PEJA, will climate impacts be magnified? If yes, list how and why.

☐ Yes X No

Should thresholds of concern be lowered to account for magnification of impacts? If yes, indicate how lower thresholds will be used in the screening.

☐ Yes X No

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Climate Screening Table*

Potential Climate Hazards	**Relevant to the Site Location** (Y/N/NA)[1]	**Projected Change** (Resilience Analysis and Planning Tool (RAPT)/arcgis.com[3]	**Potential to Impact Remedy** (Y/N)	**Is remedy/site already resilient?** (Y/N)[4]
Precipitation	Y	None	N/A	N/A
Temperature[2] (Extreme Heat or Cold Weather Impacts)	Y	None	N/A	N/A
Sea Level Rise	N	N/A	N/A	N/A
Flooding	N	N/A	N/A	N/A
Storm Surge	N	N/A	N/A	N/A
Wildfire	N	N/A	N/A	N/A
Drought	N	N/A	N/A	N/A
Storm Severity	Y	None	N/A	N/A
Landslides	N	N/A	N/A	N/A
Other Hazards:	N/A	N/A	N/A	N/A

* Links to potential data sources can be found on the following page

[1] If the first column is N --> The rest of the columns will be N/A, the hazard is not applicable to the site.

[2] Extreme Heat: periods of three or more days above 90°F- Extreme Cold: Individual days with minimum temperatures at or below 0 degrees F (NYSERDA ClimAID report)

[3] List the projected change in specific terms or units e.g. inches of rainfall, feet of sea level rise, etc.

[4] If final column is Y, provide reasoning, if the final column is N --> Climate Vulnerability Assessment (CVA) required.

Required Next Steps (If no further action is required, provide justification):

Conduct severe weather storm inspections during the active remedy. Inspect dewatering systems prior to anticipated storm events that could result in a power outage, and after storm events.

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Potential Data Sources (not an exhaustive list)- from Superfund Climate Resilience: Vulnerability Assessment | US EPA

NYSERDA ClimAID report- Responding Climate Change in New York State (ClimAID) - NYSERDA

FEMA- National Flood Hazard Layer | FEMA.gov

NOAA- National Storm Surge Risk Maps - Version 3 (noaa.gov)

Department of Agriculture Forest Service Wildfire Risk to Communities

EPA Climate Change Indicators in the United States

EPA Climate Resilience Evaluation & Awareness Tool (CREAT) | U.S. Climate Resilience Toolkit

EPA National Stormwater Calculator

National Integrated Drought Information System U.S. Drought Portal

National Interagency Coordination Center National Interagency Fire Center

National Oceanic and Atmospheric Administration Coastal Services Digital Coast

- Resources to help communities assess coastal hazards, such as the Sea Level Rise Viewer for visualizing community-level impacts of flooding or sea level rise and downloadable LIDAR data

National Oceanic and Atmospheric Administration National Centers for Environmental Information website

National Oceanic and Atmospheric Administration Sea Level Trends

National Weather Service Climate Prediction Center

National Weather Service National Hurricane Center

National Weather Service Sea, Lake, and Overland Surges from Hurricanes (SLOSH)

National Weather Service Storm Surge Hazard Maps

U.S. Federal Government Climate Resilience Toolkit: The Climate Explorer

U.S. Army Corps of Engineers Climate Preparedness and Resilience

U.S. Geological Survey Coastal Change Hazards Portal

U.S. Geological Survey Landslide Hazards Program

U.S. Geological Survey National Ground-water Monitoring Network Data Portal

U.S. Geological Survey National Climate Change Viewer

U.S. Geological Survey National Water Dashboard

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U.S. Geological Survey StreamStats

NYS Department of State- Assess | Department of State (ny.gov)

NYSERDA NY Costal Floodplain Mapper- Home Page (ny.gov)

NYSDEC Coastal Erosion Hazards- Coastal Areas Regulated By The CEHA Permit Program - NYDEC

NYSDOH Heat Index- health.ny.gov/environmental/weather/vulnerability_index/county_maps.htm

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APPENDIX L
NYSDOH Generic CAMP

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Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

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1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

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APPENDIX 1B

FUGITIVE DUST AND PARTICULATE MONITORING FROM
DER-10 TECHNICAL GUIDANCE
FOR SITE INVESTIGATIONS AND REMEDIATION

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Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50° C (14 to 122° F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

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